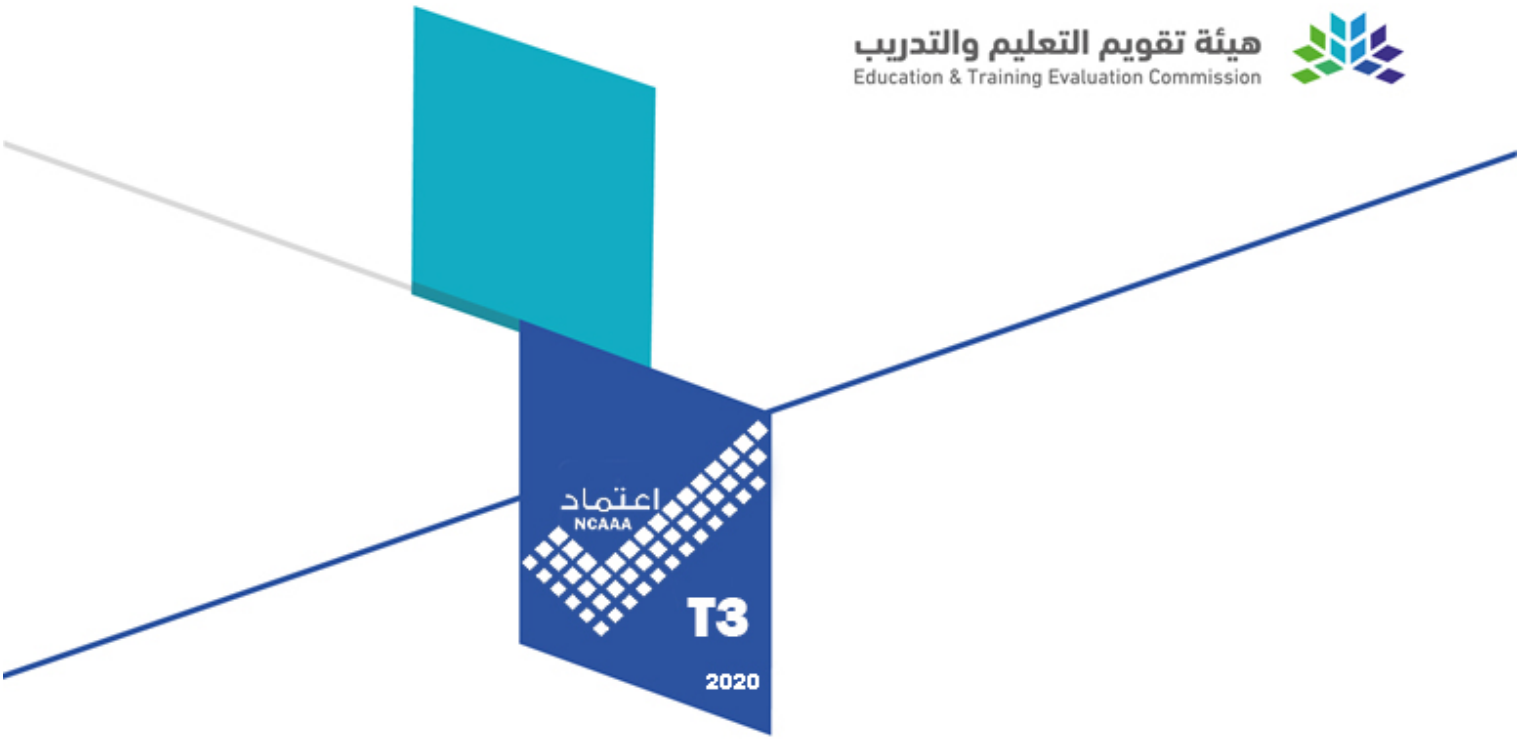
توصيف البرنامج

Program Specification

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Program Specification

Program Name: Mathematical Sciences
Qualification Level: Bachelor of Science
Department: Mathematical Sciences
College: Applied Sciences and Alqunfudah University College
Institution: Umm Al-Qura University

Content

A. Program Identification and General Information

: Program Main Location .1

Umm Al-Qura university Male Campus, Al-Abdiya, Mecca and Alqunfudah

: Branches Offering the Program .2

Umm Al-Qura university Female Campus, Al-Zahir, Mecca and Alqungudah

3. Reasons for Establishing the Program:
(Economic, social, cultural, and technological reasons, and national needs and development, etc.)

The need of the labor market for the department graduates. Especially in all levels of education sector.

4. Total Credit Hours for Completing the Program: (204)

5. Professional Occupations/Jobs:

1. General Education Sector : Teaching
2. Colleges and Universities : Teaching Assistants and Research Assistants
3. Research and Information Technology Centers: Researchers and Data Analysts
4. Banks and others financial facilities: data analyst, researchers, labor wage specialists and contributors to the preparation of strategic plans.
5. In the public and private sector: Collecting, Coding and analysis of statistical data.
6. Astronomical timer

6. Major Tracks/Pathways (if any)**:**

Major track/pathway	Credit hours (For each track)	Professional Occupations/Jobs (For each track)
1. None		
2.		
3.		
4.		

7. Intermediate Exit Points/Awarded Degree (if any)**:**

Intermediate exit points/awarded degree	Credit hours
1. None	
2.	
3.	

B. Mission, Goals, and Learning Outcomes

1. Program Mission:

Our mission is to provide distinguished programs in Mathematical Sciences that serve education and scientific research to prepare professionals able to strongly compete in the labor market.

2. Program Goals:

G-I. Provide students a wide range of the basic concepts and theories of mathematics.
- O-a. Retain basic knowledge in the core branches of mathematics
- O-b. Profound overview of the contents of fundamental mathematical theories and laws and able to identify their correlations

G-II. Reveal the relation between mathematics and others basic sciences.
- O-a. Utilize the appropriate mathematical techniques to analyze and interpret practical data.
- O-b. Use computer science applications and information technology to solve mathematical problems.

G-III. Recognize the role of mathematics in the development of society.
- O-a. Apply mathematical skills and knowledge to understand and solve real life problems.
- O-b. Communicate, and contribute their work effectively in teams

G-IV. Able to obtain employment in their area of mathematical interest or gain admittance to a graduate program in mathematics.
- O-a. succeed in gaining admission, and perform adequately in graduate programs.
- O-b. obtain entry-level employment in math-related fields.

O-c. Improve language and self-learning skills.

3. Relationship between Program Mission and Goals and the Mission and Goals of the Institution/College.

Mission of Umm Al-Qura University:

Provision of distinctive scientific education and research that serve the community and Hajj and Umrah, and contribute to the development of the knowledge-based economy in accordance with the Saudi Vision 2030.

Objectives of UQU Major and Subsidiary Strategic Plan

S/N	Objective	Strategic Objective	Sub-Objective
1.	Learning and Education	Application of the learning organization model	1- Development of staff performance
			2- Enhancement of student experience
			3- Update of the colleges' educational programs to keep pace with the labor market
2.	Scientific Research	Sustainability of scientific research and improvement of its outputs to meet the needs of the community	1- Increasing outstanding scientific publishing
			2- Developing the research environment and improving the outputs of scientific research
3.	Social Responsibility		1-Community awareness and education

		Active participation in volunteering, and the service of community and pilgrims	2- Dissemination and adoption of the volunteerism culture
4.	Infrastructure	Infrastructure enhancement	1- Completion of lame duck projects
			2- Creation of new projects
5.	Leadership, Administrative and Technical Affairs	Developing the performance, and the scientific, creative and intellectual abilities, of leaders, administrators and technicians	1- Leadership Development
			2- Administration Development
			3- Technical Development
6.	Quality Assurance and Improvement	Establishing an integrated system for total quality management	1- Obtaining the NCAAA
			2- Obtaining the AACSB by some colleges' programs
7.	External Cooperation	Convening local, regional and international agreements and partnerships with different organizations	1- Local agreements
			2- Regional agreements
			3- International agreements
8.	Media and Marketing	Marketing of UQU and its programs and activities to be a reliable academic brand	1- Improve the mental image of UQU to the concerned parties
			2- Marketing of UQU programs and activities
9.	Investment and Knowledge-Based Economy	Development of the University's own resources	1- Material utilization of the university's facilities
			2- Investment in knowledge-based economy

Consistency between Goals and objectives of the Math. and UQU Goals

Math. / UQU	G-I		G-II		G-III		G-IV		
	O-a	O-b	O-a	O-b	O-a	O-b	O-a	O-b	O-c
1	✓	✓	✓						
2		✓	✓	✓		✓		✓	✓
3			✓		✓	✓	✓		
4					✓				
5		✓	✓				✓		
6			✓	✓					
7	✓	✓			✓	✓			✓
8				✓					
9					✓	✓		✓	

4. Graduate Attributes:

1. **Highly qualified and competitive graduates,**
2. **Demonstrate deep conceptual understanding of different fields of Mathematical Sciences,**
3. **Work effectively in teams and with same and multiple disciplinary,**
4. **Approach challenges with curiosity, critical thinking and creativity,**
5. **Apply acquired skills to tackling real life problems,**
6. **Able to learn independently with high efficiency,**
7. **Display a strong sense of personal and professional identity.**

5.Program learning Outcomes*

Knowledge and Understanding	
K1	Understand the related basic scientific facts, concepts, principles and techniques

K2	Identify the relation between the studied topics and the environment.
K3	Acquire knowledge for solving real life problems.
K4	Understand and have knowledge about written proofs using standard methods
K5	Use symbolic forms of problem situations through modelling real-world situations
Skills	
S1	Analyse, synthesize, assess and interpret qualitatively and quantitatively science relevant data.
S2	Develop lines of argument and appropriate judgments in accordance with scientific theories and concepts
S3	Derive and apply theories in different field of mathematical Sciences
S4	Develop and use mathematical models to make predictions and informed decisions..
S5	Apply mathematical techniques and tools considering scientific ethics
S6	Develop conjectures and draw appropriate conclusions, and test these conjectures
S7	Consider community linked problems, ethics and traditions
S8	Acquire self- and long life-learning
S9	Confidence in their abilities to use mathematics independently
Values	
V1	Use technology to enhance mathematical thinking and understanding
V2	Work in groups effectively, manage time, collaborate and communicate with others positively
V3	Apply scientific models, systems, and tools effectively within scientific ethics
V4	Exhibit the sense of beauty and neatness
V5	Use computer and its applications as office and computational tools

* Add a table for each track and exit Point (if any)

C. Curriculum

1. Curriculum Structure

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Institution Requirements	Required	14	33	17
	Elective	3	6	3
College Requirements	Required	3	12	5
	Elective	0	0	0
Program Requirements	Required	38	143	70
	Elective	3	10	5
Capstone Course/Project				
Field Experience/ Internship				
Others				
Total		**61**	**204**	**100**

* Add a table for each track (if any)

2. Program Study Plan

	Course Code	Course Name	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College or Department)
Level 1		Intensive English Language B1	Required		4	**Institution**
		Islamic Culture (1)	Required		2	**Institution**
		General Physics	Required		4	**College**
	MTH1101-4	Introduction to Calculus	Required		4	**Department**
	MTH1201-4	Foundations of Mathematics	Required		4	**Department**
	Unit Total				18	
Level 2		Intensive English Language B2	Required		4	**Institution**
		Technology	Required		2	**Institution**
		General Biology	Required		4	**College**
	MTH1102-4	Differential Calculus	Required	Intro. to calculus	4	**Department**
	MTH1501-4	Elementary Statistics and probability	Required		4	**Department**
	Unit Total				18	
Level 3		Intensive English Language B3	Required		4	**Institution**
		Holy Quraan (1)	Required		2	**Institution**
		General Chemistry	Required		4	**College**
	MTH1103-4	Integral Calculus	Required	Differential Calculus	4	**Department**
	MTH1211-4	Linear Algebra 1	Required	Foundations of Mathematics	4	**Department**
	Unit Total				18	

Level 4		Islamic Culture (2)	Required		2	**Institution**
		Mathematical English	Required		1	**Institution**
	MTH2121-4	Ordinary Differential Equations	Required	Integral Calculus	4	**Department**
	MTH2301-4	Analytical Geometry	Required	Foundations of Mathematics	4	**Department**
	MTH2111-4	Introduction to Real Analysis	Required	Pre-Calculus	4	**Department**
	MTH2104-3	Multivariable Calculus	Required	Integral Calculus	3	**Department**
	Unit Total				18	
Level 5		Arabic writing and editing	Required		2	**Institution**
	MTH2122-4	Partial Differential Equations	Required	ODE + Multivariable Calculus	4	**Department**
	MTH2212-4	Linear Algebra 2	Required	Linear Algebra 1	4	**Department**
	MTH2112-4	Real Analysis 1	Required	Introduction to Real Analysis	4	**Department**
	MTH2105-3	Vector Calculus	Required	Multivariable Calculus	3	**Department**
	Unit Total				17	
Level 6		Holy Quraan (2)	Required		2	**Institution**
	MTH2123-4	Nonlinear Differential Equations	Required	Partial Differential Equations	4	**Department**
	MTH2251-4	Discrete Mathematics	Required	Foundations of Mathematics	4	**Department**
	MTH2113-4	Real Analysis 2	Required	Introduction to Real Analysis	4	**Department**
	MTH2502-4	Probability Theory	Required	Elementary Statistics and probability	4	**Department**
	Unit Total				18	
Level 7		Holy Quraan (3)	Required		2	**Institution**
	MTH3231-4	Number Theory	Required	Foundations of Mathematics	4	**Department**
	MTH3141-3	Introduction to Complex Analysis	Required	Real Analysis 2	3	**Department**
	MTH3401-4	Linear Programming	Required	Linear Algebra 1	4	**Department**
		Mathematical Packages	Required		4	**Department**
	Unit Total				17	
Level 8		Islamic Culture (3)	Required		2	**Institution**
	MTH3302-4	Modern Geometry	Required	Foundations of Mathematics	4	**Department**
	MTH3142-3	Complex Analysis	Required	Introduction to Complex Analysis	3	**Department**
	MTH3411-3	Applied Mathematics	Required	Ordinary Differential Equations	3	**Department**
	MTH3221-4	Introduction to Group Theory	Required	Number Theory	4	**Department**
	MTH3001-2	History of Mathematics	Required		2	**Department**
	Unit Total				18	
Level 9	MTH3888-8	Cooperative Training	Required		8	**Department**
	Unit Total				8	

Level 10		Islamic Culture (4)	Required		2	**Institution**
		Statistics Theory	Required	Probability Theory	4	**Department**
	MTH4311-4	Elementary Topology	Required	Real Analysis 1	4	**Department**
	MTH4402-4	Numerical Analysis 1	Required	ODE	4	**Department**
	MTH4222-4	Rings and Field Theory	Required	Introduction to Group Theory	4	**Department**
	Unit Total				18	
Level 11		Holy Quraan (4)	**Required**		2	**Institution**
		Uni. Elective (2)	Elective		**2**	**Institution**
	MTH4801-3	Research Project 1	Required	(Pass 140 Units) + Dept. Approval	3	**Department**
	MTH4412-2	Math Methods in Continuum Mechanics	Required	Ordinary Differential Equations	2	**Department**
	MTH4421-3	Special Functions	Required	Ordinary Differential Equations	3	**Department**
		Dep. Elective I	Elective		3	**Department**
		Dep. Elective II	Elective		3	**Department**
	Unit Total				18	
Level 12		**Uni. Elective (1)**	Elective		**2**	**Institution**
		Uni. Elective (3)	Elective		**2**	**Institution**
	MTH4802-4	Research Project 2	Required	Research Project 1	4	**Department**
	MTH4114-3	Measure and Integration	Required	Real Analysis 2	3	**Department**
	MTH4413-3	Math. Methods in Fluid Mechanics	Required	Math. Methods in Continuum Mechanics	3	**Department**
		Dep. Elective III	Elective		4	**Department**
	Unit Total				18	

I-Elective		
Course	**Prerequisite**	**CH**
Set Theory	Foundations of Mathematics	3
Differential geometry	Vector Calculus	3
Advanced linear algebra	Linear Algebra 2	3
General topology	Elementary Topology	3
Group theory	Intro. to Group Theory	3
Functional Analysis	Real Analysis 1	3
Graph Theory	Discrete Mathematics	3
Calculus of Variations	Real Analysis 2 + Differential Equations	3
Coding Theory	Linear Algebra 2+ Introduction to Group Theory	3

II-Elective		
Course	**Prerequisite**	**CH**
Numerical Analysis 2	Numerical Analysis 1	3
Tensors Calculus	Analytical Geometry + PDE	3
Integral Equations	Ordinary Differential Equations	3
Fundamentals of Biomathematics	Ordinary Differential Equations	3
Optimization	Multivariable Calculus + Linear Algebra	3
Discrete systems and integrability	Partial Differential Equations	3

III-Elective		
Course	**Prerequisite**	**CH**
Financial mathematics	Integral calculus	4
Stochastic processes	Probability Theory + Int. Real Analysis	4

Statistical Methods	Elementary Statistics and probability	4
Regression Analysis	Mathematical software packages	4
Data Analysis	Integral calculus	4
Programming		4

* Include additional levels if needed
** Add a table for each track (if any)

3. Course Specifications

Insert hyperlink for all course specifications using NCAAA template

4. Program learning Outcomes Mapping Matrix

Align the program learning outcomes with program courses, according to the following desired levels of performance (**I = Introduced P = Practiced M = Mastered)**

Course Code	Course Name	Knowledge					Skills								Competence					
		K1	K2	K3	K4	K5	S1	S2	S3	S4	S5	S6	S7	S8	S9	C1	C2	C3	C4	C5
MTH1101-4	Introduction to Calculus	I		I		I	I		I		I				I		I		I	
MTH1201-4	Foundations of Mathematics	I		I		I	I		I		I				I		I		I	
MTH1102-4	Differential Calculus	I		P		I	I		P		I				I		I		I	
MTH1501-4	Elementary Statistics and probability	I	I	I		I	I		I	I	I				I		I		I	
MTH1103-4	Integral Calculus	I		P		I	I		P		I				I		I	I	I	
MTH3211-4	Linear Algebra 1	P		I		I	I			P	I		I		I		I	I	I	I
MTH2121-4	Ordinary Differential Equations	P		I		P	I		I		I				I		I		I	
MTH2301-4	Analytical Geometry	M		I		I	P	I	I		I				I		I	P	I	
MTH2111-4	Introduction to Real Analysis	M	P	I		I	P		I		I				I		I		I	
MTH2104-3	Multivariable Calculus	M	I	I		M	I		I		I	I	I		I		I		I	I
MTH2122-4	Partial Differential Equations	P			I	I	I	I	I		I	I			I		I			
MTH3212-4	Linear Algebra 2	P	I	I			I	I		I	P		P			I	I		I	
MTH2112-4	Real Analysis 1	M		I		I	I	I		M	I			I			I	I	I	
MTH2105-3	Vector Calculus	P				I	P		I	I	I	P			I	I	I			
MTH2123-4	Nonlinear Differential Equations	P			I	I	I		I		I				I		I	I	I	
MTH2251-4	Discrete Mathematics	M		I		I	I	I		M	I			I			I	I	I	
MTH2113-4	Real Analysis 2	M			I	I	P		I	I	I	M			I	I	I			
MTH3502-4	Probability Theory	M		I		P	I		I		P				I		I		I	
MTH3231-4	Number Theory	M		I		I	I	I		M	I			I			I	I	I	I
MTH3141-3	Introduction to Complex Analysis	P	I	I			I	I		I	P		P			I	I		I	
MTH3401-4	Linear Programming	M	I	I		I	I	I		M	I			I			I	I	I	I
	Mathematical Packages	M	I	I		M	I	I		M	I			I	M		I	I	I	M
MTH3302-4	Modern Geometry	M		I		I	P	I	I		I				I		I	P	I	
MTH3142-3	Complex Analysis	M	I	I		I	I	I		M	I				I		I	I	I	
MTH3411-3	Applied Mathematics	P		I			I	I		I	P		P			I	I		I	
MTH3221-4	Introduction to Group Theory	P		I		P	I	I		I	P		P	P		I	I		I	
	History of Mathematics	M	I	I		I	M	I		M	I			I			I	I	I	
	Statistics Theory	M	I	I		M	I	I		M	I			I	M		I	I	I	M
MTH3311-4	Elementary Topology	M			I	I	P		I	I	I	M			I	I	I			

MTH3402-4	Numerical Analysis 1	M			M	I	P		I	I	I	M			I	I	I			
MTH4222-4	Rings and Field Theory	M				I	P		I	I	I	P			I	I	I			
MTH4601-3	Research Project 1	P		I		P	I	I		I	P		P	P		I	I		I	
MTH3412-2	Math Methods in Continuum Mechanics	M	I	I		M	I	I		P	I			I	P		I	P	I	M
MTH4421-3	Special Functions	M	I	I		I	M	I		M	I			I			I	I	I	
MTH4602-4	Research Project 2	M		P		M	P	I		I	M		M	M		P	P		P	
MTH4114-3	Measure and Integration	M			I	I	P		I	I	I	M			I	I	I			
MTH4413-3	Math. Methods in Fluid Mechanics	M	I	I		M	P	I		M	P			I	M		I	I	P	M

* Add a table for each track (if any)

5. Teaching and learning strategies to achieve program learning outcomes

Describe policies, teaching and learning strategies, learning experience, and learning activities, including curricular and extra-curricular activities, to achieve the program learning outcomes.

Lectures: A traditional strategy in which the lecturer talk most of the time
Brainstorming: A strategy for developing creativity and imagination. students are divide into groups to create more ideas.
Cooperative learning: Lecturer divide the students into small groups to work together about a topic.
Discussion: Students are given the opportunity to discuss some topics in the classroom
Solving problem: Students are asked to solve problems related to the given topic then discuss the solution with lecturer.
Tutorials: Student are attending the lecturers' office to get more information about any topic or discuss certain tasks and solve some problem.

6. Assessment Methods for program learning outcomes.

Describe assessment methods (Direct and Indirect) that can be used to measure achievement of program learning outcomes in every domain of learning.

Homework,
Exams,
Quizzes,
Discussion,
Reports

D. Student Admission and Support:

1. Student Admission Requirements

Prospective students applying in the Bachelor's Degree Program in universities are expected to have the following requirement:

- **Have obtained a general high school certificate or its equivalent from within or outside the Kingdom of Saudi Arabia.**
- **High school certificate or its equivalent should not be older than five years. The University Council may make some exceptions if convincing reasons are provided.**
- **Successfully pass any test or interview assigned by the University Council.**
- **Should be medically fit.**
- **Provide a permission for study from the employer, if he works in government or private sector.**
- **Should not have been dismissed from any other university for disciplinary or academic reasons.**
- **A student registered for another university degree, shall not be admitted in another program, in the same university or another**

Study and exams regulations for undergraduate students at Umm Al-Qura University can be found in the following site

https://drive.uqu.edu.sa/_/dadregis/files/homePage/EDU.pdf

2. Guidance and Orientation Programs for New Students

At the beginning of the year, advisors from the faculty help the new students to know the facilities and offices of the faculty that can help them locate their needs.

• Students get some guidance and advice through the university, faculty and department website
3. Student Counseling Services (academic, career, psychological and social)
Faculty members are assigned advisors to help students understand the program requirements and registration process Each faculty member posts 6 office hours per week declared on his door for students guidance. Assign of a committee from department staff to examine the complaints and suggestions and to stand on the ways to solve them
4. Special Support (low achievers, disabled, gifted and talented)

E. Teaching and Administrative Staff

1. Needed Teaching and Administrative Staff

Academic Rank	Specialty		Special Requirements / Skills (if any)	Required Numbers		
	General	Specific		M	F	T
Professors				1	3	4
Associate Professors				3	7	10
Assistant Professors				10	31	41
Lecturers				8	5	13
Teaching Assistants				2	0	2
Technicians and Laboratory Assistants				1	0	1
Administrative and Supportive Staff				1	2	3
Others (specify)						

2. Professional Development

2.1 Orientation of New Teaching Staff

Describe briefly the process used for orientation of new, visiting and part-time teaching staff

- **Awareness of newly appointed faculty members, visitors, or part-time employees about the vision, mission and objectives of the department and faculty.**
- **Explain the study plan and the outputs that must be achieved upon completion of the program.**

Clarify that scientific research related to scientific activities, research and publication and attend conferences and follow-up developments in various disciplines.

2.2 Professional Development for Teaching Staff

Describe briefly the plan and arrangements for academic and professional development of teaching staff (e.g., teaching & learning strategies, learning outcomes assessment, professional development, etc.)

- **Umm Al-Qura University offers a lot of workshops to develop and improve the ability of staff in the field of teaching and research.**
- **The announcement on the website of the Deanship of Academic Development and Quality Assurance**

17. **http://quality.uqu.edu.sa/program-male.html**

- **Also the Deanship of Scientific Research offers some workshops to develop the research activity of the staff. Their website**

18. **https://uqu.edu.sa/page/ar/93234126**

announce some workshops for the scientific research.

F. Learning Resources, Facilities, and Equipment

1. Learning Resources.

Mechanism for providing and quality assurance of learning resources (textbooks, references and other resource materials, including electronic and web-based resources, etc.)

- **Assigning textbooks through a scientific resource committee after reviewing the appropriateness of the material by concerned faculty and approval in the departmental and higher academic councils**
- **Books published by faculty members of the department are also used a resource.**

Periodically committees are formed to inspect the current textbook and compare it to the most recent textbooks in the field. The new book selected will be approved by departmental.

2. Facilities and Equipment
(Library, laboratories, medical facilities, classrooms, etc.).

Umm Al-Qura university has suitable faculties to facilitate and support students' academic and social activities such as

- **King Abdullah University Library and a common libraries in each faculty and department.**
- **Well Equipped classrooms with all teaching assistant devices**
- **A university polyclinic medical center**
- **Computer Laboratories with all needed software**
- **A university Sports Center**

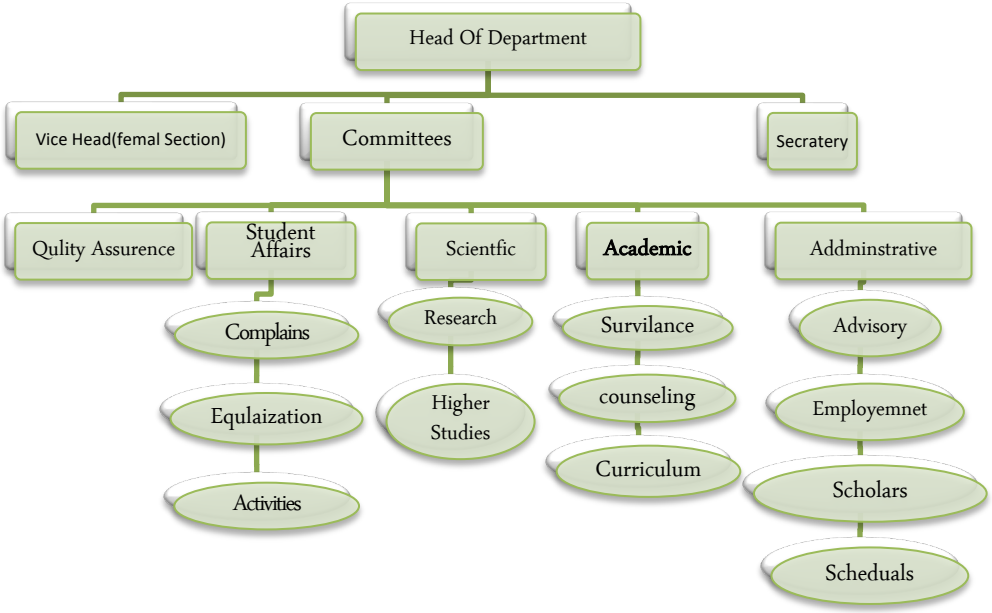
3. Arrangements to Maintain a Healthy and Safe Environment (According to the nature of the program)

The nature of the Mathematics Program does not need extra arrangement more than what is provided by Umm Al-Qura University and faculty of Applied Sciences.

G. Program Management and Regulations

1. Program Management

1.1 Program Structure
(including boards, councils, units, committees, etc.)



1.2 Stakeholders Involvement
Describe the representation and involvement of stakeholders in the program planning and development. (students, professional bodies, scientific societies, alumni, employers, etc.)

- **Regular and periodic questioners and scurvies both manually and electronically to find out the opinion, response and suggestion of stakeholders**
- **Establishment of alumni unit to keep contacted with students graduated for the Programme**

Involvement of labor markets' personals in the meetings of Advisory Committee

2. Program Regulations
Provide a list of related program regulations, including their link to online version: admission, study and exams, recruitment, appeals and complaint regulations, etc.)

- **Umm Al-Qura University deanship of student affairs provide a list of regulation concerning student recruitment, appeals and complaint in a form of a guide Student Rights and Duties Regulation, which can be found on the following document**

https://drive.uqu.edu.sa/_/studaff/files/qanon.pdf

- **Moreover, Umm Al-Qura University deanship of registration and admission provide the study and exams regulations for undergraduate students at Umm Al-Qura University can be found in the following site**

https://drive.uqu.edu.sa/_/dadregis/files/homePage/EDU.pdf

H. Program Quality Assurance

1. Program Quality Assurance System

Provide online link to quality assurance manual

https://uqu.edu.sa/quality/15352

https://drive.uqu.edu.sa/_/quality/files/Policies/quality%20manual%201.pdf

2. Program Quality Monitoring Procedures

- **Current programs are reviewed occasionally within the department by individual faculty members.**
- **Questionnaires are assigned for faculty members to express an opinion on the program**
- **Evaluation of questionnaires and stand on weaknesses in the program**
- **Ask for advice from colleagues in similar departments of other universities**
- **A departmental committee is formed to look into the recommendations of various divisions and to make a final proposal.**

The revised program is discussed in the departmental council before approval.

3. Arrangements to Monitor Quality of Courses Taught by other Departments.

- **Exchange of adequate information between Mathematics programme administration and other Departments providing service courses.**
- **For all service courses required as part of Mathematics programme, clear documentation on course details, including course evaluation results, must be provided to Mathematics programme periodically.**

4. Arrangements Used to Ensure the Consistency between Main Campus and Branches (including male and female sections)

- **Department council assign a faculty member to coordinate the teaching process of common courses to ensure the consistency of nits taught and teaching material and strategies and unify assessment techniques**

5. Arrangements to Apply the Institutional Regulations Governing the Educational and Research Partnerships (if any).

Deanship of Scientific Research at Umm Al-Qura university contains a Community Partnerships Unit with the following tasks:

1. **Suggesting community partnerships with foreign agencies that carry out the tasks of the Vice Deanship of Research Volunteering and Voluntary Research.**
2. **Suggesting local cooperation with colleges, deanships, and institutes to carry out the tasks of the Vice Deanship of Research Volunteering and Voluntary Research.**
3. **Inventorying and following up and implementing of the memoranda of partnership and foreign and local cooperation.**
4. **Assessing and regulating local and foreign community partnerships, in addition to those involving voluntary services.**
5. **Laying out plans and suggestions to improve local and foreign community partnerships.**

6. Assessment Plan for Program Learning Outcomes (PLOs), and Mechanisms of Using its Results in the Development Processes

Mathematics Programme administration regularly ass the PLOs through the following mechanisms
1- Questioning and surveying stakeholders,
2- Internal and External review process,
3- Discussions within curriculum committee and quality assurance committee

7. Program Evaluation Matrix

Evaluation Areas/Aspects	Evaluation Sources/References	Evaluation Methods	Evaluation Time
leadership	Teaching staff and administrators	Questionnaire to evaluate the performance of administrative leaders	End of the semester
effectiveness of teaching	Students	evaluation Questionnaire	End of the semester
assessment	Review Committees of Questionnaire	Analyzing the Questionnaire	End of the semester
learning resources	Library, internet, Communicate with similar departments in other universities	Report beneficiaries on the effectiveness of learning methods	During the semester

Evaluation Areas/Aspects (e.g., leadership, effectiveness of teaching & assessment, learning resources, partnerships, etc.)
Evaluation Sources (students, graduates, alumni, faculty, program leaders, administrative staff, employers, independent reviewers, and others (specify)
Evaluation Methods (e.g., Surveys, interviews, visits, etc.)
Evaluation Time (e.g., beginning of semesters, end of academic year, etc.)

8. Program KPIs*

The period to achieve the target (.....) year.

No	KPIs Code	KPIs	Target	Measurement Methods	Measurement Time
1	1-0-1	**The program has a clear, appropriate, approved and publicized widely mission that is consistent with the mission of the institution and the college/department; and is consistent with the needs of the society and the national trends.***	5	semi-quantitative	
2	1-0-2	The program goals are linked to its mission, consistent with the goals of the institution/college, and characterized by being clear, realistic and measurable.	5	semi-quantitative	
3	1-0-3	The program mission and goals guide all its	5	semi-quantitative	

No	KPIs Code	KPIs	Target	Measurement Methods	Measurement Time
		operations and activities (e.g., planning, decision-making, resources allocation, curriculum 5development).			
4	1-0-4	The program goals and its implementation needs are linked to appropriate operational plans that are consistent with the institution/college plans.	5	semi-quantitative	
5	1-0-5	**Program managers monitor the extent to which its goals are achieved, through specific performance indicators, and take the necessary actions for performance improvement. ***	5	semi-quantitative	
.....	1-0-6	The program mission and goals are reviewed periodically with the participation of relevant stakeholders and are developed accordingly.	5	semi-quantitative	

* including KPIs required by NCAAA

I. Specification Approval Data

Council / Committee	
Reference No.	
Date	

خطة البرنامج

Program Plan

البكالوريوس في العلوم الرياضية

المستوى الاول				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
ELCE1201	لغة انجليزية مكثفة B1	4		
ICC1201	الثقافة الاسلامية ١	2		
PHY1001	فيزياء عامة	4		
MTH1101	مقدمة في التفاضل والتكامل	4		
MTH1201	أسس الرياضيات	4		
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المستوى الثاني				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
ELCE1202	لغة انجليزية مكثفة B2	4		
DS1101	تقنية	2		
BIO1101	احياء عامة	4		
MTH1102	حساب التفاضل	4	MTH1101	مقدمة في التفاضل والتكامل
MTH1501	مبادئ الاحصاء و الاحتمالات	4		
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المستوى الثالث				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
ELCE1203	لغة انجليزية مكثفة B3	4		
QR1101	القران الكريم ١	2		
CHM1101	كيمياء عامة	4		
MTH1103	حساب التكامل	4	MTH1102	حساب التفاضل
MTH1211	الجبر الخطي ١	4	MTH1201	أسس الرياضيات
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المستوى الرابع				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
ICC2202	الثقافة الإسلامية ٢	2		
ELCE2311	اللغة الإنجليزية للرياضيات	1		
MTH2121	المعادلات التفاضلية العادية	4	MTH1103	حساب التكامل
MTH2301	الهندسة التحليلية	4	MTH1201	أسس الرياضيات
MTH2111	المدخل الى التحليل الحقيقي	4	MTH1101	مقدمة في التفاضل والتكامل
MTH2104	التفاضل و التكامل عديد المتغيرات	3	MTH1103	حساب التكامل
	مجموع الوحدات	18		

المستوى الخامس				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
ARS1601	الكتابة و التحرير العربي	2		
MTH2122	المعادلات التفاضلية الجزئية	4	MTH2121	المعادلات التفاضلية العادية
			MTH2104	التفاضل و التكامل عديد المتغيرات
MTH2212	الجبر الخطي ٢	4	MTH1211	الجبر الخطي ١
MTH2112	التحليل الحقيقي ١	4	MTH2111	المدخل الى التحليل الحقيقي
MTH2105	حساب المتجهات	3	MTH2104	التفاضل و التكامل عديد المتغيرات
	مجموع الوحدات	17		

المستوى السادس				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
QR2102	القرآن الكريم ٢	2		
MTH2123	المعادلات التفاضلية غير الخطية	4	MTH2122	المعادلات التفاضلية الجزئية
MTH2251	الرياضيات المتقطعة	4	MTH1201	أسس الرياضيات
MTH2113	التحليل الحقيقي ٢	4	MTH2111	المدخل الى التحليل الحقيقي
MTH2502	نظرية الاحتمالات	4	MTH1501	مبادئ الاحصاء و الاحتمالات
	مجموع الوحدات	18		

المستوى السابع				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
QR3103	القران الكريم ٣	2		
MTH3231	نظرية الاعداد	4	MTH1201	أسس الرياضيات
MTH3141	المدخل الى التحليل المركب	3	MTH2113	التحليل الحقيقي ٢
MTH3401	البرمجة الخطية	4	MTH1211	الجبر الخطي ١
MTH3701	حزم البرمجيات الرياضية	4		
	مجموع الوحدات	17		

المستوى الثامن				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
ICC3203	الثقافة الاسلامية ٣	2		
MTH3302	الهندسة الحديثة	4	MTH1201	أسس الرياضيات
MTH3142	التحليل المركب	3	MTH3141	المدخل الى التحليل المركب
MTH3411	الرياضيات التطبيقية	3	MTH2121	المعادلات التفاضلية العادية
			MTH2301	الهندسة التحليلية
MTH3221	المدخل الى نظرية الزمر	4	MTH3231	نظرية الاعداد
MTH3001	تاريخ الرياضيات	2		
	مجموع الوحدات	18		

المستوى التاسع				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
MTH3888	التدريب التعاوني	8		
	مجموع الوحدات	8		

المستوى العاشر				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
ICC4204	الثقافة الإسلامية ٤	2		
MTH4222	نظرية الحلقات و الحقول	4	MTH3221	المدخل الى نظرية الزمر
MTH4311	مبادئ التبولوجي	4	MTH2112	التحليل الحقيقي ١
MTH4503	الإحصاء الرياضي	4	MTH2502	نظرية الاحتمالات
MTH4402	التحليل العددي ١	4	MTH2121	المعادلات التفاضلية العادية
	مجموع الوحدات	18		

المستوى الحادي عسر				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
QR4104	القرآن الكريم ٤	2		
	متطلب عام اختياري ١	2		
MTH4801	مشروع بحثي ١	2		(اجتياز ١٤٠ وحدة) + موافقة القسم
MTH4412	طرق رياضية في ميكانيكا التلاحم	3	MTH2121	المعادلات التفاضلية العادية
MTH4421	دوال خاصة	3	MTH2121	المعادلات التفاضلية العادية
	اختياري1	3		
	اختياري2	3		
	مجموع الوحدات	18		

المستوى الثاني عشر				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
	متطلب عام اختياري ٢	2		
	متطلب عام اختياري ٣	2		
MTH4802	مشروع بحثي ٢	3	MTH4801	مشروع بحثي ١
MTH4114	القياس و التكامل	4	MTH2113	التحليل الحقيقي ٢
MTH4413	طرق رياضية في ميكانيكا الموائع	3	MTH4412	طرق رياضية في ميكانيكا التلاحم
	اختياري3	4		
	مجموع الوحدات	18		

الاختياري ١				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
MTH4202	نظرية المجموعات	3	MTH1201	أسس الرياضيات
MTH4303	الهندسة التفاضلية	3	MTH2105	حساب المتجهات
MTH4213	الجبر الخطي المتقدم	3	MTH2212	الجبر الخطي ٢
MTH4312	التبولوجي العام	3	MTH4311	مبادئ التبولوجي
MTH4223	نظرية الزمر	3	MTH3221	المدخل الى نظرية الزمر
MTH4151	التحليل الدالي	3	MTH2112	التحليل الحقيقي ١
MTH4252	نظرية البيان	3	MTH2251	الرياضيات المتقطعة
MTH4161	حساب المتغيرات	3	MTH2113	التحليل الحقيقي ٢
			MTH2122	المعادلات التفاضلية الجزئية
MTH4241	نظرية الترميز	3	MTH2212	الجبر الخطي ٢
			MTH3221	المدخل الى نظرية الزمر

الاختياري ٢				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
MTH4403	التحليل العددي ٢	3	MTH4402	التحليل العددي ١
MTH4431	حساب التنسورات	3	MTH2301	الهندسة التحليلية
			MTH2122	المعادلات التفاضلية الجزئية
MTH4131	المعادلات التكاملية	3	MTH2121	المعادلات التفاضلية العادية
MTH4461	الرياضيات الحيوية	3	MTH2121	المعادلات التفاضلية العادية
MTH4451	الاستمثال الرياضي	3	MTH2104	التفاضل و التكامل عديد المتغيرات
			MTH1211	الجبر الخطي ١
MTH4441	الأنظمة المتقطعة و المتكاملة	3	MTH2122	المعادلات التفاضلية الجزئية

الاختياري ٣				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
MTHF3604	الرياضيات المالية	4	MTH1103	حساب التكامل
MTHF3505	العمليات العشوائية	4	MTH2111	المدخل الى التحليل الحقيقي
			MTH2502	نظرية الاحتمالات
MTHF4509	طرق إحصائية	4	MTH1501	مبادئ الاحصاء و الاحتمالات
MTHF4506	تحليل الانحدار	4	MTH3701	حزم البرمجيات الرياضية
MTHF4511	تحليل البيانات	4	MTH1103	حساب التكامل
CSXXXX	لغات برمجة	4		

Bachelor of Mathematical Sciences

Level 1				
Code	**Course**	**Units**	**Prerequisite**	
ELCE1201	Intensive English Language B1	4		
ICC1201	Islamic Culture (1)	2		
PHY1001	General Physics	4		
MTH1101	Introduction to Calculus	4		
MTH1201	Foundations of Mathematics	4		
Total of Units		18		

Level 2				
Code	**Course**	**Units**	**Prerequisite**	
ELCE1202	Intensive English Language B2	4		
DS1101	Technology	2		
BIO1101	General Biology	4		
MTH1102	Differential Calculus	4	MTH1101	Introduction to Calculus
MTH1501	Elementary Statistics and probability	4		
Total of Units		18		

Level 3				
Code	**Course**	**Units**	**Prerequisite**	
ELCE1203	Intensive English Language B3	4		
QR1101	Holy Quraan (1)	2		
CHM1101	General Chemistry	4		
MTH1103	Integral Calculus	4	MTH1102	Differential Calculus
MTH1211	Linear Algebra 1	4	MTH1201	Foundations of Mathematics
Total of Units		18		

Level 4				
Code	**Course**	**Units**	**Prerequisite**	
ICC2202	Islamic Culture (2)	2		
ELCE2311	Mathematical English	1		
MTH2121	Ordinary Differential Equations	4	MTH1103	Integral Calculus
MTH2301	Analytical Geometry	4	MTH1201	Foundations of Mathematics
MTH2111	Introduction to Real Analysis	4	MTH1101	Introduction to Calculus
MTH2104	Multivariable Calculus	3	MTH1103	Integral Calculus
Total of Units		18		

Level 5				
Code	**Course**	**Units**	**Prerequisite**	
ARS1601	Arabic writing and editing	2		
MTH2122	Partial Differential Equations	4	MTH2121	Ordinary Differential Equations
			MTH2104	Multivariable Calculus
MTH2212	Linear Algebra 2	4	MTH1211	Linear Algebra 1
MTH2112	Real Analysis 1	4	MTH2111	Introduction to Real Analysis
MTH2105	Vector Calculus	3	MTH2104	Multivariable Calculus
Total of Units		17		

Level 6				
Code	**Course**	**Units**	**Prerequisite**	
QR2102	Holy Quraan (2)	2		
MTH2123	Nonlinear Differential Equations	4	MTH2122	Partial Differential Equations
MTH2251	Discrete Mathematics	4	MTH1201	Foundations of Mathematics
MTH2113	Real Analysis 2	4	MTH2111	Introduction to Real Analysis
MTH2502	Probability Theory	4	MTH1501	Elementary Statistics and probability
Total of Units		18		

Level 7				
Code	**Course**	**Units**	**Prerequisite**	
QR3103	Holy Quraan (3)	2		
MTH3231	Number Theory	4	MTH1201	Foundations of Mathematics
MTH3141	**Introduction to Complex Analysis**	3	MTH2113	Real Analysis 2
MTH3401	Linear Programming	4	MTH1211	Linear Algebra 1
MTH3701	Mathematical Software Packages	4		
Total of Units		17		

Level 8				
Code	**Course**	**Units**	**Prerequisite**	
ICC3203	Islamic Culture (3)	2		
MTH3302	Modern Geometry	4	MTH1201	Foundations of Mathematics
MTH3142	Complex Analysis	3	MTH3141	Introduction to Complex Analysis
MTH3411	Applied Mathematics	3	MTH2121	Ordinary Differential Equations
			MTH2301	Analytical Geometry
MTH3221	Introduction to Group Theory	4	MTH3231	Number Theory
MTH3001	History of Mathematics	2		
Total of Units		18		

Level 9				
Code	**Course**	**Units**	**Prerequisite**	
MTH3888	Cooperative Training	8		
Total of Units		8		

Level 10				
Code	**Course**	**Units**	**Prerequisite**	
ICC4204	Islamic Culture (4)	2		
MTH4222	Rings and Field Theory	4	MTH3221	Introduction to Group Theory
MTH4402	Elementary Topology	4	MTH2121	Real Analysis 1
MTH4503	Mathematical Statistics	4	MTH2502	Probability Theory
MTH4311	Numerical Analysis 1	4	MTH2112	Ordinary Differential Equations
Total of Units		18		

Level 11				
Code	**Course**	**Units**	**Prerequisite**	
QR4104	Holy Quraan (4)	2		
	Uni. Elective (1)	2		
MTH4801	Research Project 1	2		(Pass 140 .Units) + Dep. Approval
MTH4412	Mathematical Methods in Continuum Mechanics	3	MTH2121	Ordinary Differential Equations
MTH4421	Special Functions	3	MTH2121	Ordinary Differential Equations
	Dep. Elective I	3		
	Dep. Elective II	3		
Total of Units		18		

Level 12				
Code	**Course**	**Units**	**Prerequisite**	
	Uni. Elective (2)	2		
	Uni. Elective (3)	2		
MTH4802	Research Project 2	3	MTH4801	Research Project 1
MTH4114	Measure and Integration	4	MTH2113	Real Analysis 2
MTH4413	Mathematical Methods in Fluid Mechanics	3	MTH4412	Mathematical Methods in Continuum Mechanics
	Dep. Elective III	4		
Total of Units		18		

Elective 1				
Code	**Course**	**Units**	**Prerequisite**	
MTH4202	Set Theory	3	MTH1201	Foundations of Mathematics
MTH4303	Differential geometry	3	MTH2105	Vector Calculus
MTH4213	Advanced linear algebra	3	MTH2212	Linear Algebra 2
MTH4312	General topology	3	MTH4311	Elementary Topology
MTH4223	Group theory	3	MTH3221	Intro. to Group Theory
MTH4151	Functional Analysis	3	MTH2112	Real Analysis 1
MTH4252	Graph Theory	3	MTH2251	Discrete Mathematics
MTH4161	Calculus of Variations	3	MTH2113	Real Analysis 2
			MTH2122	Partial Differential Equations
MTH4241	Coding Theory	3	MTH2212	Linear Algebra 2
			MTH3221	Introduction to Group Theory

Elective 2				
Code	**Course**	**Units**	**Prerequisite**	
MTH4403	Numerical Analysis 2	3	MTH4402	Numerical Analysis 1
MTH4431	Tensors Calculus	3	MTH2301	Analytical Geometry
			MTH2122	Partial Differential Equations
MTH4131	Integral Equations	3	MTH2121	Ordinary Differential Equations
MTH4461	Mathematical Biology	3	MTH2121	Ordinary Differential Equations
MTH4451	Optimization	3	MTH2104	Multivariable Calculus
			MTH1211	Linear Algebra
MTH4441	Discrete systems and integrability	3	MTH2122	Partial Differential Equations

Elective 3				
Code	**Course**	**Units**	**Prerequisite**	
MTHF3602	Financial mathematics	4	MTH1103	Integral Calculus
MTHF3504	Stochastics processes	4	MTH2111	Introduction to Real Analysis
			MTH2502	Probability Theory
MTHF4508	Statistical Methods	4	MTH1501	Elementary Statistics and probability
MTHF4505	Regression Analysis	4	MTH3701	Mathematical Software Packages
MTHF4511	Data Analysis	4	MTH1103	Integral Calculus
CSXXXX	Programming	4		

البكالوريوس في العلوم الرياضية

المستوى الاول				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
ELCE1201	لغة انجليزية مكثفة B1	4		
ICC1201	الثقافة الاسلامية ١	2		
PHY1001	فيزياء عامة	4		
MTH1101	مقدمة في التفاضل والتكامل	4		
MTH1201	أسس الرياضيات	4		
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المستوى الثاني				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
ELCE1202	لغة انجليزية مكثفة B2	4		
DS1101	تقنية	2		
BIO1101	احياء عامة	4		
MTH1102	حساب التفاضل	4	MTH1101	مقدمة في التفاضل والتكامل
MTH1501	مبادئ الاحصاء و الاحتمالات	4		
	مجموع الوحدات	18		

المستوى الثالث				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
ELCE1203	لغة انجليزية مكثفة B3	4		
QR1101	القران الكريم ١	2		
CHM1101	كيمياء عامة	4		
MTH1103	حساب التكامل	4	MTH1102	حساب التفاضل
MTH1211	الجبر الخطي ١	4	MTH1201	أسس الرياضيات
	مجموع الوحدات	18		

المستوى الرابع				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
ICC2202	الثقافة الإسلامية ٢	2		
ELCE2311	اللغة الإنجليزية للرياضيات	1		
MTH2121	المعادلات التفاضلية العادية	4	MTH1103	حساب التكامل
MTH2301	الهندسة التحليلية	4	MTH1201	أسس الرياضيات
MTH2111	المدخل الى التحليل الحقيقي	4	MTH1101	مقدمة في التفاضل والتكامل
MTH2104	التفاضل و التكامل عديد المتغيرات	3	MTH1103	حساب التكامل
	مجموع الوحدات	18		

المستوى الخامس				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
ARS1601	الكتابة و التحرير العربي	2		
MTH2122	المعادلات التفاضلية الجزئية	4	MTH2121	المعادلات التفاضلية العادية
			MTH2104	التفاضل و التكامل عديد المتغيرات
MTH2212	الجبر الخطي ٢	4	MTH1211	الجبر الخطي ١
MTH2112	التحليل الحقيقي ١	4	MTH2111	المدخل الى التحليل الحقيقي
MTH2105	حساب المتجهات	3	MTH2104	التفاضل و التكامل عديد المتغيرات
	مجموع الوحدات	17		

المستوى السادس				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
QR2102	القرآن الكريم ٢	2		
MTH2123	المعادلات التفاضلية غير الخطية	4	MTH2122	المعادلات التفاضلية الجزئية
MTH2251	الرياضيات المتقطعة	4	MTH1201	أسس الرياضيات
MTH2113	التحليل الحقيقي ٢	4	MTH2111	المدخل الى التحليل الحقيقي
MTH2502	نظرية الاحتمالات	4	MTH1501	مبادئ الاحصاء و الاحتمالات
	مجموع الوحدات	18		

المستوى السابع				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
QR3103	القران الكريم ٣	2		
MTH3231	نظرية الاعداد	4	MTH1201	أسس الرياضيات
MTH3141	المدخل الى التحليل المركب	3	MTH2113	التحليل الحقيقي ٢
MTH3401	البرمجة الخطية	4	MTH1211	الجبر الخطي ١
MTH3701	حزم البرمجيات الرياضية	4		
	مجموع الوحدات	17		

المستوى الثامن				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
ICC3203	الثقافة الاسلامية ٣	2		
MTH3302	الهندسة الحديثة	4	MTH1201	أسس الرياضيات
MTH3142	التحليل المركب	3	MTH3141	المدخل الى التحليل المركب
MTH3411	الرياضيات التطبيقية	3	MTH2121	المعادلات التفاضلية العادية
			MTH2301	الهندسة التحليلية
MTH3221	المدخل الى نظرية الزمر	4	MTH3231	نظرية الاعداد
MTH3001	تاريخ الرياضيات	2		
	مجموع الوحدات	18		

المستوى التاسع				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
MTH3888	التدريب التعاوني	8		
	مجموع الوحدات	8		

المستوى العاشر				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
ICC4204	الثقافة الإسلامية ٤	2		
MTH4222	نظرية الحلقات و الحقول	4	MTH3221	المدخل الى نظرية الزمر
MTH4311	مبادئ التبولوجي	4	MTH2112	التحليل الحقيقي ١
MTH4503	الإحصاء الرياضي	4	MTH2502	نظرية الاحتمالات
MTH4402	التحليل العددي ١	4	MTH2121	المعادلات التفاضلية العادية
	مجموع الوحدات	18		

المستوى الحادي عسر				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
QR4104	القرآن الكريم ٤	2		
	متطلب عام اختياري ١	2		
MTH4801	مشروع بحثي ١	2		(اجتياز ١٤٠ وحدة) + موافقة القسم
MTH4412	طرق رياضية في ميكانيكا التلاحم	3	MTH2121	المعادلات التفاضلية العادية
MTH4421	دوال خاصة	3	MTH2121	المعادلات التفاضلية العادية
	اختياري1	3		
	اختياري2	3		
	مجموع الوحدات	18		

المستوى الثاني عشر				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
	متطلب عام اختياري ٢	2		
	متطلب عام اختياري ٣	2		
MTH4802	مشروع بحثي ٢	3	MTH4801	مشروع بحثي ١
MTH4114	القياس و التكامل	4	MTH2113	التحليل الحقيقي ٢
MTH4413	طرق رياضية في ميكانيكا الموائع	3	MTH4412	طرق رياضية في ميكانيكا التلاحم
	اختياري3	4		
	مجموع الوحدات	18		

الاختياري ١				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
MTH4202	نظرية المجموعات	3	MTH1201	أسس الرياضيات
MTH4303	الهندسة التفاضلية	3	MTH2105	حساب المتجهات
MTH4213	الجبر الخطي المتقدم	3	MTH2212	الجبر الخطي ٢
MTH4312	التبولوجي العام	3	MTH4311	مبادئ التبولوجي
MTH4223	نظرية الزمر	3	MTH3221	المدخل الى نظرية الزمر
MTH4151	التحليل الدالي	3	MTH2112	التحليل الحقيقي ١
MTH4252	نظرية البيان	3	MTH2251	الرياضيات المتقطعة
MTH4161	حساب المتغيرات	3	MTH2113	التحليل الحقيقي ٢
			MTH2122	المعادلات التفاضلية الجزئية
MTH4241	نظرية الترميز	3	MTH2212	الجبر الخطي ٢
			MTH3221	المدخل الى نظرية الزمر

الاختياري ٢				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
MTH4403	التحليل العددي ٢	3	MTH4402	التحليل العددي ١
MTH4431	حساب التنسورات	3	MTH2301	الهندسة التحليلية
			MTH2122	المعادلات التفاضلية الجزئية
MTH4131	المعادلات التكاملية	3	MTH2121	المعادلات التفاضلية العادية
MTH4461	الرياضيات الحيوية	3	MTH2121	المعادلات التفاضلية العادية
MTH4451	الاستمثال الرياضي	3	MTH2104	التفاضل و التكامل عديد المتغيرات
			MTH1211	الجبر الخطي ١
MTH4441	الأنظمة المتقطعة و المتكاملة	3	MTH2122	المعادلات التفاضلية الجزئية

الاختياري ٣				
رقم المقرر	المقرر	الساعات	رمز المتطلب	المتطلب
MTHF3604	الرياضيات المالية	4	MTH1103	حساب التكامل
MTHF3505	العمليات العشوائية	4	MTH2111	المدخل الى التحليل الحقيقي
			MTH2502	نظرية الاحتمالات
MTHF4510	تصميم التجارب	4	MTH4503	الإحصاء الرياضي
MTHF4509	طرق إحصائية	4	MTH1501	مبادئ الاحصاء و الاحتمالات
MTHF4506	تحليل الانحدار	4	MTH3701	حزم البرمجيات الرياضية
MTHF4511	تحليل البيانات	4	MTH1103	حساب التكامل
CSXXXX	لغات برمجة	4		

Bachelor of Mathematical Sciences

Level 1				
Code	**Course**	**Units**	**Prerequisite**	
ELCE1201	Intensive English Language B1	4		
ICC1201	Islamic Culture (1)	2		
PHY1001	General Physics	4		
MTH1101	Introduction to Calculus	4		
MTH1201	Foundations of Mathematics	4		
Total of Units		18		

Level 2				
Code	**Course**	**Units**	**Prerequisite**	
ELCE1202	Intensive English Language B2	4		
DS1101	Technology	2		
BIO1101	General Biology	4		
MTH1102	Differential Calculus	4	MTH1101	Introduction to Calculus
MTH1501	Elementary Statistics and probability	4		
Total of Units		18		

Level 3				
Code	**Course**	**Units**	**Prerequisite**	
ELCE1203	Intensive English Language B3	4		
QR1101	Holy Quraan (1)	2		
CHM1101	General Chemistry	4		
MTH1103	Integral Calculus	4	MTH1102	Differential Calculus
MTH1211	Linear Algebra 1	4	MTH1201	Foundations of Mathematics
Total of Units		18		

Level 4				
Code	**Course**	**Units**	**Prerequisite**	
ICC2202	Islamic Culture (2)	2		
ELCE2311	Mathematical English	1		
MTH2121	Ordinary Differential Equations	4	MTH1103	Integral Calculus
MTH2301	Analytical Geometry	4	MTH1201	Foundations of Mathematics
MTH2111	Introduction to Real Analysis	4	MTH1101	Introduction to Calculus
MTH2104	Multivariable Calculus	3	MTH1103	Integral Calculus
Total of Units		18		

Level 5				
Code	**Course**	**Units**	**Prerequisite**	
ARS1601	Arabic writing and editing	2		
MTH2122	Partial Differential Equations	4	MTH2121	Ordinary Differential Equations
			MTH2104	Multivariable Calculus
MTH2212	Linear Algebra 2	4	MTH1211	Linear Algebra 1
MTH2112	Real Analysis 1	4	MTH2111	Introduction to Real Analysis
MTH2105	Vector Calculus	3	MTH2104	Multivariable Calculus
Total of Units		17		

Level 6				
Code	**Course**	**Units**	**Prerequisite**	
QR2102	Holy Quraan (2)	2		
MTH2123	Nonlinear Differential Equations	4	MTH2122	Partial Differential Equations
MTH2251	Discrete Mathematics	4	MTH1201	Foundations of Mathematics
MTH2113	Real Analysis 2	4	MTH2111	Introduction to Real Analysis
MTH2502	Probability Theory	4	MTH1501	Elementary Statistics and probability
Total of Units		18		

Level 7				
Code	**Course**	**Units**	**Prerequisite**	
QR3103	Holy Quraan (3)	2		
MTH3231	Number Theory	4	MTH1201	Foundations of Mathematics
MTH3141	**Introduction to Complex Analysis**	3	MTH2113	Real Analysis 2
MTH3401	Linear Programming	4	MTH1211	Linear Algebra 1
MTH3701	Mathematical Software Packages	4		
Total of Units		17		

Level 8				
Code	**Course**	**Units**	**Prerequisite**	
ICC3203	Islamic Culture (3)	2		
MTH3302	Modern Geometry	4	MTH1201	Foundations of Mathematics
MTH3142	Complex Analysis	3	MTH3141	Introduction to Complex Analysis
MTH3411	Applied Mathematics	3	MTH2121	Ordinary Differential Equations
			MTH2301	Analytical Geometry
MTH3221	Introduction to Group Theory	4	MTH3231	Number Theory
MTH3001	History of Mathematics	2		
Total of Units		18		

Level 9				
Code	**Course**	**Units**	**Prerequisite**	
MTH3888	Cooperative Training	8		
Total of Units		8		

Level 10				
Code	**Course**	**Units**	**Prerequisite**	
ICC4204	Islamic Culture (4)	2		
MTH4222	Rings and Field Theory	4	MTH3221	Introduction to Group Theory
MTH4402	Elementary Topology	4	MTH2121	Real Analysis 1
MTH4503	Mathematical Statistics	4	MTH2502	Probability Theory
MTH4311	Numerical Analysis 1	4	MTH2112	Ordinary Differential Equations
Total of Units		18		

Level 11				
Code	**Course**	**Units**	**Prerequisite**	
QR4104	Holy Quraan (4)	2		
	Uni. Elective (1)	2		
MTH4801	Research Project 1	2		(Pass 140 .Units) + Dep. Approval
MTH4412	Mathematical Methods in Continuum Mechanics	3	MTH2121	Ordinary Differential Equations
MTH4421	Special Functions	3	MTH2121	Ordinary Differential Equations
	Dep. Elective I	3		
	Dep. Elective II	3		
Total of Units		18		

Level 12				
Code	**Course**	**Units**	**Prerequisite**	
	Uni. Elective (2)	2		
	Uni. Elective (3)	2		
MTH4802	Research Project 2	3	MTH4801	Research Project 1
MTH4114	Measure and Integration	4	MTH2113	Real Analysis 2
MTH4413	Mathematical Methods in Fluid Mechanics	3	MTH4412	Mathematical Methods in Continuum Mechanics
	Dep. Elective III	4		
Total of Units		18		

Elective 1				
Code	**Course**	**Units**	**Prerequisite**	
MTH4202	Set Theory	3	MTH1201	Foundations of Mathematics
MTH4303	Differential geometry	3	MTH2105	Vector Calculus
MTH4213	Advanced linear algebra	3	MTH2212	Linear Algebra 2
MTH4312	General topology	3	MTH4311	Elementary Topology
MTH4223	Group theory	3	MTH3221	Intro. to Group Theory
MTH4151	Functional Analysis	3	MTH2112	Real Analysis 1
MTH4252	Graph Theory	3	MTH2251	Discrete Mathematics
MTH4161	Calculus of Variations	3	MTH2113	Real Analysis 2
			MTH2122	Partial Differential Equations
MTH4241	Coding Theory	3	MTH2212	Linear Algebra 2
			MTH3221	Introduction to Group Theory

Elective 2				
Code	**Course**	**Units**	**Prerequisite**	
MTH4403	Numerical Analysis 2	3	MTH4402	Numerical Analysis 1
MTH4431	Tensors Calculus	3	MTH2301	Analytical Geometry
			MTH2122	Partial Differential Equations
MTH4131	Integral Equations	3	MTH2121	Ordinary Differential Equations
MTH4461	Mathematical Biology	3	MTH2121	Ordinary Differential Equations
MTH4451	Optimization	3	MTH2104	Multivariable Calculus
			MTH1211	Linear Algebra
MTH4441	Discrete systems and integrability	3	MTH2122	Partial Differential Equations

Elective 3				
Code	**Course**	**Units**	**Prerequisite**	
MTHF3602	Financial mathematics	4	MTH1103	Integral Calculus
MTHF3504	Stochastics processes	4	MTH2111	Introduction to Real Analysis
			MTH2502	Probability Theory
MTHF4510	Design of Experiments	4	MTH4503	Mathematical Statistics
MTHF4508	Statistical Methods	4	MTH1501	Elementary Statistics and probability
MTHF4505	Regression Analysis	4	MTH3701	Mathematical Software Packages
MTHF4511	Data Analysis	4	MTH1103	Integral Calculus
CSXXXX	Programming	4		

توصيف المقررات

Courses Specification

The First Level

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA T4 2020

Course Specifications

Course Title:	English Language 1
Course Code:	ELCE1201
Program:	Bachelor in EMI Colleges (Medical Colleges/ College of Engineering/ College of Computer Sciences/ College of Business Administration/ Applied Sciences)
Department:	English Language Centre
College:	English Language Centre
Institution:	Umm Al Qura University

Table of Contents

A. Course Identification

1. Credit hours: 4 hours
2. Course type **a.** University ☐ College ■ Department ☐ Others ☐ **b.** Required ■ Elective ☐
3. Level/year at which this course is offered: **1st Year**
4. Pre-requisites for this course (if any)**:** **N/A**
5. Co-requisites for this course (if any)**:** **N/A**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	12 hours per week	75%
2	**Blended**	16 hours per week	100%
3	**E-learning**	4 hours per week	25%
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	(16 hours) X (10 weeks)
2	**Laboratory/Studio**	0
3	**Tutorial**	0
4	**Others** (specify)	0
	Total	160 hours

B. Course Objectives and Learning Outcomes

1. Course Description

English Language I is a single-level, English for General Purposes (EGP) course. All students who are admitted to Bachelor in the EMI Colleges (Medical Colleges/ College of Engineering/ College of Computer Sciences/ College of Business Administration/ Applied Sciences) are required to take this course in the first semester of the first year of their program. The course is offered in 10 weeks with a 16-hour-per week teaching plan covering the four language skills. It intends to develop students' knowledge and ability of English language in all major skills which include reading, writing, listening, and speaking, as well as in sub-skills including grammar, vocabulary, and pronunciation.

2. Course Main Objective

English Language 1 is a basic level taking students from (CEFR) A1 to A2.

3. Course Learning Outcomes

CLOs	
1.0	**Knowledge**
1.1	**By the end of the course, the students are expected to be able to:** exhibit adequate comprehension of spoken materials at the A2 level through recognizing key words and simple changes in topic. - understand the main ideas of conversations, presentations, radio programmes, news reports, podcasts, and interviews - understand how to listen for detail in academic study - understand the use of repetition for clarification - understand a speaker's mood from intonation - understand a speaker's attitude to a topic - distinguish fact from opinion - recognize features of connected speech, e.g. single sounds, intrusives, stress patterns
1.2	demonstrate basic understanding of grammar at the A2 level. - use the present simple to describe habits and routines - be aware of the use of formal vs informal language when making requests, writing email, etc. - use the past simple and past continuous when describing events in someone's life with correct time clauses where needed - use the present continuous to describe actions happening at the time of speaking or when discussing future plans -use *going to* when talking about persona plans or intentions - correctly use quantifiers, such as *too much* - be aware of the difference in use of *to* and *for* when giving reasons - use comparatives and superlatives for comparing people and objects - make predictions using *will, may* or *might* where appropriate - use present perfect to talk about experience or ack of it - use relative clauses with *who, which* or *that*
1.3	recognize and use lexical items such as words, collocations related to everyday topics at the A2 level: - develop vocabulary of the topics covered in order to be able to talk about them with others - be able to combine clauses using *and* and *but* - understand and use basic collocations with *have, make* and *do* - write short texts, eg making comments on podcast chat or online discussions, or giving online travel advice
2.0	**Skills**
2.1 2.1.1	**Cognitive Skills:** demonstrate comprehension of simple written texts at the A2 level through applying the skills of scanning, skimming, and guessing from context. - develop scanning (to find information quickly) and skimming skills (to predict the meaning of the text from visuals, titles or common words) - identify the author or speaker's audience and purpose - listen or read for opinions, attitude, and identify fact from opinion - understand meaning from context in both written and spoken texts
2.1.2	compose simple and basic texts at the A2 level about everyday topics through applying the skills of brainstorming ideas, composing an outline, and editing/revision. - write a formal email of introduction - post comments online with reasons and/or examples - posting text msgs vs writing an email - brainstorm and write points on presentation slides with correct format (parallelism) - write an announcement and comment on it - research a famous person, make notes, and produce a short paragraph from them - write a vlog script - write combined sentences, using *and* and *but* - use sequencers: *first, then, next, etc* - punctuation: Capital letters, commas, periods.

CLOs	
2.1.3	communicate in spoken language at the A2 level through simple tasks such as direct exchange of information, delivering short talks - talk about familiar topics - use functional language, such as greetings, inviting, expressing surprise, etc - give short presentations - produce a short vlog and video - check understanding
2.2	**Critical Thinking** - consider how people feel and think when meeting someone for the first time - analyze a text regarding main ideas in paragraphs - identify and discuss the habits of successful people - identify the pros and cons of a topic - identify a person's attitude or feelings based on what they have said - identify solutions to a problem - identify the purpose of a text based on its content - form an opinion based on input, eg an article - separate fact from fiction - identify reasons people take some action and problems they may have - evaluate a classmate's writing based on criteria provided - identify the difference between fact and fiction in advertisements - identify different points of view - identify use of register/ formality - reflect on how knowledge helps comprehension - reflect on knowledge gained - make predictions based on present knowledge
2.3	**Communication, Information Technology, Numerical** - provide basic, prepared information - describe and give personal opinions on a variety of topics - give advice, eg on travel - express general beliefs - talk about advantages and disadvantages - give recommendations - present persuasively
2.4	**Psychomotor** - give confident, persuasive presentations - design slides for a presentation with appropriate parallelism - use linking and weak forms in sentences
3.0	**Values**
3.1	develop life-long learning strategies so that students can take full responsibility of their English language skill development.
3.2	develop academic integrity.
3.3	collaborate in knowledge building and co-operate with peers: - hold short discussions with a partner to activate knowledge before listening tasks - hold short discussions with a partner to synthesize knowledge post-listening - work with others to develop a plan, create a convincing argument - give feedback to peers on writing, presentations, etc - use intonation to show emotion and interest - show levels of agreement *"I agree", "I guess"* - ask for opinions and check information
3.4	take the responsibilities to meet the requirements of the jobs market: - consider research needed before a job application - write a formal letter of self-introduction - be aware of the importance of first impressions - consider and give advice on how to save - consider the future of work

C. Course Content

No	List of Topics	Contact Hours
Evolve 2 Special Edition: Level 1 (A2)		
1	Unit 1: Connections Family, possessions, greetings, email, first impressions, things in common Video: Friends for dinner	
2	Unit 2: Work and Study Routines, work or study space, explaining a problem, podcasts, smartphones, the Internet, useful apps Video: Monday morning problems	
3	Unit 3: Let's move Sport and exercise, asking for info, bike sharing, attitudes to keeping fit, a fitness program Video: At the gym	
4	Unit 4: Good times Comic Con, gifts, invitations, Bug Fest, National Day and national dishes Video: A surprise party	
5	Unit 5: Firsts and lasts A day in your life, events in your life, congratulating and sympathizing, first impressions, migration, the Titanic Video: A photo album	
6	Unit 6: Buy now, pay later Back Friday, shopping habits, discovering new words, money, online shopping advice, inventions Video: An online shopping problem	
7	Unit 7: But first, food Comfort food, street food, ordering, meat-free burgers, vegan food, celebrating Video: Eating out	
8	Unit 8: Trips Trip advice, A short trip, making suggestions, living abroad, a trip to Riyadh, planning a trip Video: Lost in the city	
9	Unit 9: Looking good What to wear, family photos, giving opinions, images in ads, recycling, advertisements Video: An untidy guest	
10	Unit 10: Risky business Dangers at work, health, fears, the future: yourself and work, TV shows Video: A 911 call	
11	Unit 11: Me, online Personal achievements, social media, requesting, selfies, Internet of Things (IoT), online videos Video: Getting a job	
12	Unit 12: Outdoors The weather, describing places, getting lost, guerilla gardening, writing a trip review, a tourism campaign Video: Changes	
Total		

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge**		
1.1	**By the end of the course, the students are expected to be able to:** exhibit adequate comprehension of spoken materials at the A2 level. - understand the main ideas of conversations, presentations, radio programmes, news reports, podcasts, and interviews - understand how to listen for detail in academic study - understand the use of repetition for clarification - understand a speaker's mood from intonation - understand a speaker's attitude to a topic distinguish fact from opinion - recognize features of connected speech, e.g. single sounds, intrusives, stress patterns	Listening exercises	Listening mid-term exam Listening final exam
1.2	demonstrate basic understanding of grammar at the A2 level. - use the present simple to describe habits and routines - be aware of the use of formal vs informal language when making requests, writing email, etc - use the past simple and past continuous when describing events in someone's life with correct time clauses where needed - use the present continuous to describe actions happening at the time of speaking or when discussing future plans -use *going to* when talking about persona plans or intentions - correctly use quantifiers, such as *too much* - be aware of the difference in use of *to* and *for* when giving reasons - use comparatives and superlatives for comparing people and objects - make predictions using *will, may* or *might* where appropriate - use present perfect to talk about experience or ack of it - use relative clauses with *who, which* or *that*	Grammar exercises	Midterm Exam Continuous writing assessment Continuous speaking assessment Quizzes Writing Final Exam Final Exam
1.3	recognize and use lexical items such as words, collocations related to everyday topics at the A2 level: - develop vocabulary of the topics covered in order to be able to talk about them with others - be able to combine clauses using *and* and *but* - understand and use basic collocations with *have*, *make* and *do* - write short texts, e.g. making comments on podcast chat or online discussions, or giving online travel advice	Writing, reading, and vocabulary exercises	Midterm Exam Continuous writing assessment Continuous speaking assessment Quizzes Writing Final Exam Final Exam

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	**Skills**		
2.1 2.1.1	**Cognitive Skills:** demonstrate comprehension of simple written texts at the A2 level through applying the skills of scanning, skimming, and guessing from context. - develop scanning (to find information quickly) and skimming skills (to predict the meaning of the text from visuals, titles or common words) - identify the author or speaker's audience and purpose - listen or read for opinions, attitude, and identify fact from opinion - understand meaning from context in both written and spoken texts	Reading comprehension exercises	Classroom discussion Midterm exam Final exam
2.1.2	compose simple and basic texts at the A2 level about everyday topics through applying the skills of brainstorming ideas, composing an outline, and editing/revision. - write a formal email of introduction - post comments online with reasons and/ or examples - posting text msgs vs writing an email - brainstorm and write points on presentation slides with correct format (parallelism) - write an announcement and comment on it - research a famous person, make notes, and produce a short paragraph from them - write a vlog script - write combined sentences, using *and* and *but* - use sequencers: *first, then, next, etc* - punctuation: Capital letters, commas, periods.	Writing exercises	Continuous writing assessment Writing Final Exam
2.1.3	communicate in spoken language at the A2 level through simple tasks such as direct exchange of information, delivering short talks - talk about familiar topics - use functional language, such as greetings, inviting, expressing surprise, etc - give short presentations - produce a short vlog and video - check understanding	Speaking exercises Discussion Presentation, eg an advertisement, a tourist campaign, a YouTube video	Continuous speaking assessment

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.2	**Critical Thinking** - consider how people feel and think when meeting someone for the first time - analyze a text regarding main ideas in paragraphs - identify and discuss the habits of successful people - identify the pros and cons of a topic - identify a person's attitude or feelings based on what they have said - identify solutions to a problem - identify the purpose of a text based on its content - form an opinion based on input, eg an article separate fact from fiction - identify reasons people take some action and problems they may have - evaluate a classmate's writing based on criteria provided - identify the difference between fact and fiction in advertisements - identify different points of view - identify use of register/ formality - reflect on how knowledge helps comprehension - reflect on knowledge gained - make predictions based on present knowledge		
2.3	**Communication, Information Technology, Numerical** - provide basic, prepared information - describe and give personal opinions on a variety of topics - give advice, eg on travel - express general beliefs - talk about advantages and disadvantages - give recommendations present persuasively	Demonstrations Active self-learning Pair work Group work e-learning Online material (Encourage students to make their presentations to small groups in the class)	Monitoring students' progress Evaluating the individual contribution Evaluating the teamwork Evaluating the final product (Evaluation of presentations may be by peers)
2.4	**Psychomotor** - give confident, persuasive presentations - design slides for a presentation with appropriate parallelism - use linking and weak forms in sentences	Active self-learning Pair work Group work	Monitoring students' progress

3.0	Values		
3.1	develop life-long learning strategies so that students can take full responsibility of their English language skill development.	Cambridge application Cambridge LMS	Built-in immediate feedback
3.2	develop academic integrity.	Writing exercises	Continuous writing assessment Continuous speaking assessment Writing Final Exam
3.3	collaborate in knowledge building and co-operate with peers: - hold short discussions with a partner to activate knowledge before listening tasks - hold short discussions with a partner to synthesize knowledge post-listening - work with others to develop a plan, create a convincing argument - give feedback to peers on writing, presentations, etc - use intonation to show emotion and interest - show levels of agreement *"I agree", "I guess"* - ask for opinions and check information	Peer work Group work	Evaluating the individual contribution Evaluating the teamwork Evaluating the final product
3.4	take the responsibilities to meet the requirements of the jobs market: - consider research needed before a job application - write a formal letter of self-introduction - be aware of the importance of first impressions - consider and give advice on how to save - consider the future of work	Individual, peer and group work inside classrooms. Extramural language work to master the competencies at this language level.	Monitoring students' progress

2. Assessment Tasks for Students

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm Exam	The 5th	30
2	Listening Mid-term Exam	The 6th	5
3	Continuous writing assessment	from the 1st to the 10th	5
4	Continuous speaking assessment	from the 1st to the 10th	5
5	3 Quizzes (average)	3rd/ 6th/ 9th	5
6	Online Practice	from the 1st to the 10th	5
6	Listening Final Exam	The 10th	5
7	Writing Final Exam	The 11th	5
8	Final Exam	The 11th	35
	Total		100

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice: Course instructors are ready to answer all students' queries during their lectures or during office hours and they can be reached by personal meeting, e-mails, WhatsApp or telegram. All students have the e-mail and office hours of the course instructor through student handouts distributed to the student at the beginning of each semester.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Clandfield, L., Goldstein, B., Jones, C., Kerr, P., Hendra, L., Tilbury, A. (2019). Evolve 2 Special Edition: Student's Book with Practice Extra. Cambridge University Press. UK: Cambridge University Press.
Essential References Materials	Multimedia
Electronic Materials	Cambridge LMS
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms
Technology Resources (AV, data show, Smart Board, software, etc.)	data show, Smart Board, and Cambridge application
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Blackboard

G. Course Quality Evaluation

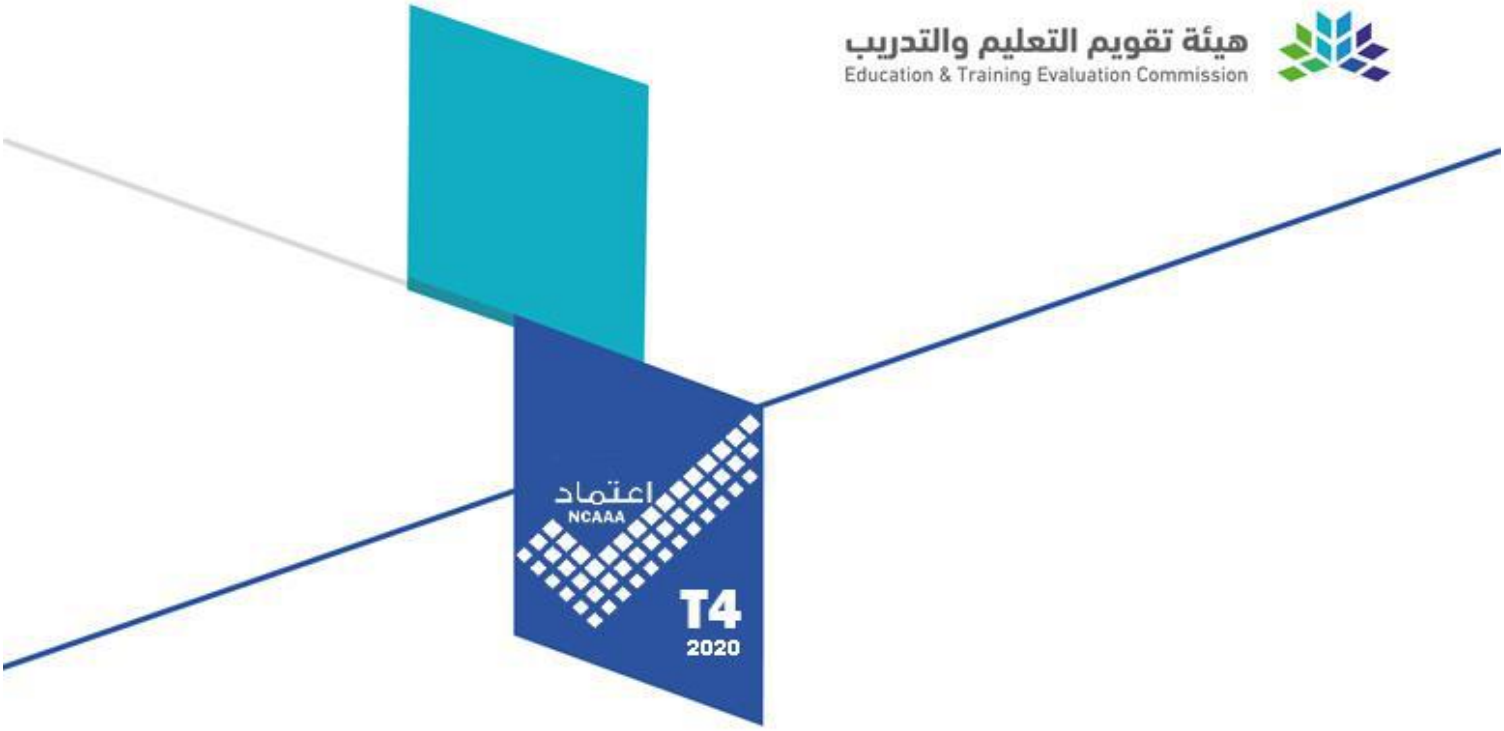
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources.	Faculty members	Direct: Course reports
Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources.	University students	Direct: Evaluation surveys

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Curriculum and Accreditation Committees
Reference No.	
Date	Dec 28.2021

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



توصيف المقرر الدراسي

اسم المقرر:	**توصيف مقرر الثقافة الإسلامية (١)**
رمز المقرر:	ICC1201
البرنامج:	**البكالوريوس**
القسم العلمي:	**الدعوة والثقافة الإسلامية**
الكلية:	**الدعوة وأصول الدين**
المؤسسة:	**جامعة أم القرى**

المحتويات

أ. التعريف بالمقرر الدراسي:

١. الساعات المعتمدة: 32
٢. نوع المقرر أ. متطلب جامعة ■ متطلب كلية ☐ متطلب قسم ☐ أخرى ☐ ب. إجباري ■ اختياري ☐
٣. السنة / المستوى الذي يقدم فيه المقرر **الأول**
٤. المتطلبات السابقة لهذا المقرر (إن وجدت) **لا يوجد**
٥. المتطلبات المتزامنة مع هذا المقرر (إن وجدت) **لا يوجد**

٦. نمط الدراسة (اختر كل ما ينطبق)

م	نمط الدراسة	عدد الساعات التدريسية	النسبة
1	**المحاضرات التقليدية**	**لا ينطبق**	**لا ينطبق**
2	**لتعليم المدمج**	**لا ينطبق**	**لا ينطبق**
3	**التعليم الإلكتروني**	**لا ينطبق**	**لا ينطبق**
4	**التعليم عن بعد**	٢٠	%٩٠,٩٠
5	**أخرى: (الاختبارات النصفية والنهائية)**	٢ساعتان	%٩,٠٩

٧. ساعات الاتصال (على مستوى الفصل الدراسي)

م	النشاط	ساعات التعلم
١	محاضرات: (بواقع ساعتين في الأسبوع لمدة ١٠ أسبوعا)	٢٠
٢	معمل أو استوديو	لا ينطبق
٣	دروس إضافية	لا ينطبق
٤	أخرى (تذكر): (الاختبارات النصفية والنهائية)	٢ ساعتان
	الإجمالي	٢٢

ب- هدف المقرر ومخرجاته التعليمية:

١. الوصف العام للمقرر:

يتناول المقرر التعريف بمحاسن الإسلام، ووسطيته، وسمو مبادئه، إضافة إلى بيان مفهوم الإيمان، وأركانه، كما سيتناول مقاصد العبادات في الإسلام، مع دراسة لنماذج متنوعة من هذه العبادات، وأثرها على حياة الإنسان.

٢. الهدف الرئيس للمقرر:

- ترسيخ العقيدة الإسلامية الصحيحة.
- بيان محاسن الإسلام ووسطيته، وسمو مبادئه.
- توضيح مقاصد العبادة في الإسلام

٣. مخرجات التعلم للمقرر:

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1	**المعرفة والفهم**	
1.1	يعرف على الثقافة الإسلامية ومصادرها وخصائصها	
1.2	يوضح آداب وسمات طالب العلم	
1.3	يشرح مفهوم العقيدة وأهميتها وأصولها وآثارها على الفرد والمجتمع	
1.4	يستعرض مفهوم العبادة ومكانتها وشروطها وخصائصها وآثارها	

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
2	**المهارات**	
2.1	يقارن بين الثقافة الإسلامية والثقافة الغربية من حيث المفهوم والمصادر والأهداف	
2.2	يستنبط أدلة وثمار أركان الإيمان الستة	
2.3	يمارس العقيدة والعبادات بشكل صحيح بعيدا عن الغلو والتطرف وبالوسطية التي جاء بها الإسلام وأكدت عليها رؤية المملكة ٢٠٣٠	
2.4	ينقد أهم النظريات الأخلاقية الغربية	
3	**القيم**	
3.1	يتحلى بآداب وسمات طالب العام الناجح	
3.2	يكون علاقات داخل الجامعة وخارجها قائمة على الاستقلالية وتحمل المسؤولية	
3.3	يتمثل القيم والأخلاق الإسلامية الحميدة	

ج. موضوعات المقرر

م	قائمة الموضوعات	ساعات الاتصال
١	**مدخل إلى الثقافة الإسلامية (مفهومها، أهميتها، خصائصها، علاقتها بالعلوم الأخرى) :** سيتعلم الطالب في هذه المفردة مفهوم الثقافة الإسلامية وأهميتها، كما سيدرس خصائص الثقافة الإسلامية، والعلاقة بين الثقافة الإسلامية وارتباطها بالعلوم الشرعية الأخرى.	٢
٢	**مفهوم الدين رؤية الإسلام للوجود والإنسان:** يدرس الطالب في هذه المفردة مفهوم الدين، وتعريفاته، وأهميته، وحاجة الإنسان إليه من حيث فطريته، وتصحيح سلوكه. في هذه المفردة سيدرس الطالب نظرة الإسلام للخالق سبحانه وتعالى، وللكون، والمخلوقات، وكيف أن الإسلام كرم الإنسان وميزه على سائر المخلوقات	٢
٣	**وسطية الإسلام ومحاسنه:** في هذه المفردة سيدرس الطالب أصول محاسن، وكمال هذا الدين العظيم، كما سيدرس مظاهر وسطية الإسلام في عقائده وشرائعه وأخلاقه.	٢
٤	**مفهوم الإيمان:** تتطرق هذه المفردة إلى بيان الحقيقة اللغوية والشرعية للإيمان، وأهمية الايمان بالغيب، والعلاقة بين الظاهر والباطن، وزيادة الإيمان ونقصانه. في **الإيمان بالله (الربوبية، الأسماء والصفات):** هذه المفردة سيدرس الطالب مفهوم الايمان بالله وبوجوده، وبربوبيته، وأسمائه وصفاته، وأثر الإيمان بها في حياة المسلم **الإيمان بالله: (الألوهية):** يدرس الطالب في هذه المفردة مفهوم الايمان بالألوهية، وأثر ذلك في حياة المسلم.	٢
٥	**الإيمان بالملائكة والكتب:** هذه المفردة تعنى بتعريف الايمان بالملائكة والكتب وأهميته وآثاره. كما سيدرس صفات الملائكة ووظائفهم، والكتب الإلهية الواجب الإيمان بها، بالإضافة إلى موقف المسلم من الكتب السماوية السابقة والقرآن الكريم.	٢
٦	**الإيمان بالرسل:** في هذه المفردة سيدرس الطالب معنى الإيمان بالرسل وأهميته وآثاره، كما سيدرس وظائف الرسل عليهم السلام وصفاتهم والمقصد من إرسالهم، بالإضافة إلى أدلة صدق النبي صلى الله عليه وسلم وخصائصه وحقوقه	٢
٧	**الإيمان باليوم الآخر**: هذه المفردة يدرس الطالب فيها معنى الإيمان باليوم الآخر وأهميته وآثاره، كما سيدرس الحقائق التي يشملها الإيمان باليوم الآخر كأشراط الساعة وما يكون بعد الموت من حساب وجزاء، بالإضافة إلى أدلة البعث وحقيقته، ومفهوم الشفاعة.	٢

٨	**الإيمان بالقدر**: في هذه المفردة سيدرس الطالب مفهوم القضاء والقدر وآثار الإيمان به، كما سيدرس مراتب الإيمان بالقدر والمراد بها.	٢
٩	**العبادة**: تعنى هذه المفردة ببيان مفهوم العبادة في الإسلام وخصائصها وشروطها ومقاصدها، كما سيدرس أهمية عبادة الله وآثارها على حياة المسلم.	٢
١٠	**أركان الإسلام وآثارها:** سيكون التركيز في هذه المفردة على دراسة الآثار الإيمانية والتربوية للصلاة والزكاة والصوم والحج في حياة المسلم.	٢
المجموع		٢٠

د. التدريس والتقييم:

١. ربط مخرجات التعلم للمقرر مع كل من استراتيجيات التدريس وطرق التقييم

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
1.0	**المعرفة والفهم**		
1.1	يعرف الثقافة الإسلامية ويعدد مصادرها وخصائها	المحاضرات والمناقشات	الاختبارات التحريرية والشفوية
1.2	يتمثل بآداب وسمات طالب العلم	التعلم التعاوني	الملاحظة المستمرة والتقييم الجماعي
1.3	يبين مفهوم العقيدة وأهميتها وأصولها وآثارها على الفرد والمجتمع	المحاضرات والمناقشات	الاختبارات التحريرية والشفوية
1.4	يعرض مفهوم العبادة ومكانتها وشروطها وخصائصها وآثارها	تعلم الأقران	الاختبارات التحريرية والشفوية، التقويم المتسمر
2.0	**المهارات**		
2.1	يقارن برين الثقافة الإسلامية والثقافة الغربية من حيث المفهوم والمصادر والأهداف	العصف الذهني	الملاحظة والتقييم المستمر
2.2	يستنبط أدلة وثمار أركان الإيمان الستة	الطريقة الاستقرائية التكليف بأبحاث وواجبات	تقييم البحوث والواجبات
2.3	يطبق العقيدة والعبادات بشكل صحيح بعيدا عن الغلو والتطرف وفق رؤية المملكة ٢٠٣٠	التعليم التعاوني	الملاحظة المستمرة والتقييم الجماعي
2.4	ينقد أهم النظريات الأخلاقية الغربية	التعلم الذاتي	
3.0	**القيم**		
3.1	يتحلى بآداب وسمات طالب العام الناجح	التعلم التعاوني	الملاحظة المباشرة وتقويم الأداء
3.2	يكون عالقات داخل الجامعة وخارجها قائمة على الاستقلالية وتحمل المسؤولية	التعلم التعاوني	الملاحظة المستمرة والتقييم الجماعي
3.3	يستخدم التقنية الحديثة في البحث عن بعض مفردات المنهج	تكليف الطالب بأبحاث وواجبات يحتاج لجمع مفرداتها إلى وسائل التقنية الحديثة	تقييم الأبحاث

٢. أنشطة تقييم الطلبة

م	أنشطة التقييم	توقيت التقييم (بالأسبوع)	النسبة من إجمالي درجة التقييم
١	الاختبار التحريري والشفوي	الأسبوعان الثامن والرابع عشر	٦٠%
٢	التقويم المستمر	كل أسابيع الدراسة	١٥%

م	أنشطة التقييم	توقيت التقييم (بالأسبوع)	النسبة من إجمالي درجة التقييم
٣	عرض البحوث والمناقشة	الحادي عشر والثاني عشر	١٥%
٤	الملاحظة وتقويم الأداء	كل أسابيع الدراسة	١٠%

أنشطة التقييم (اختبار تحريري، شفهي، عرض تقديمي، مشروع جماعي، ورقة عمل الخ)

هـ - أنشطة الإرشاد الأكاديمي والدعم الطلابي:

- **تعريف الطالب بالمقرر**
- **متابعة بعض الحالات الفردية التي تحتاج إلى اهتمام خاص.**
- **توجيه الطالب الى كيفية الإفادة من التقنيات الحديثة.**
- **الساعات المكتبية.**
- **ربط جميع الطلاب بمرشدين أكاديميين لمساعدتهم على فهم متطلبات البرنامج وعمليات التسجيل.**
- **نشر جميع معلومات الاتصال الخاصة بعضو هيئة التدريس على الصفحة الرئيسية للمقرر الدراسي على البلاك بورد**

و – مصادر التعلم والمرافق:

١. قائمة مصادر التعلم:

المرجع الرئيس للمقرر	١- الدر المختصر في محاسن الدين الإسلامي للشيخ عبد الرحمن بن ناصر السعدي. + شرح أصول الإيمان للشيخ محمد العثيمين
المراجع المساندة	٢- تفصيل النشأتين وتحصيل السعادتين للراغب الأصفهاني. ٣- شفاء العليل في مسائل القضاء والقدر والحكمة والتعليل لابن قيم الجوزية.
المصادر الإلكترونية	المكتبة الرقمية السعودية
أخرى	

٢. المرافق والتجهيزات المطلوبة:

العناصر	متطلبات المقرر
المرافق (القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ)	قاعة دراسية مجهزة افتراضية مكتبة اليكترونية
التجهيزات التقنية (جهاز عرض البيانات، السبورة الذكية، البرمجيات)	أجهزة حاسوب مرتبطة بالنت قاعات افتراضية
تجهيزات أخرى (تبعاً لطبيعة التخصص)	لا يوجد

ز. تقويم جودة المقرر:

مجالات التقويم	المقيمون	طرق التقييم
فاعلية التدريس	أعضاء هيئة التدريس، الطالب، لجنة الجودة، إدارة القسم	غير مباشر (الاستبانات)
فاعلية طرق تقييم الطالب	المراجع النظير	مراجعة عينات عشوائية من أوراق إجابات الطلاب
مدى تحصيل مخرجات التعلم	قيادات البرنامج	تقييم مباشر

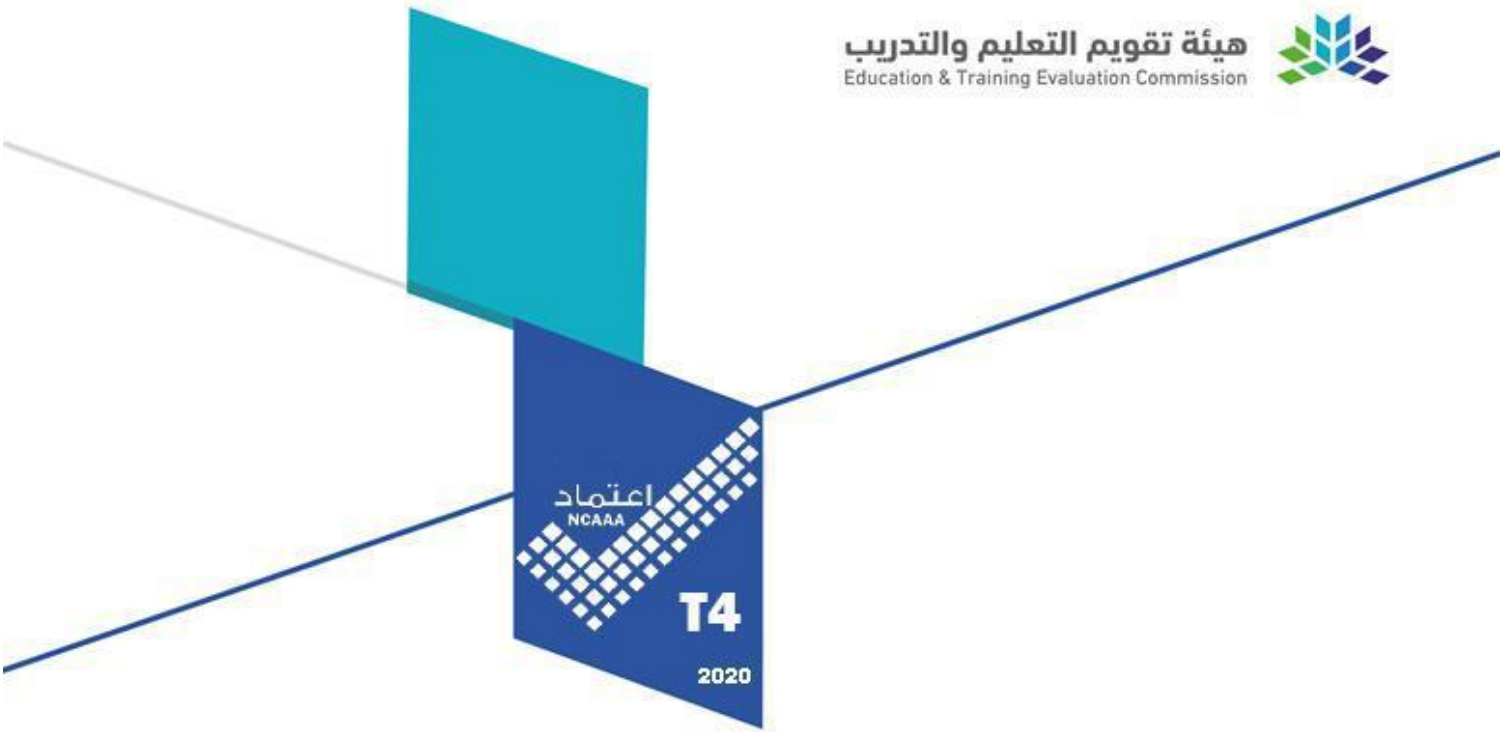
مجالات التقويم (مثل. فاعلية التدريس، فاعلة طرق تقييم الطلاب، مدى تحصيل مخرجات التعلم للمقرر، مصادر التعلم ... إلخ)

المقيمون (الطلبة، أعضاء هيئة التدريس، قيادات البرنامج، المراجع النظير، أخرى (يتم تحديدها)
طرق التقييم (مباشر وغير مباشر)

ح. اعتماد التوصيف

جهة الاعتماد	مجلس القسم
رقم الجلسة	
تاريخ الجلسة	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	**General Physics 1**
Course Code:	
Program:	**Physics**
Department:	**Physics**
College:	**Applied Science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 4 (3+1)
2. Course type **a.** University ☐ College ☑ Department ☐ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Level 1st/ 1st year
4. Pre-requisites for this course (if any)**:**
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	60	100%
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	30
3	**Tutorial**	
4	**Others**	
	Total	60

B. Course Objectives and Learning Outcomes

1. Course Description

The course will cover the principles of general physics, such as measurements, vectors, Motion in one dimension, Newton's laws, work and energy. The course will also provide a conceptual background of experimental physics sufficient to enable students to take courses that are more advanced in related fields.

2. Course Main Objective

After completing this course student should be able to:

1. Define the concepts of the measurements, length, time, and weight.
2. Differentiate between the vectors and the scalars
3. Calculate the vectors sum, and vectors product.
4. Define the concepts of force and gravity.

5. Apply Newton's laws of motion to calculate the position, velocity and acceleration.
6. Differentiate between Work, Energy, and power.

In addition to these items, the students should gain practical skills through performing some experimental class.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and understanding**	
1.1	Define the physical quantities related to the measurement, motion in one dimension, vectors, Newton's law of motion, work and energy .	K1
1.2	Describe the concepts and physical laws related to the measurement, motion in one dimension, vectors, Newton's law of motion, work and energy using the mathematical formula.	K2
1.3		
2	**Skills:**	
2.1	Apply physics laws to calculate physical quantities related to the measurement, motion in one dimension, vectors, Newton's law of motion, work and energy.	S1
2.2	Explain the procedures for scientific theoretical treatments as well as empirical observations.	S2
2.3		
3	**Values:**	
3.1	Work effectively responsibly in teamwork	V2
3.2		

C. Course Content

No	List of Topics	Contact Hours
1	**Measurement** ● Measuring Things ● The International System of Units ● Changing Units ● Length ● Significant Figures and Decimal Places ● Time ● Mass	5
2	**Motion Along a Straight Line** ● Position, Displacement, and Average Velocity ● Motion ● Position and Displacement ● Average Velocity and Average Speed ● Instantaneous Velocity and Speed ● Acceleration ● Constant Acceleration: A Special Case ● Another Look at Constant Acceleration ● Free-Fall Acceleration ● Graphical Integration in Motion Analysis	5
3	**Vectors** ● Vectors and Their Components ● Vectors and Scalars ● Adding Vectors Geometrically ● Components of Vectors	5

	• Unit Vectors Adding Vectors by Components • Vectors and the Laws of Physics • Multiplying Vectors	
4	**Motion in Two and Three Dimensions** • Position and Displacement • Position and Displacement • Average Velocity and Instantaneous Velocity • Average Acceleration and Instantaneous Acceleration • Projectile Motion • Uniform Circular Motion • Relative Motion in One Dimension • Relative Motion in Two Dimensions	**5**
5	**Force and Motion-I** • Newtonian Mechanics • Newton's First Law • Force • Mass • Newton's Second Law • Some Particular Forces • Newton's Third Law • Applying Newton's Laws	**5**
6	**Force and Motion-II** • Friction • Properties of Friction • The Drag Force and Terminal Speed • Uniform Circular Motion Forces	**5**
	Practical Part: • Safety Procedures in the Lab. • Introduction to Graphing and Data Analysis • The Errors in Experimental Physics • Fine Measurements • The Lever • Force Table-I • Force Table-II • Position, Velocity, and Acceleration • Newton's Second Law • Free Fall	**10**
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Define the physical quantities related to the course.	1. Demonstrating the basic principles through lectures.	1. Solve some examples during the lecture. 2. Discussions during the lectures 3. Exams:
1.2	Describe the concepts and physical laws related to the course using the mathematical formula.		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.3		2. Discussing phenomena with illustrating pictures and diagrams. 3. Lecturing method: ● Board, Power point. ● Discussions ● Brain storming ● Start each chapter by general idea and the benefit of it. 4. Do some experimental in the Laboratory	a) Quizzes. b) Midterm exams. c) Final exam. d) Practical exams.
2.0	**Skills**		
2.1	Apply physics laws to calculate physical quantities related to the course.	1. Solve some problems in physics during lectures. 2. Following some proofs during lectures. 3. Encourage students to participate in solving problems.	1. Solve some examples during the lecture. 2. Discussions during the lectures 3. Exams: a) Quizzes. b) Midterm exams. c) Final exam. d) Practical exams.
2.2	Explain the procedures for scientific theoretical treatments as well as empirical observations.		
2.3			
3.0	**Values**		
3.1	Work effectively responsibly in teamwork	● Give students tasks of duties. ● Organize the students as a small group in the lab.	● Evaluate the scientific reports. ● Discussing the reports with each teamwork. ● Evaluate the efforts of each student in preparing the report.
3.2			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm Exam	7th	20 %
2	HomeWorks & Quizzes	All weeks	10 %
3	Practical Exam	End of the semester	20 %
4	Final Exam	End of the semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

Each student will be supervised by academic adviser in Physics Department and the time table for academic advice were given to the student each semester. (4 hrs per week)

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Halliday & Resnick, Jearl Walker, "Fundamentals of Physics" 10th Edition (2018)

Essential References Materials	
Electronic Materials	
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	● Classroom ● Laboratory ● Library
Technology Resources (AV, data show, Smart Board, software, etc.)	● Data show ● Black Bord
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

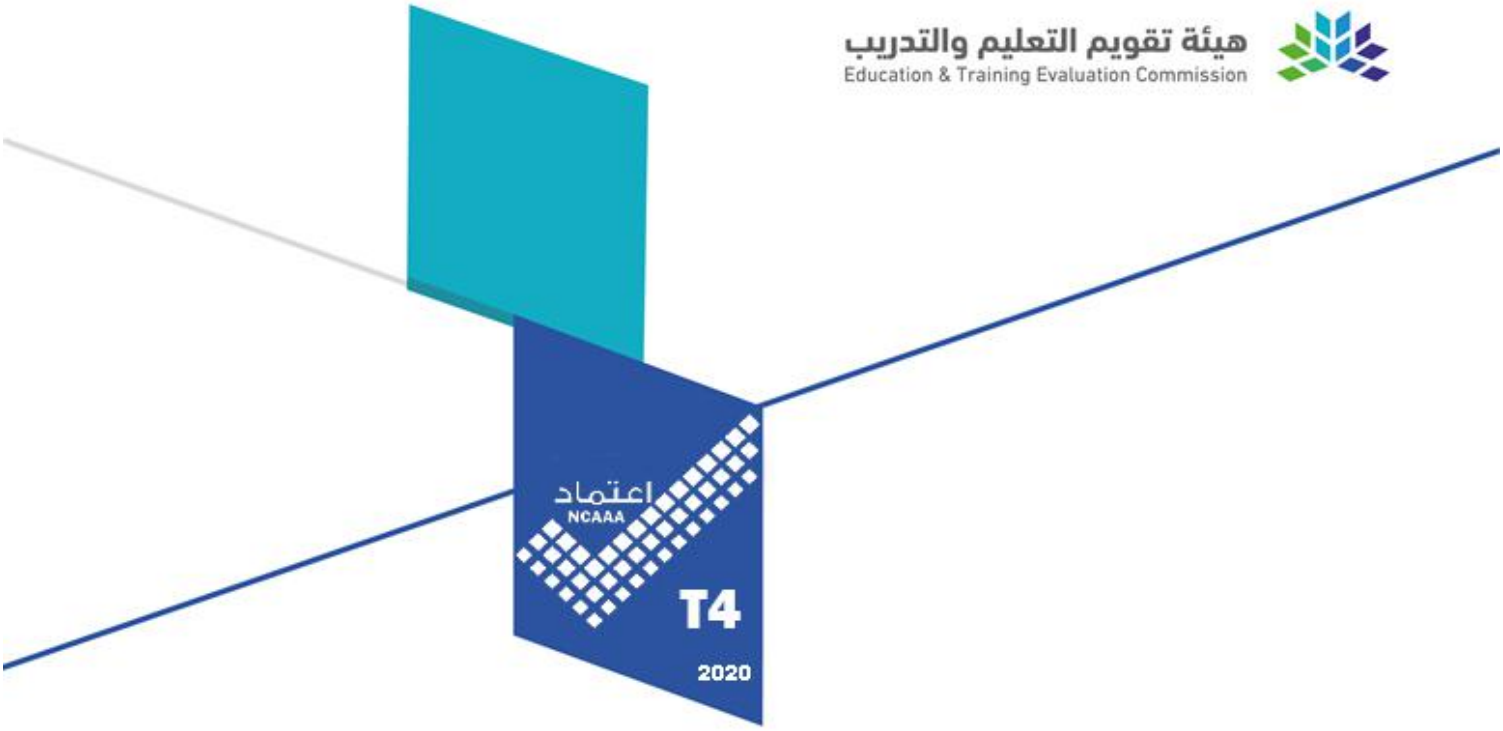
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching Strategies	Students	Questionnaire
Effectiveness of student assessment	Instructor	Exams
Extent of achievement of course learning outcomes	Instructor	Course report
Quality of learning resources	Instructor	Course report

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Introduction to Calculus
Course Code:	MTH1101
Program:	BSc. in Mathematics
Department:	Mathematical sciences
College:	Applied sciences
Institution:	Umm Al-Qura University

Table of Contents

A. Course Identification

1. Credit hours:	4
2. Course type	
a.	University ☐ College ☐ Department ☒ Others ☐
b.	Required ☒ Elective ☐
3. Level/year at which this course is offered:	First level/First year
4. Pre-requisites for this course (if any)**:**	None
5. Co-requisites for this course (if any)**:**	Not applicable

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	**%100**
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**36**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (Exam, Quizzes, Activities,…)	**4**
	Total	**40**

B. Course Objectives and Learning Outcomes

1. Course Description

This introductory calculus course covers differentiation and integration of functions of one variable. It is the first in a three-course sequence of calculus. Key topics of the course include precalculus, limits and continuity, derivatives, integrals.

2. Course Main Objective

The primary objective of the course is to introduce students to the concepts of calculus and to develop the student's confidence and skill in dealing with mathematical expressions. To achieve this goal, the course will help the student understand the following basic concepts: limits, continuity , derivatives and integration involving real-valued functions of one variable (including algebraic and trigonometric functions).

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	

CLOs		Aligned PLOs
1.1	Recognize the characteristics of a function expressed in symbolic or graphic form.	K1
1.2	Outline the definitions of limits and continuity of a single-variable function and related theorems.	K1, K4
1.3	Define the basic concept of a derivative of a single-variable function and learn the different rules, formulas and theorems for computing the derivative of a function in calculus.	K1, K4
1.4	Define the basic concepts and techniques of integration of polynomial, rational, and trigonometric functions.	K3, K4
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Analyze functions represented in a variety of ways: graphical, numerical or analytical	S1, S8
2.2	Determine the limits of functions and their continuity at points or on intervals.	S1, S3, S8
2.3	Calculate the derivative of various type of functions using the rules and techniques of differentiation.	S1, S8, S9
2.4	Evaluate integrals of real functions using basic rules and techniques of integration.	S6, S8, S9
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Apply the computational and conceptual principles of calculus to the solutions of various mathematical problems.	V2, V3
3.2	Justify the choice of different steps in problem resolution procedure.	V2, V3
3.3	Solve problems using a range of formats and approaches in basic science.	V1, V2, V3
3.4	Show the ability to work independently and within groups.	V2

C. Course Content

No	List of Topics	Contact Hours
1	**Pre Calculus:** (i) Exponents and Radicals. (ii) Solving Equations. (iii)Inequalities and Absolute Values. (iv)Lines	8
2	**Functions** (i) Functions: Definition, Graphs and Operations (ii) Trigonometric Functions and Identities.	4
3	**Limits and Continuity:**	8

	(i) Introduction to Limits (ii) Theorems on limits (iii) Limit at infinity and infinite limits (iv) Continuity	
4	**Differentiation** (i) Definition of Derivative (Using Limits) (ii) Rules and Theorems for Finding Derivatives (iii)Derivative of Trigonometric Function (iv)Chain Rule (v) Higher Order Derivatives	10
5	**Integration** (i) Antiderivatives. (ii) Fundamental Theorems of Calculus.	6
6	**Others** Preprimaries, Quizzes, Activities …	4
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Recognize the characteristics of a function expressed in symbolic or graphic form.	Lecture and Tutorials	Exams, quizes
1.2	Outline the definitions of limits and continuity a single-variable function and related theorems.	Lecture and Tutorials	Exams, quizes
1.3	List the different rules, formulas and theorems for computing derivatives of functions.	Lecture and Tutorials	Exams, quizes
1.4	Define the basic concepts and techniques of integration of polynomial, rational, and trigonometric functions.	Lecture and Tutorials	Exams, quizes
2.0	**Skills**		
2.1	Analyze functions represented in a variety of ways: graphical, numerical or analytical.	Lecture/Individual or group work	Exams, quizes
2.2	Determine the limits of functions and their continuity at points or on intervals.	Lecture/Individual or group work	Exams, quizes

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.3	Calculate the derivative of various type of functions using the rules and techniques of differentiation.	Lecture/Individual or group work	Exams, quizes
2.4	Apply the concept of derivative to completely analyze graph of a function.	Lecture/Individual or group work	Exams, quizes
2.5	Evaluate integrals of real functions using basic rules and techniques of integration.	Lecture/Individual or group work	Exams, quizes
3.0	**Values**		
3.1	Apply the computational and conceptual principles of calculus to the solutions of various mathematical problems.	Lecture/Individual or group work	Exams, quizes
3.2	Justify the choice of different steps in problem resolution procedure.	Lecture/Individual or group work	Exams, quizes
3.3	Solve problems using a range of formats and approaches in basic science.	Lecture/Individual or group work	Exams, quizes
3.4	Show the ability to work independently and within groups.	Lecture/Individual or group work	Exams, quizes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30%
2	Quizes and homeworks	During semester	20%
3	Final exam	End of semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Calculus (9th Edition), Dale Varberg, Edwin Purcell and Steven Rigdon, Prentice Hall (2006).
Essential References Materials	• Thomas' Calculus (14th Edition), George B. Thomas • Precalculus: Mathematics for Calculus (6th Edition), James

	Stewart
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

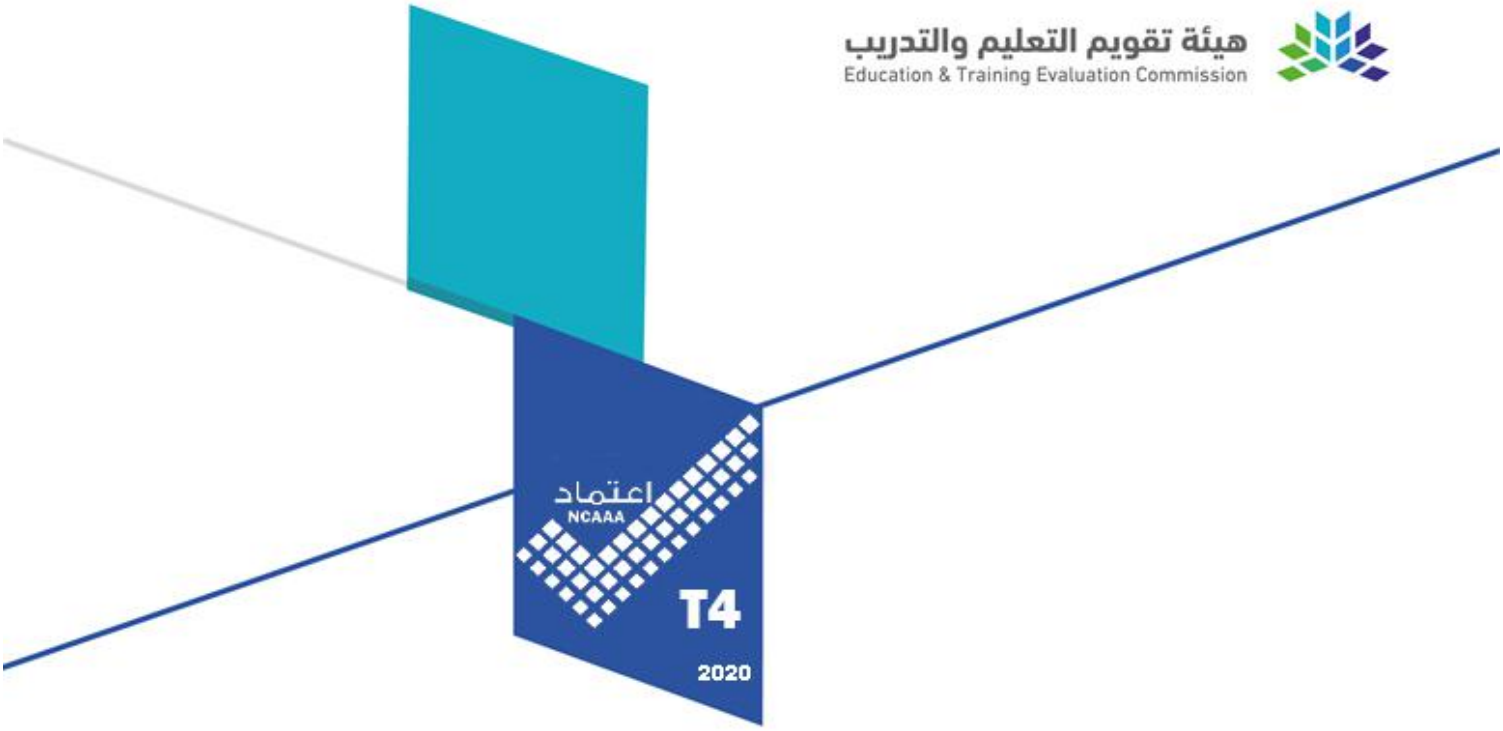
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Foundations of Mathematics**
Course Code:	**MTH1201**
Program:	**BSc. in Mathematics**
Department:	**Mathematical sciences**
College:	**Applied sciences**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 4
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: First level/First year
4. Pre-requisites for this course (if any)**:** None
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	Four hours/week	%100
2	Blended	0	0
3	E-learning	0	0
4	Distance learning	0	0
5	Other	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	40
2	Laboratory/Studio	0
3	Tutorial	0
4	Others (specify)	0
	Total	40

B. Course Objectives and Learning Outcomes

1. Course Description

Mathematics is closely related to the details and activities of human daily life and activities. Foundations of mathematics is a term sometimes used in some fields of mathematics, such as mathematical logic, sets theory, proof theory and model theory. This course will introduce principles of mathematical logic and define sets, membership, Cartesian product and relations on sets. Mappings (or sometimes called functions) and binary operations will be presented. Primary definitions with examples of groups, rings, and fields will be introduced.

2. Course Main Objective

This course will provide a common mathematical foundation for students in all of the programs, drawing upon the full range of undergraduate courses in mathematics. In addition, it will permit students to build upon and share knowledge already acquired while pointing out areas in which additional study may be needed. In addition, it will develop the communication skills and understanding of the process of doing mathematics necessary for graduate-level study.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Identify statements, negation and De Morgan's laws.	K3
1.2	Identify different methods of proofs that can be applied to prove many mathematical problems.	K3
1.3	Present basic concepts of sets and their operations.	K3, K5
1.4	State the basic rules of logical equivalence	K1
1.5	Describe Cartesian product of sets and the concept of relations	
1.6	Define mappings and their types.	K1
1.7	State groups, rings and fields.	K1, K3
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Compare between relations on sets (reflexive, symmetry and transitive).	S1, S5
2.2	Use methods of proofs for solving many mathematical problems.	S3, S9
2.3	Apply algebraic structures on sets.	S3, S5
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Prepare for success in disciplines which rely on foundations of mathematics, which is the key to understand most of mathematical subjects.	V2
3.2	Interpret graphical and qualitative representations of solutions to problems	V2, V4
3.3	Evaluate fundamental concepts of sets, Cartesian product, mappings, and the interrelationship between operations, groups, rings and fields.	V2, V4
3.4	Generalize mathematical concepts in problem-solving through integration of new material and modeling.	V4

C. Course Content

No	List of Topics	Contact Hours
1	**Principle of Mathematical Logic:** Statements, negation of statements, truth tables and Connectives Methods of proofs (direct proof, proof by contrapositive, proof by contradiction, proof by mathematical induction)	4
2	**Sets, membership and algebra of sets:** Method of defining a set (listing method, characteristic property), finite and infinite sets. Membership and inclusion, Universal and existential quantifiers. Power set, Algebra of sets (union, intersection, universal set, complement of a set, symmetric difference, De Morgan's laws, Venn diagrams, Membership tables, membership tables, sets of numbers (N, Z, Q, R and C).	6
3	**Cartesian Product and Relations on Sets** Ordered pairs, Cartesian product of sets, Binary relations on sets, reflexive, symmetric, transitive relations, Skew-symmetric (Anti-symmetric), Equivalence relation, ordered relation, Partition of sets and equivalence classes, Partial ordered relation, Inverse of relation, Composition of relations. Diagrams of relations.	6
4	**Mappings (Functions):** Definition of mapping, Image of mapping, Inverse image of mapping Special types of mappings (injective (1-1), surjective (onto), bijective (1-1 and onto), Identity mapping, Composition of mappings, Bijection mappings as permutations, inverse of mapping. Equivalence of sets, Countable sets and non-countable sets, Cardinal numbers, Contour Theorem.	6
5	**Binary Operations:** Definition and examples of binary operations, closure of a binary operation, commutative and associative operations, Identity element, Inverse of element, Systems of two operations, Homomorphism between two closed algebraic systems.	6
6	**Introduction to Groups:** Definition of semigroups and examples, Definition of groups and elementary examples, Definition of subgroups and examples Definition of cyclic groups and examples, Definition of symmetric groups and examples, Partition of groups and cosets.	6
7	**Introduction to Rings and Fields:** Definition of rings and elementary examples, Integral domains, Definition of fields and elementary examples, some properties of rings. Ring of polynomials.	6

Total	40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Identify statements, negation and De Morgan's laws.	Lecture and Tutorials	Exams, quizzes
1.2	Identify different methods of proofs that can be applied to prove many mathematical problems.	Lecture and Tutorials	Exams, quizzes
1.3	Present basic concepts of sets and their operations.	Lecture and Tutorials	Exams, quizzes
1.4	State the basic rules of logical equivalence		
1.5	Describe Cartesian product of sets and the concept of relations	Lecture and Tutorials	Exams, quizzes
1.6	Define mappings and their types.	Lecture and Tutorials	Exams, quizzes
1.7	State groups, rings and fields.		
2.0	**Skills**		
2.1	Compare between relations on sets (reflexive , symmetric and transitive).	Lecture and Individual or group work	Exams, quizzes
2.2	Use methods of proofs for solving many mathematical problems.	Lecture and Individual or group work	Exams, quizzes
2.3	Apply algebraic structures on sets.	Lecture and Individual or group work	Exams, quizzes
3.0	**Values**		
3.1	Prepare for success in disciplines which rely on foundations of mathematics, which is the key to understanding most of mathematical subjects.	Lecture and Individual or group work	Exams, quizzes
3.2	Interpret graphical and qualitative representations of solutions to problems	Lecture and Individual or group work	Exams, quizzes
3.3	Evaluate fundamental concepts of sets, Cartesian product, mappings, and the interrelationship between operations, groups, rings and fields.	Lecture and Individual or group work	Exams, quizzes
3.4	Generalize mathematical concepts in problem-solving through integration of new material and modeling.	Lecture and Individual or group work	Exams, quizzes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	6th week	%30
2	Quizes and homeworks	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice: All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures. Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	1- Guide to Abstract Algebra by: Carol Whitehead, Edited by David Towers Edition 2nd Edition: ISBN:9780333794470 2- Set Theory and related topics by: Seymour Lipschutz, Schaum's Outlines Series : ISBN:0-07-038159-3 3- Basic Abstract Algebra by: P. B. Bhattacharya, S. K. Jain, S. R. Nagpaul, Cambridge University Press, Jum. II 21, 1415 AH - Mathematics - 487 pages ISBN: 0-521-46081-6 and 0-521-46629-6
Essential References Materials	1- A First Course in Abstract Algebra, 7th Edition 7th edition, by John B. Fraleigh; Publisher: Pearson; 7 edition (November 16, 2002) ISBN-10: 0201763907: ISBN-13: 978-0201763904 2- Modern Algebra: An Introduction 6th Edition, by John R. Durbin; Publisher: Wiley; 6 edition (December 31, 2008) ISBN-10: 0470384433 ISBN-13: 978-0470384435. 3 – Theory and Problems of Abstract Algebra by Frank Ayres and Lloyd R. Jaisingh, Schaum's Outlines Series. Second Edition.
Electronic Materials	https://en.wikipedia.org/wiki/Set_theory https://en.wikipedia.org/wiki/Map_(mathematics) https://en.wikipedia.org/wiki/Binary_operation https://en.wikipedia.org/wiki/Group_(mathematics) https://en.wikipedia.org/wiki/Ring_(mathematics)
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources	Data Show, Smart Board

Item	Resources
(AV, data show, Smart Board, software, etc.)	
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Prof. Dr. Ahmad Alghamdi and Dr. Maha Alshareef
Reference No.	
Date	

The Second Level

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA T4 2020

Course Specifications

Course Title:	English Language 2
Course Code:	ELCE1202
Program:	Bachelor in EMI Colleges (Medical Colleges/ College of Engineering/ College of Computer Sciences/ College of Business Administration/ Applied Sciences)
Department:	English Language Centre
College:	English Language Centre
Institution:	Umm Al Qura University

Table of Contents

A. Course Identification

1. Credit hours: 4 hours
2. Course type **a.** University ☐ College ■ Department ☐ Others ☐ **b.** Required ■ Elective ☐
3. Level/year at which this course is offered: **1st Year**
4. Pre-requisites for this course (if any)**:** EMI Colleges – English Language 1
5. Co-requisites for this course (if any)**:** **N/A**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	12 hours per week	75%
2	**Blended**	16 hours per week	100%
3	**E-learning**	4 hours per week	25%
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	(16 hours) X (10 weeks)
2	**Laboratory/Studio**	0
3	**Tutorial**	0
4	**Others** (specify)	0
	Total	160 hours

B. Course Objectives and Learning Outcomes

1. Course Description

English Language 2 is a single-level, English for General Purposes (EGP) course. All students who are admitted to Bachelor in the EMI Colleges (Medical Colleges/ College of Engineering/ College of Computer Sciences/ College of Business Administration/ Applied Sciences) are required to take this course in the second semester of the first year of their program. The course is offered in 10 weeks with a 16-hour-per week teaching plan covering the four language skills. It intends to develop students' knowledge and ability of English language in all major skills which include reading, writing, listening, and speaking, as well as in sub-skills including grammar, vocabulary, and pronunciation.

2. Course Main Objective

English Language 2 is one level taking students from (CEFR) A2 to B1.

3. Course Learning Outcomes

CLOs	
1.0	**Knowledge**
1.1	**By the end of the course, the students are expected to be able to:** exhibit adequate comprehension of simple and complex spoken materials at the B1 level through recognizing key words, stress, intonation, pauses, and linkers in fast speech. - understand the main ideas of conversations, presentations, radio programmes, news reports, podcasts, discussions and interviews - identify main ideas and supporting ideas - develop listening for detail, examples and reasons - listen for opinions, attitude, and identify fact from opinion - identify rhetorical questions in a presentation - recognize how discourse markers help identify main points, especially in academic discussions, presentations and lectures
1.2	demonstrate an understanding of grammar at the B1 level, incorporating tenses, part of speech, modal auxiliaries, and sentence structure. - use indirect questions "Can you tell me where …? I'd like to know what…" - use discourse markers for contrasting ideas - expand knowledge of present perfect to include how long something has occurred, and whether something has been done or not - use modals for giving advice "I would…/ you should/ could…" - be aware of the difference in use of present continuous, going to and will for the future - use -ed and -ing adjectives correctly to describe feelings or opinions - use the past simple and past continuous correctly in narrative - use conditionals for present and future real conditions, and for unreal conditions to talk about imaginary situations or to express wishes - use present and past passive tenses when a product is more important than the producer - use used to for past habits - use modals for necessity, obligation, etc
1.3	recognize and use lexical items such as words, collocations, and derivatives, both in general and academic contexts at the B1 level. - develop vocabulary of the topics covered in order to be able to talk about them with others - develop a bank of vocabulary for functional use, such as for describing the condition of possessions, for making decisions and plans, losing and finding things, describing progress - use linking words for contrast, such as *although, but, however, on the other hand*. Be aware of their position in sentences and whether they are used in formal or informal texts - use a range of vocabulary for describing graphs - use *this* and *these* for referencing within a text - be aware of collocations, such as *significant advantage, key point*, and how they can help to follow and understand a talk - be aware of the different types of phrasal verb - provide definitions of difficult vocabulary in presentations, using expressions such as '*what I mean is…' 'that's when…'*
2.0	**Skills**
2.1 2.1.1	**Cognitive Skills:** demonstrate comprehension of simple and complex written texts at the B1 level through applying the skills of scanning, skimming, guessing from context and through recognizing linking words. - use scanning (to find information quickly) and skimming skills (to predict the meaning of the text from visuals, titles or common words) - identify the author or speaker's audience and purpose - read for opinions, attitude, and identify fact from opinion - understand meaning from context in both written and spoken texts

2.1.2	compose coherent/cohesive texts at the B1 level for various general and academic purposes through applying the skills of brainstorming ideas, composing an outline, and editing/revision. - write short texts, such as a travel post, movie review, an ad to request something, etc - write an email, short story or anecdote of more than one paragraph - use an appropriate opening and closing for a formal email - write a description of a trend (describing statistics), using notes - write complex sentences - support opinions with facts in formal (academic) writing - use a variety of linking words - use parallelism for bullet points in presentations and resumés
2.1.3	communicate effectively in spoken language at the B1 level in tasks such as oral presentations, group discussion, expressing opinions, and short talks. - discuss familiar and unfamiliar topics - reach a common consensus, eg who should be class leader - give short presentations - rank items in order of importance - show interest using short questions - repeat to show comprehension
2.2	**Critical Thinking** - develop well-reasoned, persuasive arguments - analyze sources of information when conducting research - evaluate things from a different perspective, eg what makes other people happy - evaluate and rank items according to usefulness or importance - evaluate arguments (evidence of support or relevance) - analyze advantages and disadvantages - infer meaning from written or spoken text - identify a specific audience and consider their need - appraise a text according to criteria, and provide feedback - identify inconsistencies and errors - appraise arguments - evaluate the approach of others and reflect on personal assumptions, beliefs and values - understand the links between ideas - organize ideas in a logical, systematic way - evaluate problems and propose solutions - reflect on knowledge gained
2.3	**Communication, Information Technology, Numerical** - research, discuss and present information - describe and give personal opinions on a variety of topics - express general beliefs - paraphrase where needed - give recommendations - present persuasively
2.4	**Psychomotor** - give confident, persuasive presentations -take part in a role play -use intonation to show mood: express agreement, surprise, confidence, trepidation, etc. -use softening techniques when expressing opinions -be aware of 'chunking' in speech -use linking and weak forms in sentences
3.0	**Values**
3.1	develop life-long learning strategies so that students can take full responsibility of their English language skill development.
3.2	develop academic integrity.

3.3	collaborate in knowledge building and co-operate with peers: - hold short discussions with a partner to activate knowledge before listening tasks -hold short discussions with a partner to synthesize knowledge post-listening -work with others to brainstorm, create a convincing argument -give feedback to peers on writing, presentations, etc. -ask for opinions and check information
3.4	take the responsibilities to meet the requirements of the jobs market: - write a personal statement - write a resumé - be aware of the importance of good time management - be aware of the importance of turn-taking in debates or discussions - be aware of learning from failure

C. Course Content

No	List of Topics	Contact Hours
	Evolve 3 Special Edition: Level 2 (B1)	
1	Unit 1: Who We Are Personality, getting to know someone, spending money, qualities of a leader Video: What's the right job for you?	
2	Unit 2: So Much Stuff Personal possessions, describing things, switching topics, collecting things, the story of a person or place, essential items to take Video: Collections, old and new	
3	Unit 3: Smart Moves Describing a city, getting around, asking for and giving directions, a written personal statement, describing changes and trends, a 'secret spot' Video: One day in…	
4	Unit 4: Think First Opinions and reactions ("*it's interesting*"/ "*I'm interested*"), planning a trip, reassurance, describing plans, travel posts, microadventure Video: Making plans	
5	Unit 5: And then … Lost and found, needing and giving help, surprises, storytelling, selfies, 'Believe it or not' Video: Lost and found	
6	Unit 6: Impact Big-city problems, problems and solutions, concern and relief, a podcast point of view, Big-city life, 'green' city planning Video: Green in the city	
7	Unit 7: Entertain Us Reading, TV and movies, declining invites, a movie review, children and technology, changing tastes Video: The history of cinema	
8	Unit 8: Getting There Recent activity, describing progress, catching up, time management, hobbies, a better life Video: Serious hobbies	
9	Unit 9: Make It Work College subjects, studying or working from home (WFH), confidence – or lack of it, a resumé, bilingual education, a perfect job Video: The college life	

10	Unit 10: Why We Buy 'Green' clothing, product origins, a good choice? Product feedback, souvenirs, psychology of shopping Video: Tricks of the ad world	
11	Unit 11: Pushing Yourself Success, unreal situations, giving and responding to opinions, your comfort zone, the psychology of fear, success stories Video: Testing your physical limits	
12	Unit 12: Life's Little Lessons Accidents, extreme experiences, describing and asking about feelings, an anecdote, learning a skill Video: I learned my lesson!	
Total		

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge**		
1.1	**By the end of the course, the students are expected to be able to:** exhibit adequate comprehension of simple and complex spoken materials at the B1 level through recognizing key words, stress, intonation, pauses, and linkers in fast speech. - understand the main ideas of conversations, presentations, radio programmes, news reports, podcasts, discussions and interviews - identify main ideas and supporting ideas - develop listening for detail, examples and reasons - listen for opinions, attitude, and identify fact from opinion - identify rhetorical questions in a presentation - recognize how discourse markers help identify main points, especially in academic discussions, presentations and lectures	Listening exercises	Listening mid-term exam Listening final exam

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.2	demonstrate an understanding of grammar at the B1 level, incorporating tenses, part of speech, modal auxiliaries, and sentence structure. - use indirect questions "Can you tell me where …? I'd like to know what…" - use discourse markers for contrasting ideas - expand knowledge of present perfect to include how long something has occurred, and whether something has been done or not - use modals for giving advice "I would…/ you should/ could…" - be aware of the difference in use of present continuous, going to and will for the future - use -ed and -ing adjectives correctly to describe feelings or opinions - use the past simple and past continuous correctly in narrative - use conditionals for present and future real conditions, and for unreal conditions to talk about imaginary situations or to express wishes - use present and past passive tenses when a product is more important than the producer - use used to for past habits - use modals for necessity, obligation, etc.	Grammar exercises	Midterm Exam Continuous writing assessment Continuous speaking assessment Quizzes Writing Final Exam Final Exam
1.3	recognize and use lexical items such as words, collocations, and derivatives, both in general and academic contexts at the B1 level. - develop vocabulary of the topics covered in order to be able to talk about them with others - develop a bank of vocabulary for functional use, such as for describing the condition of possessions, for making decisions and plans, losing and finding things, describing progress - use linking words for contrast, such as although, but, however, on the other hand. Be aware of their position in sentences and whether they are used in formal or informal texts - use a range of vocabulary for describing graphs - use this and these for referencing within a text - be aware of collocations, such as significant advantage, key point, and how they can help to follow and understand a talk - be aware of the different types of phrasal verb - provide definitions of difficult vocabulary in presentations, using expressions such as 'what I mean is…' 'that's when…'	Writing, reading, and vocabulary exercises	Midterm Exam Continuous writing assessment Continuous speaking assessment Quizzes Writing Final Exam Final Exam

2.0	Skills		
2.1 2.1.1	**Cognitive Skills:** demonstrate comprehension of simple and complex written texts at the B1 level through applying the skills of scanning, skimming, guessing from context and through recognizing linking words. - use scanning (to find information quickly) and skimming skills (to predict the meaning of the text from visuals, titles or common words) - identify the author or speaker's audience and purpose - read for opinions, attitude, and identify fact from opinion - understand meaning from context in both written and spoken texts	Reading comprehension exercises	Classroom discussion Midterm exam Final exam
2.1.2	compose coherent/cohesive texts at the B1 level for various general and academic purposes through applying the skills of brainstorming ideas, composing an outline, and editing/revision. - write short texts, such as a travel post, movie review, an ad to request something, etc - write an email, short story or anecdote of more than one paragraph - use an appropriate opening and closing for a formal email - write a description of a trend (describing statistics), using notes - write complex sentences - support opinions with facts in formal (academic) writing - use a variety of linking words - use parallelism for bullet points in presentations and resumés	Writing exercises	Continuous writing assessment Writing Final Exam
2.1.3	communicate effectively in spoken language at the B1 level in tasks such as oral presentations, group discussion, expressing opinions, and short talks. - discuss familiar and unfamiliar topics - -reach a common consensus, eg who should be class leader - give short presentations - rank items in order of importance - show interest using short questions - repeat to show comprehension	Speaking exercises Discussion Presentation, eg an advertisement, a tourist campaign, a YouTube video	Continuous speaking assessment

2.2	**Critical Thinking** - develop well-reasoned, persuasive arguments - analyze sources of information when conducting research - evaluate things from a different perspective, eg what makes other people happy - evaluate and rank items according to usefulness or importance - evaluate arguments (evidence of support or relevance) - analyze advantages and disadvantages - infer meaning from written or spoken text - identify a specific audience and consider their need - appraise a text according to criteria, and provide feedback - identify inconsistencies and errors - appraise arguments - evaluate the approach of others and reflect on personal assumptions, beliefs and values - understand the links between ideas - organize ideas in a logical, systematic way - evaluate problems and propose solutions - reflect on knowledge gained		
2.3	**Communication, Information Technology, Numerical** - research, discuss and present information - describe and give personal opinions on a variety of topics - express general beliefs - paraphrase where needed - give recommendations - present persuasively	Demonstrations Active self-learning Pair work Group work e-learning Online material (Encourage students to make their presentations to small groups in the class)	Monitoring students' progress Evaluating the individual contribution Evaluating the teamwork Evaluating the final product (Evaluation of presentations may be by peers)
2.4	**Psychomotor** - give confident, persuasive presentations - take part in a role play - use intonation to show mood: express agreement, surprise, confidence, trepidation, etc - use softening techniques when expressing opinions - be aware of 'chunking' in speech - use linking and weak forms in sentences	Active self-learning Pair work Group work	Monitoring students' progress

3.0	Values		
3.1	develop life-long learning strategies so that students can take full responsibility of their English language skill development.	Cambridge application Cambridge LMS	Built-in immediate feedback
3.2	develop academic integrity.	Writing exercises	Continuous writing assessment Continuous speaking assessment Writing Final Exam
3.3	collaborate in knowledge building and co-operate with peers: - hold short discussions with a partner to activate knowledge before listening tasks - hold short discussions with a partner to synthesize knowledge post-listening - work with others to brainstorm, create a convincing argument - give feedback to peers on writing, presentations, etc - ask for opinions and check information	Peer work Group work	Evaluating the individual contribution Evaluating the teamwork Evaluating the final product
3.4	take the responsibilities to meet the requirements of the jobs market: - write a personal statement - write a resumé - be aware of the importance of good time management - be aware of the importance of turn-taking in debates or discussions - be aware of learning from failure	Individual, peer and group work inside classrooms. Extramural language work to master the competencies at this language level.	Monitoring students' progress

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm Exam	The 5th	30
2	Listening Mid-term Exam	The 6th	5
3	Continuous writing assessment	from the 1st to the 10th	5
4	Continuous speaking assessment	from the 1st to the 10th	5
5	3 Quizzes (average)	3rd/ 6th/ 9th	5
6	Online Practice	from the 1st to the 10th	5
6	Listening Final Exam	The 10th	5
7	Writing Final Exam	The 11th	5
8	Final Exam	The 11th	35
	Total		100

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice: Course instructors are ready to answer all students' queries during their lectures or during office hours and they can be reached by personal meeting, e-mails, WhatsApp or telegram. All students have the e-mail and office hours of the course instructor through student handouts distributed to the student at the beginning of each semester.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Hendra, L., Ibbotson, M., O'Dell, K., Tilbury, A. (2019). Evolve 3 Special Edition: Student's Book with Practice Extra. Cambridge University Press. UK: Cambridge University Press.
Essential References Materials	Multimedia
Electronic Materials	Cambridge LMS
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms
Technology Resources (AV, data show, Smart Board, software, etc.)	data show, Smart Board, and Cambridge application
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Blackboard

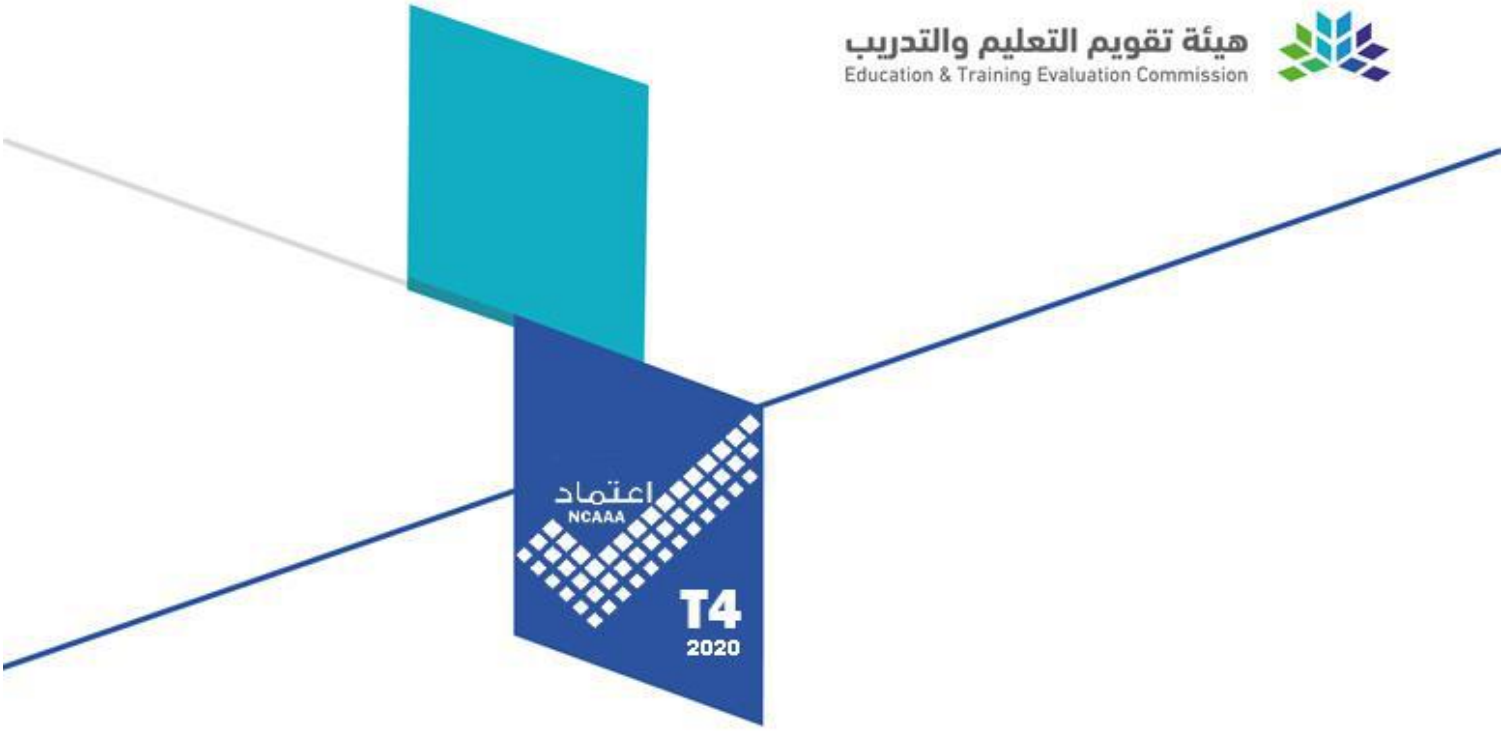
G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources.	Faculty members	Direct: Course reports
Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources.	University students	Direct: Evaluation surveys

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Curriculum and Accreditation Committees
Reference No.	
Date	Dec 28.2021



توصيف المقرر الدراسي

اسم المقرر:	التقنية الرقمية
رمز المقرر:	DS 1101
البرنامج:	متطلب جامعة
القسم العلمي:	علم المعلومات
الكلية:	الحاسب الآلي ونظم المعلومات
المؤسسة:	جامعة أم القرى

المحتويات

أ. التعريف بالمقرر الدراسي:

1. الساعات المعتمدة: 2

2. نوع المقرر

أ. متطلب جامعة [P] متطلب كلية [ ] متطلب قسم [ ] أخرى [ ]

ب. إجباري [P] اختياري [ ]

3. السنة / المستوى الذي يقدم فيه المقرر

4. المتطلبات السابقة لهذا المقرر (إن وجدت)

لا يوجد

5. المتطلبات المتزامنة مع هذا المقرر (إن وجدت)

6. **نمط الدراسة** (اختر كل ما ينطبق)

م	نمط الدراسة	عدد الساعات التدريسية	النسبة
1	المحاضرات التقليدية		
2	التعليم المدمج		
3	التعليم الإلكتروني	2	%100
4	التعليم عن بعد		
5	أخرى		

7. **ساعات الاتصال** (على مستوى الفصل الدراسي)

م	النشاط	ساعات التعلم
1	محاضرات	2
2	معمل أو إستوديو	
3	دروس إضافية	
4	أخرى (تذكر)	
	الإجمالي	20

ب- هدف المقرر ومخرجاته التعليمية:

1. الوصف العام للمقرر:

يهدف هذا المقرر إلى تعريف الطالب بالمفاهيم الأساسية للأجهزة والمواد الرقمية، البرمجيات، ومفاهيمها، وتطبيقاتها. حيث يشمل تناول الموضوعات التالية: أنظمة الكمبيوتر التشغيلية، وتعريفات حول هندسة البرمجيات، مستودع البيانات الضخمة والخدمات السحابية، التقنيات المختلفة التي تستخدمها الشركات لبناء وتشغيل تطبيق أي مشروع، تعريف بأهم تطبيقات الهواتف المحمولة والشبكات وكيفية نقل المعلومات، أساسيات انترنت الأشياء والتعريف بتكنولوجيا الروبوتات وكيفية محاكاة الذكاء البشري والتعريف بأهمية الوعي المعلوماتي وأمن المعلومات.

2. الهدف الرئيس للمقرر

يهدف المقرر إلى تعريف الطالب بالمصطلحات والمفاهيم الأساسية والتقنيات الحديثة المتعلقة باستخدام الحاسب الآلي.
إضافة إلى ذلك، فإن زياد الوعي المعلوماتي فيما يتعلق بأهم التطبيقات المتعلقة بالتقنية الحديثة والمستخدمة لإنجاز المهام اليومية الأساسية بفاعلية يعتبر أحد الأهداف الرئيسة لهذا المقرر.

3. مخرجات التعلم للمقرر:

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1	**المعرفة والفهم**	
1.1	التعرف على المفاهيم الأساسية لإدارة أنظمة الحاسب الالي والهواتف الذكية التشغيلية	
1.2	مناقشة أهم تطبيقات الحاسب الالي المختلفة وتصنيفاتها ومستودعات المعلومات الضخمة	

مخرجات التعلم للمقرر		رمز مخرج التعلم المرتبط للبرنامج
1.3	التعرف على أنواع الشبكات والشبكة العنكبوتية	
1.4	استنباط وتمييز طرق الاستخدام الآمن والغير آمن للتقنية	
2	**المهارات**	
2.1	تطبيق التقنيات الرقمية الحديثة لحل المشكلات	
2.2	اختيار طرق الاستخدام الآمنة للتقنية وتطبيقها بفعالية وكفاءة	
3	**القيم**	
3.1	تطبيق الجوانب الأخلاقية بحقوق الملكية والخصوصية	
3.2	المشاركة في المناقشة بفعالية في فريق العمل	

ج. موضوعات المقرر

م	قائمة الموضوعات	ساعات الاتصال
1	أنظمة الحاسب الآلي التشغيلية	2
2	التقنيات الناشئة والعمل عبر الانترنت	2
3	قواعد المعلومات والخدمات السحابية	2
4	التقنيات المختلفة لبناء وتشغيل تطبيقات الحاسب الآلي	2
5	تطبيقات الهواتف المحمولة	2
6	الانترنت والشبكات	2
7	الذكاء الاصطناعي	2
8	انترنت الأشياء وتكنولوجيا الروبوتات	2
9	التحول الرقمي	2
10	الوعي المعلوماتي وأمن المعلومات	2
المجموع		20

د. التدريس والتقييم:

1. ربط مخرجات التعلم للمقرر مع كل من استراتيجيات التدريس وطرق التقييم

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
1	**المعرفة والفهم**		
1.1	التعرف على المفاهيم الأساسية لإدارة أنظمة الحاسب الالي والهواتف الذكية التشغيلية	محاضرات، قراءات و تعلم ذاتي، التدريبات والانشطة في قاعة الدرس و خارجها، المواقع والأدوات المتوفرة عبر شبكة الانترنت	مناقشات عبر منصة التعليم الالكترونية
1.2	مناقشة أهم تطبيقات الحاسب الالي المختلفة وتصنيفاتها ومستودعات المعلومات الضخمة	محاضرات، قراءات و تعلم ذاتي، التدريبات والانشطة في قاعة الدرس و خارجها، المواقع والأدوات المتوفرة عبر شبكة الانترنت	مناقشات عبر منصة التعليم الالكترونية
1.3	التعرف على أنواع الشبكات والشبكة العنكبوتية	محاضرات، قراءات و تعلم ذاتي، التدريبات والانشطة في قاعة الدرس و خارجها، المواقع والأدوات المتوفرة عبر شبكة الانترنت	مناقشات عبر منصة التعليم الالكترونية
1.4	استنباط وتمييز طرق الاستخدام الآمن والغير آمن للتقنية	محاضرات، قراءات و تعلم ذاتي، التدريبات والانشطة في قاعة الدرس و خارجها،	مناقشات عبر منصة التعليم الالكترونية

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
		المواقع والأدوات المتوفرة عبر شبكة الانترنت	
2	**المهارات**		
2.1	تطبيق التقنيات الرقمية الحديثة لحل المشكلات	تعلم ذاتي، التدريبات والأنشطة، التطبيق العملي	مناقشات عبر منصة التعليم الالكترونية و الواجبات الأسبوعية
2.2	اختيار طرق الاستخدام الآمنة للتقنية وتطبيقها بفعالية وكفاءة	البحث الذاتي، الاقتناء عبر مواقع شبكة الانترنت	الواجبات الأسبوعية
3	**القيم**		
3.1	تطبيق الجوانب الأخلاقية بحقوق الملكية والخصوصية	مناقشات عبر المنصة	مناقشات عبر منصة التعليم الالكترونية و الواجبات الأسبوعية
3.2	المشاركة في المناقشة بفعالية في فريق العمل	مناقشات عبر المنصة	مناقشات عبر منصة التعليم الالكترونية و الواجبات الأسبوعية

2. أنشطة تقييم الطلبة

م	أنشطة التقييم	توقيت التقييم (بالأسبوع)	النسبة من إجمالي درجة التقييم
1	واجبات (عبر منصة التعليم الالكترونية)	2 - 10	%20
2	اختبار تحريري نصفي	6 – 7	%20
3	اختبار تحريري نهائي	11	%60

أنشطة التقييم (اختبار تحريري، شفهي، عرض تقديمي، مشروع جماعي، ورقة عمل الخ)

هـ - أنشطة الإرشاد الأكاديمي والدعم الطلابي:

يتم تخصيص ساعات مكتبية أسبوعية بمعدل ساعة أسبوعيا على الأقل
إرشاد الطالب إلى بعض المواقع الإلكترونية للإفادة منها. عقد حلقات نقاش بحثية يتم من خلالها شرح وتحليل بعض تطبيقات الحاسب الالي المستخدمة في حياتنا اليومية من خلال تطبيقات الأجهزة الذكية.

و – مصادر التعلم والمرافق:

1. قائمة مصادر التعلم:

المرجع الرئيس للمقرر	• كتاب أساسيات الحوسبة – خالد بكرو (2021) • On the Foundation of Computing, Giuseppe. P (2020), Oxford University Press
المراجع المساندة	• الأمن السيبراني مفهومه وخصائصه وسياسته – خالد سعد الشايع (2019) • الحاسب الآلي واستخداماته في التعليم – أولفت محمد فودة (2018) • اتجاهات في آمن المعلومات وأنواعها – ساري محمد الخالد (2018) • فضاءات البيانات الضخمة – عبد مرزوق الظهوري وفاطمة سعيد سالم (٢٠٢١) • الذكاء الاصطناعي ثورة في تقنيات العصر – أحمد حبيب بلال وعبد الله موسي (٢٠١٩) • أخلاقيات المعلومات - لوسيانو فلوريدي (٢٠١٩)
المصادر الإلكترونية	تحدد لاحقاً

أخرى	

2. المرافق والتجهيزات المطلوبة:

العناصر	متطلبات المقرر
المرافق (القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ)	
التجهيزات التقنية (جهاز عرض البيانات، السبورة الذكية، البرمجيات)	معامل افتراضية نظام تعلم الكتروني
تجهيزات أخرى (تبعاً لطبيعة التخصص)	

ز. تقويم جودة المقرر:

مجالات التقويم	المقيمون	طرق التقييم
فاعلية التدريس	الطلبة	استبيان
فاعلية طرق تقييم الطلاب	المراجع النظير	استبيان
مدى تحصيل مخرجات التعلم للمقرر	أعضاء هيئة التدريس	مباشرة، تقارير، استبيان
مصادر التعلم	المراجع النظير	استبيان

مجالات التقويم (مثل. فاعلية التدريس، فاعلة طرق تقييم الطلاب، مدى تحصيل مخرجات التعلم للمقرر، مصادر التعلم ... إلخ)
المقيمون (الطلبة، أعضاء هيئة التدريس، قيادات البرنامج، المراجع النظير، أخرى (يتم تحديدها)
طرق التقييم (مباشر وغير مباشر)

ح. اعتماد التوصيف

جهة الاعتماد	
رقم الجلسة	
تاريخ الجلسة	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA T4 2020

Course Specifications

Course Title:	General Biology
Course Code:	
Program:	Faculty of Applied Science Requirement
Department:	Biology Department
College:	Applied Science
Institution:	Umm Al-Qura University

Table of Contents

A. Course Identification

1. Credit hours:	4 Credits
2. Course type	
a.	University ☐ College ☑ Department ☐ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	1st Year / 1st Level
4. Pre-requisites for this course (if any)**:**	
5. Co-requisites for this course (if any)**:**	

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	60hrs	100%
2	**Blended**	-	-
3	**E-learning**	-	-
4	**Distance learning**	-	-
5	**Other**	-	-

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30hrs
2	**Laboratory/Studio**	30hrs
3	**Tutorial**	-
4	**Others** (specify)/ Office hours	40hrs
	Total	100 hrs

B. Course Objectives and Learning Outcomes

1. Course Description

General Biology provides an overview of life on Earth, the evolutionary relationships among major groups of organisms, and the structural and functional characteristics of these organisms. The course covers major areas of biology ranging from cellular to whole organism and includes the study of ecosystems. The focus on cellular level processes leads to an understanding of the importance and roles of the cell. By comparing the processes in unicellular organism and multicellular plants and animals, candidates investigate the increasing levels of life complexity. The key areas of biodiversity and interdependence are covered, along with the processes leading to evolution as well as food security and ethical issues. General Biology is intended primarily for students majoring in any of the biological sciences or life science-related fields (Chemistry, physics, and mathematics).

2. Course Main Objective

The main objective of this course is to give an overview of the many features that are common to living organisms and what is meant by "life" and "living organisms.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
K1	Understanding the basic biological principles through an integrated approach.	
K2	Investigating the cellular processes of living organisms with an emphasis on biological chemistry applications.	
K3	Identify the unifying themes and key concepts of different organisms.	
K4	Describe the anatomy, function, genetics and evolution of different types of organisms.	
K5	Demonstrate factual knowledge of contemporary natural science.	
2	**Skills :**	
S1	The student will apply contemporary scientific models to describe the natural world.	
S2	To understand and apply the scientific method.	
S3	Demonstrate basic problem-solving processes, including observation, inference, measurement, prediction, use of numbers, classifying and use of space and time relationships in life sciences	
S4	Demonstrate integrated process skills, including identification and control of variables, interpretation of data, formulation and testing of hypotheses, and experimentation in the life sciences.	
3	**Values:**	
V1	An awareness of ethical, social and cultural issues within a global context and their importance in the exercise of professional skills and responsibilities.	
V2	A commitment to continuous learning and the capacity to maintain intellectual curiosity throughout life.	

C. Course Content

No	List of Topics	Contact Hours
1	**The Chemistry of Life** • The Chemical Context of Life • Water and Life • Carbon and the Molecular Diversity of Life • The Structure and Function of Large Biological Molecules	3
2	**The Cell** • A Tour of the Cell • Membrane Structure and Function • An Introduction to Metabolism • Cellular Respiration and Fermentation • Photosynthesis	3

	• Cell Communication • The Cell Cycle	
3	**Genetics** • Meiosis and Sexual Life Cycles • Mendel and the Gene Idea • The Chromosomal Basis of Inheritance • The Molecular Basis of Inheritance • Gene Expression: From Gene to Protein • Regulation of Gene Expression • Viruses • DNA Tools and Biotechnology	4
	Mechanisms of Evolution • Descent with Modification: A Darwinian View of Life • The Evolution of Populations • The Origin of Species • The History of Life on Earth	3
4	**The Evolutionary History of Biological Diversity** • Phylogeny and the Tree of Life • Bacteria and Archaea • Protists • Plant Diversity I: How Plants Colonized Land • Plant Diversity II: The Evolution of Seed Plants • Fungi • An Overview of Animal Diversity • An Introduction to Invertebrates • The Origin and Evolution of Vertebrates	4
5	**Plant Form and Function** • Vascular Plant Structure, Growth, and Development • Resource Acquisition and Transport in Vascular Plants • Soil and Plant Nutrition • Angiosperm Reproduction and Biotechnology • Plant Responses to Internal and External Signals	4
6	**Animal Form and Function** • Basic Principles of Animal Form and Function • Animal Nutrition • Circulation and Gas Exchange • The Immune System • Osmoregulation and Excretion • Hormones and the Endocrine System • Animal Reproduction • Animal Development • Neurons, Synapses, and Signaling • Nervous Systems • Sensory and Motor Mechanisms • Animal Behavior	5
7	**Ecology** • An Introduction to Ecology and the Biosphere • Population Ecology	4

	• Community Ecology • Ecosystems and Restoration Ecology • Conservation Biology and Global Change	
Total		**30**

No	Practical Topics	Contact Hours
1	Biology Lab Safety, Lab Notebook, Basic Biology Laboratory Equipment	**3**
2	Scientific Investigation Laboratory • Questions and Hypotheses Exercise • Designing Experiments to Test Hypotheses Exercise • Designing an Experiment Exercise • Presenting and Analyzing Results Exercise • Interpreting and Communicating Results	**3**
3	Microscopes and Cells Laboratory • The Compound Light Microscope Exercise • Basic Microscope Techniques Exercise • The Stereoscopic Microscope Exercise • The Organization of Cells	**3**
4	Diffusion and Osmosis Laboratory • Diffusion of Molecules Exercise • Osmotic Activity in Cells Exercise • Investigating Osmolarity of Plant Cells	**3**
5	Cellular Respiration and Fermentation Laboratory • Alcoholic Fermentation Exercise • Cellular Respiration Exercise • Designing and Performing Your Open-Inquiry Investigation	**3**
6	Photosynthesis Laboratory • The Wavelengths of Light for Photosynthesis Exercise • Pigments in Photosynthesis Exercise • Separation and Identification of Plant Pigments by Paper Chromatography Exercise • Determining the Absorption Spectrum for Leaf Pigments	**3**
7	Mitosis and Meiosis Laboratory • Modeling the Cell Cycle and Mitosis in an Animal Cell Exercise • Observing Mitosis and Cytokinesis in Plant Cells Exercise • Observing Chromosomes, Mitosis, and Cytokinesis in Animal Cells Exercise • Modeling Meiosis Exercise	**3**

	• Meiosis in Sordaria fimicola: A Study of Crossing	
8	Bacteriology Laboratory • Investigating Characteristics of Bacteria Exercise • Ecological Succession of Bacteria in Milk Exercise • Bacteria in the Environment Exercise • Controlling the Growth of Bacteria	**3**
9	Animal Development Laboratory • Development in Echinoderms: Sea Urchin and Sea Star Exercise • Development in an Amphibian Exercise • Development in the Zebraflsh Exercise • Development in a Bird: The Chicken	**3**
10	Plant Growth Laboratory • Factors Influencing Seed Germination Exercise • Plant Growth Regulators: Auxin Exercise • Plant Growth Regulators: Gibberellins Exercise	**3**
Total		**30**

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
K1	Understanding the basic biological principles through an integrated approach.	Lectures Lab work	Quiz. Final and mid-term exam. Assignments and activities
K2	Understanding the cellular processes of living organisms.	Lectures Lab work	Quiz. Final and mid-term exam. Assignments and activities
K3	Identify the unifying themes and key concepts of different organisms.	Lectures Lab work	Quiz. Final and mid-term exam. Assignments and activities
K4	Describe the anatomy, function, genetics and evolution of different types of organisms.	Lectures Lab work	Quiz. Final and mid-term exam. Assignments and activities

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
K5	Demonstrate factual knowledge of contemporary natural science.	Lectures Research activity. Web based study	Quiz. Final and mid-term exam. Assignments and activities
2.0	**Skills**		
S1	The student will apply contemporary scientific models to describe the natural world.	Lectures Lab work	Quiz. Final and mid-term exam. Assignments and activities
S2	To understand and apply the scientific method.	Lectures Lab work Research activity	Quiz. Final and mid-term exam. Assignments and activities
S3	Demonstrate basic problem-solving processes, including observation, inference, measurement, prediction, use of numbers, classifying and use of space and time relationships in life sciences	Lectures Lab work Research activity	Quiz. Final and mid-term exam. Assignments and activities
S4	Demonstrate integrated process skills, including identification and control of variables, interpretation of data, formulation and testing of hypotheses, and experimentation in the life sciences.	Lab work Research activity	Quiz. Final and mid-term exam. Assignments and activities
3.0	Values		
V1	An awareness of ethical, social and cultural issues within a global context and their importance in the exercise of professional skills and responsibilities.	Lectures Lab work Research activity	Quiz. Final and mid-term exam. Assignments and activities
V2	A commitment to continuous learning and the capacity to maintain intellectual curiosity throughout life.	Lectures Lab work Research activity	Quiz. Final and mid-term exam. Assignments and activities

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quizzes, Assignats, Problem set, Projects		10%

#	Assessment task*	Week Due	Percentage of Total Assessment Score
2	Midterm Exam (Lecture)		20%
3	Midterm Exam (Lab)		10%
5	Final Exam (Lab)		20%
6	Final Exam (Lecture)		40%
8	Total		100%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

4 office hours per week

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	**Campbell Biology**, 12th Edition, Author(s): Lisa A. Urry, Micheal L. Cain, Steven A. Wasserman, Peter V. Minorsky, Rebecca B. Orr, Neil A. Campbell, Publisher: Pearson, Year: 2020, ISBN: 9780135988046; 0135988047 **Investigating Biology Laboratory Manual**, Ninth Edition by Judith Giles Morgan, Emory University, and M. Eloise Brown Carter, Oxford College of Emory University 978-0-13447346-8/0-134-47346-9
Essential References Materials	
Electronic Materials	1. https://www.coursera.org/learn/Biology 2. https://www.edx.org
Other Learning Materials	1. Handouts and Lecture notes 2. Microsoft office package. 3. Multi- media associated with the textbook and the relevant websites.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	1. Lecture room suitable for 40 students. 2. Lecture room equipped with Data show. 3. Biology laboratory.
Technology Resources (AV, data show, Smart Board, software, etc.)	1. Computers or internet connection. 2. Active Board. 3. Data show is required in every room.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Laboratory instruments & equipment: light microscope, Spectrophotometer, centrifuge, pH meters, flasks,

Item	Resources
	beakers, screw capped tubes, slides and tips and chemicals kits.

G. Course Quality Evaluation

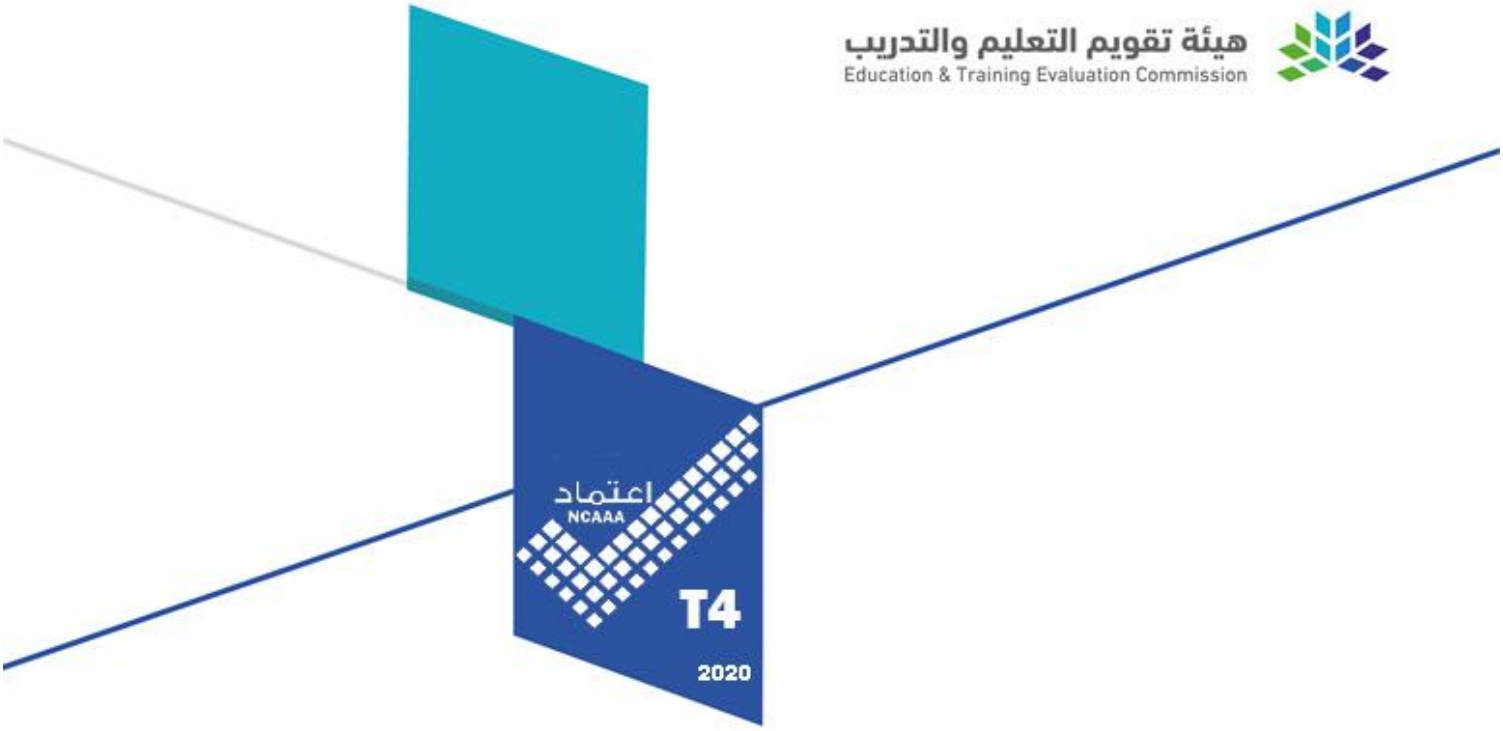
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Observations and the assistance of colleagues.	Faculty	Indirect
Effectiveness of teaching and assessment	Program leader, curriculum committee; external reviewers	Direct
Extent of achievement of CLO's	Peer Reviewer	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Biology Program Updating Committee
Reference No.	
Date	1443(2022)

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Differential Calculus
Course Code:	MTH1102
Program:	BSc. in Mathematics
Department:	Mathematical sciences
College:	Applied sciences
Institution:	Umm Al-Qura University

Table of Contents

A. Course Identification

1. Credit hours:	4
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	**Second level/First year**
4. Pre-requisites for this course (if any)**:**	**Introduction to Calculus**
5. Co-requisites for this course (if any)**:**	**Not applicable**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**32**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (Exam, Quizzes, Activities,…)	**8**
	Total	**40**

B. Course Objectives and Learning Outcomes

1. Course Description

This course is the second in a three-course sequence of calculus. It provides an introduction to a single-variable differential calculus. Key topics of the course include inverse functions and transcendental functions and their derivatives, derivative applications, indeterminate forms, and L'Hospital's rules.

2. Course Main Objective

The primary objective of the course is to introduce students to the concepts of differential calculus and to develop the student's confidence and skill in dealing with mathematical expressions. Students will see that there is an important connection between the derivative of a function and the derivative of its inverse. Student will learn how to find the derivatives of a verity of real valued functions. Also, student will learn how to apply the derivative in many applications.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	List formulas and theorems of differentiation of some real valued functions.	K1, K4
1.2	Recall the relation between the derivative of a function and the derivative of its inverse	K3, K4
1.3	State basic properties of exponential and logarithmic functions	K2, K4
1.4	Recall the Indeterminate forms and the L'Hospital's Rules	K3, K4
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Express logarithmic forms of inverse hyperbolic functions	S1, S8
2.2	Calculate the derivative of various type of functions using some techniques of differentiation.	S2, S3, S5, S8
2.3	Apply the L'Hospital's Rules	S6, S8, S9
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Apply the computational and conceptual principles of calculus to the solutions of various mathematical problems.	V2, V3
3.2	Justify the choice of different steps in problem resolution procedure.	V2, V4
3.3	Solve problems using a range of formats and approaches in basic science.	V1, V3
3.4	Show the ability to work independently and within groups.	V3

C. Course Content

No	List of Topics	Contact Hours
1	Inverse functions and their derivative	4
2	Transcendental functions and their derivative	8
3	Implicit differentiation and the related rates	4
4	Applications of the derivative	10
5	Indeterminate forms and L'Hospital's Rules	6
	Others (Preliminaries, Revision, Quizzes, …)	8
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	List formulas and theorems of differentiation of some real functions.	Lecture and Tutorials	Exams, quizes
1.2	Recall the relation between the derivative of a function and the derivative of its inverse	Lecture and Tutorials	Exams, quizes
1.3	State basic properties of exponential and logarithmic functions	Lecture and Tutorials	Exams, quizes
1.4	Recall the Indeterminate forms and the L'Hospital's Rules	Lecture and Tutorials	Exams, quizes
2.0	**Skills**		
2.1	Express logarithmic forms of inverse hyperbolic functions	Lecture/Individual or group work	Exams, quizes
2.2	Calculate the derivative of various type of functions using some techniques of differentiation.	Lecture/Individual or group work	Exams, quizes
2.3	Apply the L'Hospital's Rules	Lecture/Individual or group work	Exams, quizes
3.0	**Values**		
3.1	Apply the computational and conceptual principles of calculus to the solutions of various mathematical problems.	Lecture/Individual or group work	Exams, quizes
3.2	Justify the choice of different steps in problem resolution procedure.	Lecture/Individual or group work	Exams, quizes
3.3	Solve problems using a range of formats and approaches in basic science.	Lecture/Individual or group work	Exams, quizes
3.4	Show the ability to work independently and within groups.	Lecture/Individual or group work	Exams, quizes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30%
2	Quizes and homeworks	During semester	20%
3	Final exam	End of semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Calculus (9th Edition), Dale Varberg, Edwin Purcell and Steven Rigdon, Prentice Hall (2006).
Essential References Materials	• Thomas' Calculus (14th Edition), George B. Thomas • Precalculus: Mathematics for Calculus (6th Edition), James Stewart
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

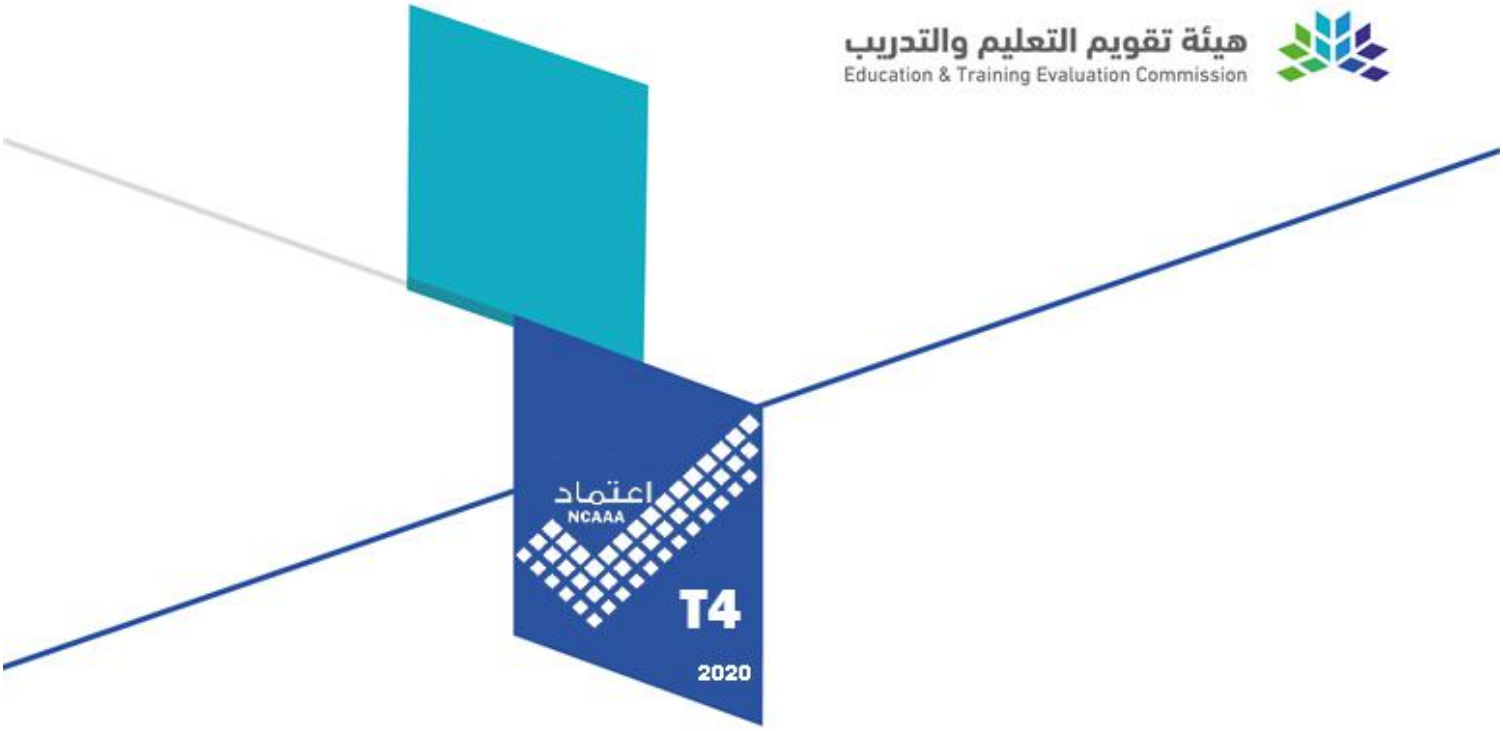
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Elementary of Statistics and Probability**
Course Code:	**MATH1501**
Program:	
Department:	**Mathematical science**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐	
3. Level/year at which this course is offered:	**Third term, First year**
4. Pre-requisites for this course (if any)**:** Calculus I	
5. Co-requisites for this course (if any)**:** **Not applicable**	

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**40**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (specify)	**0**
	Total	**40**

B. Course Objectives and Learning Outcomes

1. Course Description

This course provides an elementary introduction to probability, statistical theory and methodology with applications. It contains the most basic tools for a good initiation to statistical methods. The course helps the students to establish an outstanding theoretical background for their future professions.

2. Course Main Objective

Acquiring the basic knowledge and concepts of describing data statistically and elementary theory of probability.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Define the concepts, principles and techniques in statistics and probability theory.	
1.2	Describe basic statistical methodology of data analysis including; graphs, descriptive statistics	
1.3	List the addition and the multiplication rules of probability.	
2	**Skills :**	
2.1	Develop connections within branches of statistics and between statistical analysis and other disciplines.	
2.2	Explain the counting rules.	
2.3	Estimate the population parameter by the statistic.	
2.4	Estimate the population parameter by the statistic.	
2.5	Diagram the sample space.	
2.6	Interpret the results of statistical problem and data analysis	
3	**Values:**	
3.1	Work independently and with groups for solving statistical problem.	
3.2	Use computer skills and library effectively.	
3.3	Apply the statistical skills in solving the life problems.	

C. Course Content

No	List of Topics	Contact Hours
1	Definition and general view of statistics and organization and presentation of statistical data.	2
2	Measures of central tendency (Mean, Median, Mode) of the simple data and the frequency distribution.	6
3	Measures of dispersion (The Range – The Variance and the standard deviation - Coefficient of variation) of the simple data and the frequency Distribution	6
4	Moments and Measure of Skewness and Kurtosis	5
5	Correlation measures and Simple Linear regression	6
6	Sample space and Events.	2
7	Counting Techniques (Fundamental basics, Addition Rule – Multi-plication Rule- Permutation and Combinations)	5
8	Definition of the probability and its applications	2
9	Conditional probability - Independence of events and Bayes theorem and its applications	6
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Define the concepts, principles and techniques in statistics and probability theory.	Lecture and Tutorials	Exams, quizes
1.2	Describe basic statistical methodology of data analysis including; graphs, descriptive statistics.		
1.3	List the addition and the multiplication rules of probability.		
2.0	**Skills**		
2.1	Develop connections within branches of statistics and between statistical analysis and other disciplines.	Lecture /individual or group work	Exams, quizes
2.2	Explain the counting rules.		
2.3	Estimate the population parameter by the statistic.		
2.4	Estimate the population parameter by the statistic.		
2.5	Diagram the sample space.		
2.6	Interpret the results of statistical problem and data analysis.		
3.0	**Values**		
3.1	Work independently and with groups	Lecture/ individual or group work	Exams, quizes
3.2	Use the computer skills and library effectively.		
3.3	Apply the statistical skills in solving the life problems.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	First periodical exam	Sixth week	%30
2	Quizes and homeworks	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :
All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Bluman, A. G. (2017). *A Brief Version: Elementary Statistics: A Step by Step Approach*. McGraw-Hill Education: tenth edition, ISBN: 1259755339
Essential References Materials	Probability and statistics for engineers and scientists, Ronald E. Walpole, Prentice Hall (2012).
Electronic Materials	**None**
Other Learning Materials	**None**

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	**Classrooms**
Technology Resources (AV, data show, Smart Board, software, etc.)	**Data Show, Smart Board**
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	**Students**	**Direct**
Quality of learning resources	**Students**	**Direct**
Extent of achievement of course learning outcomes	**Faculty Member**	**Direct**

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

The Third Level

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA T4 2020

Course Specifications

Course Title:	English Language 3
Course Code:	ELCE1203
Program:	Bachelor in EMI Colleges (Medical Colleges/ College of Engineering/ College of Computer Sciences/ College of Business Administration/ Applied Sciences)
Department:	English Language Centre
College:	English Language Centre
Institution:	Umm Al Qura University

Table of Contents

A. Course Identification

1. Credit hours: 4 hours
2. Course type **a.** University ☐ College ■ Department ☐ Others ☐ **b.** Required ■ Elective ☐
3. Level/year at which this course is offered: **1st Year**
4. Pre-requisites for this course (if any)**:** EMI Colleges – English Language 1 & EMI Colleges – English Language 2
5. Co-requisites for this course (if any)**:** **N/A**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	12 hours per week	75%
2	**Blended**	16 hours per week	100%
3	**E-learning**	4 hours per week	25%
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	(16 hours) X (10 weeks)
2	**Laboratory/Studio**	0
3	**Tutorial**	0
4	**Others** (specify)	0
	Total	160 hours

B. Course Objectives and Learning Outcomes

1. Course Description

English Language 3 is a single-level, English for General Purposes (EGP) course. All students who are admitted to Bachelor in the EMI Colleges (Medical Colleges/ College of Engineering/ College of Computer Sciences/ College of Business Administration/ Applied Sciences) are required to take this course in the third semester of the first year of their program. The course is offered in 10 weeks with a 16-hour-per week teaching plan covering the four language skills. It intends to develop students' knowledge and ability of English language in all major skills which include reading, writing, listening, and speaking, as well as in sub-skills including grammar, vocabulary, and pronunciation.

2. Course Main Objective

English Language 3 is one level taking students from (CEFR) B1 to B1+.

3. Course Learning Outcomes

CLOs	
1.0	**Knowledge**
1.1	**By the end of the course, the students are expected to be able to:** exhibit adequate comprehension of simple and complex spoken materials at the B1+ level through recognizing key words, stress, intonation, pauses, and linkers in fast speech. - understand the main ideas of conversations, presentations, radio programmes, news reports, podcasts, discussions and interviews - identify main ideas and supporting ideas - develop listening for detail, examples and reasons - listen for transition words in spoken contexts to help follow the speech or conversation - recognize how stress can emphasize a new point is being made - listen to the tone to distinguish attitude
1.2	demonstrate an understanding of grammar at the B1+ level, incorporating tenses, part of speech, modal auxiliaries, and sentence structure. - be aware of the difference between stative and dynamic verbs, and how rules may change in informal speech, eg "*I'm loving it*" - modify comparisons, *"by far the best", "a little busier"* - use modals for speculation, *"it may be…" "it could be"* - use subject and object relative clauses correctly - use the present unreal conditional to discuss hypothetical situations, e.g. "*if I were prime minister, I would…"* - use modals to discuss past probability - understand the difference between the use of gerunds and infinitives after *forget, remember, stop*
1.3	recognize and use lexical items such as words, collocations, and derivatives, both in general and academic contexts at the B1+ level. - develop vocabulary of the topics covered in order to be able to talk about them with others - be aware of, and build word families - be aware of the meaning of ALL CAPS in text messages - use reporting words to convey meaning, e.g. *explained, persuaded* - use various expressions (*not supposed to, allowed to*) to express prohibition, permission or obligation - understand the use of the causative verbs, *help, let, make* - recognize substitution and referencing in texts - be aware of importance of linking words in academic texts, and develop the range and use - reference another argument in your writing
2.0	**Skills**
2.1 2.1.1	**Cognitive Skills:** demonstrate comprehension of simple and complex written texts at the B1+ level through applying the skills of scanning, skimming, guessing from context and through recognizing linking words. - infer attitude and meaning - identify arguments and support - identify main points of paragraphs, and make notes on the details to facilitate summarizing or paraphrasing later - note the use of adjectives and adverbs to discern attitude in text - recall key information - develop different note-taking skills, such as the use of timelines for chronologically ordered texts
2.1.2	compose coherent/cohesive texts at the B1+ level for various general and academic purposes through applying the skills of brainstorming ideas, composing an outline, and editing/revision. - write a variety of texts of several paragraphs - write a letter of apology - write formal and informal emails - produce and conduct a survey, and write a description of the data results - write complex sentences, using *after, while, until* - reread and proofread to improve a finished text

CLOs	
2.1.3	communicate effectively in spoken language at the B1+ level in tasks such as oral presentations, group discussion, expressing opinions, and short talks. - discuss familiar and unfamiliar topics - take part in an interview, role plays, debates and discussions - give short presentations - use signals to get back on track, eg *anyway, where was I?* - discuss hypothetical situations, eg life without a phone - talk about wishes and hopes
2.2	**Critical Thinking** - develop well-reasoned, persuasive arguments - analyze sources of information when conducting research - analyze and interpret the results of a survey - evaluate things from a different perspective - reflect on own assumptions, beliefs and values - evaluate and rank items according to usefulness or importance - evaluate arguments (evidence of support or relevance) - infer meaning from written or spoken text - appraise a text according to criteria, and provide feedback - appraise arguments, identify inconsistencies and errors - understand the links between ideas - organize ideas in a logical, systematic way - evaluate problems and propose solutions - reflect on knowledge gained
2.3	**Communication, Information Technology, Numerical** - research, discuss and present information - describe and give personal opinions on a variety of topics - express general beliefs - reach a compromise to solve a problem
2.4	**Psychomotor** - give confident, persuasive presentations - take part in an interview, role plays, debates and discussions - place stress correctly in long words
3.0	**Values**
3.1	develop life-long learning strategies so that students can take full responsibility of their English language skill development.
3.2	develop academic integrity.
3.3	collaborate in knowledge building and co-operate with peers: - hold short discussions with a partner to activate knowledge before listening tasks - hold short discussions with a partner to synthesize knowledge post-listening - work with others to brainstorm, create a convincing argument - work with others to rank items in order of importance - give feedback to peers on writing, presentations, etc - ask for opinions and check information
3.4	take the responsibilities to meet the requirements of the jobs market: - recognize good employee qualities - take part in a job interview role play - appraise the interview performance of others, and provide written feedback - be able to justify your decisions - be aware of how to manage stress in the workplace - develop note-taking skills - maintain a calm rather formal tone when something goes wrong in business - repair a customer relationship - write a public apology - use key formal phrases in business correspondence, such as "I look forward to hearing from you"

C. Course Content

No	List of Topics	Contact Hours
Evolve 4 Special Edition: Level 3 (B1+)		
1	Unit 1: And We're Off Personal achievements, right qualities for the job, introductions, responding to an article on job interviews, sport science: presentation examples, a job interview Video: Fit for the job	
2	Unit 2: The Future of Food Trends, food preparation, offers: making, accepting and declining, a food survey, traditional dishes, restaurant rescue Video: Green cities	
3	Unit 3: What's It Worth? Time and money, value for money, apologizing, product reviews, work-life balance, responding to negative reviews Video: Save now, pay later	
4	Unit 4: Going Local Merchandising, viral stories, discussing opinions, brands, product and business reviews, design an ad Video: Saving the world, one hour at a time	
5	Unit 5: True Stories Stories, changing plans, reacting to bad news, a written apology, language learning, a chance meeting Video: Walking and talking	
6	Unit 6: Community Action Charities and volunteers, acts of kindness, help: offering, accepting and refusing, a community project, responding to offers and requests, an urban art project Video: Can do!	
7	Unit 7: Can We Talk? Text messaging apps, written vs spoken language, retelling a story, formal vs informal communication, critical literacy, an online survey Video: Mobile communication in Africa	
8	Unit 8: Lifestyles Work lifestyles, wishes and regrets, considering options, comment on a podcast, post practical advice, digital detox Video: Start-up life	
9	Unit 9: Yes, you can Rules and regulations, discussing rules, tipping, a letter of complaint, a case study: urban regeneration, making improvements Video: Opening doors for everyone	
10	Unit 10: What if ….? Accidental discoveries, alternatives and possibilities, engaging the listener, good and bad inventions, turning points, the greatest invention? Video: Game of bones	
11	Unit 11: Contrasts College life, scientific facts, discussing alternatives, commenting on new technology, a healthy diet, mediation Video: The future of driving	

12	Unit 12: Looking Back The story behind a photo, childhood memories, sharing past experiences, zoos: the pros and cons, national traditions, a 'national moment' Video: the good old days?	
Total		

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge**		
1.1	**By the end of the course, the students are expected to be able to:** exhibit adequate comprehension of simple and complex spoken materials at the B1+ level through recognizing key words, stress, intonation, pauses, and linkers in fast speech. - understand the main ideas of conversations, presentations, radio programmes, news reports, podcasts, discussions and interviews - identify main ideas and supporting ideas - develop listening for detail, examples and reasons - listen for transition words in spoken contexts to help follow the speech or conversation - recognize how stress can emphasize a new point is being made - listen to the tone to distinguish attitude	Listening exercises	Listening mid-term exam Listening final exam
1.2	demonstrate an understanding of grammar at the B1+ level, incorporating tenses, part of speech, modal auxiliaries, and sentence structure. - be aware of the difference between stative and dynamic verbs, and how rules may change in informal speech, eg "*I'm loving it*" - modify comparisons, *"by far the best", "a little busier"* - use modals for speculation, *"it may be…" "it could be"* - use subject and object relative clauses correctly - use the present unreal conditional to discuss hypothetical situations, e.g. "*if I were prime minister, I would…"* - use modals to discuss past probability - understand the difference between the use of gerunds and infinitives after *forget, remember, stop*	Grammar exercises	Midterm Exam Continuous writing assessment Continuous speaking assessment Quizzes Writing Final Exam Final Exam

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.3	- recognize and use lexical items such as words, collocations, and derivatives, both in general and academic contexts at the B1+ level. - develop vocabulary of the topics covered in order to be able to talk about them with others - be aware of, and build word families - be aware of the meaning of ALL CAPS in text messages - use reporting words to convey meaning, e.g. *explained, persuaded* - use various expressions (*not supposed to, allowed to*) to express prohibition, permission or obligation - understand the use of the causative verbs, *help, let, make* - recognize substitution and referencing in texts - be aware of importance of linking words in academic texts, and develop the range and use - reference another argument in your writing	Writing, reading, and vocabulary exercises	Midterm Exam Continuous writing assessment Continuous speaking assessment Quizzes Writing Final Exam Final Exam
2.0	**Skills**		
2.1 2.1.1	**Cognitive Skills:** demonstrate comprehension of simple and complex written texts at the B1+ level through applying the skills of scanning, skimming, guessing from context and through recognizing linking words. - infer attitude and meaning - identify arguments and support - identify main points of paragraphs, and make notes on the details to facilitate summarizing or paraphrasing later - note the use of adjectives and adverbs to discern attitude in text - recall key information - develop different note-taking skills, such as the use of timelines for chronologically ordered texts	Reading comprehension exercises	Classroom discussion Midterm exam Final exam
2.1.2	compose coherent/cohesive texts at the B1+ level for various general and academic purposes through applying the skills of brainstorming ideas, composing an outline, and editing/revision. - write a variety of texts of several paragraphs - write a letter of apology - write formal and informal emails - produce and conduct a survey, and write a description of the data results - write complex sentences, using *after, while, until* - reread and proofread to improve a finished text	Writing exercises	Continuous writing assessment Writing Final Exam

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.1.3	communicate effectively in spoken language at the B1+ level in tasks such as oral presentations, group discussion, expressing opinions, and short talks. - discuss familiar and unfamiliar topics - take part in an interview, role plays, debates and discussions - give short presentations - use signals to get back on track, eg *anyway, where was I?* - discuss hypothetical situations, eg life without a phone - talk about wishes and hopes	Speaking exercises Discussion Presentation, eg an advertisement, a tourist campaign, a YouTube video	Continuous speaking assessment
2.2	**Critical Thinking** develop well-reasoned, persuasive arguments - analyze sources of information when conducting research - analyze and interpret the results of a survey - evaluate things from a different perspective - reflect on own assumptions, beliefs and values - evaluate and rank items according to usefulness or importance - evaluate arguments (evidence of support or relevance) - infer meaning from written or spoken text - appraise a text according to criteria, and provide feedback - appraise arguments, identify inconsistencies and errors - understand the links between ideas - organize ideas in a logical, systematic way - evaluate problems and propose solutions - reflect on knowledge gained		
2.3	**Communication, Information Technology, Numerical** - research, discuss and present information - describe and give personal opinions on a variety of topics - express general beliefs reach a compromise to solve a problem	Demonstrations Active self-learning Pair work Group work e-learning Online material (Encourage students to make their presentations to small groups in the class)	Monitoring students' progress Evaluating the individual contribution Evaluating the teamwork Evaluating the final product (Evaluation of presentations may be by peers)

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.4	**Psychomotor** - give confident, persuasive presentations - take part in an interview, role plays, debates and discussions - place stress correctly in long words	Active self-learning Pair work Group work	Monitoring students' progress
3.0	**Values**		
3.1	develop life-long learning strategies so that students can take full responsibility of their English language skill development.	Cambridge application Cambridge LMS	Built-in immediate feedback
3.2	develop academic integrity.	Writing exercises	Continuous writing assessment Continuous speaking assessment Writing Final Exam
3.3	collaborate in knowledge building and co-operate with peers: - hold short discussions with a partner to activate knowledge before listening tasks - hold short discussions with a partner to synthesize knowledge post-listening - work with others to brainstorm, create a convincing argument - give feedback to peers on writing, presentations, etc - ask for opinions and check information	Peer work Group work	Evaluating the individual contribution Evaluating the teamwork Evaluating the final product
3.4	take the responsibilities to meet the requirements of the jobs market: - write a personal statement - write a resumé - be aware of the importance of good time management - be aware of the importance of turn-taking in debates or discussions - be aware of learning from failure	Individual, peer and group work inside classrooms. Extramural language work to master the competencies at this language level.	Monitoring students' progress

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm Exam	The 5th	30
2	Listening Mid-term Exam	The 6th	5
3	Continuous writing assessment	from the 1st to the 10th	5
4	Continuous speaking assessment	from the 1st to the 10th	5
5	3 Quizzes (average)	3rd/ 6th/ 9th	5
6	Online Practice	from the 1st to the 10th	5
6	Listening Final Exam	The 10th	5
7	Writing Final Exam	The 11th	5
8	Final Exam	The 11th	35
	Total		100

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

Course instructors are ready to answer all students' queries during their lectures or during office hours and they can be reached by personal meeting, e-mails, WhatsApp or telegram.

All students have the e-mail and office hours of the course instructor through student handouts distributed to the student at the beginning of each semester.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Goldstein, B., Jones, C., Hendra, L., Tilbury, A. (2019). Evolve 4 Special Edition: Student's Book with Practice Extra. Cambridge University Press. UK: Cambridge University Press.
Essential References Materials	Multimedia
Electronic Materials	Cambridge LMS
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms
Technology Resources (AV, data show, Smart Board, software, etc.)	data show, Smart Board, and Cambridge application
Other Resources	Blackboard

Item	Resources
(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

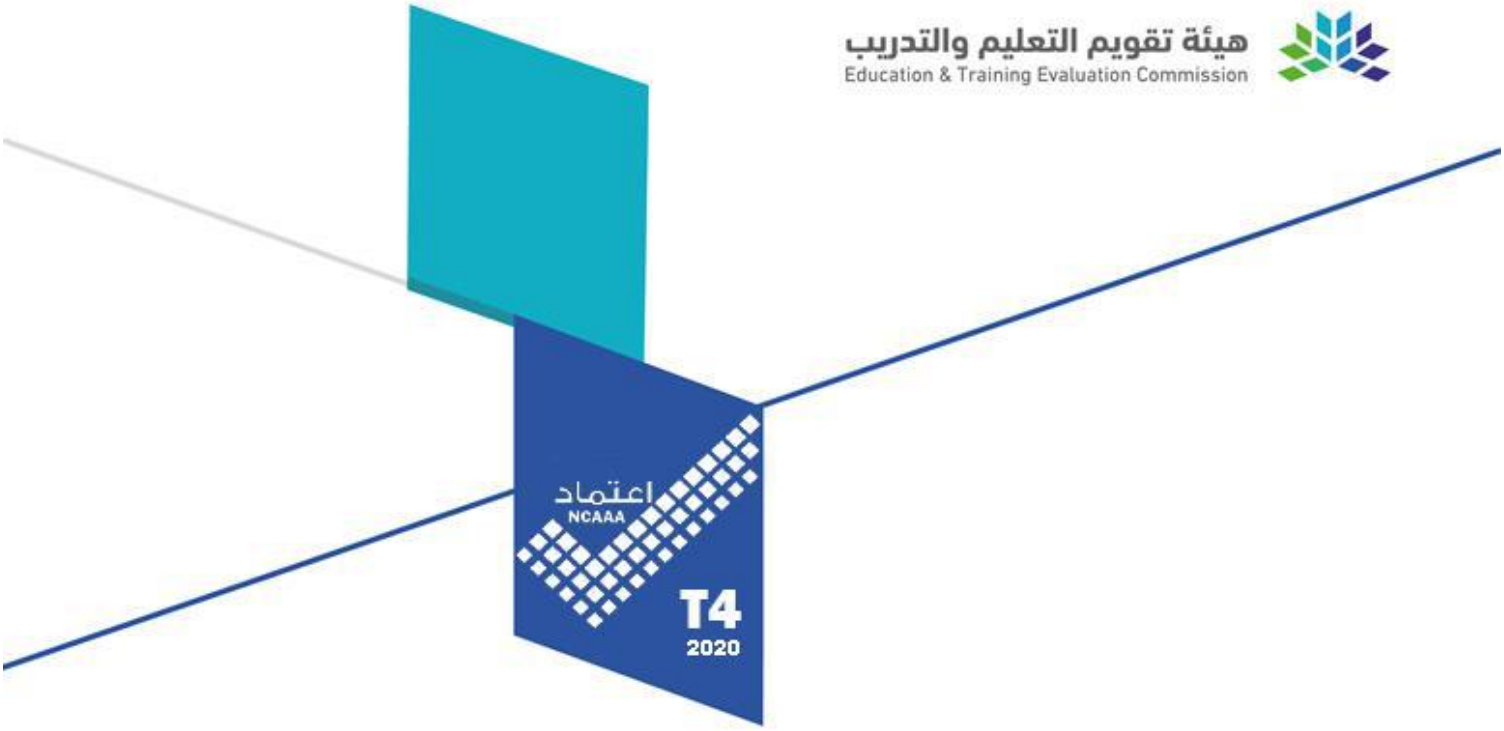
G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources.	Faculty members	Direct: Course reports
Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources.	University students	Direct: Evaluation surveys

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Curriculum and Accreditation Committees
Reference No.	
Date	Dec 28.2021



توصيف المقرر الدراسي

اسم المقرر:	القرآن الكريم (1)
رمز المقرر:	**(QR1101)**
البرنامج:	**البكالوريوس**
القسم العلمي:	**القراءات**
الكلية:	**الدعوة وأصول الدين**
المؤسسة:	**جامعة أم القرى**

المحتويات

أ. التعريف بالمقرر الدراسي:

1. الساعات المعتمدة: ساعتان.

2. نوع المقرر

أ. متطلب جامعة ☑ متطلب كلية ☐ متطلب قسم ☐ أخرى ☐

ب. إجباري ☑ اختياري ☐

3. السنة / المستوى الذي يقدم فيه المقرر: السنة الأولى

4. المتطلبات السابقة لهذا المقرر:

لايوجد

5. المتطلبات المتزامنة مع هذا المقرر (إن وجدت)

لا يوجد

6. نمط الدراسة (اختر كل ما ينطبق)

م	نمط الدراسة	عدد الساعات التدريسية	النسبة
1	المحاضرات التقليدية		
2	التعليم المدمج		
3	التعليم الإلكتروني		
4	التعليم عن بعد	20 ساعة	%100
5	أخرى		

7. ساعات الاتصال (على مستوى الفصل الدراسي)

م	النشاط	ساعات التعلم
1	محاضرات	20 ساعة
2	معمل أو إستوديو	
3	دروس إضافية	
4	أخرى (تذكر)	
	الإجمالي	20 ساعة

ب- هدف المقرر ومخرجاته التعليمية:

1. الوصف العام للمقرر:

يشمل المقرر على أربعة محاور:

1- حفظ نصف الجزء الثلاثين من القرآن: من سورة الأعلى إلى سورة الناس.

٢- تلاوة ثلاثة أجزاء: من سورة المجادلة إلى سورة الناس.

3- دراسة أحكام التَّجويد.

4- شرح غريب الكلمات: من سورة الأعلى إلى سورة الناس.

2. الهدف الرئيس للمقرر

تعليم الطُّلَّاب النُّطق السَّليم لكتاب الله -عزَّ وجلَّ-، وفق طرق الأداء المعتبرة، مع حفظ حزب واحدٍ من القرآن الكريم.

3. مخرجات التعلم للمقرر:

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1	**المعرفة والفهم**	

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1.1	أن يحفظ الطَّالب المقدار المقرَّر أسبوعيًّا.	
1.2	أن يتلو الطَّالب القران الكريم بالكيفية الصحيحة.	
1.3	أن يتعرف الطالب على أحكام التجويد.	
1.4	أن يعَرِّف الطَّالب غريب القرآن.	
2	**المهارات**	
2.1	أن يصحح الطالب الأخطاء التي تقع في التلاوة أو الحفظ منه أو من زملائه.	
2.2	أن يطبِّق الطَّالب جميع أحكام التَّجويد تطبيقاً عمليًّا.	
2.3	أن يوضح معاني غريب القرآن.	
2.4	أن يتواصل الطالب مع الآخرين بشكل فعال؛ لإظهار ونقل معارفه ومهاراته.	
2.5	أن يقترح الطالب الأساليب المثلى له ولزملائه لتعلم القرآن الكريم؛ لحل مشكلات التعلم والقراءة؛ مستخدماً الأدوات التقنية والحاسوبية.	
3	**القيم**	
3.1	أن يعمل ضمن فريق المقرر بكفاءة، ومسؤولية.	
3.2	أن يلتزم بآداب وأخلاق قارئ القرآن.	
3.3	أن يقوِّم ذاتياً مستوى أدائه؛ ملتزماً بتحمل مسؤولية تعلمه.	

ج. موضوعات المقرر

م	قائمة الموضوعات	ساعات الاتصال
1	مقدِّمة تعريفيَّة عن فضل تعلم القرآن الكريم، وأقسام اللحن الجلي والخفي، وتصحيح تلاوة سورتي الأعلى والغاشية مع التَّكليف بحفظهما مع شرح غريب القرآن.	2
2	تسميع سورتي الأعلى والغاشية، تصحيح تلاوة سورتي الفجر والبلد مع التَّكليف بحفظهما، مع شرح غريب القرآن، تلاوة سورتي المجادلة والحشر، شرح درس التجويد (باب أحكام النون الساكنة والتنوين).	2
3	تسميع سورتي الفجر والبلد، تصحيح تلاوة سورتي الشمس والليل مع التَّكليف بحفظهما. مع شرح غريب القرآن، تلاوة سورة الممتحنة والصف والجمعة.	2
4	تسميع سورتي الشمس والليل، تصحيح تلاوة سور الضحى، الشرح، التين، مع التَّكليف بحفظها، مع شرح غريب القرآن، تلاوة سورة المنافقون، التغابن والطلاق، شرح درس التجويد (باب أحكام الميم الساكنة).	2
5	تسميع سور الضحى، الشرح، التين، تصحيح تلاوة سورتي العلق والقدر مع التَّكليف بحفظهما، مع شرح غريب القرآن، تلاوة سور التحريم، والملك، والقلم.	2
6	تسميع سورتي العلق والقدر، تصحيح تلاوة سورتي البينة والزلزلة، مع التَّكليف بحفظها، مع شرح غريب القرآن، تلاوة سورة الحاقة، والمعارج، ونوح، والجن، شرح درس التجويد (باب أحكام النون والميم المشددتين).	2
7	تسميع سورتي البينة والزلزلة، تصحيح تلاوة سور العاديات، والقارعة، والتكاثر، والعصر مع التَّكليف بحفظها، مع شرح غريب القرآن، تلاوة سور المزمل، والمدثر، والقيامة، والإنسان، والمرسلات.	2
8	تسميع العاديات، والقارعة، والتكاثر، والعصر، تصحيح تلاوة سور الهمزة، والفيل، وقريش، الماعون، والكوثر، والكافرون، والنصر والمسد، الإخلاص، والمعوذتين، مع التَّكليف بحفظها، مع شرح غريب القرآن، تلاوة سور النبأ، والنازعات، وعبس، والتكوير، والانفطار، والمطففين، والانشقاق.	2

9	تسميع سور الهمزة، والفيل، وقريش، والماعون، تلاوة من سورة البروج إلى سورة الناس.	2
10	تسميع سور الكوثر، والكافرون، والنصر والمسد، الإخلاص، والمعوذتين.	2
المجموع		20

د. التدريس والتقييم:

1. ربط مخرجات التعلم للمقرر مع كل من استراتيجيات التدريس وطرق التقييم

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
1.0	**المعرفة والفهم**		
1.1	أن يحفظ الطَّالب المقدار المقرَّر أسبوعيًّا.	المحاضرة التلقي والسماع العروض التقديمية	التقييم المستمر الاختبارات الشفوية
1.2	أن يتلو الطَّالب القران الكريم بالكيفية الصحيحة.		
1.3	أن يتعرف الطالب على أحكام التجويد.		
1.4	أن يعرِّف الطَّالب غريب القرآن.		
2.0	**المهارات**		
2.1	أن يصحح الطالب الأخطاء التي تقع في التلاوة أو الحفظ منه أو من زملائه.	المحاضرة الحوار والمناقشة التلقِّي والمحاكاة العرض والاستماع التَّعلم الذاتي العروض التقديمية أسلوب حل المشكلات	الاختبارات الشفوية الاختبارات التحريرية
2.2	أن يطبِّق الطَّالب جميع أحكام التَّجويد تطبيقاً عمليًّا.		
2.3	أن يوضح معاني غريب القرآن.		
2.4	أن يتواصل الطالب مع الآخرين بشكل فعال؛ لإظهار ونقل معارفه ومهاراته.		
2.5	أن يقترح الطالب الأساليب المثلى له ولزملائه لتعلم القرآن الكريم؛ لحل مشكلات التعلم والقراءة؛ مستخدماً الأدوات التقنية والحاسوبية.		
3.0	**القيم**		
3.1	أن يعمل ضمن فريق المقرر بكفاءة ومسؤولية.	التَّعلم الذاتي التَّعليم التعاوني حلقات النقاش ملف الإنجاز	بطاقة الملاحظة
3.2	أن يلتزم بآداب وأخلاق قارئ القرآن.		
3.3	أن يقوِّم ذاتياً مستوى أدائه؛ ملتزماً بتحمل مسؤولية تعلمه.		

2. أنشطة تقييم الطلبة

م	أنشطة التقييم	توقيت التقييم (بالأسبوع)	النسبة من إجمالي درجة التقييم
1	**المشاركة وحفظ الآيات وتلاوتها**	مستمر	%20
2	**الاختبار النصفي**	السادس	%20
3	**الاختبار النهائي**	العاشر	%60

أنشطة التقييم (اختبار تحريري، شفهي، عرض تقديمي، مشروع جماعي، ورقة عمل الخ)

هـ ـ أنشطة الإرشاد الأكاديمي والدعم الطلابي:

– ساعات الإرشاد الأكاديمي (السَّاعات المكتبية للأستاذ).
– مساعدة الطلبة في توفير المصادر غير المتوفرة في مكتبة الكلِّيَّة.
– مساعدة الطلبة ذوي الاحتياجات الخاصة (ذوي البصيرة) في توفير المصادر ببرايل.
– إحالة الطلبة الوافدات والمتعثرات والموهوبات على لجنة الإرشاد الأكاديمي بالقسم والجهات المعنيَّة بشؤون الطَّلبة.
–تشكيل لجنة تطوير المقرَّرات بالبرنامج، تعنى بمراجعة المفردات وطرق تدريسها وتقييمها، وتقييم المخرجات من خلال المتابعة المستمرة للتَّغذية الرَّاجعة من قبل الطَّلبة وتقارير المدرِّسين، ثم تقدِّم توصياتها لمجلس القسم لتأخذ مجراها الأكاديمي.
–إعداد الأسئلة التَّقويميَّة نهاية الدَّرس والأنشطة المنزليَّة.
–توجيه الطُّلاب لسماع تلاوات المقرئين المجوِّدين من خلال الوسائل المتاحة.
–المقارنة المرجعيَّة بالمقرَّرات المشابهة له في الجهات الأكاديميَّة الأخرى.

و ـ مصادر التعلم والمرافق:

1. قائمة مصادر التعلم:

المرجع الرئيس للمقرر	–القرآن الكريم. – الميسر في غريب القرآن الكريم المطبوع بمجمع الملك فهد لطباعة المصحف الشريف. – التجويد الميسر المطبوع بمجمع الملك فهد لطباعة المصحف الشريف.
المراجع المساندة	- البرهان في تجويد القرآن/ محمد الصادق قمحاوي. - هداية القارئ إلى تجويد كلام البارئ/ عبد الفتاح السيد عجمي المرصفي. - مذكرة في علم التجويد/ محمد نبهان بن حسين مصري.
المصادر الإلكترونية	- موقع مكتبة جامعة أم القرى. - المكتبة الوقفية. - المكتبة الشاملة. - ملتقى أهل التفسير. - منتديات قراء القرآن.
أخرى	-

2. المرافق والتجهيزات المطلوبة:

العناصر	متطلبات المقرر
المرافق (القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ)	–قاعات دراسية بها عدد من الكراسي والطاولات للاختبارات النصفية والنهائية.
التجهيزات التقنية (جهاز عرض البيانات، السبورة الذكية، البرمجيات)	– الحاسب الآلي. –التطبيقات الالكترونية.
تجهيزات أخرى (تبعاً لطبيعة التخصص)	–

ز. تقويم جودة المقرر:

مجالات التقويم	المقيمون	طرق التقييم
تقويم فاعليَّة استراتيجيات التَّدريس	أستاذ زميل يدرِّس نفس المقرَّر	مباشر: الزِّيارة للفصل وتقرير فاعليَّة

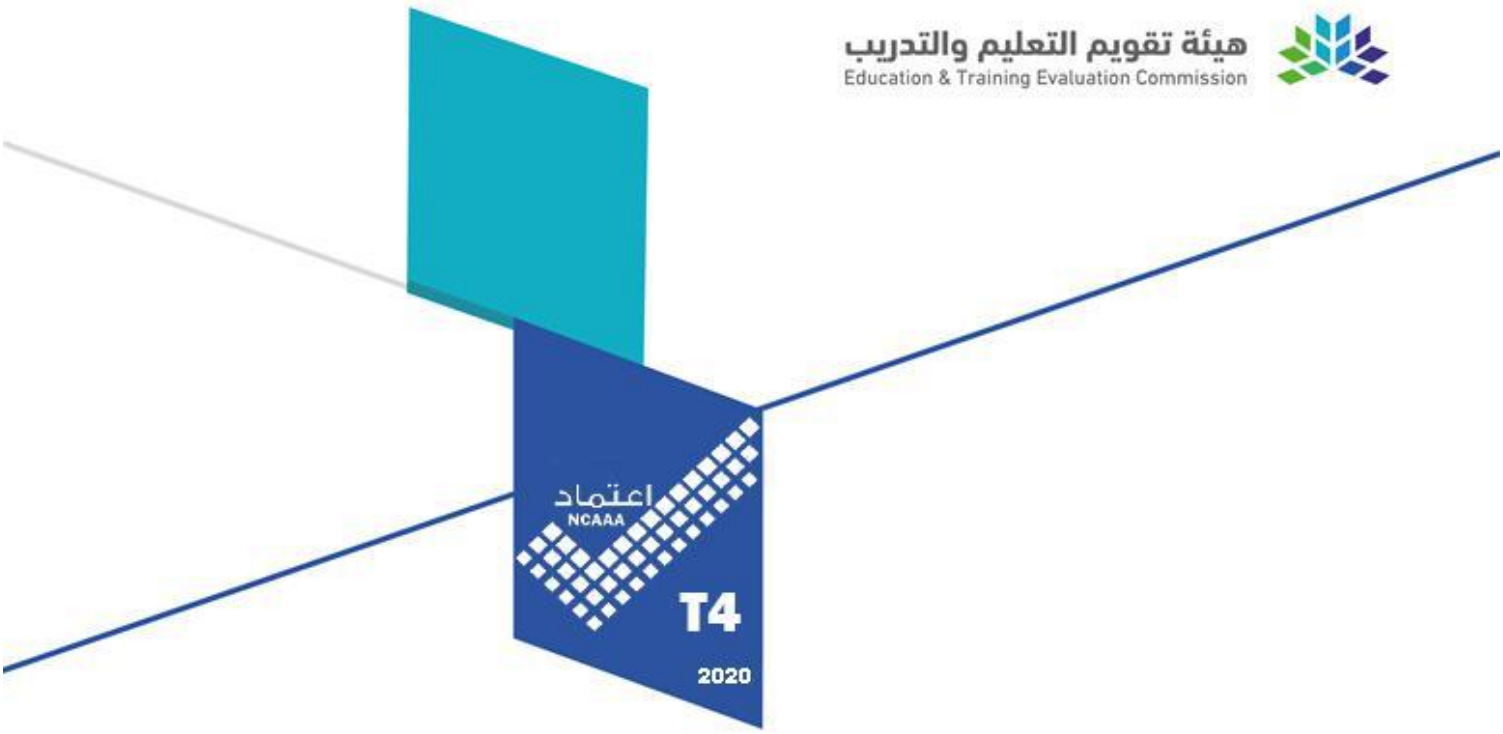
مجالات التقويم	المقيمون	طرق التقييم
المستخدمة		استراتيجيَّات التَّدريس المستخدمة.
طرق تقييم الطُّلَّاب	الطُّلَّاب	غير مباشر: استبانة تقييم المقرَّر المتاحة على الموقع الإلكتروني.
مدى تحصيل مخرجات التَّعلم للمقرَّر	قيادة البرنامج	غير مباشر: تقرير المقرَّر.

مجالات التقويم (مثل. فاعلية التدريس، فاعلة طرق تقييم الطلاب، مدى تحصيل مخرجات التعلم للمقرر، مصادر التعلم ... إلخ)
المقيمون (الطلبة، أعضاء هيئة التدريس، قيادات البرنامج، المراجع النظير، أخرى (يتم تحديدها)
طرق التقييم (مباشر وغير مباشر)

ح. اعتماد التوصيف

جهة الاعتماد	
رقم الجلسة	
تاريخ الجلسة	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	General Chemistry 1
Course Code:	Chem1001
Program:	All Chemistry tracks - Industrial Chemistry – Physics - Medical Physics – Biology – Microbiology – Mathematics- Environmental
Department:	Department of chemistry
College:	Faculty of Applied Science/
Institution:	Umm Al-qura University

Table of Contents

A. Course Identification

1. Credit hours:
2. Course type **a.** University ☐ College ■ Department ☐ Others ☐ **b.** Required ■ Elective ☐
3. Level/year at which this course is offered: Level 1/ 1st year
4. Pre-requisites for this course (if any)**: -**
5. Co-requisites for this course (if any)**: -**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	3	100%
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	30
3	**Tutorial**	
4	**Others** (specify)	
	Total	60

B. Course Objectives and Learning Outcomes

1. Course Description

This course is an introductory chemistry course designed to prepare students for college level chemistry courses.

2. Course Main Objective

The course introduces some basic principles of physical, organic and inorganic chemistry.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	**Familiar with the International system of units**	K1
1.2	**Write the electronic configuration of different elements**	K1

CLOs		Aligned PLOs
1.3	Familiar with the atomic structure	K1
1.4	List the factors affecting equilibrium position and equilibrium concentration.	K1
1.5	List the various types of chemical reaction	K1
1.6	Recognize and know which elements in the Periodic Table	K2
1.7	familiar with the terms hydrocarbons, organic compounds containing oxygen and nitrogen atoms	K2
2	**Skills :**	
2.1	Predict molecular formulas using empirical formulas and molecular masses.	S1
2.2	Explain trends in the Periodic Table as they relate to Atomic Size, Ionization Energy and Electron Affinity.	S1
2.3	Calculate the concentration of a solution from the volume and the mass, or moles, of solute	S1
2.4	Calculate the pH of acids and bases	S2
3	**Values:**	
3.1	Ability to communicate results of work to classmates.	V2
3.2	Communicate effectively with his lecturer and colleagues	V1

C. Course Content

No	List of Topics	Contact Hours
1	Units of measurements; SI- units, intensive and extensive properties, uncertainty in measurements (precision and accuracy). Introduction: Matter and measurements	2
2	Significant figures: Using significant figures in addition, subtraction, multiplication and divisions.	1
3	States of matter and measurement, molecules and molecular compounds.	2
4	The periodic table, electronic structure of atoms, simple periodic properties of the elements.	3
5	Stoichiometry, atomic and molecular weights.	3
6	The mole, simple quantitative calculations with chemical reactions.	4
7	Basics of chemical equilibrium.	6
8	Acids and bases.	3
9	Thermochemistry.	3
10	Chemistry of life: Organic and biological chemistry	3
Total		**30**

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	Familiar with the International system of units	• Lectures • Library visits Web-based study	Quiz. Exam. Class discussion.
1.2	Write the electronic configuration of different elements	• Lectures • Scientific discussion Web-based study	Quiz. Exam. Class discussion.
1.3	Familiar with the atomic structure	• Lectures • Scientific discussion Web-based study	Quiz. Exam. Class discussion.
1.4	Describe the mass relationships in chemical reactions	• Lectures • Library visits • Web-based study	Quiz. Exam. Class discussion.
1.5	List the factors affecting equilibrium position and equilibrium concentration.	• Lectures • Scientific discussion • Web-based study	Quiz. Exam. Class discussion.
1.6	List the various types of chemical reaction	• Lectures • Scientific discussion • Web-based study	Quiz. Exam. Class discussion.
1.7	Recognize and know which elements in the Periodic Table	• Lectures • Scientific discussion • Web-based study	Quiz. Exam. Class discussion.
1.8	familiar with the terms hydrocarbons, organic compounds containing oxygen and nitrogen atoms	• Lectures • Scientific discussion • Web-based study	Quiz. Exam. Class discussion.
2.0	Skills		
2.1	Predict molecular formulas using empirical formulas and molecular masses.	• Lectures • Scientific discussion Web-based study	Quiz. Exam. Class discussion.
2.2	Explain trends in the Periodic Table as they relate to Atomic Size, Ionization Energy and Electron Affinity.	• Lectures • Scientific discussion Web-based study	Quiz. Exam. Class discussion.
2.3	Calculate the concentration of a solution from the volume and the mass, or moles, of solute	• Lectures • Scientific discussion Web-based study	Quiz. Exam. Class discussion.
2.4	Calculate the pH of acids and bases	• Lectures • Scientific discussion Web-based study	Quiz. Exam. Class discussion.

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.0	Values		
3.1	Demonstrate commitment to professional and academic values, and ethics in the field of chemistry	• Lectures • Scientific discussion	Class discussion. Assignment activities
…			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Class activities, Attendances and Duties	Throughout the Term	10%
2	Mid-Term Exam (s)	Week 6-8	20%
3	Lab Activity and Final Exam on Lab	Throughout the Term	30%
4	Final Exam.(2 hours exam)	End of the Term	40%
5	Total	100%	

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- We have faculty members to provide counselling and academic advice.
- 2 hours per week as office hours are available for discussion with the students.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	General Chemistry, by Chang, 9th ed., 2007, MacGraw-Hill.
Essential References Materials	Steven S. Zumdahl, Susan A. Zumdahl, 9th ed., 2009, New York.
Electronic Materials	Power point lectures.
Other Learning Materials	Course available online

2. Facilities Required

Item	Resources

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	**Classrooms.** **Providing hall of teaching aids including computers and projector.**
Technology Resources (AV, data show, Smart Board, software, etc.)	**Room equipped with computer and projector and TV**
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	**------**

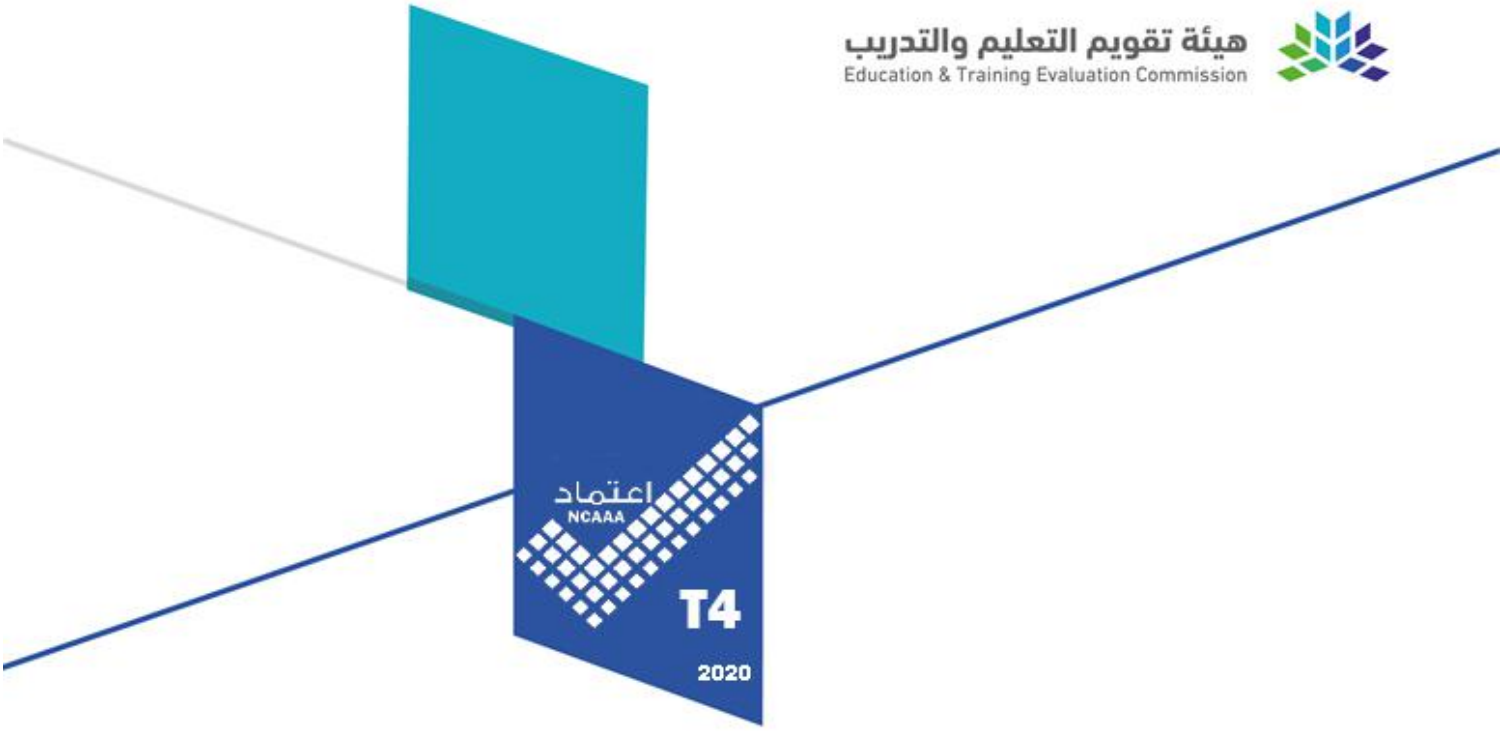
G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	**Students**	**Indirect (Online survey at the end of the semester (Program survey, Experience survey &course evaluation) .**
Effectiveness of teaching	**Faculty members**	**Direct (classroom observation using the Teaching Observation**
Achievement of course learning outcomes.	**Faculty members**	**Direct (60% of the students achieved ≥ 70% of the degree assigned to the course learning outcome).**
Assessment of faculty members	**Department head**	**Direct (Performance Assessment of faculty** **Indirect (feedback from faculty and students).**
Quality of learning resources	**Students**	**Direct (feedback from faculty).** **Indirect (online survey at the end of the semester.**
Effectiveness of teaching Strategies for Learning Outcomes.	**Faculty members**	**Direct (Comments of course instructors regarding evaluation of teaching strategies for learning outcomes mentioned in course report).**

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Prof. Mohamed I. Awad
Reference No.	
Date	**15.03.2022**



Course Specifications

Course Title:	**Integration Calculus**
Course Code:	**MTH1103**
Program:	**BSc. in Mathematics**
Department:	**Mathematical sciences**
College:	**Applied sciences**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	**4**
2. Course type **a.** University ☐ College ☐ Department ■ Others ☐ **b.** Required ■ Elective ☐	
3. Level/year at which this course is offered:	**Third level/First year**
4. Pre-requisites for this course (if any):	**Differential calculus (MTH1101-4)**
5. Co-requisites for this course (if any):	**Not applicable**

6. Mode of Instruction (mark all that apply)

Percentage	Contact Hours	Mode of Instruction	No
100%	**Four hours/week**	**Traditional classroom**	**1**
0	**0**	**Blended**	**2**
0	**0**	**E-learning**	**3**
0	**0**	**Distance learning**	**4**
0	**0**	**Other**	**5**

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**32**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** Exam, Quizzes, Activities,…	**8**
	Total	**40**

B. Course Objectives and Learning Outcomes

1. Course Description

Integration Calculus is the third in the three-course sequence of calculus. This course provides a unique introduction to a course in single-variable calculus. Key topics of the course include Indefinite integral and definite integral, the first and the second fundamental Theorems, techniques of integration, applications of integration and improper integral.

2. Course Main Objective

The primary objective of the course is to introduce students to the concepts of calculus and to develop the student's confidence and skill in dealing with

mathematical expressions. In addition students will recognize systematic procedure from attacking unfamiliar integrals. Among the objectives we can cite the understanding of the role of definite integrals in the calculation of volumes and surfaces of solids.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Recognize principles of integral evaluation	K3, K4
1.2	Present definite integral as the limit of Riemann sums	K1, K3
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Calculate integrals over infinite intervals	S1, S3, S8
2.2	Distinguish methods for approaching integration problems	S6, S8
2.3	Apply the definite integral in geometry and engineering	S3, S4, S5, S6, S8, S9
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Use the most important techniques of integration calculus, such as the first and second fundamental theorems and solve different integration problems.	V2, V3
3.2	Solve problems using a range of formats and approaches in basic science.	V2, V3, V4

C. Course Content

No	List of Topics	Contact Hours
1	An overview of indefinite integral and the definite integral of real functions	4
2	The 1^{st} and 2^{nd} fundamental theorems	4
3	Techniques of integration	10
4	Applications of the definite integral	10
5	Improper integral	4
6	Revision+ tests+ quizzes+ tutorials	8
	Total	40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Recognize principles of integral evaluation. Present definite integral as the limit of Riemann sums.	Lecture and Tutorials	Exams, quizzes
2.0	**Skills**		
2.1	Distinguish methods for approaching integration problems	Lecture/Individual or group work	Exams, Quizzes, Homework
2.2	Calculate integrals over infinite intervals	Lecture/Individual or group work	Exams, Quizzes, Homework
2.3	Apply the definite integral in geometry and engineering	Lecture/Individual or group work	Exams, Quizzes, Homework
3.0	**Values**		
3.1	Use the most important techniques of integration calculus, such as the first and second fundamental theorems and solve different integration problems. Solve problems using a range of formats and approaches in basic science.	Lecture/Individual or group work	Exams, Quizzes, Homework

2. Assessment Tasks for Students

Percentage of Total Assessment Score	Week Due	*Assessment task	#
30%	Sixth week	Midterm exam	**1**
20%	During semester	Quizzes and Homework	**2**
50%	End of semester	Final exam	**3**

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice : Each group of students is assigned to a faculty member where he or she will provide academic advising. All faculty members are required to be in their offices outside teaching hours. Each faculty member allocates at least 4 hours per week to give academic advice and to answer to the questions of students about concepts studied during the lectures. .

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Calculus with differential equations, Varberg, D. E. , Purcell, E. J. , & Rigdon, S. E. , Pearson/Prentice Hall (2007) .
Essential References Materials	• Thomas' Calculus (14th Edition), George B. Thomas • Precalculus: Mathematics for Calculus (6th Edition), James Stewart
Electronic Materials	None
Other Learning Materials	Mathlab

2. Facilities Required

Resources	Item
Classrooms	**Accommodation** Classrooms, laboratories,) (.demonstration rooms/labs, etc
Data Show, Smart Board	**Technology Resources** (AV, data show, Smart Board, software, etc.)
None	**Other Resources** Specify, e.g. if specific laboratory) equipment is required, list (requirements or attach a list

G. Course Quality Evaluation

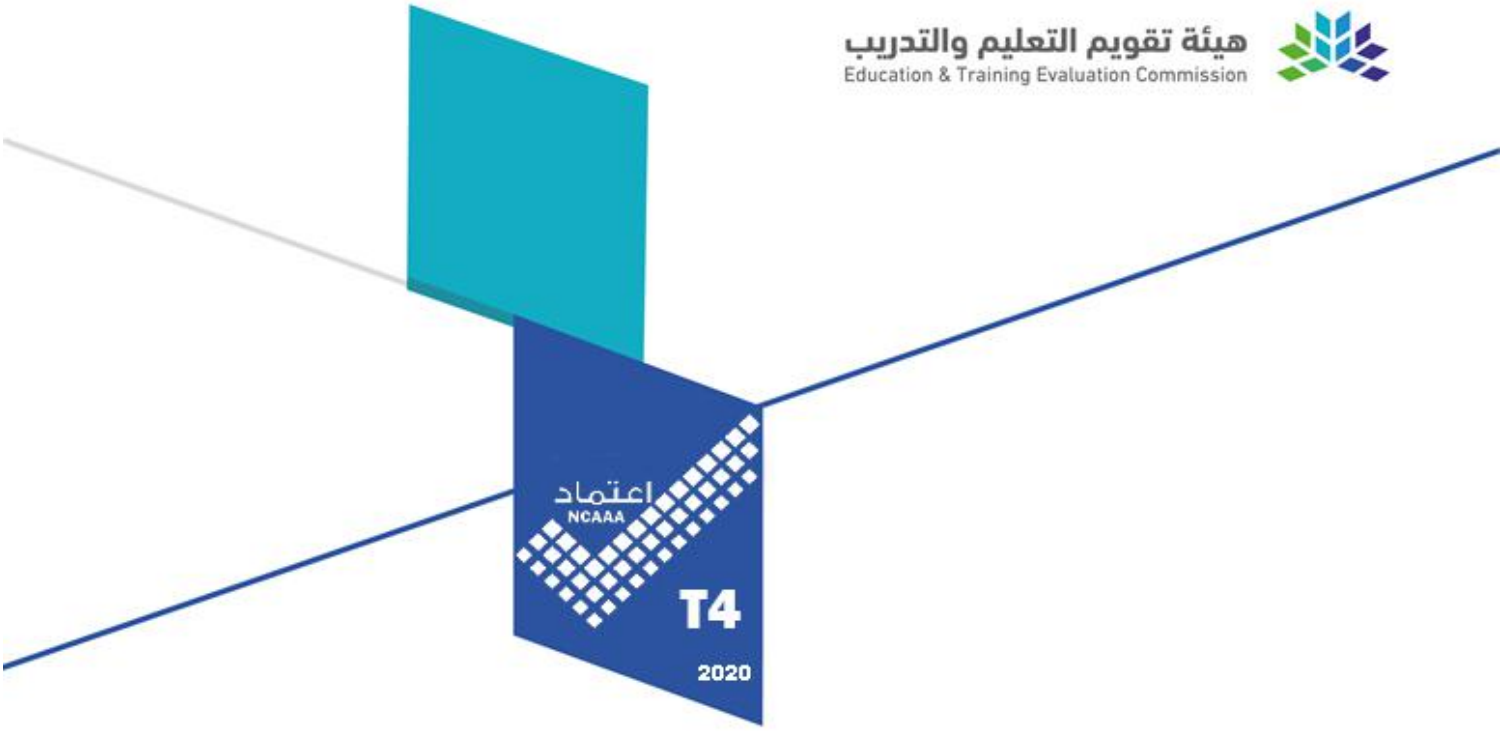
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee Reference No. Date	Council of the Mathematics Department

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Linear Algebra 1**
Course Code:	**MTH1211**
Program:	
Department:	**Mathematical science**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	4
2. Course type	
a.	University ☐ College ☐ Department ■ Others ☐
b.	Required ■ Elective ☐
3. Level/year at which this course is offered:	**Second term, First year**
4. Pre-requisites for this course (if any)**:**	
5. Co-requisites for this course (if any)**:**	

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**40**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (specify)	**0**
	Total	**40**

B. Course Objectives and Learning Outcomes

1. Course Description

Linear Algebra is an area of mathematics that deals with the properties and applications of vectors, matrices, and other related mathematical structures. Interestingly, these topics readily lend themselves to a very rigorous study of the underlying mathematical theory, as well as to a broadly applications-oriented study of concepts, methods, and algorithms. This course will place roughly equal emphasis on theory and applications.

Main topics we will cover include linear systems and their solutions, matrix, determinants, vector space, linear transformation, eigenvalues and eigenvectors. We will study a variety of interdisciplinary applications and related strategies throughout the course.

2. Course Main Objective

The first goal of the course is to teach students how to use linear algebra as a powerful tool for computation. The second goal is to show how these computations can be conceptualized in a geometric framework. The final goal is to give a gentle introduction to the theory of abstract vector spaces.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Identify systems of linear equations	
1.2	State Row reduction and echelon forms	
1.3	Describe the different matrix operations	
1.4	Memorize determinants and their properties	
1.5	Outline vector and sub-vector spaces and their properties	
1.6	Name bases and dimension of vector spaces	
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Write a system of linear equations in matrix form	
2.2	Determine whether a system of linear equations is consistent or inconsistent	
2.3	Perform matrix operations and solve matrix equations	
2.4	Calculate an eigenvalue and an eigenvector of a given matrix	
2.5	Determine whether a given matrix is diagonalizable, symmetric	
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Analyze quantitative data verbally, graphically, symbolically and numerically	
3.2	Communicate quantitative data verbally, graphically, symbolically and numerically	
3.3	Integrate appropriately technology into mathematical processes	
3.4	Generalize mathematical concepts in problem-solving through integration of new material and modeling	

C. Course Content

No	List of Topics	Contact Hours
1	System of linear equations in a linear algebra: systems of linear equations, consistent and inconsistent systems of linear equations, Gaussian Elimination and Gauss-Jordan Elimination of linear equations.	4
2	Matrix Algebra: Matrix operations, properties of matrix operations, the inverse of a matrix (invertible matrix theorem), elementary matrices.	8
3	Determinants of square matrices: definition of determinants, evaluation of a determinant using elementary operations, properties of determinants. Applications of determinants: the inverse of a matrix by its adjoint, Cramer's rule and volume.	8

4	Vector spaces: Vectors in $\mathbb{R}^2, \mathbb{R}^3, \ldots, \mathbb{R}^n$, definition of vector space, subspaces, linearly independence, basis and dimensions, rank of a matrix, coordinate and change basis.	12
5	Inner product spaces: definition of inner product space and examples	2
6	Linear transformation: definition of linear transformation, kernel and image of linear transformation and isomorphism of vector spaces.	4
7	Eigen values and eigen vectors: Definitions and examples	2
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Und0erstanding**		
1.1	Identify systems of linear equations	Lecture and Tutorials	Exams, quizzes
1.2	State Row reduction and echelon form	Lecture and Tutorials	Exams, quizzes
1.3	Describe the different matrix operations	Lecture and Tutorials	Exams, quizzes
1.4	Memorize determinants and their properties	Lecture and Tutorials	Exams, quizzes
1.5	Outline vector and sub-vector spaces and their properties	Lecture and Tutorials	Exams, quizzes
1.6	Name bases and dimension of vector spaces	Lecture and Tutorials	Exams, quizzes
2.0	**Skills**		
2.1	Write a system of linear equations in matrix form	Lecture/Individual or group work	Exams, quizzes, Homework
2.2	Determine whether a system of linear equations is consistent or inconsistent.	Lecture/Individual or group work	Exams, quizzes, Homework
2.3	Perform matrix operations and solve matrix equations.	Lecture/Individual or group work	Exams, quizzes, Homework
2.4	Find the determinants of a matrix in many ways.	Lecture/Individual or group work	Exams, quizzes, Homework
2.5	Calculate an eigenvalue and an eigenvector of a given matrix	Lecture/Individual or group work	Exams, quizzes, Homework
2.6	Determine whether a given matrix is Diagonalizable, symmetric or orthogonal	Lecture/Individual or group work	Exams, quizzes, Homework
3.0	**Values**		
3.1	Analyze quantitative data verbally, graphically, symbolically and numerically	Lecture/Individual or group work	Exams, quizzes, research essays
3.2	Communicate quantitative data verbally, graphically, symbolically and numerically	Lecture/Individual or group work	Exams, quizzes, research essays
3.3	Integrate appropriately technology into mathematical processes	Lecture/Individual or group work	Exams, quizzes, research essays

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.4	Generalize mathematical concepts in problem-solving through integration of new material and modeling	Lecture/Individual or group work	Exams, quizzes, research essays

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	%30
2	Quizzes, homework, and research essays	During semester	%20
4	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• R. Larson, B. Edwards and D. Falvo, Elementary Linear Algebra, Houghton Mifflin Harcourt, 6th edition ,2009. • T. S. Blyth and E. F. Robertson, Basic Linear Algebra, Springer, London, 1998.
Essential References Materials	• T. David, Guide to linear algebra. Macmillan International Higher Education, 1988. • G. Strang, Introduction to Linear Algebra. 5th Edition. Wellesley, MA: Wellesley-Cambridge Press, 2016.
Electronic Materials	https://en.wikipedia.org/wiki/Linear_algebra
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

The Fourth Level

توصيف المقرر الدراسي

اسم المقرر:	توصيف مقرر الثقافة الإسلامية (٢)
رمز المقرر:	ICC2202
البرنامج:	البكالوريوس
القسم العلمي:	الدعوة والثقافة الإسلامية
الكلية:	الدعوة وأصول الدين
المؤسسة:	جامعة أم القرى

المحتويات

أ. التعريف بالمقرر الدراسي:

١. الساعات المعتمدة:
٢. نوع المقرر أ. متطلب جامعة ☒ متطلب كلية ☐ متطلب قسم ☐ أخرى ☐ ب. إجباري ☒ اختياري ☐
٣. السنة / المستوى الذي يقدم فيه المقرر
٤. المتطلبات السابقة لهذا المقرر (إن وجدت) ثقافة إسلامية ١٠١
٥. المتطلبات المتزامنة مع هذا المقرر (إن وجدت) **لا يوجد**

٦. نمط الدراسة (اختر كل ما ينطبق)

م	نمط الدراسة	عدد الساعات التدريسية	النسبة
1	**المحاضرات التقليدية**	**لا ينطبق**	**لا ينطبق**
2	**لتعليم المدمج**	**لا ينطبق**	**لا ينطبق**
3	**التعليم الإلكتروني**	**لا ينطبق**	**لا ينطبق**
4	**التعليم عن بعد**	٢٠	%٩٠,٩٠
5	**أخرى: (الاختبارات النصفية والنهائية)**	٢ساعتان	%٩,٠٩

٧. ساعات الاتصال (على مستوى الفصل الدراسي)

م	النشاط	ساعات التعلم
١	محاضرات: (بواقع ساعتين في الأسبوع لمدة ١٠ أسبوعا)	٢٠
٢	معمل أو استوديو	لا ينطبق
٣	دروس إضافية	لا ينطبق
٤	أخرى (تذكر): (الاختبارات النصفية والنهائية)	٢ ساعتان
الإجمالي		٢٢

ب- هدف المقرر ومخرجاته التعليمية:

١. الوصف العام للمقرر: يهتم هذا المستوى بربط الطالب بمصادر الدين: الكتاب والسنة، من خلال بيان حاجة الناس إلى هذه المصادر، وأهميتها، وحجيتها، وكيفية ثبوتها، وحفظها، وطرق تعظيمها، وكيفية التعامل معها.
٢. الهدف الرئيس للمقرر: ١- التعرف على مصادر المعرفة، ومجال كل منها. ٢- توضيح مصادر التشريع الإسلامي وأهميتها. ٣- تمييز مصادر التشريع وصلاحيتها لكل زمان ومكان.

٣. مخرجات التعلم للمقرر:

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1	**المعرفة والفهم**	
1.1	يعرّف بالقرآن وكيفية نزوله وجمعه وقراءاته وإعجازه وطرق تفسيره	
1.2	يشرح معاني آيات سورة الحجرات	
1.3	يوضح مكانة السنة في التشريع وتدوينها وأهم مصطلحاتها ومصادرها ونماذج منها	
1.4	يقدم بنبذة مختصرة عن الإجماع والقياس والاجتهاد والفتوى	
2	**المهارات**	

مخرجات التعلم للمقرر		رمز مخرج التعلم المرتبط للبرنامج
2.1	يوضح أهم أوجه إعجاز القرآن	
2.2	يستنبط أهم الفوائد والأحكام من تفسير سورة الحجرات	
2.3	يرسم مخطط توضيحي لأقسام الحديث من حيث القبول والرد	
2.3	يشرح عشرة أحاديث مختارة من السنة النبوية	
3	**القيم**	
3.1	يعظم قدر النبي صلى الله عليه وسلم ويعرف مكانته وواجبه نحوه ونحو سنته ونحو مصادر التشريع الإسلامي	
3.2	يكون علاقات داخل الجامعة وخارجها قائمة على الاستقلالية وتحمل المسؤولية	
3.3	يتمثل القيم والأخلاق الإسلامية الحميدة ويبني من خلالها تعامله مع الآخرين بشكل مميز وحسن .	

ج. موضوعات المقرر

م	قائمة الموضوعات	ساعات الاتصال
١	**مدخل إلى مصادر المعرفة**: يدرس الطالب في هذه المفردة مصادر المعرفة، والتي تكمن في: النقل، والعقل، والحس، والفطرة، ومفهوم كل منها، ومجالاتها، وأهميتها.	٢
٢	**الوحي**: يدرس الطالب في هذه المفردة تعريف الوحي، وصوره، وأدلة صدقه، وحاجة الناس إليه.	٢
٣	**مصادر التشريع**: في هذه المفردة سيدرس الطالب التعريف بالقرآن والسنة والإجماع والقياس كمصادر للتشريع في الإسلام.	٢
٤	**مدخل إلى القرآن الكريم**: هذه المفردة تتطرق لتعريف القرآن الكريم، وكيفية نزوله، ومراحل جمعه وتدوينه، خصائصه.	٢
٥	**واجبنا تجاه القرآن الكريم:** في هذه المفردة سيدرس الطالب أهم واجبات المسلم نحو القرآن الكريم. **التزكية بالقرآن الكريم:** في هذه المفردة سيدرس الطالب طرق التزكية بالقرآن الكريم وأثره في تصحيح الأخلاق والسلوك.	٢
٦	**مدخل إلى السنة النبوية**: في هذه المفردة سيدرس الطالب تعريف السنة، وأدلة حجيتها، ومراحل جمعها وتدوينها، وبيان مكانتها	٢
٧	**أقسام الحديث من حيث القبول والرد:** في هذه المفردة سيدرس الطالب: -أقسام الحديث الصحيح والحسن والضعيف، ومعرفة المقبول منها والمردود، إضافة إلى تعريفه بطرق البحث في المواقع الإلكترونية في مجال الحديث. **المنهج النقدي عند المحدثين**: -أبرز معالم المنهج الذي سلكه المحدثون في تنقيتهم للسنة النبوية مما شابها من الدخيل، وكيفية تمييزهم الصحيح من الضعيف، مع إلحاق ذلك بدراسة تطبيقية حول صحيح البخاري.	٢
٨	**واجبنا تجاه الرسول صلى الله عليه وسلم وسنته:** في هذه المفردة سيدرس الطالب أهم واجبات المسلم نحو السنة النبوية، والتي تكمن في: تعظيمها، والتسليم لها، والعمل بها، والدفاع عنها.	٢
٩	**مكانة الصحابة وفضلهم:** في هذه المفردة سيتعرف الطالب على مكانة الصحابة وفضلهم، والواجب نحوهم، ودورهم في تلقي القرآن والسنة وروايتها.	٢
١٠	**قواعد في التعامل مع النصوص الشرعية:** في هذه المفردة سيتعرف الطالب على واجبات التعامل مع النصوص الشرعية، وأهم القواعد الشرعية في ذلك، وأهمها: وجوب الإيمان بالنصوص الشرعية، واشتمالها على أصول الدين، ورد التنازع إليها، وعدم التعارض بينها وبين العقل.	٢
	المجموع	٢٠

د. التدريس والتقييم:

١. ربط مخرجات التعلم للمقرر مع كل من استراتيجيات التدريس وطرق التقييم

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
1.0	**المعرفة والفهم**		
1.1	يعرف القرآن وكيفية نزوله وجمعه وقراءاته وإعجازه وطرق تفسيره	المحاضرات والمناقشات	الاختبارات التحريرية والشفوية. أوراق عمل
1.2	يبين تفسير سورة الحجرات	التعلم الذاتي - ربط الطالب بالمراجع الأساسية والمساندة في معرفة هذه المفردات	الاختبارات التحريرية والشفوية. عرض البحوث والمناقشة
1.3	يشرح مكانة السنة في التشريع وتدوينها وأهم مصطلحاتها ومصادرها ونماذج منها	المحاضرات والمناقشات - ربط الطالب بالمراجع الأساسية والمساندة في معرفة هذه المفردات	الاختبارات التحريرية والشفوية. عرض البحوث والمناقشة
1.4	يُقدم نبذة مختصرة عن الإجماع والقياس والاجتهاد والفتوى	الاستقراء والعصف الذهني المحاضرات والمناقشات	الاختبارات التحريرية والشفوية.
2.0	**المهارات**		
2.1	يوضح أهم أوجه إعجاز القرآن	العصف الذهني الحوار والمناقشة عمل أبحاث وأوراق عمل زيارة بعض المواقع الالكترونية التي تعتني بهذا الموضوع	التقييم الجماعي تقييم الأبحاث وأوراق عمل
2.2	يستنبط أهم الفوائد والأحكام من تفسير سورة الحجرات	الطريقة الاستقرائية ربط الطالب بالمراجع الأساسية والمساندة في معرفة هذه المفردات	الملاحظة المباشرة وتقييم قدرة الطالب على الاستنباط والتحليل
2.3	يرسم مخطط توضيحي لأقسام الحديث من حيث القبول والرد	التعليم التعاوني خريطة المفاهيم	الملاحظة المباشرة والتقييم الجماعي
2.4	يشرح عشرة أحاديث مختارة من السنة النبوية	التعلم الذاتي التكليف بواجبات	الاختبار تقييم أبحاث
3.0	**القيم**		
3.1	يعظم قد النبي صلى الله علسه وسلم ويعرف مكانته وواجبه نحروه ونحو سنته	التعلم التعاوني الحوار والمناقشة	الملاحظة المستمرة وتقيم الأداء
3.2	يكون علاقات داخل الجامعة وخارجها قائمة على الاستقلالية وتحمل المسؤولية	التعلم التعاوني	الملاحظة المستمرة والتقييم الجماعي
3.3	يتمثل القيم والأخلاق الإسلامية الحميدة	التعليم التعاوني من خلال التكليف بواجبات وأبحاث وأنشطة جماعية	تقييم الأبحاث الملاحظة المباشرة لسلوك الطلاب وتوجهاتهم

٢. أنشطة تقييم الطلبة

م	أنشطة التقييم	توقيت التقييم (بالأسبوع)	النسبة من إجمالي درجة التقييم
١	الاختبار التحريري والشفوي	منتصف ونهاية الفصل الدراسي	٦٠٥
٢	التقويم المستمر	كل أسابيع الدراسة	%١٠

م	أنشطة التقييم	توقيت التقييم (بالأسبوع)	النسبة من إجمالي درجة التقييم
٣	عرض البحوث والمناقشة	التاسع	١٥%
٤	الملاحظة والتقويم الجماعي	ابتداء من الأسبوع الرابع	١٥%

أنشطة التقييم (اختبار تحريري، شفهي، عرض تقديمي، مشروع جماعي، ورقة عمل الخ)

هـ - أنشطة الإرشاد الأكاديمي والدعم الطلابي:

- **تعريف الطالب بالمقرر**
- **متابعة بعض الحالات الفردية التي تحتاج إلى اهتمام خاص.**
- **توجيه الطالب الى كيفية الإفادة من التقنيات الحديثة.**
- **الساعات المكتبية.**
- **ربط جميع الطلاب بمرشدين أكاديميين لمساعدتهم على فهم متطلبات البرنامج وعمليات التسجيل.**
- **نشر جميع معلومات الاتصال الخاصة بعضو هيئة التدريس على الصفحة الرئيسية للمقرر الدراسي على البلاك بورد.**

و – مصادر التعلم والمرافق:

١. قائمة مصادر التعلم:

المرجع الرئيس للمقرر	الرسالة لمحمد بن إدريس الشافعي.
المراجع المساندة	١- جماع العلم لمحمد بن إدريس الشافعي. ٢- الإتقان في علوم القرآن للسيوطي. ٣- الاعتصام لأبي إسحاق إبراهيم بن موسى الشاطبي. ٤- نزهة النظر في شرح نخبة الفكر لابن حجر العسقلاني. ٥- رفع الملام عن الأئمة الأعلام لشيخ الإسلام ابن تيمية الحراني. ٦- مجموع فتاوى شيخ الإسلام ابن تيمية. ٧- التبيان في آداب حملة القرآن للنووي.
المصادر الإلكترونية	المكتبة الرقمية السعودية
أخرى	

٢. المرافق والتجهيزات المطلوبة:

العناصر	متطلبات المقرر
المرافق (القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ)	قاعة دراسية مجهزة افتراضية مكتبة اليكترونية
التجهيزات التقنية (جهاز عرض البيانات، السبورة الذكية، البرمجيات)	أجهزة حاسوب مرتبطة بالنت قاعات افتراضية
تجهيزات أخرى (تبعاً لطبيعة التخصص)	لا يوجد

ز. تقويم جودة المقرر:

مجالات التقويم	المقيمون	طرق التقييم
فاعلية التدريس	أعضاء هيئة التدريس، الطالب، إدارة القسم، لجنة الجودة	غير مباشر (الاستبانات)

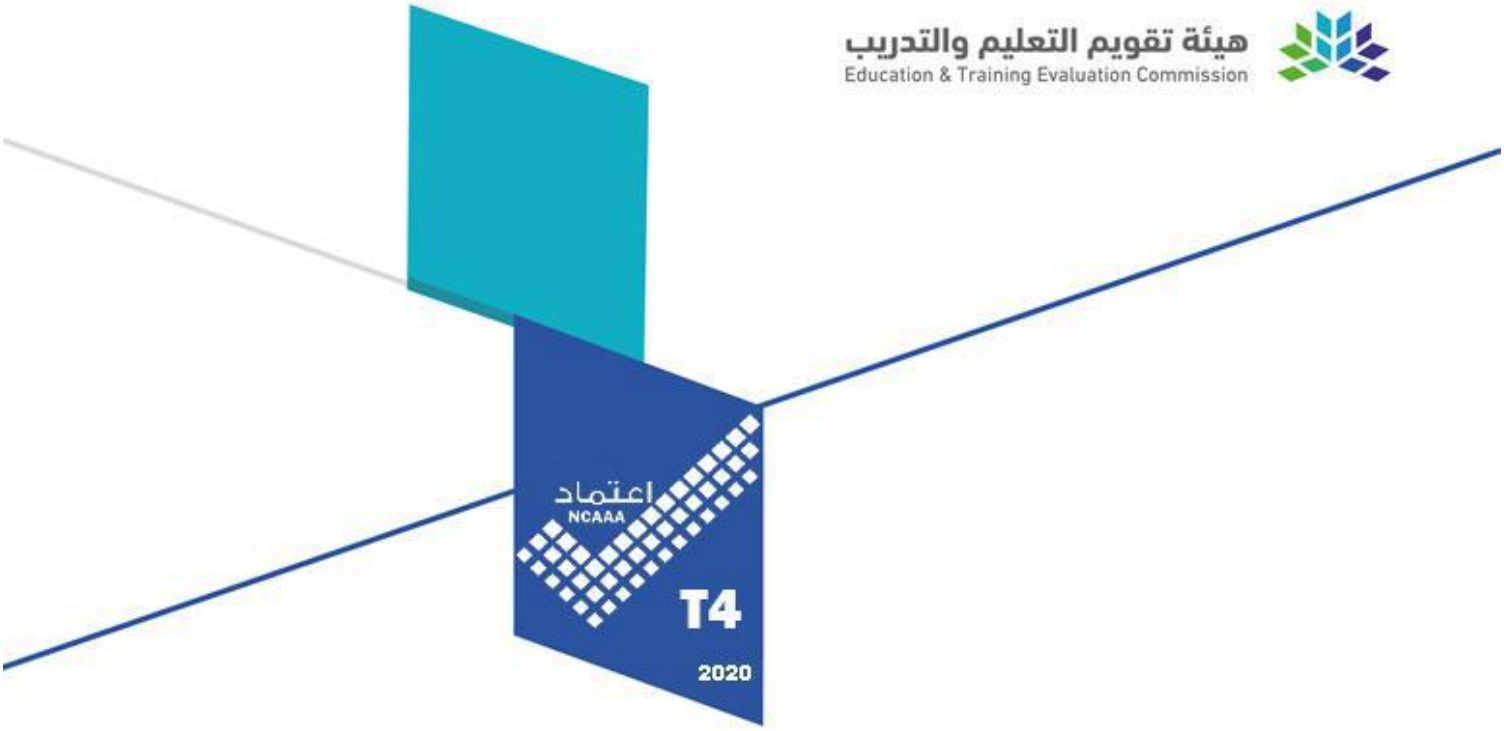
مجالات التقويم	المقيمون	طرق التقييم
فاعلية طرق تقييم الطالب	المراجع النظير	مراجعة عينات عشـــوائية من أوراق إجابات الطلاب
مدى تحصيل مخرجات التعلم	قيادات البرنامج	تقييم مباشر

مجالات التقويم (مثل. فاعلية التدريس، فاعلة طرق تقييم الطلاب، مدى تحصيل مخرجات التعلم للمقرر، مصادر التعلم ... إلخ)
المقيمون (الطلبة، أعضاء هيئة التدريس، قيادات البرنامج، المراجع النظير، أخرى (يتم تحديدها)
طرق التقييم (مباشر وغير مباشر)

ح. اعتماد التوصيف

جهة الاعتماد	مجلس القسم
رقم الجلسة	
تاريخ الجلسة	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Mathematical English**
Course Code:	**ELCE2311**
Program:	**BSc. in Mathematics**
Department:	**English Language Centre**
College:	**English Language Centre**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 2
2. Course type **a.** University ☐ College ☐ Department ☒ Others ☐ **b.** Required ☒ Elective ☐
3. Level/year at which this course is offered: 4 level/2 year
4. Pre-requisites for this course (if any)**:** Intensive English Language
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	Four hours/week	100%
2	Blended	0	0
3	E-learning	0	0
4	Distance learning	0	0
5	Other	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	4 hours * 10 weeks = 40
2	Laboratory/Studio	0
3	Tutorial	0
4	Others (specify) Quizzes, Group, Discussions	0
	Total	40

B. Course Objectives and Learning Outcomes

1. Course Description:

Technical English is an English for Specific Purposes (ESP) course. All students who are admitted to the Bachelor's in Mathematics are required to take this course in the fourth semester of the second year of their program. The course is offered in 10 weeks with a 4-hour-per week teaching plan covering a wide range of topics relevant to mathematics. It also intends to develop students' knowledge and ability of English language in all major skills which include reading, writing, listening, and speaking, as well as in sub-skills including grammar, vocabulary, and pronunciation.

2. Course Main Objective

The main objective of the course is to provide students with the specific English including terminology, linguistic knowledge and communicative skills in mathematics.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Recognize and understand key words when listening, including correct stress and pronunciation of key words and phrases and show understanding of the content of the course by: - identifying main ideas and supporting ideas - developing listening for detail, examples and reasons to complete a summary - recognizing mistakes and correct them	
1.2	Recognize, use and understand grammar forms presented during the course, including: - *there is* and *there are* for introducing new topics - using fractions; using cardinal and ordinal numbers - imperatives for giving instructions - *which* or *that* for giving extra information - *have to* and *should* - *if* and *then* to talk about deductions	
1.3	Recognize and use vocabulary items in related to the course, including: - developing vocabulary of the topics covered in order to be able to listen, understand and use them - understanding cardinal and ordinal numbers and fractions - being aware of importance of word families and subjects and objects	
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1.1	Demonstrate comprehension of simple and complex mathematical texts by: - demonstrating an understanding of main ideas and details - identifying information - identifying important points of texts and complete a summary - recalling key information	
2.1.2	Complete texts by: - demonstrating comprehension of simple and complex mathematical texts - demonstrating and understandings of main ideas and details - identifying information and important points in texts and completing a summary - recalling key information	
2.2	**Critical Thinking** - learn to analyze sources of information - infer meaning from written or spoken texts - appraise arguments	
2.3	**Communication, Information Technology, Numerical** - understand numerical information - recognize and learn cardinal and ordinal numbers	
3	**Values:**	
3.1	Develop students' background knowledge for their future course and their future in tertiary education.	
3.2	Develop students' abilities to learn independently and assess their own learning.	
3.3	Develop the ability to cooperate with and learn from peers.	

C. Course Content

No	List of Topics	Contact Hours
1	Points and Lines	
2	Fractions and Ordinals	
3	Arithmetic	
4	Surfaces and Angels	
5	Spaces and Volumes	
7	Algebra and Formulas	
Total		

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**		
1.1	Recognize and understand key words when listening, including correct stress and pronunciation of key words and phrases and show understanding of the content of the course by: - identifying main ideas and supporting ideas - developing listening for detail, examples and reasons to complete a summary - recognizing mistakes and correcting them	Strategies for listening exercises	Listening quizzes Formative and summative listening tests Listening mid-term examination Listening final examination
1.2	Recognize, use and understand grammar forms presented during the course, including: - *there is* and *there are* for introducing new topics - using fractions; using cardinal and ordinal numbers - imperatives for giving instructions - *which* or *that* for giving extra information - *have to* and *should* *if* and *then* to talk about deductions	Grammar exercises	Grammar quizzes Formative and summative grammar tests Assessment of and writing assignments as part of mid-term and final examination
1.3	Recognize and use vocabulary items in related to the course, including: - developing vocabulary of the topics covered in order to be able to listen, understand and use them - understanding cardinal and ordinal numbers and fractions - being aware of importance of word families and subjects and objects	Strategies for vocabulary building Dictionary skills	Vocabulary quizzes Formative and summative vocabulary tests Assessment of vocabulary during speaking and writing as part of mid-term and final examination

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	**Skills**		
2.1.1	Demonstrate comprehension of simple and complex mathematical texts by: - demonstrating an understanding of main ideas and details - identifying information - identifying important points of texts and complete a summary - recalling key information	Reading strategies Writing strategies	Vocabulary quizzes Formative and summative vocabulary tests Assessment of vocabulary, reading and writing as part of mid-term and final examination
2.1.2	Complete texts by: - demonstrating comprehension of simple and complex mathematical texts - demonstrating and understandings of main ideas and details - identifying information and important points in texts and completing a summary - recalling key information	Writing strategies	Continuous writing assessment
2.2	**Critical Thinking** - learn to analyze sources of information - infer meaning from written or spoken texts - appraise arguments	Strategies for developing logical thought and critical thinking	Continuous assessment of writing tasks
2.3	**Communication, Information Technology, Numerical** - understand numerical information - recognize and learn cardinal and ordinal numbers	Reading and listening strategies	Quizzes Formative and summative tests Mid-term and final examinations
3.0	**Values**		
3.1	Develop students' background knowledge for their future course and their future in tertiary education.	Reading, listening, speaking and writing strategies	Reading, listening, speaking and writing quizzes Formative and summative assessments Mid-term and final examinations
3.2	Develop students' abilities to learn independently and assess their own learning.	Self-study skills	Continuous assessment
3.3	Develop the ability to cooperate with and learn from peers.	Pair and group work Presentations	Assessment of individual performance and performance within the group

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm Exam	The 5th	30
2	Listening Mid-term Exam	The 6th	5
3	Listening Final Exam	the 10th	5
4	Speaking Assessment	from the 1st to the 10th	5
5	2 Quizzes (average)	The 4th & 9th	5
6	Vocabulary Project	from the 1st to the 10th	5
7	Final Exam	The 11th	45
8	Total		100

* **Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	*Technical English* Course Book
Essential References Materials	.
Electronic Materials	N/A
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms
Technology Resources (AV, data show, Smart Board, software, etc.)	data show & Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Blackboard

G. Course Quality Evaluation

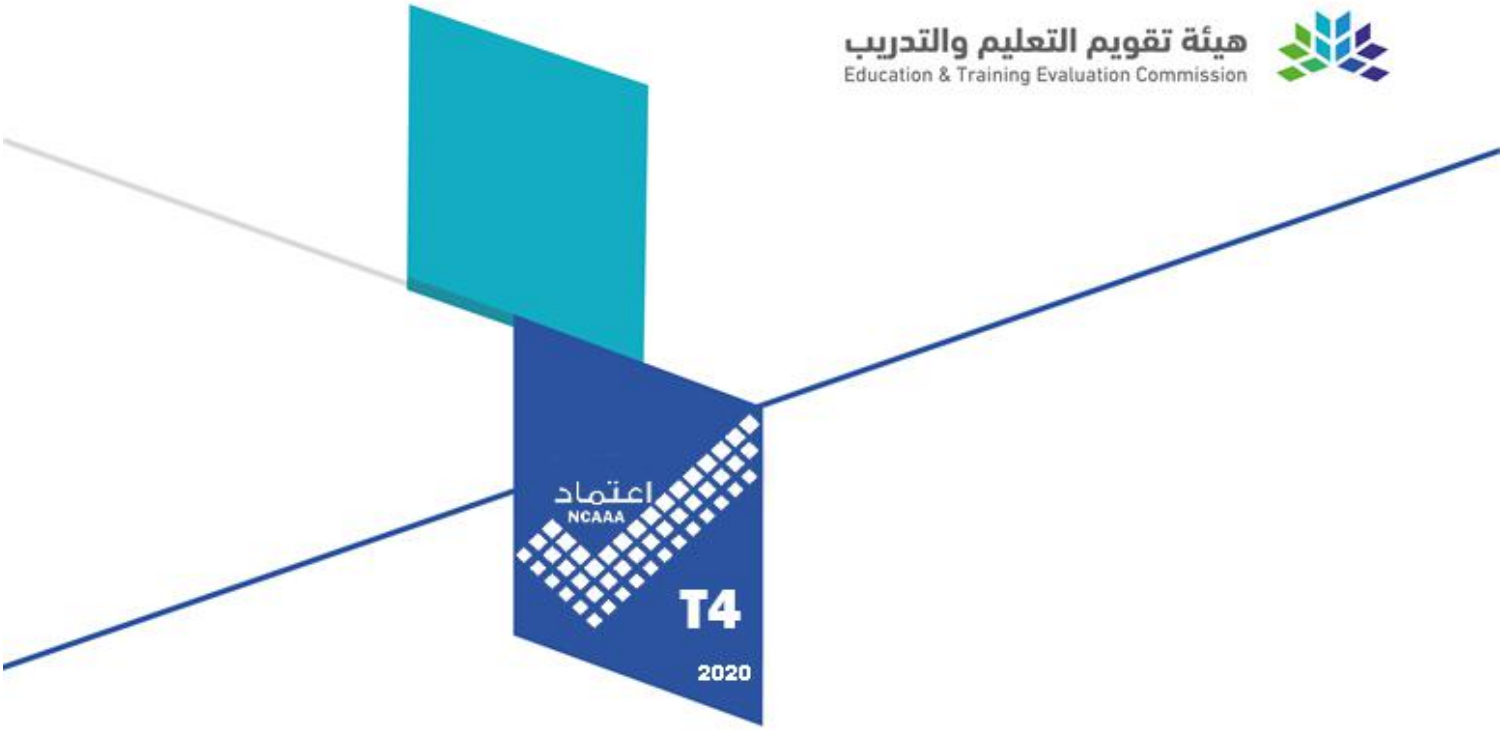
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Curriculum and Accreditation Committees
Reference No.	
Date	20 April, 2022

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Ordinary differential equations
Course Code:	MTH2121
Program:	**BSc. in Mathematics**
Department:	**Mathematical science**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	4
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	**Fourth level/second year**
4. Pre-requisites for this course (if any)**:**	**Integration**
5. Co-requisites for this course (if any)**:**	**Not applicable**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**40**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (specify)	**0**
	Total	**40**

B. Course Objectives and Learning Outcomes

1. Course Description

Differential equations are an important branch of mathematics. They have a rich mathematical Formalization, as well as a very successful history of being applied to important problems in physics, chemistry, engineering, and biology. This course will introduce primarily linear, first and second order differential equations. Solution techniques for such equations will be presented. The application of Laplace transforms to differential equations will be introduced.

2. Course Main Objective

The course objective is to achieve an elementary knowledge of ordinary differential equations and to become more familiar with rigorous proofs in analysis. The objectives are summarized mainly in the competence in solving linear differential equations, employing different techniques namely integrating factors, substitution, and variation of parameters and reduction of order.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Identify linear and nonlinear equations	K1, K5
1.2	Examine higher order differential equations	K3, K5
1.3	Present an account of basic concepts and definitions for differential equations	K1, K3, K5
1.4	Describe exact equations and its solutions	K1, K3
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Compare the methods of solution developed in higher order and solution in second/first order equations	S1, S5
2.2	Use methods for obtaining exact solutions of linear homogeneous and nonhomogeneous differential equations	S3, S5, S9
2.3	Apply elementary Laplace transform techniques	S3, S5
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Prepare for success in disciplines which rely on differential equations, and in more advanced mathematics which incorporate these topics, such as Partial Differential Equations	V2
3.2	Interpret graphical and qualitative representations of solutions to problems	V4
3.3	Evaluate fundamental concepts of differential equations, and the interrelationship between differential equations and linear algebra	V2, V4
3.4	Generalize mathematical concepts in problem-solving through integration of new material and modeling	V4

C. Course Content

No	List of Topics	Contact Hours
1	Definition of a differential equation: degree and order. Elimination of arbitrary constants	2
2	First Order Differential Equations: Existence theorem, separation of variables, homogeneous equations, exact equations, linear equations, method of integrating factors, non-exact equations and Bernoulli equation.	12
3	Homogeneous higher order linear Equations with constant coefficients	8
4	Non-homogeneous linear Equations: undetermined coefficients, variation of parameters, Inverse differential operator	10
5	The Laplace Transform	8
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Identify linear and nonlinear equations	Lecture and Tutorials	Exams, quizzes
1.2	Examine higher order differential equations	Lecture and Tutorials	Exams, quizzes
1.3	Present an account of basic concepts and definitions for differential equations	Lecture and Tutorials	Exams, quizzes
1.4	Describe exact equations and its solutions	Lecture and Tutorials	Exams, quizzes
2.0	**Skills**		
2.1	Compare the methods of solution developed in higher order and solution in second/first order equations	Lecture/Individual or group work	Exams, quizzes
2.2	Use methods for obtaining exact solutions of linear homogeneous and nonhomogeneous differential equations	Lecture/Individual or group work	Exams, quizzes
2.3	Apply elementary Laplace transform techniques	Lecture/Individual or group work	Exams, quizzes
3.0	**Values**		
3.1	Prepare for success in disciplines which rely on differential equations, and in more advanced mathematics which incorporate these topics, such as Partial Differential Equations	Lecture/Individual or group work	Exams, quizzes
3.2	Interpret graphical and qualitative representations of solutions to problems	Lecture/Individual or group work	Exams, quizzes
3.3	Evaluate fundamental concepts of differential equations, and the interrelationship between differential equations and linear algebra	Lecture/Individual or group work	Exams, quizzes
3.4	Generalize mathematical concepts in problem-solving through integration of new material and modeling	Lecture/Individual or group work	Exams, quizzes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	%30
2	Quizes and homeworks	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Elementary Differential Equations, 8th edition, 1997, Earl D. Rainville, Phillip E. Bedient • William E. Boyce and Richard C. DiPrima: Elementary Differential Equations and Boundary Value Problems, 10th edition
Essential References Materials	Polking, Boggess and Arnold, *Differential Equations with Boundary Value Problems*, second edition, Pearson Prentice-Hall
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

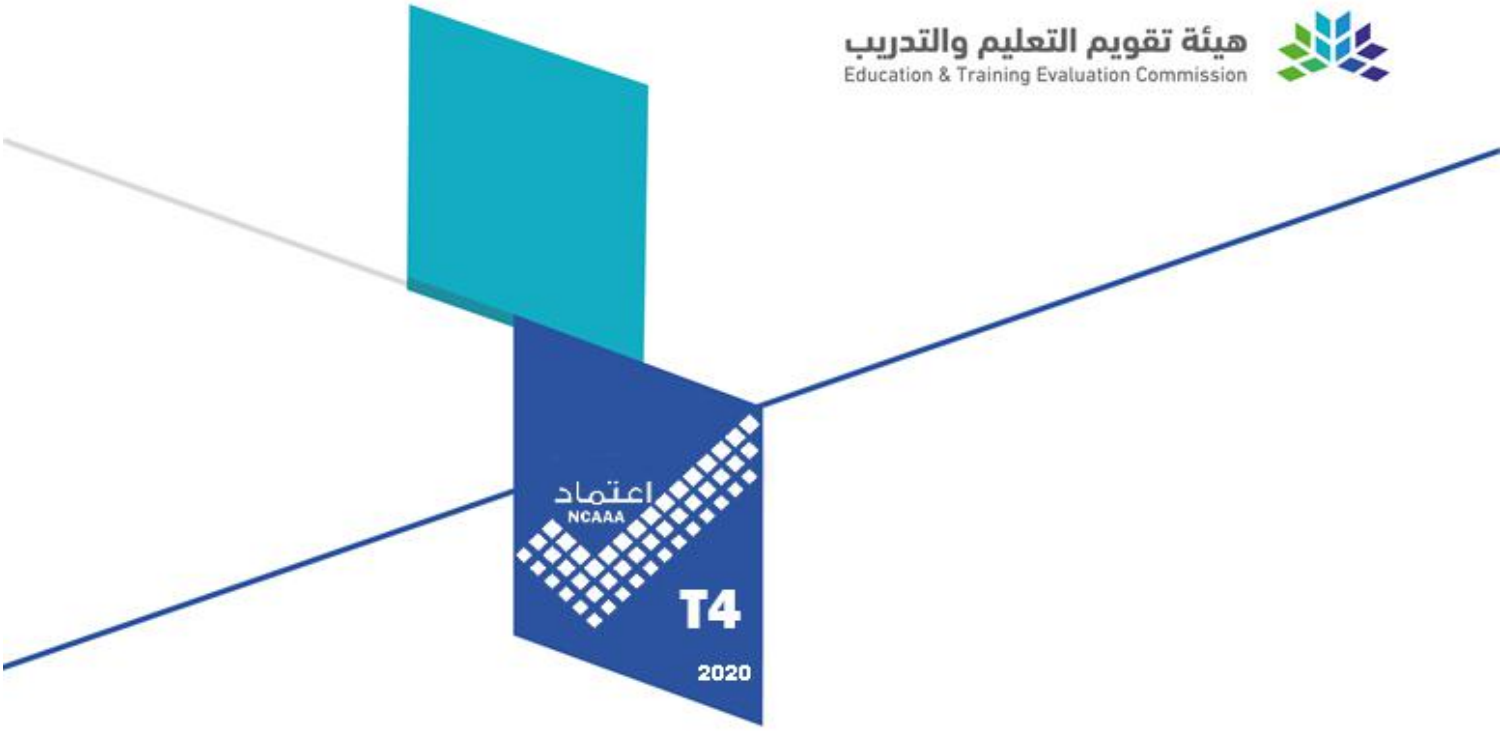
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Analytical Geometry
Course Code:	**MTH2301**
Program:	**BSc. in Mathematics**
Department:	**Department of Mathematical Sciences**
College:	**College of Applied Science**
Institution:	**Umm Al-Qura, University**

Table of Contents

A. Course Identification

1. Credit hours: 4
2. Course type **a.** University ☐ College ☐ Department ☐ Others ☐ **b.** Required ☐ Elective ☐
3. Level/year at which this course is offered: LEVEL 4
4. Pre-requisites for this course (if any)**:** Foundations of Mathematics
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	40	100%
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	40
2	**Laboratory/Studio**	
3	**Tutorial**	
4	**Others** (specify)	
	Total	40

B. Course Objectives and Learning Outcomes

1. Course Description

This course is designed to provide students with • Basic Concepts Identification of conic sections through its equations, conversion of the general equation of conic section to the standard formula.

• Cartesian and polar coordinate systems and relations of the conversion from one to other, types of equations of lines, condition for collinearity and concurrency. • Second degree equation of pair of straight lines. • Conic sections represented by the general equation of second degree in two variables (a pair of straight line, circle, a parabola, ellipse and hyperbola). • The circle Tangent and normal to circles, orthogonal circles, combine equation of a circle and aline. • Parabola, ellipse and hyperbola, their general and standard equation and Sketching. • 3D Geometry and coordinate conversion between them, direction cosines and direction ratios, plane in the space and various forms of plane, bisecting planes in thespace, system of planes.

2. Course Main Objective

After finishing the course, the student is expected to be familiar with the following: • Application of analytic geometry for solving different problems • Second degree equations for pair of straight lines and circle • Conic sections and their deep knowledge with coordinate systems • Some software used in drawing figures of different conic sections.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Distinguishing mathematical concepts relevant to pure and applied mathematics. Straight lines and their different forms with Cartesian and polar coordinate systems.	K1
1.2	Analysis structures and features of Mathematics problems in pair of straight lines and circles with angle and their bisectors, Conic sections and 3D geometries.	K1, K3
1.3	Outline required concepts in Parabola, ellipse and hyperbola with centered at origin and at other points. Line and plane equations in space.	K3, K5
1...		
2	**Skills :**	
2.1	Apply aspects relevant to different forms of equations of lines, pair of straight lines, circles, tangent and normal to the circles, conic sections and plane in a space.	S2, S3, S5
2.2	Apply how to draw figures and explain their equations of pair of lines, types of circles their properties, parabola, ellipse and hyperbola, plane and line in a space.	S1, S9
2.3	Apply various math rules, techniques and theorems in drawing and classifying different figures, equations and their related line and angle bisector properties.	S1, S9
2..4	Apply mathematical problems using critical thinking and problem solving in lines, pair of lines, circles, conics, 3 dimensional concepts.	S1, S6, S9
3	**Values:**	
3.1	Ability to work individually or within a team by independently and responsibility during group work and/or assignments	V2, V4
3.2	Ability to practice mathematics knowledge and skills in different situations during interactive discussion, group assignments, and web-based activities.	V2, V3
3.3	Ability to provide ethics and friendly-ship environment in the real life during class discussion, participation in college and university activities, and be members of department committees and college committees	V2, V4
3...		

C. Course Content

No	List of Topics	Contact Hours
1	Basics concepts related to different forms of equations of lines	6
2	Pair of straight lines their angles and bisectors of angles	6
3	Circles and their types with tangent and normal concepts on them	6
4	Conic Section basics and their rough sketches	6

5	Parabola, ellipse and hyperbola with centered at origin and other points	6
6	Three dimensional geometry their different concepts and coordinate system related to them	10
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Distinguishing mathematical concepts relevant to pure and applied mathematics. Straight lines and their different forms with Cartesian and polar coordinate systems.	Lectures, Web based work, Classroom dissections.	Written exam(Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
1.2	Analysis structures and features of Mathematics problems in pair of straight lines and circles with angle and their bisectors, Conic sections and 3D geometries.	Lectures, Web based work, Classroom dissections.	Written exam(Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
…	Outline required notations and concepts in Parabola, ellipse and hyperbola with centered at origin and at other points. Line and plane equations in space.	Lectures, Web based work, Classroom dissections.	Written exam(Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
2.0	**Skills**		
2.1	Apply aspects relevant to different forms of equations of lines, pair of straight lines, circles, tangent and normal to the circles, conic sections and plane in a space.	Lectures, problem solving, web based work, Classroom dissections.	Written exam(Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
2.2	Apply how to draw figures and explain their equations of pair of lines, types of circles their properties, parabola, ellipse and hyperbola, plane and line in a space.	Lectures, problem solving, web based work, Classroom dissections.	Written exam(Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
2.3	Apply various math rules, techniques and theorems in drawing and	Lectures, problem solving, web based	Written exam(Problem

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	classifying different figures, equations and their related line and angle bisector properties.	work, Classroom dissections.	solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
3.0	**Values**		
3.1	Ability to work individually or within a team by independently and responsibility Ability to work individually or within a team by independently and responsibility.	solving, web based work	
3.2	Ability to practice mathematics knowledge and skills in different situations during interactive discussion, group assignments, and web-based activities.	solving, web based work	
3.3	Ability to provide ethics and friendly-ship environment in the real life during class discussion, participation in college and university activities, and be members of department committees and college committees.	solving, web based work	

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework and Quizzes	During the semester	20
2	Mid exam	6	30
4	Final exam.	End the semester	50
5			
6			
7			
8			

***Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)**

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

Each group of students assigned to a member of staff who will be available for help and academic guidance office hours at specific hours on daily basis. At least be available 8 hours per week.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Analytic Geometry 6th Edition, Brooks Douglas R. Riddle, Col. Publ., Co. 1995
Essential References Materials	2D and 3D geometry related materials and applications based on them.
Electronic Materials	Web sites dedicated to Analytic Geometry available on the internet
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom, Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Data show; Smart Board; Mathematics Software
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	Students, Peer and program leade	Indirect (Course Evaluation Survey)- Indirect peer evaluation
Assessment	Students, Program assessment committee	Direct/ Indirect
Extent of achievement of course learning outcomes	Instructor	Direct/Indirect
Quality of learning resources	Students, Faculty members	Indirect

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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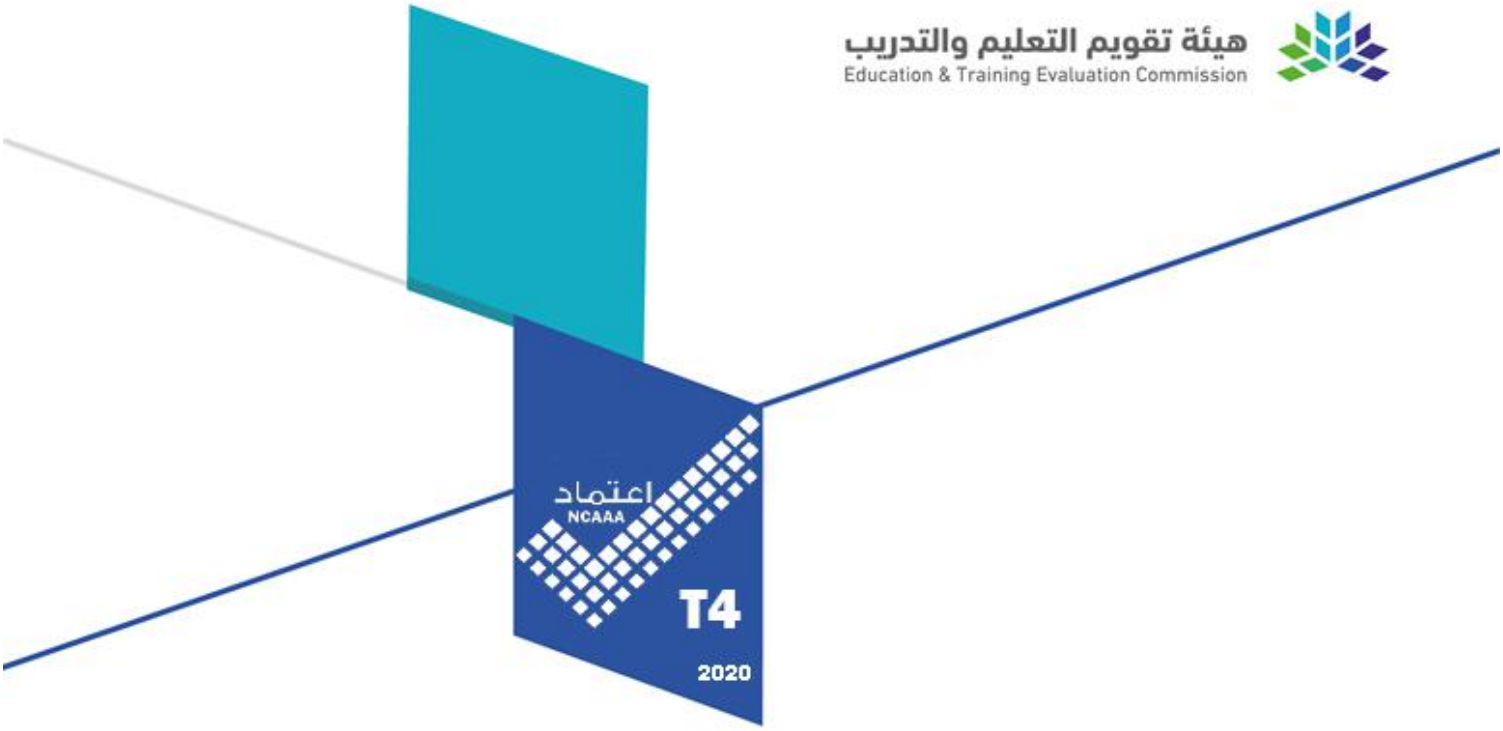
Education & Training Evaluation Commission



Course Specifications

Course Title:	Introduction to Real Analysis
Course Code:	MTH2111
Program:	BSc. in Mathematics
Department:	Mathematical sciences
College:	Applied sciences
Institution:	Umm Al-Qura University

Table of Contents

A. Course Identification

1. Credit hours:	**4**
2. Course type	
a.	University ☐ College ☐ Department ■ Others ☐
b.	Required ■ Elective ☐
3. Level/year at which this course is offered:	**Fourth level / Second year**
4. Pre-requisites for this course (if any)**:**	**MTH1101**
5. Co-requisites for this course (if any)**:**	**Not applicable**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**38 Hours**
2	**Tutorial**	**0 Hours**
3	**Midterm Exam**	**2 Hours**
	Total	**40 Hours**

B. Course Objectives and Learning Outcomes

1. Course Description

This course is an introduction to Real Analysis, whose main contents are number systems, sequences, and series. This material is standard for a first course in Real Analysis for students pursuing a Mathematics major

2. Course Main Objective

The aim of this course is to provide students with the main concepts of real analysis. Students learn the theory of sequences and series of real numbers.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Outline basic properties of the real number system	K1, K3
1.2	Define supremum and infimum of a nonempty set	K2, K3

CLOs		Aligned PLOs
1.3	Recall concept of limits of sequences	K1, K3
1.4	Identify main properties of sequences	K2, K3
1.5	Recognize different convergence tests of numerical series	K3, K5
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Prove the elementary algebraic and order properties of ordered fields.	S1, S9
2.2	Prove the elementary properties of the real numbers.	S3, S5
2.3	Prove the convergence of the standard examples of sequences and series.	S3, S5, S9
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Write clear and precise proofs.	V2, V4
3.2	Appraise the real number system as a ‘‘complete ordered field’’	V2, V4
3.3	Use the theories, methods and techniques of the course to solve complex mathematical problems.	V2, V4
3.4	Justify the choice of different steps in problem resolution procedure.	V2, V4

C. Course Content

No	List of Topics	Contact Hours
1	**Number Systems:** Peano’s Axioms and Natural Numbers, the integers, and the rational numbers.	4 Hours
2	**Complete ordered fields:** Definitions, Algebraic and order properties, Absolute value, Powers and Roots, Archimedean property, Infimum and supremum, Complete ordered field.	8 Hours
3	**Real numbers system:** Basic properties, Bernoulli inequality.	4 Hours
4	**Sequence of real numbers:** Subsequence, Monotone and Bounded sequence, Null sequence, Theorems and Examples, Convergent sequence, Theorems and Examples, Cauchy sequence, Bolzano-Weierstrass theorem.	14 Hours
5	**Series of real numbers:** Convergent series, Tests for Convergence.	4 Hours
6	Others (Tutorials, Exam, …)	6 Hours
	Total	40 Hours

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Outline basic properties of the real number system	Lecture and Tutorials	Exam
1.2	Define supremum and infimum of a nonempty set		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.3	Recall concept of limits		
1.4	Identify main properties of sequences		
1.5	Recognize different convergence tests of numerical series		
2.0	**Skills**		
2.1	Prove uncountability of the real number system	Lecture/Individual or group work	Exam
2.2	Interpret limit of a function in terms of limits of sequences		
2.3	Apply Cauchy criterion of Series		
3.0	**Values**		
3.1	Appraise the real number system as a ‘‘complete ordered field’’	Lecture/Individual or group work	Exam
3.2	Use graphical information and symbolic expression simultaneously in solving problems.		
3.3	Justify the choice of different steps in problem resolution procedure.		
3.4			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30 %
2	Quizes and homeworks	During semester	20 %
3	Final exam	End of semester	50 %

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures. Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Introduction to Real Analysis, Robert G. Bartle, Donald R. Sherbert, 4th edition, (2011). ISBN: 978-0-471-43331- 6 • Elementary Analysis: the theory of analysis, 2nd Edition, Kenneth A. Ross

Essential References Materials	• Guide to Analysis, F. Mary Hart, Macmillan Education, 1988
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

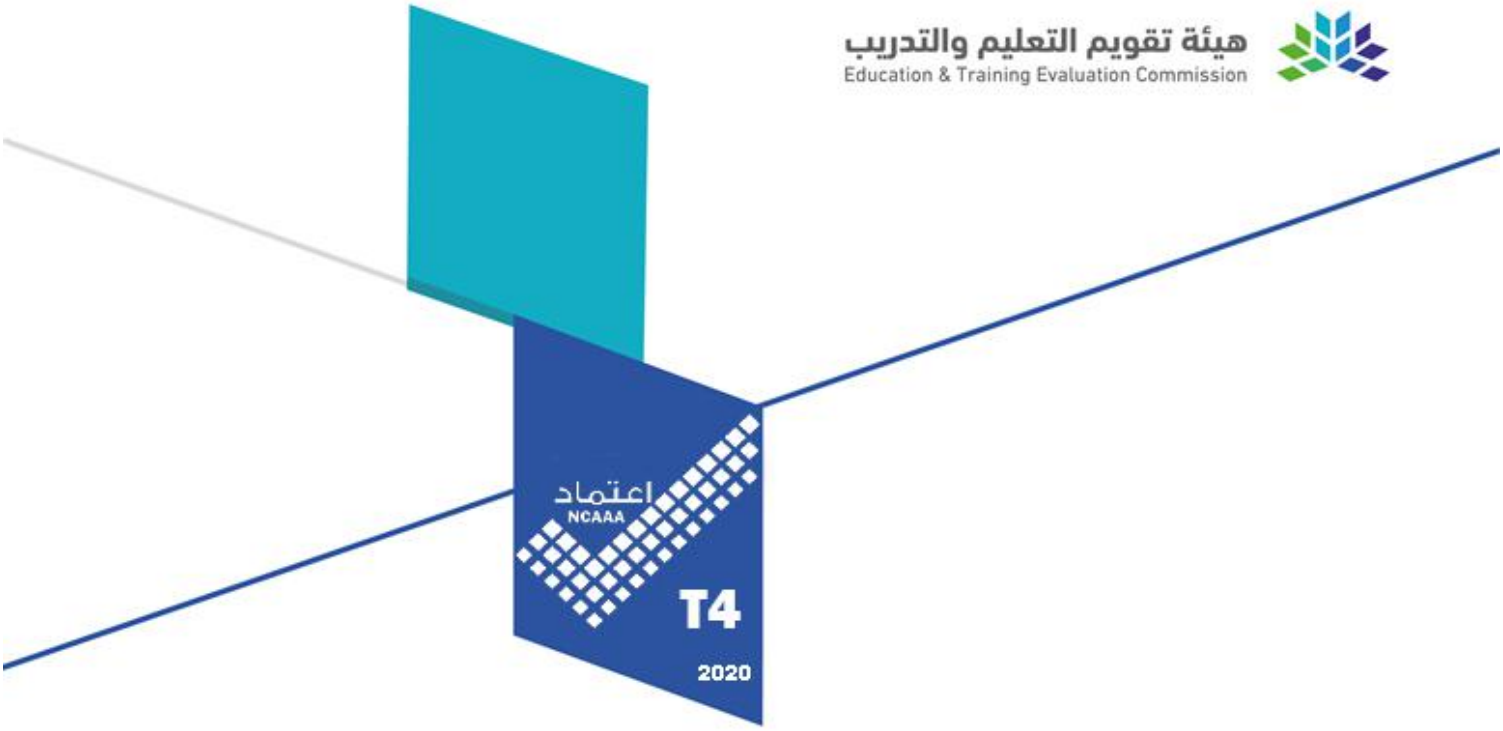
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Multivariable Calculus**
Course Code:	**MTH2104**
Program:	**BSc. in Mathematics**
Department:	**Mathematical sciences**
College:	**Applied sciences**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	**3**
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	**Fourth level/second year**
4. Pre-requisites for this course (if any)**:**	**Integration Calculation (MTH1103-4)**
5. Co-requisites for this course (if any)**:**	**Analytical Geometry (MTH2301-4)**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Three hours/week**	**100%**
2	**Blended**	**0**	**0**
3	**E-learning**	**0**	**0**
4	**Distance learning**	**0**	**0**
5	**Other**	**0**	**0**

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**24**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (Exam, Quizzes, Activities…)	**6**
	Total	**30**

B. Course Objectives and Learning Outcomes

1. Course Description

Multivariable calculus is the fourth and the final part of the standard three-semester calculus sequence. It represent the extension of calculus in one variable to calculus with functions of several variables. This course treats topics related to differential calculus in several variables, integration in several variables. Multivariable calculus has many applications in various areas such as pure mathematics, engineering and physics.

2. Course Main Objective

The aim of this course is to provide students with fundamental concepts and techniques of multivariable calculus and to develop student understanding and skills for its applications to other areas.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Recognize mathematical formulas and methods of derivation of multivariable functions.	K2, K5
1.2	State the integration techniques to calculate multiple integrals in different coordinate systems	K1, K3
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Perform differential calculus operations on functions of several variables including continuity, partial derivatives and directional derivatives.	S1, S3, S6, S7
2.2	Estimate multiple integrals in different coordinate systems including Cartesian, polar, cylindrical and spherical coordinates.	S5, S9
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Apply the computational and conceptual principles of calculus to the solutions of various scientific applications.	V2, V4, V5

C. Course Content

No	List of Topics	Contact Hours
1	**The Derivative in n-space** - Functions of several variables. - Partial Derivatives - Limits and continuity - Differentiability - Directional Derivatives - The Chain rule - Tangent planes. - Approximations - Maxima and minima - Lagrange's method	17
2	**The integral in n-space** - Double integrals over rectangles - Double integrals over nonrectangular regions - Double integrals in polar coordinates - Surface area - Triple integrals in Cartesian, cylindrical and spherical coordinates	7
3	**Others** Preprimaries, Quizzes, Activities…	6
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Recognize mathematical formulas and methods of derivation of multivariable functions.	Lecture. Memorization.	Exams (Midterm and Final). Quizzes
1.2	State the integration techniques to calculate multiple integrals in different coordinate systems.	Lecture. Memorization.	Exams (Midterm and Final). Quizzes
2.0	**Skills**		
2.1	Perform differential calculus operations on functions of several variables including continuity, partial derivatives and directional derivatives.	Lecture. Small group work.	Exams, Quizzes, Homework
2.2	Estimate multiple integrals in different coordinate systems including Cartesian, polar, cylindrical and spherical coordinates.	Lecture. Small group work.	Exams, Quizzes, Homework
3.0	**Values**		
3.1	Apply the computational and conceptual principles of calculus to the solutions of various scientific applications.	Exams (Midterm and Final). Homework.	Exams (Midterm and Final). Homework.

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30%
2	Quizzes and homeworks	During semester	20%
3	Final exam	End of semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

Each group of students is assigned to a faculty member where he or she will provide academic advising. All faculty members are required to be in their offices outside teaching hours. Each faculty member allocates at least 4 hours per week to give academic advice and to answer to the questions of students about concepts studied during the lectures.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Calculus with analytic geometry (7th Edition), Edwin J. Purcell, and Dale E. Varberg, Prentice Hall (1998).
Essential References Materials	Advanced engineering mathematics, Stanley I. Grossman, and William R. Derrick, Harper and Row, New York (1988).
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 40 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Council of the Mathematics Department
Reference No.	
Date	

The Fifth Level

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA
T4 2020

توصيف المقرر الدراسي

اسم المقرر:	الكتابة والتحرير العربي
رمز المقرر:	ARS1601
البرنامج:	يقدم لجميع طلبة الجامعة
القسم العلمي:	قسم اللغة والنحو والصرف
الكلية:	اللغة العربية وآدابها
المؤسسة:	جامعة أم القرى

المحتويات

أ. التعريف بالمقرر الدراسي:

1. الساعات المعتمدة: 2 ساعة
2. نوع المقرر أ. متطلب جامعة ☑ متطلب كلية ☐ متطلب قسم ☐ أخرى ☐ ب. إجباري ☑ اختياري ☐
3. السنة / المستوى الذي يقدم فيه المقرر: العام الأول
4. المتطلبات السابقة لهذا المقرر (إن وجدت) **لا يوجد**
5. المتطلبات المتزامنة مع هذا المقرر (إن وجدت) **لا يوجد**

6. نمط الدراسة (اختر كل ما ينطبق)

م	نمط الدراسة	عدد الساعات التدريسية	النسبة
1	المحاضرات التقليدية		
2	التعليم المدمج		
3	التعليم الإلكتروني		
4	التعليم عن بعد	20	%100
5	أخرى		

7. ساعات الاتصال (على مستوى الفصل الدراسي)

م	النشاط	ساعات التعلم
1	محاضرات	20
2	معمل أو إستوديو	-
3	دروس إضافية	-
4	أخرى (تذكر) الساعات المكتبية	-
	الإجمالي	20

ب- هدف المقرر ومخرجاته التعليمية:

1. الوصف العام للمقرر:

هذا المقرر أحد متطلبات جامعة أم القرى يدرسه جميع طلبة الجامعة وهو أحد مقررات الهوية العربية للجامعة ولطلبتها التي تحرص الجامعة على إبرازها ضمن رؤيتها ونقاط تميزها بين الجامعات.

2. الهدف الرئيس للمقرر

يهدف هذا المقرر إلى تمكين الطلبة من مهارات الكتابة اللغوية السليمة، مستعملين قواعد الرسم وعلامات الترقيم، ومتمكّنين من قواعد اللغة والصرف والنحو والمعجم، ومعبّرين تعبيرًا صحيحًا، مع قوّة الإقناع وغزارة الألفاظ، متجنّبين الأخطاء اللغويّة الشائعة، كما يمكّنهم من مهارات القراءة والفهم واستيعاب المقروء وتلخيصه.

3. مخرجات التعلم للمقرر:

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1	المعرفة والفهم	
1.1	أن يذكر الطلبة القواعد الأساسية للجملتين الاسمية والفعلية ورسم ألف الوصل والقطع والهمزة المتوسطة والمتطرفة، وعلامات الترقيم. وأنواع الكتابة الوظيفية والإقناعية.	
1.2	أن يحدد الطلبة أنواع القراءة وخصائص كل منها وأشكال الخطأ اللغوي الشائعة حسب المستوى الصوتي والصرفي والتركيبي والمعجمي.	
2	المهارات	
2.1	أن يقارن الطلبة بين الأنماط الوظيفية مثل المقالة والتقرير والتلخيص والسيرة الذاتية والمذكرات.	
2.2	أن يصوب الطلبة كتابة وقراءة الأخطاء اللغوية من خلال نصوص لغوية مختارة.	
3	القيم	

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
3.1	أن يظهر الطلبة القدرة على العمل مع زملائه ضمن فريق عمل لتصويب نصوص لغوية	
3.2	أن يتعاون الطلبة فيما بينهم لأداء عرض تمثيلي حواري يظهر مهارتهم على استعمال اللغة صحيحة.	

ج. موضوعات المقرر

م	قائمة الموضوعات	ساعات الاتصال
1	أهمّيّة السّلامة اللّغويّة في كتابتنا، التمكّن من قواعد الرّسم الكتابيّ (الهمزة – الألف المتطرّفة) – علامات الترقيم، كتابة الأعداد بالحروف.	2
2	التعبير الصحيح في الكتابة للتعبير عن العدد والجنس والتعريف والتنكير والفاعلية والمفعولية والتكثير والمبالغة.	2
3	اتّقان تركيب الجملة العربيّة (أنواع الجمل – سمات الجملة الصّحيحة – القواعد الوظيفيّة- أدوات الرّبط).	2
4	تجويد الأساليب الكتابيّة: (مثل: الأمر – النّهي – النّفي - التّوكيد – النّداء – الاستفهام ...)	2
5	تنمية الثّروة اللّفظيّة وتوظيفها في الكتابة – الإفادة من المعجم العربيّ بنوعيه (المعاني والألفاظ)	2
6	الأخطاء الكتابيّة الشّائعة (إملائيّة – صرفيّة – نحويّة – أسلوبيّة)	2
7	الكتابة الوظيفية، وأنواعها: (الطلبات الإدارية، السيرة الذاتية، التقرير، الموجز التفصيلي، محضر الاجتماع) مع نماذج تطبيقيّة.	2
8	اختبار دوري تطبيقي: ضبط نصوص لغوية وإعادة كتابتها مضبوطة بالشكل مع استخدام علامات الترقيم المناسبة.	2
9	أنواع القراءة وأهمية كل نوع منها. ومهارة القراءة الجهرية وتمييز الأخطاء من خلال قراءة نصوص مختارة.	2
10	مهارة الفهم وتلخيص المقروء من خلال نماذج تطبيقية من نصوص مختارة.	2
	المجموع	20

د. التدريس والتقييم:

1. ربط مخرجات التعلم للمقرر مع كل من استراتيجيات التدريس وطرق التقييم

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
1.0	المعرفة والفهم		
1.1	أن يذكر الطلبة القواعد الأساسية للجملتين الاسمية والفعلية ورسم ألف الوصل والقطع والهمزة المتوسطة والمتطرفة، وعلامات الترقيم. وأنواع الكتابة الوظيفية والإقناعية.	المحاضرة مع النماذج التطبيقية	المناقشة والحوار
1.2	أن يحدد الطلبة أنواع القراءة وخصائص كل منها وأشكال الخطأ اللغوي الشائعة حسب المستوى الصوتي والصرفي والتركيبي والمعجمي.	المناقشة والتحليل وتصميم الخرائط المفاهيمية	الاختبار النهائي
2	المهارات		
2.1	أن يقارن الطلبة بين الأنماط الوظيفية مثل المقالة والتقرير والتلخيص والسيرة الذاتية والمذكرات.	المحاضرة والتكليفات	تكليفات وواجبات
2.2	أن يصوب الطلبة كتابة وقراءة الأخطاء اللغوية من خلال نصوص لغوية مختارة.	التكليفات مع الحوار والمناقشة	الحوار والمناقشة
3	القيم		
3.1	أن يظهر الطلبة القدرة على العمل مع زملائه ضمن فريق عمل لتصويب نصوص لغوية	التعلم التعاوني	الملاحظة والاستماع
3.2	أن يتعاون الطلبة فيما بينهم لأداء عرض تمثيلي حواري يظهر مهارتهم على استعمال اللغة صحيحة.	التعلم التعاوني	الملاحظة والحوار مع تصميم بطاقة ملاحظة للتقويم

2. أنشطة تقييم الطلبة

م	أنشطة التقييم	توقيت التقييم (بالأسبوع)	النسبة من إجمالي درجة التقييم
1	الاختبار النصفي	السادس	10
2	الاختبار الدوري التطبيقي	الثامن	5
3	الواجبات والأنشطة الصفية (مثل الملخصات- التقارير- نماذج من التكليفات)	على مدار الفصل	5
4	الاختبار النهائي		60
	الإجمالي		100% من الدرجة الكلية

أنشطة التقييم (اختبار تحريري، شفهي، عرض تقديمي، مشروع جماعي، ورقة عمل الخ)

هـ - أنشطة الإرشاد الأكاديمي والدعم الطلابي:

أ- تشجيع الطلبة على التواصل مع عضو هيئة التدريس في مكتبه، وعبر الإنترنت للإجابة عن استفساراتهم، والمشاكل التي تعترض سبيل استيعابهم للمقرر.

ج- تخصيص ساعات إضافية لمساعدة الضعيف من الطلبة، ورعاية الموهوبين منهم.

و – مصادر التعلم والمرافق:

1. قائمة مصادر التعلم:

المرجع الرئيس للمقرر	المساعد في المهارات اللغوية أ.د/ رياض الخوام.
المراجع المساندة	-فن التحرير العربي ضوابطه وأنماطه. د/ محمد صالح الشنطي. - فنون الكتابة ومهارات التحرير العربي. د/ كمال زعفر علي. -فن الكتابة والتعبير. د/ محمد علي أبو حمدة. - أساسيات التحرير وفن الكتابة بالعربية، د/ حسين المناصرة ورفيقيه. - معجم الأخطاء الشائعة، محمد العدناني. - معجم أخطاء الكتَّاب، صلاح الدين الزعبلاوي. - قل ولا تقل، مصطفى جواد. - نحو إتقان الكتابة العلمية باللغة العربية، لمكي الحسني. -أخطاء الكتّاب والإذاعيين، أحمد مختارعمر. -معجم الأغلاط اللغوية المعاصرة، للعدناني - دليل الأخطاء الشائعة في الكتابة والنطق، لمروان البوَّاب التحرير العربي، د/ أحمد شوقي رضوان، ود/ عثمان بن صالح القريح.
المصادر الإلكترونية	موقع مكتبة الملك عبد الله الجامعية
أخرى	الأقراص المدمجة

2. المرافق والتجهيزات المطلوبة:

العناصر	متطلبات المقرر
المرافق (القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ)	لا يوجد
التجهيزات التقنية (جهاز عرض البيانات، السبورة الذكية، البرمجيات)	برنامج البلاك بورد

العناصر	متطلبات المقرر
تجهيزات أخرى (تبعاً لطبيعة التخصص)	لا يوجد

ز. تقويم جودة المقرر:

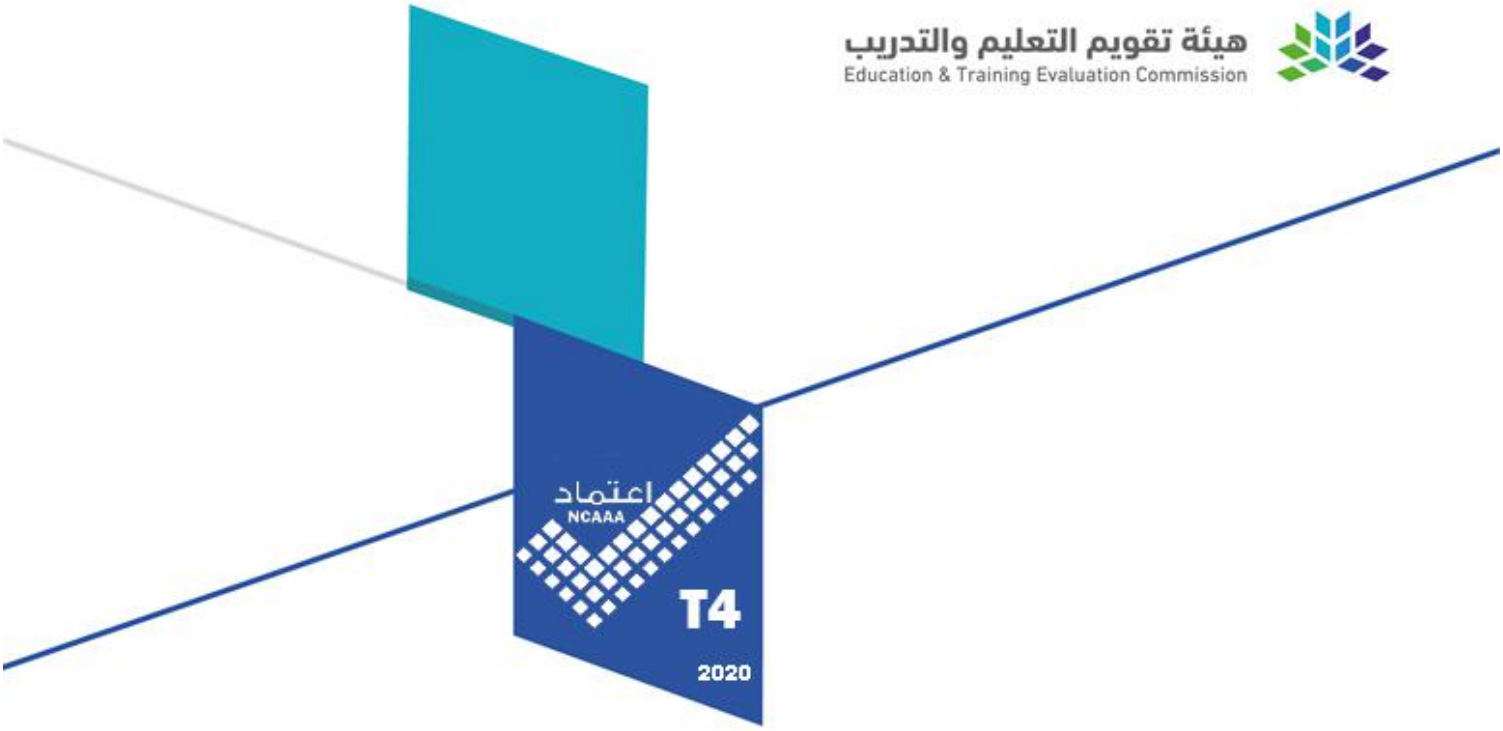
مجالات التقويم	المقيمون	طرق التقييم
فاعلية استراتيجيات التدريس المستخدمة	النظير الطلبة	(مباشر) (غير مباشر)
فاعلية آلية تقييم الطلبة	النظير	(مباشر)
كفاية مصادر التعلم	أستاذ المقرر الطلبة	(مباشر) (غير مباشر)
مصداقية الاختبار وموضوعيته	نظير من نفس التخصص لجنة فحص أسئلة الاختبار	(مباشر) (غير مباشر)
مدى تحقق مخرجات التعلم للمقرر	أستاذ المقرر – قيادة البرنامج الطلبة	(مباشر) (غير مباشر)

مجالات التقويم (مثل. فاعلية التدريس، فاعلة طرق تقييم الطلبة، مدى تحصيل مخرجات التعلم للمقرر، مصادر التعلم ... إلخ)
المقيمون (الطلبة، أعضاء هيئة التدريس، قيادات البرنامج، المراجع النظير، أخرى (يتم تحديدها)
طرق التقييم (مباشر وغير مباشر)

ح. اعتماد التوصيف

جهة الاعتماد	رئيس القسم. د أسامة بن أحمد السلمي
رقم الجلسة	
تاريخ الجلسة	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Partial differential equations
Course Code:	MTH2122
Program:	**BSc. in Mathematics**
Department:	**Mathematical science**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	4
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	**Fifth level/second year**
4. Pre-requisites for this course (if any)**:**	**Ordinary differential equations**
5. Co-requisites for this course (if any)**:**	**Multivariables Calculus**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**40**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (specify)	**0**
	Total	**40**

B. Course Objectives and Learning Outcomes

1. Course Description

This course aims to provide an introduction to the theory and applications of partial differential equations.

2. Course Main Objective

It trains students to develop a systematic approach of solving elementary partial differential equations.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Describe real-world systems using PDEs	K5
1.2	Use knowledge of partial differential equations (PDEs),	K1, K4

CLOs		Aligned PLOs
	modelling, the general structure of solutions, and analytic and numerical methods for solutions	
1.3	classify PDEs, apply analytical methods, and physically interpret the solutions	K4, K5
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Solve first order PDEs using the method of characteristics	S1, S2, S9
2.2	Formulate physical problems as PDEs using conservation laws.	S3, S6
2.3	Demonstrate accurate and efficient use of Fourier analysis techniques and their applications in the theory of PDE's.	S5, S9
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Solve linear second order PDEs using canonical variables for initial-value problems, Separation of Variables and Fourier series for boundary value problems.	V2
3.2	Demonstrate capacity to model physical phenomena using PDE's (in particular using the heat and wave equations).	V2
3.3	Apply a range of techniques to find solutions of standard Partial Differential Equations (PDE)	V2, V3

C. Course Content

No	List of Topics	Contact Hours
1	**Introduction**: Definition of a partial differential equation (PDE). Definition of properties such as 'order' and 'linear/nonlinear'. Descriptions of how partial differential equations arise in the context of applications. Specifically, how conservation laws lead to the derivations of Laplace's equation (elliptic), diffusion equation (parabolic) and the Wave Equation (hyperbolic).	4
2	**First order equations:** • Define the general form of a first order partial differential equation. Find solution of first order linear equations of the generic type. Cauchy problem in linear partial differential equation. • The use of characteristic methods to solve nonlinear first order PDEs	18
3	**Classification of second order linear equation:** Types of second order partial differential equations (examples and solutions). Classification by reduction to canonical form. Use of change of variable to find the general solution of second order linear partial differential equation in two variables. Determination of particular solutions from given information.	8
4	**Fourier Series and applications:** • Description of Fourier series, and its particularizations to half-range sine and cosine series. The Dirichlet conditions for the existence of a Fourier series. • Solution of linear partial differential equations by the method of separation of variables. Examples of the application of the method to the solution of	10

	boundary value problems for Laplace's equation in two dimensions and initial boundary value problems for the diffusion equation in one-dimension.	
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	List the theories and concepts used in the Partial differential equations	Lecture	Exams, Homework
1.2	Identify the steps required to carry out a piece of research on a topic within Partial differential equations	Lecture	Exams, Homework
1.3	Recognize an understanding of the contribution and impacts of the Partial differential equations in science	Lecture and Tutorials	Exams, Homework
2.0	**Skills**		
2.1	Apply appropriate theories, principles and concepts relevant to the Partial Differential Equations	Lecture and Tutorials	Exams, Homework
2.2	Analyze and interpret information from a variety of sources relevant to Partial Differential Equations.	Lecture and Tutorials	Exams, Homework
3.0	**Values**		
3.1	Plan practical activities using techniques and procedures appropriate to Partial Differential Equations	Lecture and Tutorials	Exams, Homework
3.2	Execute a piece of independent research using mathematics techniques of Partial Differential Equations	Lecture and Tutorials	Exams, Homework

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	%30
2	Quizzes + Homework assignments	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

- Each group of students is assigned to a particular faculty where he or she will provide academic advising during specific academic hours. Each staff will provide at least one session/week.
- There will be an academic advisor how will be a responsible for helping the student by doing the general supervision.

- The people in the library will support the students during the time of the course.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• I. Petrovski, Partial differential equations, Translated Mir Publisher, 1966. • WALTER A. STRAUSS: Partial Differential Equations: an Introduction, John Wiley & Sons, Ltd, 2009. • M.D. Raisinghania. Advanced Differential equations. S.CHAND. New Delhi 2008.
Essential References Materials	Lecture notes provided by Instructor
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

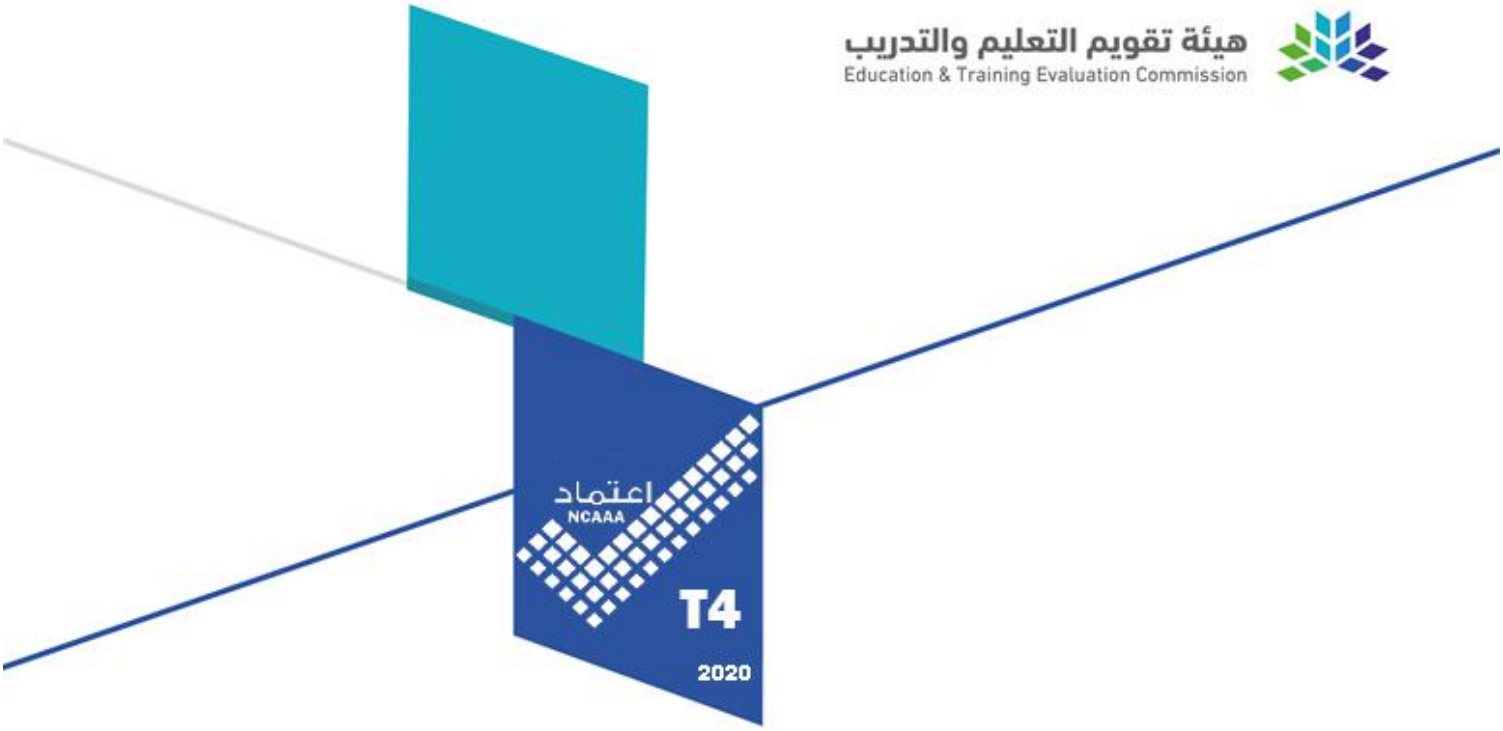
Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	

Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Linear Algebra (2)
Course Code:	**MTH2212**
Program:	BSc. in Mathematics
Department:	Mathematical science
College:	Applied science
Institution:	Umm Al-Qura University

Table of Contents

A. Course Identification

1. Credit hours: 4
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: fifth level/second year
4. Pre-requisites for this course (if any)**:** Linear Algebra (1) MTH3211-4)
5. Co-requisites for this course (if any)**:** -

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**40**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (specify)	**0**
	Total	**40**

B. Course Objectives and Learning Outcomes

1. Course Description:

This is the second course of linear algebra. It is a completion of the first one in the sense that we shall concentrate in the following items:
Some revisions of vector space, bases, dimensions. Then Algebra of linear transformations. After that Linear functional and dual and double dual basis. Then Representation of linear transformations. We shall introduce the concept of change of bases and equivalent matrices. We shall concentrate on Caley-Hamilton Theorem and Characteristic polynomials. Gram-Schmidt process of basis in an inner product space will be taught. Then Minimal polynomials. Then more in Eigenvalues and Eigenvectors of linear transformational. The similarity of matrices will be focused in and then diagonalization process. Then Direct sum of subspaces focusing on the Invariant subspaces and primary decomposition Theorem. We are intersecting in Nilpotent linear transformations. Jordan canonical forms and Rational canonical forms will be introduced**.**

2. Course Main Objective

Critically analyze and construct mathematical arguments that relate to the study of linear algebra and use computational techniques and algebraic skills essential for the study of systems of linear equations, matrix algebra, vector spaces, eigenvalues and eigenvectors, orthogonality and diagonalization. techniques namely integrating factors, substitution, and variation of parameters and reduction of order.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Interpret existence and uniqueness of solutions geometrically	K2, K3
1.2	Basic properties of subspaces and vector spaces	K1, K3
1.3	Basic properties of Linear transformation and their matrix representation	K1, K3
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Ability to explain the ideas in their own words.	S1, S7
2.2	How to apply the method when some practical problem is given?	S2, S4
2.3	How to simplify problems and analyze phenomena?	S2, S4, S5
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Execute a piece of independent research using mathematical techniques of linear Algebra.	V1, V4
3.2	Construct algebraic structures and evaluate in linear algebra	V2, V4

C. Course Content

No	List of Topics	Contact Hours
1	Some revisions of vector space, bases, dimensions. Algebra of linear transformations, linear functionals and duals. Double duals basis, and representation of linear transformation.	6
2	Cayley–Hamilton theorem, Characteristic polynomials, minimal polynomials.	6
3	Change of bases and equivalent matrices.	4
4	Eigen values and eigen vectors of linear transformations. diagonalization.	6
5	Gram–Schmidt process of basis in an inner product space.	6
6	Direct sum of subspaces, invariant subspaces and primary decomposition Theorem	6
7	Nilpotent linear transformation., Jordan canonical forms. And rational forms	6
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	To revise vector space, bases, dimension. - To define Algebra of linear transformations of a vector space, minimal polynomials, invariant subspaces. Direct sum of bases - To list and name Linear functionals and duals and double duals. -	Lecture and Tutorials	Written Exams
1.2	To recognize eigen values and eigen vectors of linear transformation and diagonalization.	Lecture and Tutorials	Written Exams
1.3	To recognize Elementary canonical forms	Lecture and Tutorials	Written Exams
3.0	**Values**		
3.1	To interpret vector space, bases, dimension. - To reconstruct Algebra of linear transformations of a vector space, invariant subspaces, direct sum of subspaces - To interpret and name Linear functional and duals and double duals.	Lecture and Tutorials	Mid-term exams
3.2	To evaluate Rational canonical forms, Jordan canonical forms.	Lecture and Tutorials	Quizzes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Fifth week	%30
2	Quizes and homeworks	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Required Textbooks Linear Algebra (2nd Edition) by Kenneth M Hoffman, Ray Kunze; Publisher: Pearson; 2 edition (April 25, 1971) Language: English ISBN-10: 0135367972 ISBN-13: 978-0135367971
Essential References Materials	Linear Algebra and Its Applications,(4th Edition) Publisher: Pearson; 4 edition (December 26, 2011) Language: English ISBN-10: 0321836146 ISBN-13: 978-0321836144 -Schaum's Outline of Linear Algebra, 5th Edition: 612 Solved Problems + 25 Videos (Schaum's Outlines) :Publisher: McGraw-Hill Education; 5 edition (December 11, 2012) Language: English ISBN-10: 0071794565 ISBN-13: 978-0071794565
Electronic Materials	ABSTRACT ALGEBRA ONLINE STUDY GUIDE (http://www.math.niu.edu/~beachy/abstract_algebra/study_guide/contents.ht ml) https://en.wikipedia.org/wiki/Set_theory https://en.wikipedia.org/wiki/Algebraic_structure http://mathworld.wolfram.com/topics/LinearAlgebra.html
Other Learning Materials	Mathematica -Magma -Gap -Matlab –Maple

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA T4 2020

Course Specifications

Course Title:	**Real Analysis (1)**
Course Code:	**MTH2112**
Program:	**BSc. in Mathematics**
Department:	**Mathematical sciences**
College:	**Applied sciences**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 4
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Fifth level/second year
4. Pre-requisites for this course (if any)**:** Introduction to Real Analysis MTH2111-4
5. Co-requisites for this course (if any)**:** Not applicable

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	Four hours/week	%100
2	Blended	0	0
3	E-learning	0	0
4	Distance learning	0	0
5	Other	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	36
2	Laboratory/Studio	0
3	Tutorial	0
4	Others (Tests + Quizzes + Revisions)	4
	Total	40

B. Course Objectives and Learning Outcomes

1. Course Description

As mentioned in previous modules, the main idea in analysis is to take limits. In Course " Introduction to Real Analysis" students learn to take limits of sequences of real numbers and learned to take limits of functions as a real number approached some other real number. We want to take limits in more complicated contexts. For example, students might want to have sequences of points in 3-dimensional space. Students might even want to define functions on spaces that are a little harder to describe, such as the surface of the earth. Students still want to talk about limits there. Finally, we have seen the limit of a sequence of functions in precedent chapters. We wish to unify all these notions so that we do not have to reprove theorems over and over again in each context. The concept of a metric space is an elementary yet powerful tool in analysis. And while it is not sufficient to describe every type of limit one can find in modern analysis, it gets us very far indeed.

2. Course Main Objective

The aims of this course are the following:
Be able to deal with different metric spaces and with some types of points such as interior, isolated, boundary and accumulation points.
Be Familiar with the concepts of open and closed sets.
Understand the concepts of completeness and compactness.
Study the continuity of some functions.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Recognize the basic properties of metric spaces	K1, K3
1.2	Describe the standard examples of metric spaces	K1, K2
1.3	Examine continuous function between metric spaces	K2, K3
1.4	Recall the neighborhood of a point and its relation with open, closed and other sets	K1, K5
1.5	Describe convergence of sequences as topological phenomenon	K2, K3
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Classify open and closed sets in metric spaces	S1, S8
2.2	Associate open, closed sets	S2, S4, S5
2.3	Investigate Cauchy sequences to study complete metric spaces	S4, S5, S8
2.4	Summarize main properties of compact metric spaces	S2, S8
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Generalize the main results in the real case to the metric spaces	V2, V4
3.2	Write clear and precise proofs	V3, V4
3.3	Communicate effectively in both written and oral form	V2, V4

C. Course Content

No	List of Topics	Contact Hours
1	Metric space: Definition of metric spaces, basic properties and examples. Holder and Minkowski inequalities Open set, Closed sets, Interior and Closure of a set	6
2	Bounded set , Totally bounded set Dense, and Nowhere dense subsets. Separable Spaces and examples. Product of Metric spaces	6
3	Convergent sequences. Continuous function, Uniformly continuous function	8
4	Cauchy sequences Complete metric spaces. Examples of Complete metric spaces. Completion	8
5	Contraction mapping. Compact metric spaces.	8
6	Tests + Quizzes + Revisions	4
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Recognize the basic properties of metric spaces	Lecture and Tutorials	Exams, quizzes
1.2	Describe the standard examples of metric spaces	Lecture and Tutorials	Exams, quizzes
1.3	Examine continuous function between metric spaces	Lecture and Tutorials	Exams, quizzes
1.4	Recall the neighborhood of a point and its relation with open, closed and other sets	Lecture and Tutorials	Exams, quizzes
1.5	Describe convergence of sequences as topological phenomenon		
2.0	**Skills**		
2.1	Classify open and closed sets in metric spaces	Lecture/Individual or group work	Exams, quizzes
2.2	Associate open, closed sets	Lecture/Individual or group work	Exams, quizzes
2.3	Investigate Cauchy sequences to study complete metric spaces	Lecture/Individual or group work	Exams, quizzes
2.4	Summarize main properties of compact metric spaces		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.0	**Competence**		
3.1	Generalize the main results in the real case to the metric spaces	group work	Group project, quizzes
3.2	Write clear and precise proofs.	group work	Group project, quizzes
3.3	Communicate effectively in both written and oral form.	group work	Group project, quizzes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30%
2	Quizes and homeworks	During semester	20%
3	Final exam	End of semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

Each group of students is assigned to a faculty member where he or she will provide academic advising. All faculty members are required to be in their offices outside teaching hours. Each faculty member allocates at least 4 hours per week to give academic advice and to answer to the questions of students about concepts studied during the lectures.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Joseph Muscat, Functional analysis An Introduction to Metric Spaces, Hilbert Spaces, and Banach Algebras, Springer , 2014
Essential References Materials	• Satish Shirali and Harkrishan L. Vasudeva, Metric Spaces, Springer- Verlag London Limited 2006 • Mícheál O'Searcoid, Metric Spaces, Springer Undergraduate Mathematics Series, 2007
Electronic Materials	None
Other Learning Materials	Microsoft Word

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Council of Mathematics Department
Reference No.	
Date	

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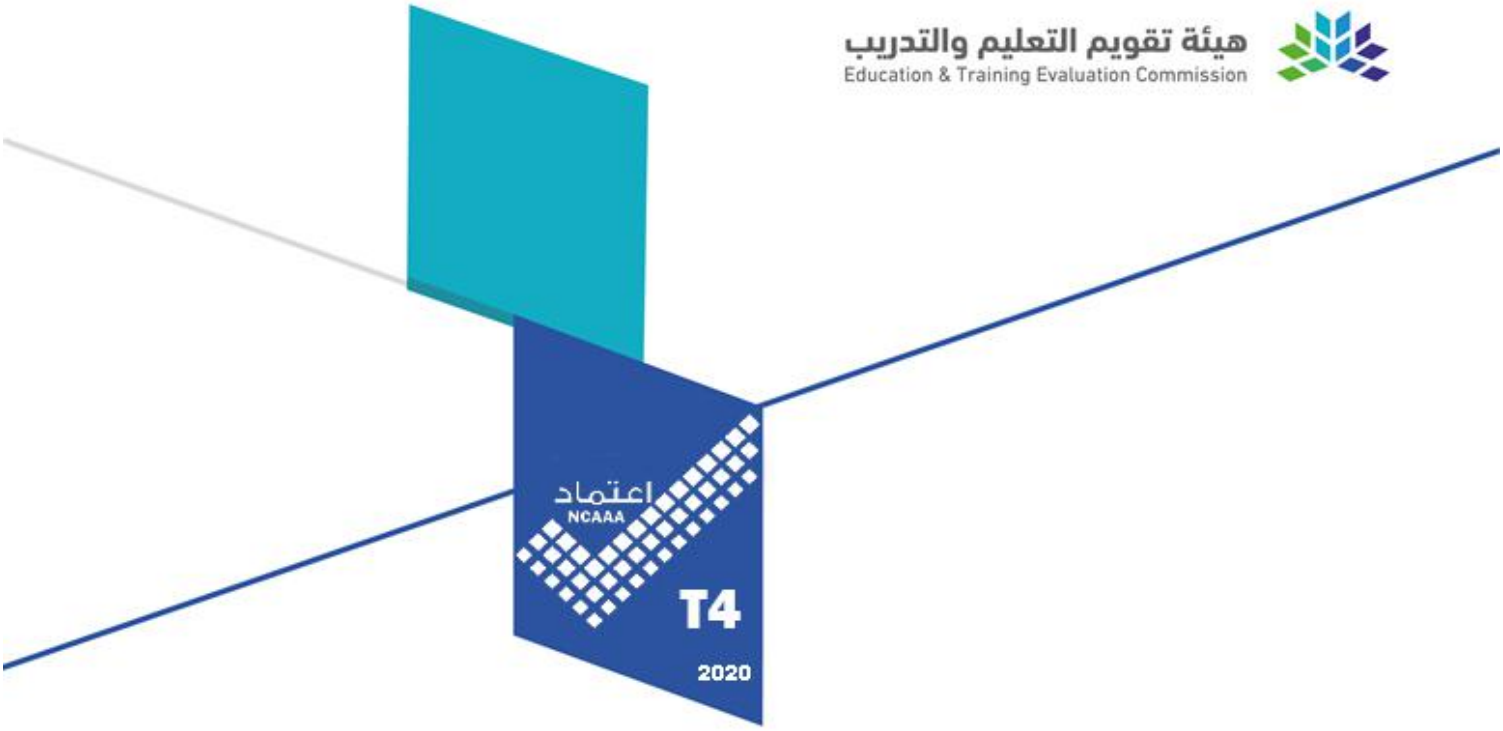
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Vectors Calculus**
Course Code:	**MTH2105**
Program:	**BSc. in Mathematics**
Department:	**Mathematical science**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	3
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	Fifth level/Second year
4. Pre-requisites for this course (if any)**:**	Multivariable calculus (MTH2104-3)
5. Co-requisites for this course (if any)**:**	Not applicable

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	Three hours/week	100%
2	Blended	0	0
3	E-learning	0	0
4	Distance learning	0	0
5	Other	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	0
3	Tutorial	0
4	Others (specify)	0
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

Vectors calculus is the fifth and the final part of the calculus sequence. This course treats topics related to the line, surface, and volume integrals. Vectors calculus are of great value in this course as they have many applications in various fields such as engineering and physics.

2. Course Main Objective

The objective of this course is to introduce to the students the basics of vectors and vectors in three dimensions and the theories of Green, Gauss, and Stokes.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Know vectors and operations on them.	K1
1.2	Get the knowledge of various physical theorems (Green, Gauss, Stokes).	K1, K5
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Perform calculus operations on vector-valued functions.	S1, S3, S5
2.2	Using the definition of a vector and its algebraic operations in solving some mathematical problems in different branches of mathematics.	S4, S6, S9
2.3	Apply integration theorems in solving physical mathematical problems.	S2, S5, S6
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Know how to think about given problems and the importance of suggesting individual solutions.	V1
3.2	Use the most important theorems of vector calculus, such as the fundamental theorem of line integrals, Green's theorem, divergence theorem, and Stokes's theorem to simplify integration problems.	V1, V2

C. Course Content

No	List of Topics	Contact Hours
1	- A quick review about vectors (vectors in two- and three-dimension, vectors algebra, derivatives and integrals of vectors, gradient, divergence and curl),	3
2	- Vector fields	3
3	- Line integrals	6
4	- Independence of path	3
5	- Green's theorem.	3
6	- Surface integrals	6
7	- Gauss's divergence theorem	3
8	- Stokes's theorem	3
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Know vectors and operations on them.	Lecture	Exams, Quizzes
1.2	Get the knowledge of various physical theorems (Green, Gauss, Stokes).	Lecture	Exams, Quizzes Homework
2.0	**Skills**		
2.1	Perform calculus operations on vector-valued functions.	Lecture /Individual or group work	Exams, Quizzes, Homework
2.2	Using the definition of a vector and its algebraic operations in solving some mathematical problems in different branches of mathematics.	Lecture / Individual or group work	Exams, Quizzes, Homework
2.3	Apply integration theorems in solving physical mathematical problems.	Lecture / Individual or group work	Exams, Quizzes, Homework
3.0	**Values**		
3.1	Know how to think about given problems and the importance of suggesting individual solutions.	Lecture / Individual or group work	Exams, Quizzes, Homework
3.2	Use the most important theorems of vector calculus, such as the fundamental theorem of line integrals, Green's theorem, divergence theorem, and Stokes's theorem to simplify integration problems.	Lecture / Individual or group work	Exams, Quizzes, Homework

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30%
2	Quizes and homeworks	During semester	20%
3	Final exam	End of semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

Each group of students is assigned to a faculty member where he or she will provide academic advising. All faculty members are required to be in their offices outside teaching hours. Each faculty member allocates at least 4 hours per week to give academic advice and to answer to the questions of students about concepts studied during the lectures.
.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Calculus with differential equations, Varberg, D. E., Purcell, E. J. , & Rigdon, S. E. , Pearson/Prentice Hall (2007) .
Essential References Materials	-Calculus with analytic geometry (4th Edition), Edwin J. Purcell, and Dale E. Varberg, Prentice Hall (1984) - Vector and tensor analysis with applications, Borisenko, A. I., Courier Corporation (1968) - Introduction to vector and tensor analysis, Wrede R. C., Courier Corporation (2013) - Vector and tensor analysis, Brand L. , Courier Dover Publications (2020) .
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 40 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Council of the Mathematics Department
Reference No.	
Date	

The Sixth Level

توصيف المقرر الدراسي

اسم المقرر:	القرآن الكريم (2)
رمز المقرر:	**(QR2102)**
البرنامج:	**البكالوريوس**
القسم العلمي:	**القراءات**
الكلية:	**الدعوة وأصول الدين**
المؤسسة:	**جامعة أم القرى**

المحتويات

أ. التعريف بالمقرر الدراسي:

1. الساعات المعتمدة: ساعتان.

2. نوع المقرر

أ. متطلب جامعة ☑ متطلب كلية ☐ متطلب قسم ☐ أخرى ☐

ب. إجباري ☑ اختياري ☐

3. السنة / المستوى الذي يقدم فيه المقرر: السنة الثانية.

4. المتطلبات السابقة لهذا المقرر:

القرآن الكريم (1)

5. المتطلبات المتزامنة مع هذا المقرر (إن وجدت)

لا يوجد

6. نمط الدراسة (اختر كل ما ينطبق)

م	نمط الدراسة	عدد الساعات التدريسية	النسبة
1	المحاضرات التقليدية		
2	التعليم المدمج		
3	التعليم الإلكتروني		
4	التعليم عن بعد	20 ساعة	%100
5	أخرى		

7. ساعات الاتصال (على مستوى الفصل الدراسي)

م	النشاط	ساعات التعلم
1	محاضرات	20 ساعة
2	معمل أو إستوديو	
3	دروس إضافية	
4	أخرى (ساعات استذكار)	
	الإجمالي	20 ساعة

ب- هدف المقرر ومخرجاته التعليمية:

1. الوصف العام للمقرر:

يشمل المقرر على أربعة محاور:

1. حفظ نصف الجزء الثلاثين من القرآن الكريم: من سورة النبأ إلى سورة الطارق.
2. تلاوة ثلاثة أجزاء: من سورة الشورى إلى سورة الحديد.
3. دراسة أحكام التَّجويد.
4. شرح غريب الكلمات: من سورة النبأ إلى سورة الطارق.

2. الهدف الرئيس للمقرر

1. تعليم الطُّلَّاب النُّطق السَّليم لكتاب الله عزَّ وجلَّ، وفق طرق الأداء المعتبرة.
2. حفظ حزب واحدٍ من القرآن الكريم.

3. مخرجات التعلم للمقرر:

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1	**المعرفة والفهم**	
1.1	أن يحفظ الطَّالب المقدار المقرَّر أسبوعيًّا.	
1.2	أن يتلو الطَّالب القران الكريم بالكيفية الصحيحة.	
1.3	أن يتعرف الطالب على أحكام التجويد.	
1.4	أن يعَرِّف الطَّالب غريب القرآن.	
2	**المهارات**	
2.1	أن يصحح الطالب الأخطاء التي تقع في التلاوة أو الحفظ منه أو من زملائه.	
2.2	أن يطبِّق الطَّالب جميع أحكام التَّجويد تطبيقاً عمليًّا.	
2.3	أن يوضح معاني غريب القرآن.	
2.4	أن يتواصل الطالب مع الآخرين بشكل فعال؛ لإظهار ونقل معارفه ومهاراته.	
2.5	أن يقترح الطالب الأساليب المثلى له ولزملائه لتعلم القرآن الكريم؛ لحل مشكلات التعلم والقراءة؛ مستخدماً الأدوات التقنية والحاسوبية.	
3	**القيم**	
3.1	أن يعمل ضمن فريق المقرر بكفاءة، ومسؤولية.	
3.2	أن يلتزم بآداب وأخلاق قارئ القرآن.	
3.3	أن يقوِّم ذاتياً مستوى أدائه؛ ملتزماً بتحمل مسؤولية تعلمه.	

ج. موضوعات المقرر

م	قائمة الموضوعات	ساعات الاتصال
1	مقدِّمة تعريفيَّة عن فضل تعلم القرآن الكريم، وأقسام اللحن الجلي والخفي، وتصحيح تلاوة سورة النبأ كاملة مع التَّكليف بحفظها، مع شرح غريب القرآن.	2
2	تسميع سورة النبأ كاملة، تصحيح تلاوة سورة النازعات كاملة مع التَّكليف بحفظها، مع شرح غريب القرآن تلاوة سورة الشورى، ، شرح درس التجويد (تفخيم اللام).	2
3	تسميع سورة النازعات كاملة، تصحيح تلاوة سورة عبس كاملة مع التَّكليف بحفظها، مع شرح غريب القرآن، تلاوة سورة الزخرف.	2
4	تسميع سورة عبس كاملة، تصحيح تلاوة سورة التكوير كاملة مع التَّكليف بحفظها، مع شرح غريب القرآن، تلاوة سورتي الدخان والجاثية، شرح درس التجويد (اللام الشمسية والقمرية).	2
5	تسميع سورة التكوير كاملة، تصحيح تلاوة سورة الانفطار كاملة مع التَّكليف بحفظها، مع شرح غريب القرآن، تلاوة سورة الأحقاف.	2
6	تسميع سورة الانفطار كاملة، تصحيح تلاوة سورة المطففين كاملة مع التَّكليف بحفظها، مع شرح غريب القرآن، تلاوة سورتي محمد صلى الله عليه وسلم والفتح، شرح درس التجويد (المدود – المد بسبب الهمز).	2
7	تسميع سورة المطففين كاملة، تصحيح تلاوة سورة الانشقاق كاملة مع التَّكليف بحفظها، مع شرح غريب القرآن، تلاوة سورة الحجرات وق والذاريات.	2

8	تسميع سورة الانشقاق كاملة، تصحيح تلاوة سورتي البروج والطارق مع التَّكليف بحفظهما، مع شرح غريب القرآن، تلاوة سورة الطور والنجم والقمر، شرح درس التجويد (تابع المدود – المد بسبب السكون).	2
9	تسميع سورة البروج، تلاوة سورة الرحمن والواقعة.	2
10	تسميع سورة الطارق، تلاوة سورة الحديد.	2
المجموع		20

د. التدريس والتقييم:

1. ربط مخرجات التعلم للمقرر مع كل من استراتيجيات التدريس وطرق التقييم

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
1.0	**المعرفة والفهم**		
1.1	أن يحفظ الطَّالب المقدار المقرَّر أسبوعيًّا.	المحاضرة التلقي والسماع العروض التقديمية	التقييم المستمر الاختبارات الشفوية
1.2	أن يتلو الطَّالب القران الكريم بالكيفية الصحيحة.		
1.3	أن يتعرف الطالب على أحكام التجويد.		
1.4	أن يعَرِّف الطَّالب غريب القرآن.		
2.0	**المهارات**		
2.1	أن يصحح الطالب الأخطاء التي تقع في التلاوة أو الحفظ منه أو من زملائه.	المحاضرة الحوار والمناقشة التلقِّي والمحاكاة العرض والاستماع التَّعلم الذاتي العروض التقديمية أسلوب حل المشكلات	الاختبارات الشفوية الاختبارات التحريرية
2.2	أن يطبِّق الطَّالب جميع أحكام التَّجويد تطبيقاً عمليًّا.		
2.3	أن يوضح معاني غريب القرآن.		
2.4	أن يتواصل الطالب مع الآخرين بشكل فعال؛ لإظهار ونقل معارفه ومهاراته.		
2.5	أن يقترح الطالب الأساليب المثلى له ولزملائه لتعلم القرآن الكريم؛ لحل مشكلات التعلم والقراءة؛ مستخدماً الأدوات التقنية والحاسوبية.		
3.0	**القيم**		
3.1	أن يعمل ضمن فريق المقرر بكفاءة ومسؤولية.	التَّعلم الذاتي التَّعليم التعاوني حلقات النقاش ملف الإنجاز	بطاقة الملاحظة
3.2	أن يلتزم بآداب وأخلاق قارئ القرآن.		
3.3	أن يقوِّم ذاتياً مستوى أدائه؛ ملتزماً بتحمل مسؤولية تعلمه.		

2. أنشطة تقييم الطلبة

م	أنشطة التقييم	توقيت التقييم (بالأسبوع)	النسبة من إجمالي درجة التقييم
1	**المشاركة وحفظ الآيات وتلاوتها**	مستمر	%20
2	**الاختبار النصفي**	السادس	%20

م	أنشطة التقييم	توقيت التقييم (بالأسبوع)	النسبة من إجمالي درجة التقييم
3	الاختبار النهائي	العاشر	%60

أنشطة التقييم (اختبار تحريري، شفهي، عرض تقديمي، مشروع جماعي، ورقة عمل الخ)

هـ - أنشطة الإرشاد الأكاديمي والدعم الطلابي:

المرجع الرئيس للمقرر	-القرآن الكريم. - الميسر في غريب القرآن الكريم المطبوع بمجمع الملك فهد لطباعة المصحف الشريف. - التجويد الميسر المطبوع بمجمع الملك فهد لطباعة المصحف الشريف.	
المراجع المساندة	- البرهان في تجويد القرآن/ محمد الصادق قمحاوي. - هداية القارئ إلى تجويد كلام البارئ/ عبد الفتاح السيد عجمي المرصفي. - مذكرة في علم التجويد/ محمد نبهان بن حسين مصري.	

- ساعات الإرشاد الأكاديمي (السَّاعات المكتبية للأستاذ).
- مساعدة الطلبة في توفير المصادر غير المتوفرة في مكتبة الكلِّيَّة.
- مساعدة الطلبة ذوي الاحتياجات الخاصة (ذوي البصيرة) في توفير المصادر ببرايل.
- إحالة الطلبة الوافدات والمتعثرات والموهوبات على لجنة الإرشاد الأكاديمي بالقسم والجهات المعنيَّة بشؤون الطَّلبة.

-تشكيل لجنة تطوير المقرَّرات بالبرنامج، تعنى بمراجعة المفردات وطرق تدريسها وتقييمها، وتقييم المخرجات من خلال المتابعة المستمرة للتَّغذية الرَّاجعة من قبل الطَّلبة وتقارير المدرِّسين، ثم تقدِّم توصياتها لمجلس القسم لتأخذ مجراها الأكاديمي.

-إعداد الأسئلة التَّقويميَّة نهاية الدَّرس والأنشطة المنزليَّة.

-توجيه الطُّلاب لسماع تلاوات المقرئين المجوِّدين من خلال الوسائل المتاحة.

-المقارنة المرجعيَّة بالمقرَّرات المشابهة له في الجهات الأكاديميَّة الأخرى.

و – مصادر التعلم والمرافق:

1. قائمة مصادر التعلم:

المصادر الإلكترونية	- موقع مكتبة جامعة أم القرى. - المكتبة الوقفية. - المكتبة الشاملة. - ملتقى أهل التفسير. - منتديات قراء القرآن.	
أخرى	-	

2. المرافق والتجهيزات المطلوبة:

العناصر	متطلبات المقرر
المرافق (القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ)	-قاعات دراسية بها عدد من الكراسي والطاولات للاختبارات النصفية والنهائية.
التجهيزات التقنية (جهاز عرض البيانات، السبورة الذكية، البرمجيات)	- الحاسب الآلي. - التطبيقات الالكترونية.
تجهيزات أخرى (تبعاً لطبيعة التخصص)	-

ز. تقويم جودة المقرر:

مجالات التقويم	المقيمون	طرق التقييم
تقويم فاعليَّة استراتيجيات التَّدريس المستخدمة	أستاذ زميل يدرِّس نفس المقرَّر	مباشر: الزِّيارة للفصل وتقرير فاعليَّة استراتيجيَّات التَّدريس المستخدمة.
طرق تقييم الطُّلَّاب	الطُّلَّاب	غير مباشر: استبانة تقييم المقرَّر المتاحة على الموقع الإلكتروني.
مدى تحصيل مخرجات التَّعلم للمقرَّر	قيادة البرنامج	غير مباشر: تقرير المقرَّر.

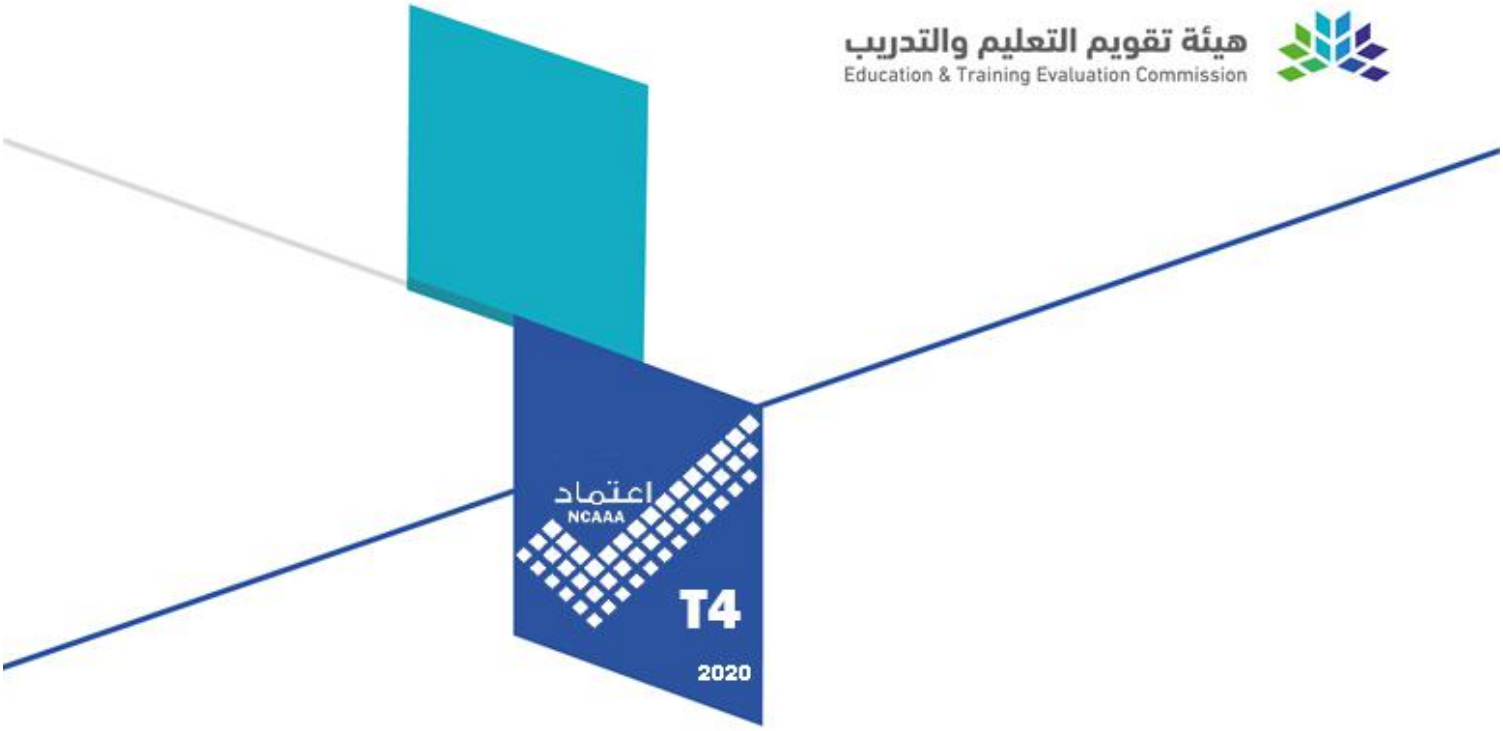
مجالات التقويم (مثل. فاعلية التدريس، فاعلة طرق تقييم الطلاب، مدى تحصيل مخرجات التعلم للمقرر، مصادر التعلم ... إلخ)
المقيمون (الطلبة، أعضاء هيئة التدريس، قيادات البرنامج، المراجع النظير، أخرى (يتم تحديدها)
طرق التقييم (مباشر وغير مباشر)

ح. اعتماد التوصيف

جهة الاعتماد	
رقم الجلسة	
تاريخ الجلسة	

أستاذ زميل يدرِّس نفس المقرَّر
الطُّلَّاب
قيادة البرنامج

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Nonlinear differential equations
Course Code:	MTH2123
Program:	**BSc. in Mathematics**
Department:	**Mathematical science**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	**4**
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	**Sixth level/second year**
4. Pre-requisites for this course (if any)**:**	**Partial differential equations**
5. Co-requisites for this course (if any)**:**	**Not applicable**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**40**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (specify)	**0**
	Total	**40**

B. Course Objectives and Learning Outcomes

1. Course Description

This course introduces basic concepts on nonlinear differential equations and how to study the qualitative behavior of the system in the long-time run. Also, finding the equilibrium points and study their stability is of great interest.

2. Course Main Objective

The course objective is to achieve an elementary knowledge of nonlinear ordinary differential equations and to become more familiar with rigorous proofs in analysis. The objectives are summarized mainly in the competence in finding the phase plane, the equilibrium points and studying their stability either by linearization or in the sense of Lyapunov.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Locate the equilibrium points	K4, K5
1.2	Find the phase plane and construct a phase diagram	K4, K5

CLOs		Aligned PLOs
1.3	Understand the meaning of stability in the sense of Liapunov	K1
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Compare the methods of solution developed in higher order and solution in second/first order equations	S1, S3
2.2	Study the stability of a planar system based on Bendixon theorem	S1, S5, S9
2.3	Study the stability of autonomous and nonautonomous dynamical system based on Liapunov methods	S3, S5, S9
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Solve problems independently and in teamwork.	V2, V3
3.2	Generalize mathematical concepts in problem-solving through the integration of new material and modeling	V3, V4

C. Course Content

No	List of Topics	Contact Hours
1	**Second-order differential equations in the phase plane:** ▶Phase diagram for the pendulum equation ▶Autonomous equations in the phase plane ▶Parameter-dependent conservative systems	8
2	**Plane autonomous systems and linearization:** ▶ The general phase plane ▶ Some population models ▶ Linear approximation at equilibrium points ▶ The general solution of linear autonomous plane systems ▶ The phase paths of linear autonomous plane systems ▶ Constructing a phase diagram ▶ Hamiltonian systems	10
3	**Stability:** ▶ Stability of time solutions: Liapunov stability ▶ Liapunov stability of plane autonomous linear systems ▶ Structure of the solutions of n-dimensional linear systems ▶ Structure of n-dimensional inhomogeneous linear systems ▶ Stability and boundedness for linear systems ▶ Stability of linear systems with constant coefficients ▶ Linear approximation at equilibrium points for first-order systems in n variables ▶ Stability of a class of non-autonomous linear systems in n dimensions	12

	▶ Stability of the zero solutions of nearly linear systems	
4	**Liapunov methods for determining stability of the zero solution:** ▶ Introducing the Liapunov method ▶ Topographic systems and the Poincaré–Bendixson theorem ▶ Liapunov stability of the zero solution ▶ Asymptotic stability of the zero solution ▶ A more general theory for autonomous systems ▶ A test for instability of the zero solution: n dimensions ▶ Stability and the linear approximation in two dimensions ▶ Exponential function of a matrix ▶ Stability and the linear approximation for nth order autonomous systems	10
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Locate the equilibrium points	Lecture and Tutorials	Exams, homeworks
1.2	Find the phase plane and construct a phase diagram	Lecture and Tutorials	Exams, homeworks
1.3	Understand the meaning of stability in the sense of Liapunov	Lecture and Tutorials	Exams, homeworks
2.0	**Skills**		
2.1	Compare the methods of solution developed in higher order and solution in second/first order equations	Lecture/Individual or group work	Exams, homeworks
2.2	Study the stability of a planar system based on Bendixon theorem	Lecture/Individual or group work	Exams, homeworks
2.3	Study the stability of autonomous and nonautonomous dynamical system based on Liapunov methods	Lecture/Individual or group work	Exams, homeworks
3.0	**Values**		
3.1	Solve problems independently and in teamwork.	Lecture/Individual or group work	Exams, homeworks
3.2	Generalize mathematical concepts in problem-solving through the integration of new material and modeling	Lecture/Individual or group work	Exams, homeworks

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	%30
2	Quizes and homeworks	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Jordan, Dominic, and Peter Smith. Nonlinear ordinary differential equations: an introduction for scientists and engineers. OUP Oxford, 2007. • Jordan, D W, and Peter Smith. Nonlinear Ordinary Differential Equations: Problems and Solutions: a Sourcebook for Scientists and Engineers. Oxford: Oxford University Press, 2007.
Essential References Materials	Lecture notes by the lecturer (when available).
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

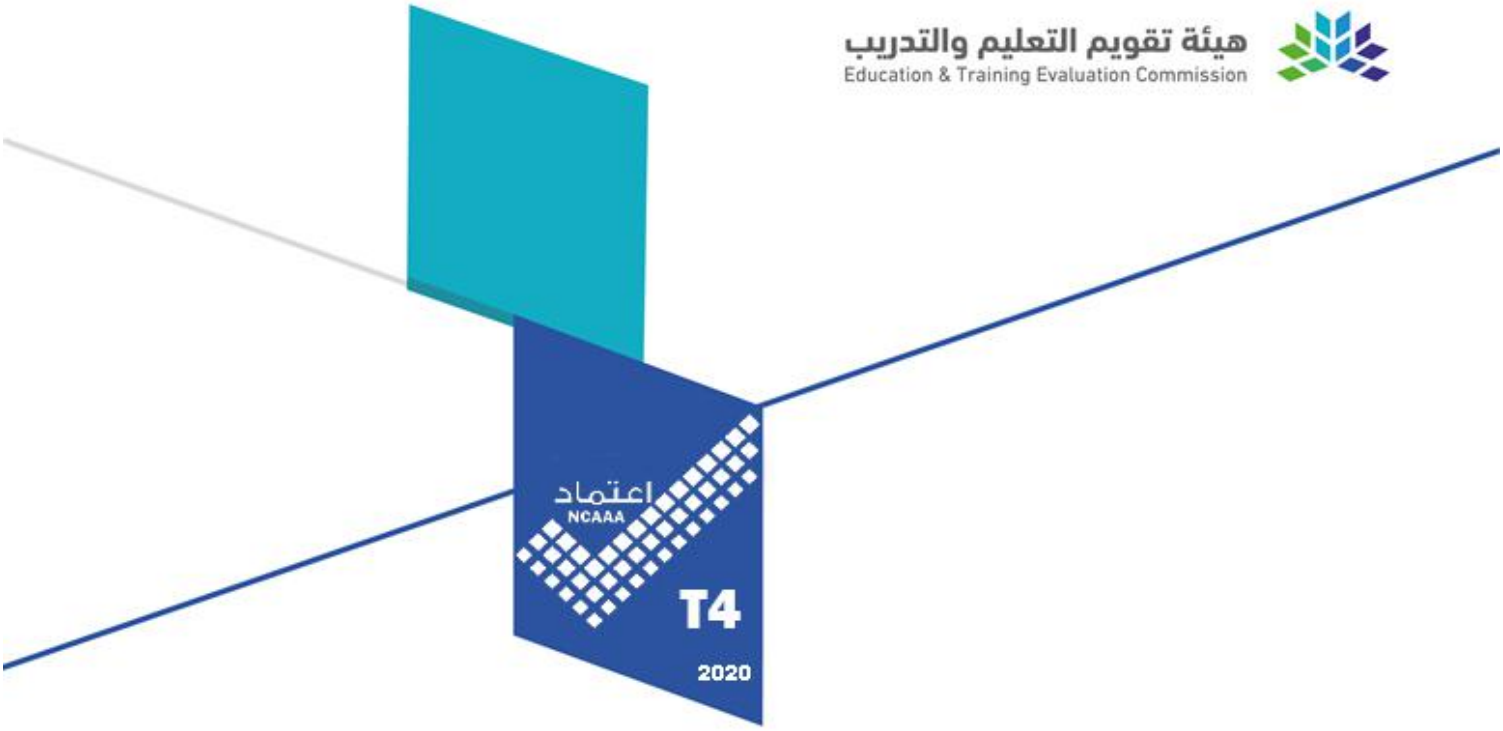
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Discrete Mathematics
Course Code:	**MTH2251**
Program:	**BSc. in Mathematics**
Department:	**Mathematical science**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	4
2. Course type	
a.	University ☐ College ☐ Department ■ Others ☐
b.	Required ■ Elective ☐
3. Level/year at which this course is offered:	**Sixth level/ Third year**
4. Pre-requisites for this course (if any)**:**	**Foundation Mathematics**
5. Co-requisites for this course (if any)**:**	

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**40**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (specify)	**0**
	Total	**40**

B. Course Objectives and Learning Outcomes

1. Course Description

Discrete mathematics is the branch of mathematics dealing with objects that can consider only distinct, separated values. This tutorial includes the fundamental concepts of Sets, Relations and Functions, Mathematical Logic, Group theory, Counting Theory, Probability, Mathematical Induction, and Recurrence Relations, Graph Theory, Trees and Boolean Algebra.

2. Course Main Objective

The course introduces the basic ideas of discreet mathematics such inductions and recursion focusing in mathematical induction and strong induction and well ordering principal. Then principals of counting including the product rule and the sum rule, counting one two one functions as well as counting subsets of a finite set. The pigeonhole principal, permutations and combinations and their generalizations. Advanced counting techniques, recurrence relations, generating functions and inclusion exclusion principal and its generalizations. Then Boolean Algebra and representing Boolean functions.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Understand the basic principles of mathematical induction and some proof techniques, and apply them to relevant cases.	K1
1.2	Identify the relationship between problems in discrete mathematics with other branches of mathematics and science.	K3, K5
1.3	To understand and apply counting techniques to the representation and characterization of relational concepts.	K1
1.4	Recognize Boolean functions and Boolean algebra	K3
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Use various techniques of mathematical proofs to prove simple mathematical properties	S1, S4
2.2	Use basic counting techniques to solve combinatorial problems.	S2, S8
2.3	Analyze basic facts of algebraic structures.	S4, S5
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Express mathematical properties formally via the formal language of propositional logic and predicate logic.	V2, V4
3.2	Communicate their thoughts systematically, work together and adapt with other students in the group, and conduct good discussions.	V3, V4

C. Course Content

No	List of Topics	Contact Hours
1	Some revisions: Algorithms, integers, relations, matrices, induction and recursion.	8
2	Counting methods: The basic rules of counting: sum rule-product rule -subtraction rule-division rule - pigeonhole principle, permutation and combinations, binomial coefficients. Number of functions between two finite sets. Number of injective functions between two sets, number of onto functions between two sets and the number of bijection functions between two sets.	10
3	Advanced Counting Techniques: Applications of Recurrence Relations, Solving Linear Recurrence Relations, Divide-and-Conquer Algorithms and Recurrence Relations, Generating Functions, Inclusion–Exclusion principal and its generalizations. Burnside Counting Argument. Poly methods for counting's.	10

4	Boolean Algebra and representing Boolean functions	12
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Some revisions: Algorithms, integers, relations, matrices, induction and recursion.	Lecture and Tutorials	Exams, quizzes
1.2	To understand and apply counting techniques to the representation and characterization of relational concepts	Lecture and Tutorials	Exams, quizzes
1.3	Recognize Boolean functions and Boolean algebra	Lecture and Tutorials	Exams, quizzes
2.0	**Skills**		
2.1	Use various techniques of mathematical proofs to prove simple mathematical properties	Lecture/Individual or group work	Exams, quizzes
2.2	Use basic counting techniques to solve combinatorial problems.	Lecture/Individual or group work	Exams, quizzes
2.3	Analyze basic facts of algebraic structures	Lecture/Individual or group work	Exams, quizzes
3.0	**Values**		
3.1	Express mathematical properties formally via the formal language of propositional logic and predicate logic	Lecture/Individual or group work	Exams, quizzes
3.2	Communicate their thoughts systematically, work together and adapt with other students in the group, and conduct good discussions.	Lecture/Individual or group work	Exams, quizzes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30 %
2	Quizes and homeworks	During semester	20 %
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will

not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	- Discrete Mathematics and its applications by Kenneth H. Rosen McGraw Hill international Edition ISBN-13: 978-007-124474-9, ISBN-10: 007-124474-3. Year 2018. - Introduction to Counting & Probability (The Art of Problem Solving) by David Patrick [2 ed.] 1934124109, 9781934124109. Year (2016).
Essential References Materials	**Discrete Mathematics, 7th Edition 7th Edition: ISBN-13: 978-0131593183 by Richard Johnsonbaugh. Publisher: Pearson; 7th edition (December 29, 2007)**
Electronic Materials	https://en.wikipedia.org/wiki/Discrete_mathematics P´olya-Burnside counting by A. M. Dawes: http://www-home.math.uwo.ca/~mdawes/courses/230/03/groups.pdf
Other Learning Materials	Art of Problem Solving

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

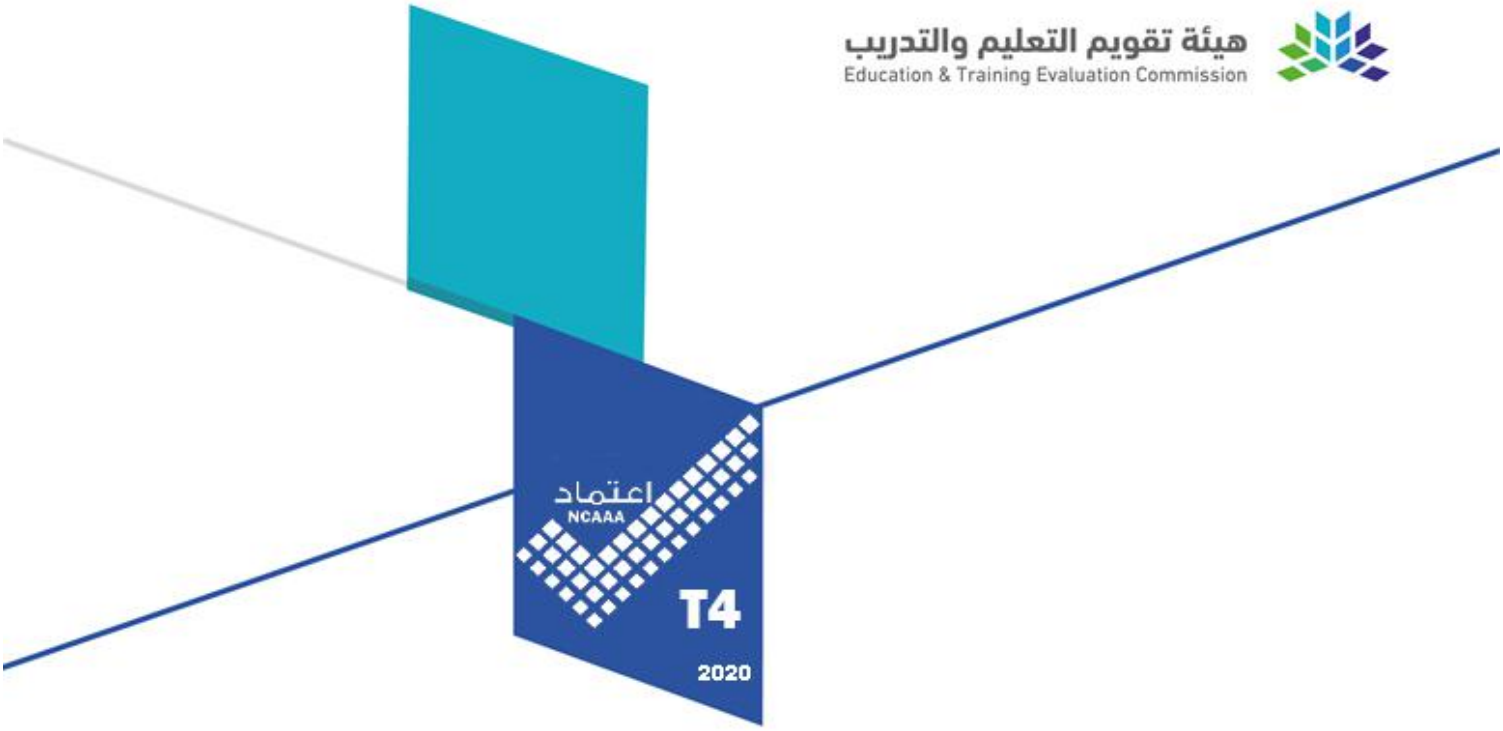
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Prof. Dr. Ahmad Mohammed Alghamdi and Makiah Maki
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Real Analysis 2
Course Code:	MTH2113
Program:	BSc. in Mathematics
Department:	Mathematical sciences
College:	Applied sciences
Institution:	Umm Al-Qura University

Table of Contents

A. Course Identification

1. Credit hours: 4
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: 6th level/Second year
4. Pre-requisites for this course (if any)**:** Introduction to Real Analysis
5. Co-requisites for this course (if any)**:** Not applicable

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	Four hours/week	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	32
2	**Laboratory/Studio**	0
3	**Tutorial**	4
4	**Others** (Exam, Quizzes, Activities, …)	4
	Total	40

B. Course Objectives and Learning Outcomes

1. Course Description This course is a continuation of Introduction to Real Analysis. The topics covered are: limits of functions and their basic properties, continuous functions and uniform continuity, differentiation and mean value theorems, Riemann integral, the Fundamental Theorem of Calculus, sequences, convergence, subsequences, Cauchy sequences, series, power series and Taylor series.
2. Course Main Objective The aim of this course is to provide students with the main concepts of real analysis. Students learn the theory of limits, continuity, differentiation, integration, sequences and series of functions.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	State the different rules of differentiability and continuity of a real function.	K1, K4
1.2	Define the Riemann integral (both definite and improper) and their properties.	K1, K4
1.3	Memorize the Fundamental theorem of Calculus.	K1
1.4	Recognize the different series of functions.	K1, K4, K5
1.5	List the different convergence tests of a series of functions.	K1, K4
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Apply mathematical concepts and principles to prove the differentiability and continuity of a real function.	S1, S3
2.2	Prove the elementary properties of the Riemann integral.	S3, S4
2.3	Use the Fundamental theorem of Calculus in Riemann Integration.	S5, S9
2.4	Determine whether a series of functions is pointwise convergent and if it is uniformly convergent.	S6, S8
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Write clear and precise proofs.	V1
3.2	Communicate effectively in both written and oral form	V2
3.3	Use the theories, methods and techniques of the course to solve complex mathematical problems.	V1, V2

C. Course Content

	List of Topics	Contact Hours
1	**Limits of functions:** Definitions, Uniqueness, Examples, Limit Theorems, One-Sided limits	2
2	**Continuity of functions:** Definitions, Combinations of continuous functions, Boundedness, Existence of Extreme values, Intermediate, Value theorem, Uniform continuity, Lipschitz continuity	4
3	**Differentiation:** The Derivative, Continuity of differentiable functions, Rules, Interior Extremum Theorem, Rolle's Theorem, The Mean Value Theorem, Applications of The MVT, L'Hospital's Rules, Taylor's Theorem	6
4	**Reimann Integral:** Definitions, Uniqueness, Examples, linearity and, monotonicity, boundedness	4
5	**Reimann Functions:** Cauchy criterion, Squeeze theorem, Step functions, Integrability of Continuous Functions, Integrability of monotone functions	4
6	**The Fundamental Theorem of Calculus:** 1st Fundamental Theorem, Indefinite integral, Continuity of indefinite integral, 2nd Fundamental Theorem	2

7	**Darboux Integral:** Upper and Lower sums, Upper and Lower Integrals, Darboux Integral, equivalence with Reimann	2
8	**Sequence of function:** Definitions, Examples, Pointwise convergence, Uniform convergence, Interchange of limits	4
9	**Series of function:** Definitions, Convergence, Uniform convergence, Infinite sum of continuous functions, Infinite sum of Reimann functions, Power series, Taylor series	4
10	Others (Preliminaries, Revision, Quizzes …)	8
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.2	Define the Riemann integral (both definite and improper) and their properties.	Lecture and Tutorials	Exams, quizes
1.3	Memorize the Fundamental theorem of Calculus.	Lecture and Tutorials	Exams, quizes
1.4	Recognize the different series of functions.	Lecture and Tutorials	Exams, quizes
1.5	List the different convergence tests of a series of functions.	Lecture and Tutorials	Exams, quizes
		Lecture and Tutorials	
2.0	**Skills**		
2.1	Apply mathematical concepts and principles to prove the differentiability and continuity of a real function.	Lecture/Individual or group work	Exams, quizes
2.2	Prove the elementary properties of the Riemann integral.	Lecture/Individual or group work	Exams, quizes
2.3	Use the Fundamental theorem of Calculus in Riemann Integration.	Lecture/Individual or group work	Exams, quizes
2.4	Determine whether a series of functions is pointwise convergent and if it is uniformly convergent.	Lecture/Individual or group work	
3.0	**Values**		
3.1	Write clear and precise proofs.	Lecture/Individual or group work	Exams, quizes
3.2	Communicate effectively in both written and oral form	Lecture/Individual or group work	Exams, quizes
3.3	Use the theories, methods and techniques of the course to solve complex mathematical problems.	Lecture/Individual or group work	Exams, quizes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30%
2	Quizes and homeworks	During semester	20%
3	Final exam	End of semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Introduction to real analysis, 4th Edition, Robert G. Bartle, Donald R. Sherbert
Essential References Materials	• Elementary Analysis: the theory of analysis, 2nd Edition, Kenneth A. Ross
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

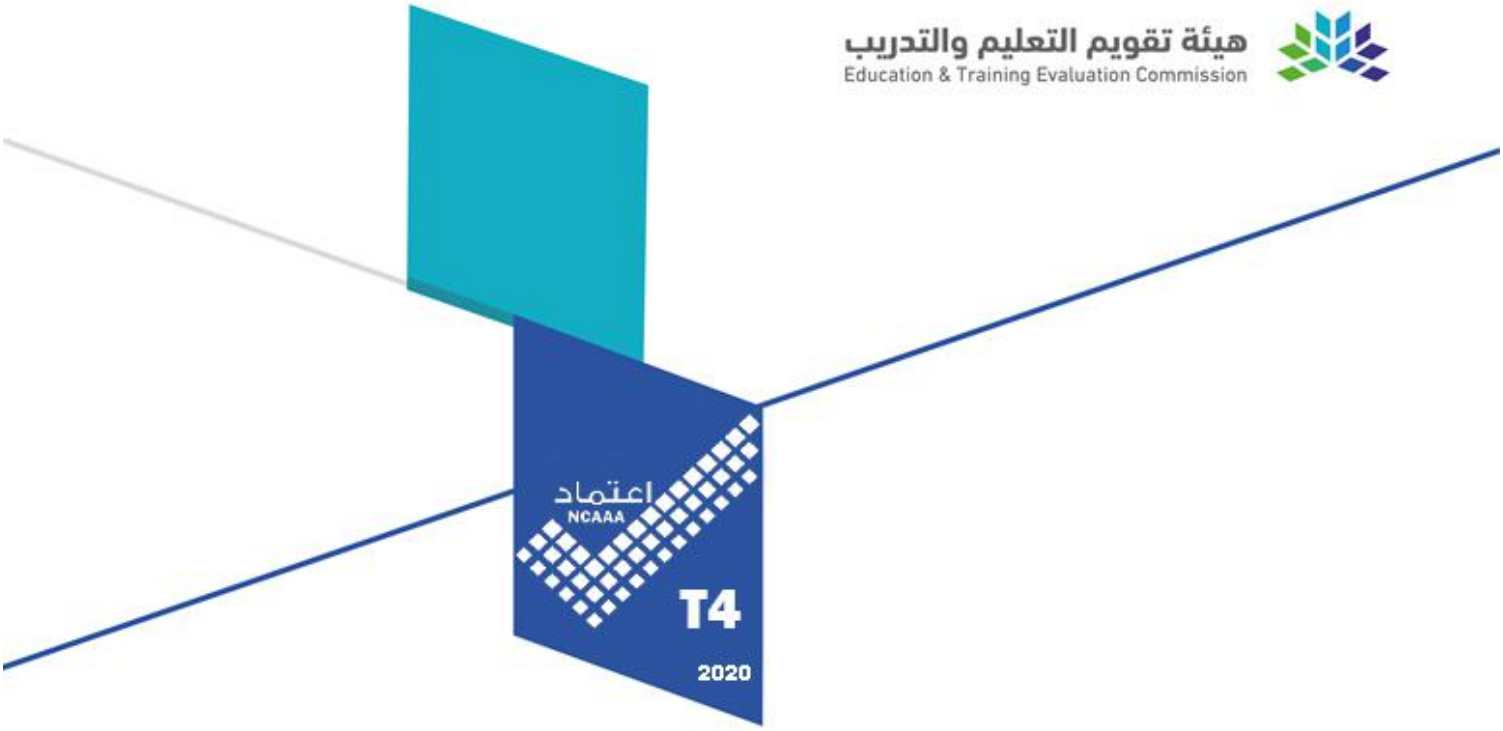
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Probability Theory
Course Code:	MTH2502-4
Program:	Mathematical Sciences (40400)
Department:	Mathematical Sciences
College:	Applied Sciences
Institution:	Umm Al-Qura University

Table of Contents

A. Course Identification

1. Credit hours: 4
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Level 6 /Second year
4. Pre-requisites for this course (if any)**:** Elementary Statistics and probability
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	Four hours/week	100 %
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	40
2	**Laboratory/Studio**	0
3	**Tutorial**	0
4	**Others** (specify)	0
	Total	40

B. Course Objectives and Learning Outcomes

1. Course Description

This course provides an elementary introduction to probability theory. Topics include: sets and events; probability spaces; random variables; discrete and continuous probability distributions; expectation and variance ; independence; convergence concepts; conditional expectation.

2. Course Main Objective

This course aims to provide an understanding of the basic concepts in probability, conditional probability and independent events. It will also focus on the random variable, mathematical expectation, and different types of distributions.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
K .1	Understand mathematical descriptions of random variables including probability mass functions (PMFs), cumulative distribution functions (CDFs), probability distribution functions (PDFs), conditional mass, conditional distribution and conditional density functions	K . 1
K .2	outline proofs of important theorems of the course, and explain the main ideas of the proofs;	K .4
K .3	Understand the law of large numbers and the central limit theorem and how these concepts are used to model various random phenomena (selected by instructor).	K .1
K.4	Define and explain the different statistical distributions (e.g., Normal, Binomial, Poisson) and the typical phenomena that each distribution often describes.	K .5
2	**Skills : by the end of this course, the student is expected to be able to**	
S .1	Apply key concepts of probability, including discrete and continuous random variables, probability distributions, conditioning, independence, expectations, and variances.	S .5
S .2	Apply the basic rules and theorems in probability including Bayes' theorem and the Central Limit Theorem (CLT).	S.2
S .3	Set up and analyse probabilistic models, by using advanced methods such as characteristic functions and conditional expectations	S.3
3	**Values: by the end of this course, the student is expected to be able to**	
V .1	Document and articulate the results and conclusions for probability techniques applied to actual cases in a variety of disciplines.	V .5
V .2	Apply the theory to model real phenomena and answer some questions in real life application	V. 1
V .3	Apply scientific models and tools effectively.	V. 1
V .4	Apply knowledge gained during the course using computer applications	V.1

C. Course Content

No	List of Topics	Contact Hours
1	Introduction: mathematical definition of sample space , probability space and sigma algebra, definition of random variables and its types: discreet and continuous. Probability axioms.	4
2	Combinatorial probability: The basic principle of counting, Permutations, Combinations and Binomial theorem.	4
3	Conditional probability and independence including , Bayes' theorem	4

	and the total theorem of probability	
4	Probability distribution function: discrete and continuous. Cumulative distribution function Marginal distribution function	4
5	Mathematical expectation and variance.	4
6	Moments , Moments generating function , Probability generating function and Characteristic function.	4
7	Central Limit Theorem and convergence	4
8	Discrete probability distribution: Bernoulli Distribution, Binomial Distribution and Poisson Distribution	4
9	Continuous probability distribution: Normal Distribution, Uniform distribution and exponential distribution	4
10	Application of probability: queueing theory and reliability theory	4
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
K	**Knowledge and Understanding**		
K .1	Understand mathematical descriptions of random variables including probability mass functions (PMFs), cumulative distribution functions (CDFs), probability distribution functions (PDFs), conditional mass, conditional distribution and conditional density functions	Lectures Tutorials Discussion Problem Solving	Exams(Midterm and Final). Quizzes.
K .2	outline proofs of important theorems of the course, and explain the main ideas of the proofs;	Lectures Tutorials Discussion Problem Solving	Exams(Midterm and Final). Quizzes.
K .3	Understand the law of large numbers and the central limit theorem and how these concepts are used to model various random phenomena (selected by instructor).	Lectures Tutorials Discussion Problem Solving	Exams(Midterm and Final). Quizzes.
K.4	Define and explain the different statistical distributions (e.g., Normal, Binomial, Poisson) and the typical phenomena that each distribution often describes.	Lectures Tutorials Discussion Problem Solving	Exams(Midterm and Final). Quizzes.
S	**Skills**		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
S. 1	Apply key concepts of probability, including discrete and continuous random variables, probability distributions, conditioning, independence, expectations, and variances.	Lecture. Small group work.	Exams(Midterm and Final). Quizzes.
S. 2	Apply the basic rules and theorems in probability including Bayes' theorem and the Central Limit Theorem (CLT).	Lecture. Small group work.	Exams(Midterm and Final). Quizzes.
S. 3	Set up and analyse probabilistic models, by using advanced methods such as characteristic functions and conditional expectations	Lecture. Small group work.	Exams(Midterm and Final). Quizzes.
V	**Values**		
V. 1	Document and articulate the results and conclusions for probability techniques applied to actual cases in a variety of disciplines.	Cooperative education	Exams(Midterm and Final). Quizzes.
V. 2	Apply the theory to model real phenomena and answer some questions in applied mathematical	Cooperative education	Exams(Midterm and Final). Quizzes.
V. 3	Apply scientific models and tools effectively.	Cooperative education	Exams(Midterm and Final). Quizzes.
V. 4	Apply knowledge gained during the course using computer applications	Cooperative education Self-learning	HW Assignments,

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30 %
2	Quizzes and HomeWorks	During semester	20 %
3	Final exam	End of semester	50 %

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

Faculty is available for his office hours (minimum 3 hours) per week for regular office hours to meet with the students for consultation and advice. The students are also welcomed to meet the faculty by appointment outside the regular office hours for this course.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	A First Course in Probability, 10th Edition by Sheldon Ross (2018)
Essential References Materials	Hossein Pishro-Nik; Introduction to probability statistics and random processes (2014). Probability and Random Processes, 2nd Edition, by Geoffrey R. Grimmett , David R. Stirzaker , Publisher Oxford University Press; 3rd edition (August 2, 2001)
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom (4 hours), Capacity = 30 Students (per group)
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

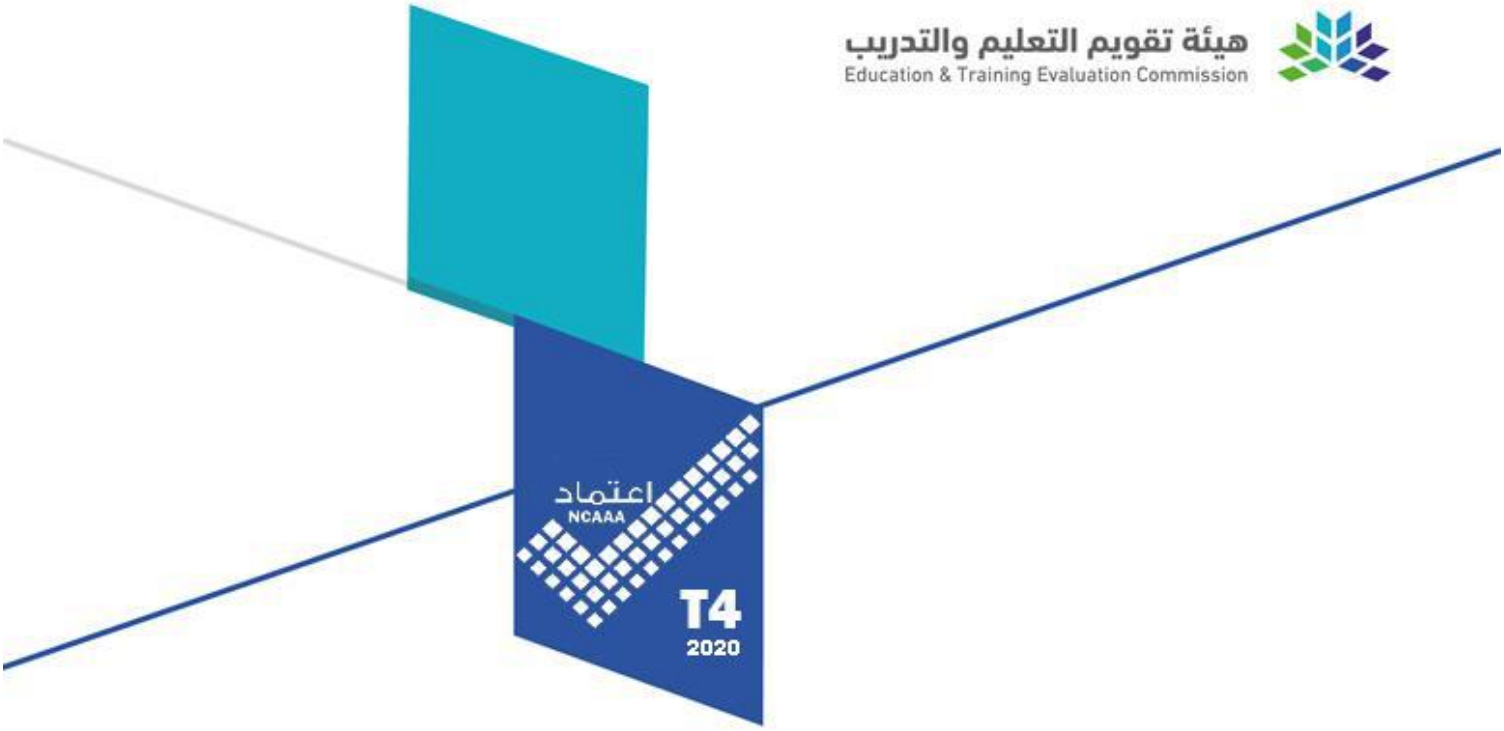
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

The Seventh Level



توصيف المقرر الدراسي

اسم المقرر:	القرآن الكريم (3)
رمز المقرر:	**(QR3103)**
البرنامج:	**البكالوريوس**
القسم العلمي:	**القراءات**
الكلية:	**الدعوة وأصول الدين**
المؤسسة:	**جامعة أم القرى**

المحتويات

أ. التعريف بالمقرر الدراسي:

1. الساعات المعتمدة: ساعتان.

2. نوع المقرر

أ. متطلب جامعة ☑ متطلب كلية ☐ متطلب قسم ☐ أخرى ☐

ب. إجباري ☑ اختياري ☐

3. السنة / المستوى الذي يقدم فيه المقرر: السنة الثالثة.

4. المتطلبات السابقة لهذا المقرر:

القرآن الكريم (2)

5. المتطلبات المتزامنة مع هذا المقرر (إن وجدت)

لا يوجد

6. نمط الدراسة (اختر كل ما ينطبق)

م	نمط الدراسة	عدد الساعات التدريسية	النسبة
1	المحاضرات التقليدية		
2	التعليم المدمج		
3	التعليم الإلكتروني		
4	التعليم عن بعد	20 ساعة	%100
5	أخرى		

7. ساعات الاتصال (على مستوى الفصل الدراسي)

م	النشاط	ساعات التعلم
1	محاضرات	20 ساعة
2	معمل أو إستوديو	
3	دروس إضافية	
4	أخرى (تذكر)، للاستذكار	
	الإجمالي	20 ساعة

ب- هدف المقرر ومخرجاته التعليمية:

1. الوصف العام للمقرر:

يشمل المقرر على أربعة محاور:

1. حفظ نصف الجزء التاسع والعشرين من القرآن الكريم: من سورة الجن إلى سورة المرسلات.
2. تلاوة ثلاثة أجزاء: من سورة الأحزاب إلى سورة الشعراء.
3. دراسة أحكام التَّجويد.
4. شرح غريب الكلمات: من سورة الجن إلى سورة المرسلات.

2. الهدف الرئيس للمقرر

تعليم الطُّلَّاب النُّطق السَّليم لكتاب الله -عزَّ وجلَّ-، وفق طرق الأداء المعتبرة، مع حفظ حزب واحدٍ من القرآن الكريم.

3. مخرجات التعلم للمقرر:

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1	**المعرفة والفهم**	

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1.1	أن يحفظ الطَّالب المقدار المقرَّر أسبوعيًّا.	
1.2	أن يتلو الطَّالب القران الكريم بالكيفية الصحيحة.	
1.3	أن يتعرف الطالب على أحكام التجويد.	
1.4	أن يعَرِّف الطَّالب غريب القرآن.	
2	**المهارات**	
2.1	أن يصحح الطالب الأخطاء التي تقع في التلاوة أو الحفظ منه أو من زملائه.	
2.2	أن يطبِّق الطَّالب جميع أحكام التَّجويد تطبيقاً عمليًّا.	
2.3	أن يوضح معاني غريب القرآن.	
2.4	أن يتواصل الطالب مع الآخرين بشكل فعال؛ لإظهار ونقل معارفه ومهاراته.	
2.5	أن يقترح الطالب الأساليب المثلى له ولزملائه لتعلم القرآن الكريم؛ لحل مشكلات التعلم والقراءة؛ مستخدماً الأدوات التقنية والحاسوبية.	
3	**القيم**	
3.1	أن يعمل ضمن فريق المقرر بكفاءة، ومسؤولية.	
3.2	أن يلتزم بآداب وأخلاق قارئ القرآن.	
3.3	أن يقوِّم ذاتياً مستوى أدائه؛ ملتزماً بتحمل مسؤولية تعلمه.	

ج. موضوعات المقرر

م	قائمة الموضوعات	ساعات الاتصال
1	مقدِّمة تعريفيَّة عن فضل تعلم القرآن الكريم، وأقسام اللحن الجلي والخفي، وتصحيح تلاوة سورة الجن من 1 إلى 13 مع التَّكليف بحفظها مع شرح غريب القرآن.	2
2	تسميع سورة الجن من 1 إلى 13، تصحيح تلاوة بقية سورة الجن 14 إلى 28 مع التَّكليف بحفظها، مع شرح غريب القرآن، وتلاوة سورة الشعراء.	2
3	تسميع سورة الجن 14 إلى 28، تصحيح تلاوة سورة المزمل كاملة مع التَّكليف بحفظها. مع شرح غريب القرآن، تلاوة سورة النمل، شرح درس التجويد (الوقف والابتداء)	2
4	تسميع سورة المزمل كاملة، تصحيح تلاوة سورة المدثر من 1إلى 31 مع التَّكليف بحفظهما، مع شرح غريب القرآن، تلاوة سورة القصص.	2
5	تسميع سورة المدثر من 1إلى 31، تصحيح تلاوة سورة المدثر 32 إلى 56 مع التَّكليف بحفظها، مع شرح غريب القرآن، تلاوة سورة العنكبوت، شرح درس التجويد (السكتات المتفق عليها والمختلف فيها).	2
6	تسميع سورة المدثر 32 إلى 56، تصحيح تلاوة سورة القيامة كاملة مع التَّكليف بحفظها، مع شرح غريب القرآن، تلاوة سورة الروم.	2
7	تسميع سورة القيامة كاملة، تصحيح تلاوة سورة الإنسان كاملة مع التَّكليف بحفظها، مع شرح غريب القرآن، تلاوة سورة لقمان، شرح درس التجويد (الألفات السبع الثابتة وقفاً، والمحذوفة وصلاً).	2
8	تسميع سورة الإنسان كاملة، تصحيح تلاوة سورة المرسلات مع التَّكليف بحفظها، مع شرح غريب القرآن، تلاوة سورة السجدة.	2
9	تسميع سورة المرسلات من 1 إلى 34، تلاوة سورة الأحزاب.	2

10	تسميع سورة المرسلات من 35 إلى نهاية السورة.	2
المجموع		20

د. التدريس والتقييم:

1. ربط مخرجات التعلم للمقرر مع كل من استراتيجيات التدريس وطرق التقييم

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
1.0	**المعرفة والفهم**		
1.1	أن يحفظ الطَّالب المقدار المقرَّر أسبوعيًّا.	المحاضرة التلقي والسماع العروض التقديمية	التقييم المستمر الاختبارات الشفوية
1.2	أن يتلو الطَّالب القران الكريم بالكيفية الصحيحة.		
1.3	أن يتعرف الطالب على أحكام التجويد.		
1.4	أن يعرِّف الطَّالب غريب القرآن.		
2.0	**المهارات**		
2.1	أن يصحح الطالب الأخطاء التي تقع في التلاوة أو الحفظ منه أو من زملائه.	المحاضرة الحوار والمناقشة التلقِّي والمحاكاة العرض والاستماع التَّعلم الذاتي العروض التقديمية أسلوب حل المشكلات	الاختبارات الشفوية الاختبارات التحريرية
2.2	أن يطبِّق الطَّالب جميع أحكام التَّجويد تطبيقاً عمليًّا.		
2.3	أن يوضح معاني غريب القرآن.		
2.4	أن يتواصل الطالب مع الآخرين بشكل فعال؛ لإظهار ونقل معارفه ومهاراته.		
2.5	أن يقترح الطالب الأساليب المثلى له ولزملائه لتعلم القرآن الكريم؛ لحل مشكلات التعلم والقراءة؛ مستخدماً الأدوات التقنية والحاسوبية.		
3.0	**القيم**		
3.1	أن يعمل ضمن فريق المقرر بكفاءة ومسؤولية.	التَّعلم الذاتي التَّعليم التعاوني حلقات النقاش ملف الإنجاز	بطاقة الملاحظة
3.2	أن يلتزم بآداب وأخلاق قارئ القرآن.		
3.3	أن يقوِّم ذاتياً مستوى أدائه؛ ملتزماً بتحمل مسؤولية تعلمه.		

2. أنشطة تقييم الطلبة

م	أنشطة التقييم	توقيت التقييم (بالأسبوع)	النسبة من إجمالي درجة التقييم
1	**المشاركة وحفظ الآيات وتلاوتها**	مستمر	%20
2	**الاختبار النصفي**	السادس	%20
3	**الاختبار النهائي**	العاشر	%60

أنشطة التقييم (اختبار تحريري، شفهي، عرض تقديمي، مشروع جماعي، ورقة عمل الخ)

هـ ـ أنشطة الإرشاد الأكاديمي والدعم الطلابي:

– ساعات الإرشاد الأكاديمي (السَّاعات المكتبية للأستاذ).
– مساعدة الطلبة في توفير المصادر غير المتوفرة في مكتبة الكلِّيَّة.
– مساعدة الطلبة ذوي الاحتياجات الخاصة (ذوي البصيرة) في توفير المصادر ببرايل.
– إحالة الطلبة الوافدات والمتعثرات والموهوبات على لجنة الإرشاد الأكاديمي بالقسم والجهات المعنيَّة بشؤون الطَّلبة.
–تشكيل لجنة تطوير المقرَّرات بالبرنامج، تعنى بمراجعة المفردات وطرق تدريسها وتقييمها، وتقييم المخرجات من خلال المتابعة المستمرة للتَّغذية الرَّاجعة من قبل الطَّلبة وتقارير المدرِّسين، ثم تقدِّم توصياتها لمجلس القسم لتأخذ مجراها الأكاديمي.
–إعداد الأسئلة التَّقويميَّة نهاية الدَّرس والأنشطة المنزليَّة.
–توجيه الطُّلاب لسماع تلاوات المقرئين المجوِّدين من خلال الوسائل المتاحة.
–المقارنة المرجعيَّة بالمقرَّرات المشابهة له في الجهات الأكاديميَّة الأخرى.

و – مصادر التعلم والمرافق:

1. قائمة مصادر التعلم:

المرجع الرئيس للمقرر	–القرآن الكريم. – الميسر في غريب القرآن الكريم المطبوع بمجمع الملك فهد لطباعة المصحف الشريف. – التجويد الميسر المطبوع بمجمع الملك فهد لطباعة المصحف الشريف.
المراجع المساندة	- البرهان في تجويد القرآن/ محمد الصادق قمحاوي. - هداية القارئ إلى تجويد كلام البارئ/ عبد الفتاح السيد عجمي المرصفي. - مذكرة في علم التجويد/ محمد نبهان بن حسين مصري.
المصادر الإلكترونية	- موقع مكتبة جامعة أم القرى. - المكتبة الوقفية. - المكتبة الشاملة. - ملتقى أهل التفسير. - منتديات قراء القرآن.
أخرى	-

2. المرافق والتجهيزات المطلوبة:

العناصر	متطلبات المقرر
المرافق (القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ)	–قاعات دراسية بها عدد من الكراسي والطاولات للاختبارات النصفية والنهائية.
التجهيزات التقنية (جهاز عرض البيانات، السبورة الذكية، البرمجيات)	– الحاسب الآلي. – التطبيقات الالكترونية.
تجهيزات أخرى (تبعاً لطبيعة التخصص)	-

ز. تقويم جودة المقرر:

مجالات التقويم	المقيمون	طرق التقييم

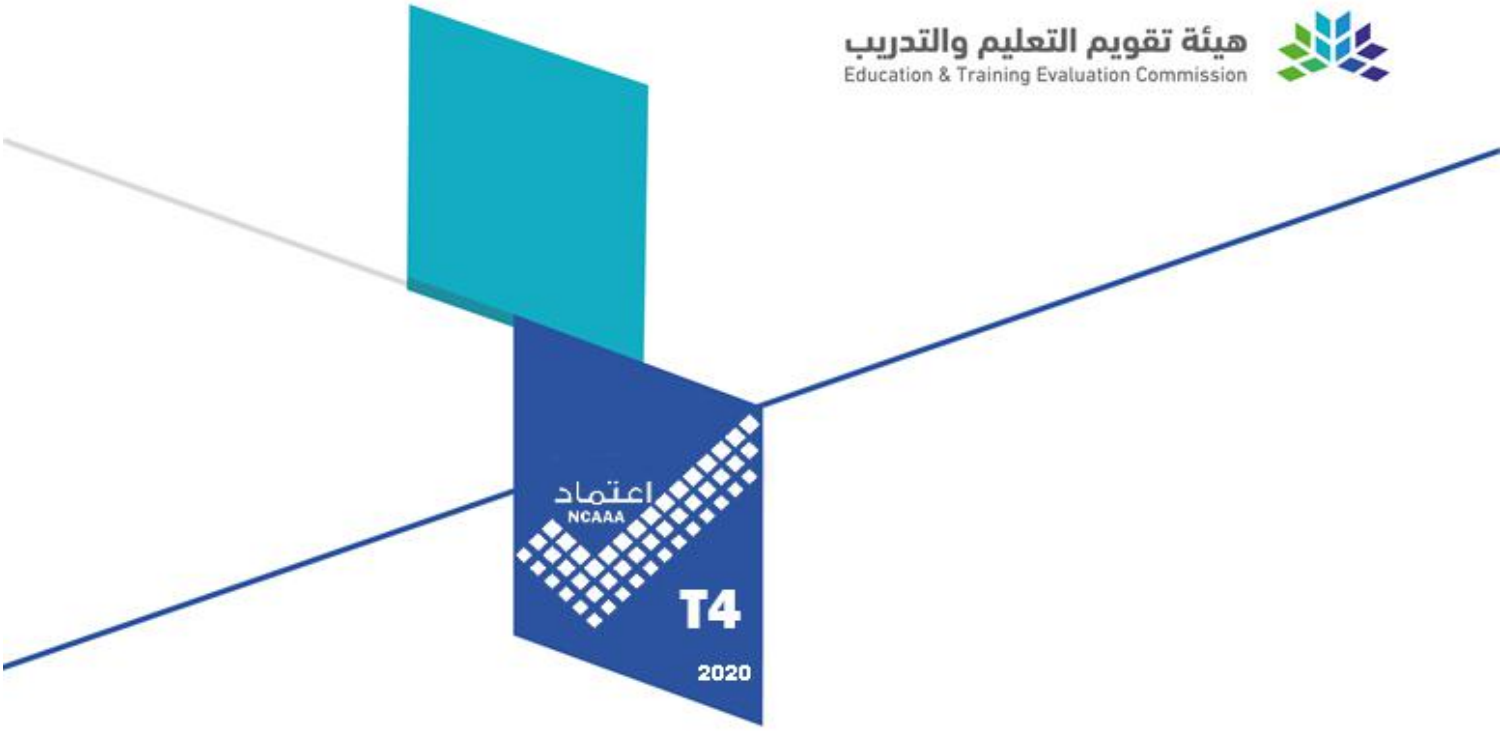
مجالات التقويم	المقيمون	طرق التقييم
تقـــويم فاعليَّـــة اســـتراتيجيات التَّـــدريس المستخدمة	أستاذ زميل يدرِّس نفس المقرَّر	مباشـــر: الـــزِّيارة للفصـــل وتقريـــر فاعليَّـــة استراتيجيَّات التَّدريس المستخدمة.
طرق تقييم الطُّلَّاب	الطُّلَّاب	غـير مباشـر: اسـتبانة تقيـيم المقـرَّر المتاحـة على الموقع الإلكتروني.
مدى تحصيل مخرجات التَّعلم للمقرَّر	قيادة البرنامج	غير مباشر: تقرير المقرَّر.

مجالات التقويم (مثل. فاعلية التدريس، فاعلة طرق تقييم الطلاب، مدى تحصيل مخرجات التعلم للمقرر، مصادر التعلم ... إلخ)
المقيمون (الطلبة، أعضاء هيئة التدريس، قيادات البرنامج، المراجع النظير، أخرى (يتم تحديدها)
طرق التقييم (مباشر وغير مباشر)

ح. اعتماد التوصيف

جهة الاعتماد	
رقم الجلسة	
تاريخ الجلسة	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Number Theory
Course Code:	**MTH3231**
Program:	**BSc. in Mathematics**
Department:	**Mathematical science**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	4
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	**Seventh level/ third year**
4. Pre-requisites for this course (if any):	**MTH1201-4**
5. Co-requisites for this course (if any):	**Not applicable**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**40**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (specify)	**0**
	Total	**40**

B. Course Objectives and Learning Outcomes

1. Course Description

German mathematician Carl Gauss said "Mathematics is the queen of sciences and Number Theory is the queen of Mathematics" This course provides an introduction to the important basic topics of number theory: Prime Numbers, Divisibility, Fundamental Theorem of Arithmetic, Greatest Common Divisor (GCD), Least Common Multiple (LCM), Euclidean Algorithm, Congruences, Chinese Remainder Theorem, Quadratic Residues, Legendre's Symbol, Quadratic Reciprocity Law, Arithmetic Functions, Diophantine Equations, Continued Fractions. Finally, some famous number in Mathematics such as Perfect, Deficient, Abundant, Mersenne and Fermat Numbers.

2. Course Main Objective

The course objective is to achieve an elementary knowledge of number theory and to become more familiar with prime numbers, finding the GCD by using Euclidean Algorithm, solving systems of linear congruences, using Wilson's and Fermat Theorems to find the least residue of a linear congruence, determine if an arithmetic function is a multiplicative/ completely multiplicative function.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Find the GCD of two natural numbers by using Euclidean Algorithm	K1, K3
1.2	Write the GCD as a linear combination.	K3, K5
1.3	Solve systems of linear congruences.	K1, K5
1.4	Using Wilson's and Fermat Theorems for investigation in problems.	K3, K5
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Be able to prove if an arithmetic function is a multiplicative/ completely multiplicative function.	S1, S2, S8
2.2	Solve linear Diophantine equation of two variables.	S2, S4, S5
2.3	Investigate the distribution of prime numbers.	S4, S5, S8
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Investigate the proof of the Fundamental Theorem of Arithmetic.	V2, V5
3.2	Using the Chinese Remainder Theorem to solve systems of linear congruences.	V2, V3
3.3	Be able to write a number as a continued fraction.	V3, V4
3.4	Using the sum of the divisor function to determine if a number is a perfect, deficient, or abundant number.	V2, V4

C. Course Content

No	List of Topics	Contact Hours
1	Definition of divisibility, GCD and LCM.	4
2	Euclidean Algorithm and Fundamental Theorem of Arithmetic.	4
3	Definition of congruences with its properties.	4
4	Residue classes, complete/ reduced residue system and least residue.	4
5	Linear Congruences and Chinese Remainder Theorem.	4
6	Arithmetic Functions and some examples.	4
7	Multiplicative and completely multiplicative functions.	4
8	Perfect, Deficient, Abundant, Mersenne, and Fermat Numbers.	4
9	Quadratic Residues, Legendre's Symbol, and Quadratic Reciprocity Law.	4
10	Diophantine Equations and Continued Fractions.	4
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Find the GCD of two natural numbers by using Euclidean Algorithm	Lecture and Tutorials	Exams, quizzes
1.2	Write GCD as a linear combination.	Lecture and Tutorials	Exams, quizzes
1.3	Solve systems of linear congruences.	Lecture and Tutorials	Exams, quizzes
1.4	Using Wilson's and Fermat Theorems for investigation in problems.	Lecture and Tutorials	Exams, quizzes
2.0	**Skills**		
2.1	Be able to prove if an arithmetic function is a multiplicative/ completely multiplicative function.	Lecture/Individual or group work	Exams, quizzes
2.2	Solve linear Diophantine equation of two variables.	Lecture/Individual or group work	Exams, quizzes
2.3	Investigate the distribution of prime numbers.	Lecture/Individual or group work	Exams, quizzes
3.0	**Values**		
3.1	Investigate the proof of the Fundamental Theorem of Arithmetic.	Lecture/Individual or group work	Exams, quizzes
3.2	Using the Chinese Remainder Theorem to solve systems of linear congruences.	Lecture/Individual or group work	Exams, quizzes
3.3	Be able to write a number as a continued fraction.	Lecture/Individual or group work	Exams, quizzes
3.4	Using the sum of the divisor function to determine if a number is a perfect, deficient, or abundant number.	Lecture/Individual or group work	Exams, quizzes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Periodical Exam	Fifth week	%30
3	Quizzes and Homework	During semester	%20
4	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for the availability of faculty and teaching staff for individual student consultations and academic advice:

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures. Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with the professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Apostol, Tom M. Introduction to analytic number theory. Springer Science & Business Media, 1998. • Koshy, Thomas. Elementary number theory with applications. Academic press, 2002. • Introduction to Number Theory by Mathew Crawford. Art of Problem-Solving ISBN 978 1 934124 12 3 MIST Academy Mathematics Olympiad Year 2015
Essential References Materials	Tattersall, James J. Elementary number theory in nine chapters. Cambridge University Press, 1999.
Electronic Materials	Art of Problem Solving
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

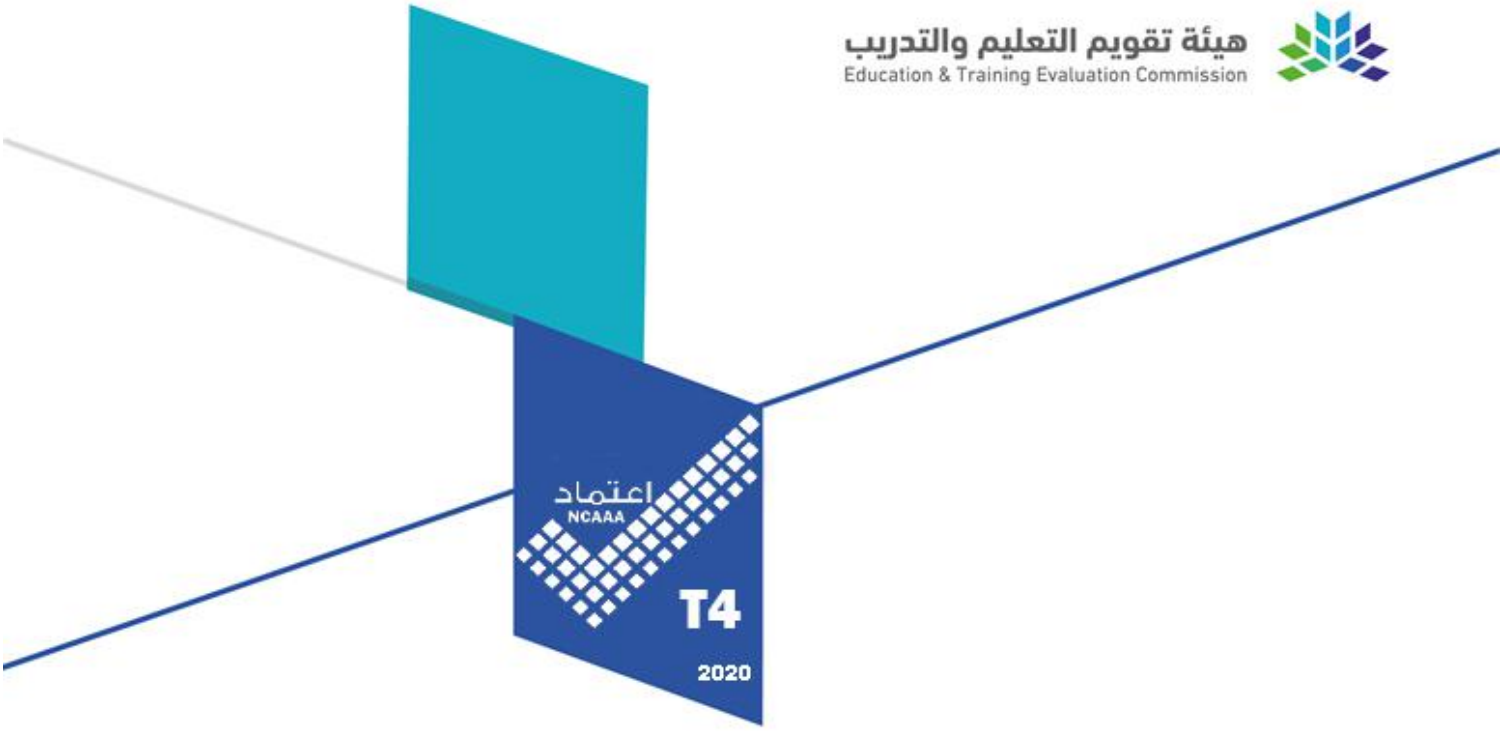
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Prof. Ahmad Alghamdi and Dr. Badria Alsulmi.
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Introduction to Complex Analysis**
Course Code:	**MTH3141**
Program:	**BSc. in Mathematics**
Department:	**Mathematical sciences**
College:	**Applied sciences**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 3
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Seventh level/second year
4. Pre-requisites for this course (if any)**:** Real Analysis II (MTH2113-4), Real Analysis I (MTH2112-4)
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	Three hours/week	%100
2	Blended	0	0
3	E-learning	0	0
4	Distance learning	0	0
5	Other	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	0
3	Tutorial	0
4	Others (specify)	0
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description This course is an introductory course on Complex Analysis. Topics to be covered in this course includes: Introduction to complex number system, Limits and Continuity of Complex variable functions, Derivation and the Cauchy – Riemann"s Equation, Analytic functions. Harmonic functions,
2. Course Main Objective The objectives of this course are to: • introduce students to the Complex Number System • equip students with necessary knowledge and skills to enable them handle mathematical operations, analyses and problems involving complex numbers..

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	**Recognize basic knowledge of complex numbers and polar coordinates Define the related basic scientific facts, concepts, principles and techniques calculus**	K1, K3
1.2	**Recognize the relevant theories and their applications in basic mathematics.**	K2, K3
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	**Justify the need for a Complex Number System and explain how is related to other existing number systems**	S2, S4, S5
2.2	**define a function of complex variable and carry out basic mathematical operations with complex numbers.**	S1, S7
2.8	**Know the condition(s) for a complex variable function to be analytic and/or harmonic.** **State and prove the Cauchy Riemann Equation and use it to show that a function is analytic.**	S2, S5, S7

C. Course Content

No	List of Topics	Contact Hours
1	**Chapter 1: Complex Numbers** **1.1 The Algebra of Complex Numbers** **1.2 Point Representation of Complex Numbers** **1.3 Vectors and Polar Forms** **1.4 The Complex Exponential functions** **1.5 Powers and Roots**	10
2	**Chapter 2: Analytic Functions** **2.1 Functions of a Complex Variable** **2.2 Limits and Continuity** **2.3 Analyticity** **2.4 The Cauchy-Riemann Equations** **2.5 Harmonic Functions**	10
3	**Chapter 3: Elementary Functions** **3.1 Polynomials and Rational Functions** **3.2 The Exponential, Trigonometric and Hyperbolic Functions** **3.3 The Logarithmic Function** **3.4 Complex Powers and Inverse Trigonometric Functions**	10
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	**Recognize basic knowledge of complex numbers and polar coordinates Define the related basic scientific facts, concepts, principles and techniques calculus**	**Lecture and Tutorials**	**Exams, quizes**
1.2	**Recognize the relevant theories and their applications in basic mathematics.**	**Lecture and Tutorials**	**Exams, quizes**
2.0	**Skills**		
2.1	**ntroduce elementary function and operation on these functions, and the notion of brunch cut Define integral and contours on the complex plan Compute the series and Laurent series of complex function and the residue of a function**	**Lecture/Individual or group work**	**Exams, quizzes**
2.2	**Compute limits of complex functions and their derivatives Knowledge if a function is analytic or not**	**Lecture/Individual or group work**	**Exams, quizzes**
3.0	**Values**		
3.1	**Prepare for success in disciplines which rely complex numbers, and in more advanced mathematics which incorporate these topics**	**Lecture/Individual or group work**	**Exams, quizzes**

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	%30
2	Quizes and homeworks	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice : -

Each group of students is assigned to a particular faculty where he or she will provide academic advising during specific academic hours. Each staff will provide at least one session/week. –

There will be an academic advisor how will be a responsible for helping the student by doing the general supervision. – **The people in the library will support the students during the time of the course.**

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	**Complex variables and its application (Eighth Edition) BY James Ward Brown and Ruel V. Churchill**
Essential References Materials	**A first course in complex analysis with applications / Dennis G. Zill, Patrick D. Shanahan.**
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

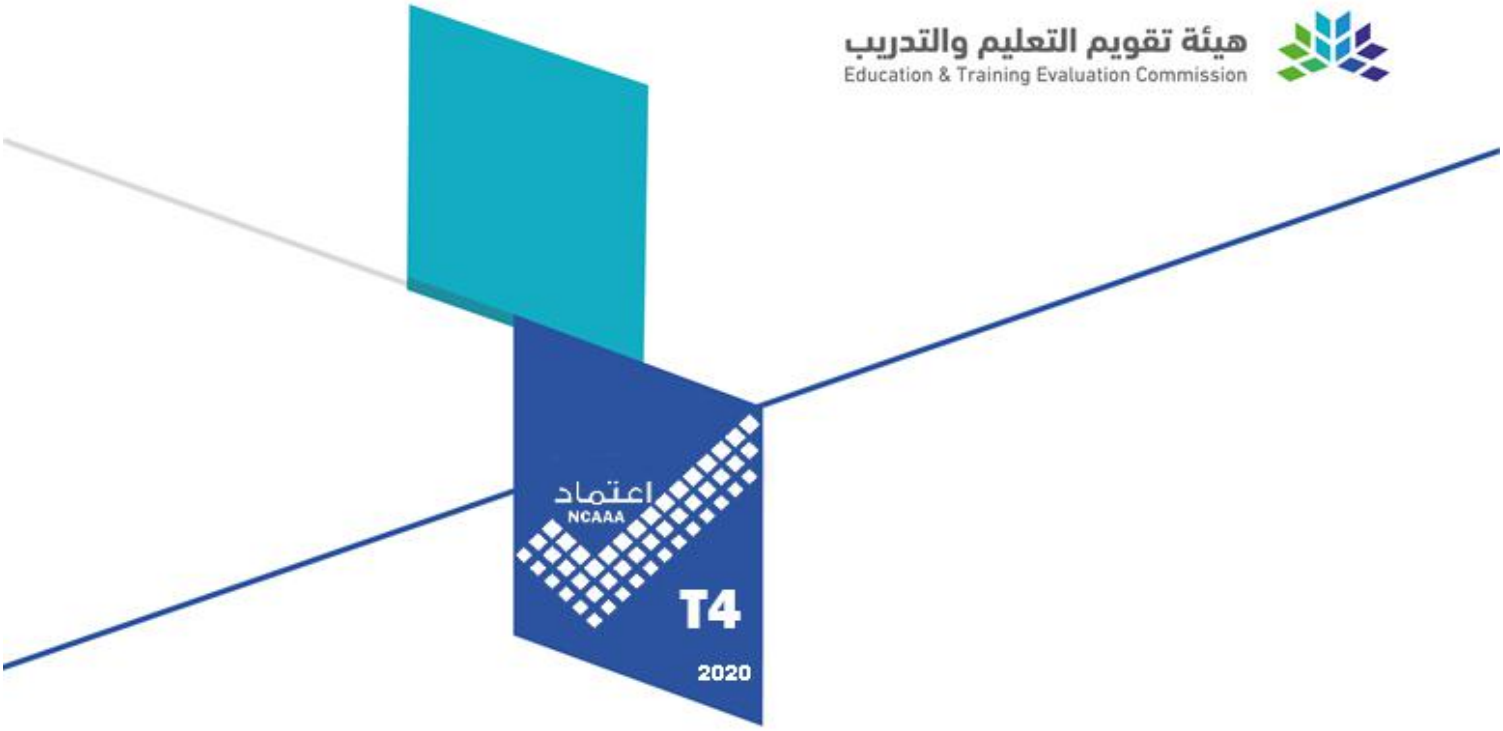
Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	

Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Linear Programming**
Course Code:	**MTH3401**
Program:	**BSc. in Mathematics**
Department:	**Mathematical sciences**
College:	**Applied sciences**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	**4**
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	**Seventh level/third year**
4. Pre-requisites for this course (if any)**:**	**Linear Algebra (1) (MTH3211-4)**
5. Co-requisites for this course (if any)**:**	**Not applicable**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	**100%**
2	**Blended**	**0**	**0**
3	**E-learning**	**0**	**0**
4	**Distance learning**	**0**	**0**
5	**Other**	**0**	**0**

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**40**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (specify)	**0**
	Total	**40**

B. Course Objectives and Learning Outcomes

1. Course Description

The course introduces the important concepts related to operation research and linear programming problem (L.P.P), including convexity, optimization theory, graphical and simplex methods used for solving L.P.P and some special cases for both methods. Moreover, it includes two important concepts in L.P.P: Duality theory and Sensitivity analysis. Finally, Formulation of Transportation Model and its solution is discussed.

2. Course Main Objective

Gain experience in modeling, solving and analyzing problems using linear programming. Recognize different methods for solving linear programming problems (LPP). Reveal the fundamental concepts and theories related to linear programming problems.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Recognize how to model the real problem in the form of linear programming problems.	K2, K3
1.2	Describe the problem and solve it graphically.	K1, K5
1.3	Identify different terminologies, concepts and theories of linear programming problems.	K2, K3
1.4	Recognize different methods and their related definitions and theories for solving linear programming problems.	K2, K5
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Modeling real situations in the form of linear programming problems	S8
2.2	Analyzing real problems and solve them graphically.	S1, S2
2.3	Utilizing appropriate method to solve a given linear programming problems.	S4, S8
2.4	Develop connections within branches of operation research and between linear programming and other disciplines	S4, S5, S8
2.5	Solve problems using a range of formats and approaches in basic science	S4, S5
2.6	Show the ability to work independently and within groups.	S8
2.7	Develop connections within branches of operation research and between linear programming and other disciplines	4, S5
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Apply scientific models and tools effectively.	V2, V5
3.2	Write scientific reports about basic linear programming principles.	V2, V3
3.3	Apply knowledge gained during the course using computer applications	V3, V4
3.4	Work both independently and in a coordination role with multiple groups.	V2
3.5	Express a personal view in the context of an understanding of solving problems	V4

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to operations research and linear programming problem (LPP)	3
2	Convex sets, Convex function, vertex points, and optimization theory	3
3	Graphical method for solving LPP	3
4	Simplex methods	6

5	Special cases of simplex method Duality Problem, sensitivity analysis	8
6	Special cases of simplex method Two Phase Method	6
7	Applications of the linear programming problem (Transportation problems, Game Theory, Network)	6
8	Use software applications to solve LPP	5
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Recognize how to model the real problem in the form of linear programming problems.	Lectures Discussion Problem Solving	Exams Assignments Quizzes
1.2	Describe the problem and solve it graphically.		
1.3	Identify different terminologies, concepts and theories of linear programming problems		
1.4	Recognize different methods and their related definitions and theories for solving linear programming problems.		
2.0	**Skills**		
2.1	Modeling real situations in the form of linear programming problems.	Lectures Discussion Problem Solving Brain Storming	Assignments. Reports. Quizzes. Discussion
2.2	Analyzing real problems and solve them graphically.		
2.3	Utilizing appropriate method to solve a given linear programming problems.		
2.4	Develop connections within branches of operation research and between linear programming and other disciplines.		
2.5	Solve problems using a range of formats and approaches in basic science.		
2.6	Show the ability to work independently and within groups.		
2.7	Develop connections within branches of operation research and between linear programming and other disciplines.		
3.0	**Values**		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.1	Show the ability to identify and use appropriate statistical models.	Lectures Brain storming Tasks to measure students' Personal skills.	Assignments. Reports. Discussion
3.2	The student should illustrate the ability to work independently and within groups.		
3.3	Illustrate how to use the internet and using software programs to deal with problems and write reports about mathematical statistics.		
3.4	Apply statistical knowledge gained during the course using computer packages		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30%
2	Quizzes and homeworks	During semester	20%
3	Final exam	End of semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

1- There are student advisor committee for the students.
2- The office hours for the teaching staff is depicted on their office.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• H.A.Taha, Introduction Operations Research 6th edition, London, Macmilla Publishing Company, Inc. • V. Chvatal: Linear Programming, San Francisco: McGill University , W.H. Freeman and Company,
Essential References Materials	• G. Hodley, linear programming, Addision-weley, 1969 P.K.Gupta and D.S.Hira, Problems in Operations research, Ram Nagar, 1998. • Michel Sakarovitch, Linear Programming, Springer-Verlag, 1983 Gerald Brickman, Mathematical Introduction to Linear Programming, Springer Verlag, New York, 1989.

Electronic Materials	• http://www.freetechbooks.com • http://tutorial.math.lamar.edu/sitemap.aspx
Other Learning Materials	• http://www.freetechbooks.com • http://tutorial.math.lamar.edu/sitemap.aspx • http://mathforum.org/advanced/numerical.htm/

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	- Classroom with capacity of 30-students. - Library
Technology Resources (AV, data show, Smart Board, software, etc.)	All classrooms are equipped by data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

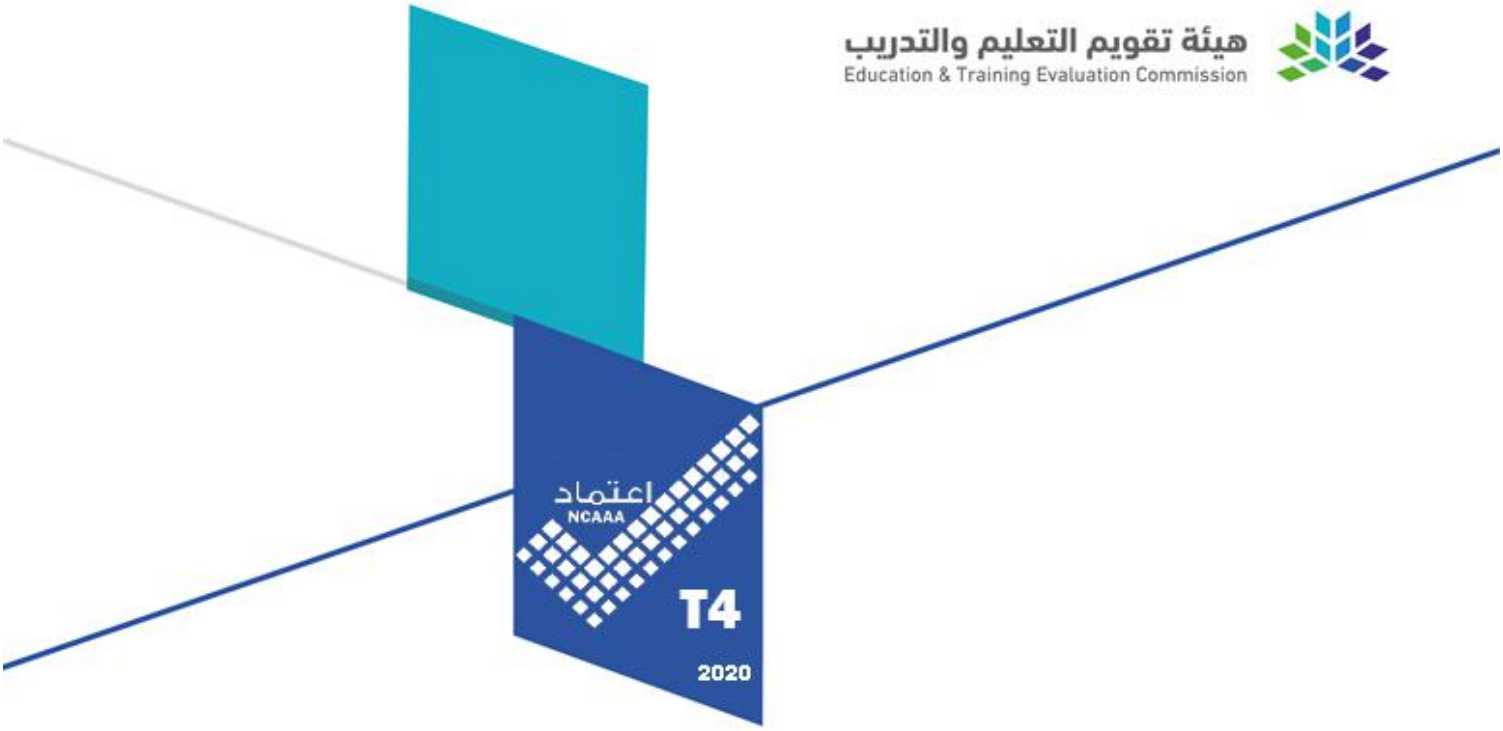
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Deanship of registration and acceptance	Student feedback through electronic survey
Quality of learning resources	Program Leaders	Student feedback through electronic survey
Evaluation of the teachers by internal & external faculty members	Program Leaders	Course Reports, evaluation of random grading report
Program Quality	Peer Reviewer	Peer evaluation and feedback

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Council of the Mathematics Department
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Mathematical Software Packages
Course Code:	**MTH3701**
Program:	**BSc. in Mathematics**
Department:	**Mathematical science**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 4	
2. Course type	
a. University ☐ College ☐ Department ☑ Others ☐	
b. Required ☑ Elective ☐	
3. Level/year at which this course is offered: Seventh Level	
4. Pre-requisites for this course (if any): Elementary Statistics and Probability, Introduction to real analysis, Linear Algebra1, Probability Theory	
5. Co-requisites for this course (if any): Not applicable	

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	Four hours/week	%100
2	Blended	0	0
3	E-learning	0	0
4	Distance learning	0	0
5	Other	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	40
2	Laboratory/Studio	10
3	Tutorial	0
4	Others (specify)	0
	Total	50

B. Course Objectives and Learning Outcomes

1. Course Description

Mathematical software packages deal with the theoretical foundations of information and computation, taking a scientific and practical approach to computation and its applications. Computation is defined as any type of calculation or use of computing technology that follows well-defined models (such as algorithms) in the practice of information processing (which in turn is defined as the use of these models to transform data in computers).

The study of such course involves systematically studying methodical processes to aid in the acquisition, representation, processing, storage, analysis, reading data using different proses etc. This is done by analyzing the feasibility, structure, expression, and mechanization of these processes and how they relate to this information. The main principles and elements for mathematical software packages using different program will be presented. Various analysis of data obtained using them are introduces. Several mathematical problems and solving using different software packages are provided.

2. Course Main Objective

This module consists of lecturers and associated practical sessions. The first part will focus on basic statistical software packages. The second part will provide an introduction to some modern computational statistical methods and their implementation. Thus, it is considered as a best tool to introduce a range of statistical methods implemented on computers. It gives practice in applying methods and interpreting results from them. Develop the use of computers in the collection, validation, analysis, and presentation of data; and help develop the knowledge and experience necessary to implement statistical computing methods.

Moreover, present, the basic concepts and principals in statistical modelling in a computational paradigm and introduce a range of data visualization, dimensionality reduction and clustering techniques and their implementation in different software packages and to give practice in applying these methods to a range of different datasets. This course will provide students with principles and methods to the statistical packages and analysis of different data

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Identify the different methods of entering, importing, and manipulating data with different software packages.	K2
1.2	Recognize the environment of the mathematical package and how to use it to perform different tasks.	K3, K5
1.3	Describe the problem and solve it graphically	K1, K3
1.4	Recognize different methods and their application for solving mathematical and statistical problems.	K2, K3
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Analyzing different types of data using software packages.	S1, S8, S9
2.2	Solve problems using a range of formats and approaches in basic science.	S2, S4, S8
2.3	Analyzing real problems and solve them graphically.	S5, S8, S9
2.4	Utilizing appropriate method to solve a given problems.	S8, S9
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Apply knowledge gained during the course using computer applications.	V2, V4
3.2	Use computer and its applications as computational tools	V3, V5
3.3	Use the internet to write reports about Mathematical and statistical principles.	V4, V5
3.4	Apply scientific models and tools effectively.	V3, V5

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to different programming software.	4
2	Dealing with different mathematical problems using such programming software.	4

4	Entering and analyzing data using different programming software.	4
4	Visualizing data using different software packages.	4
5	Describe the data using statistical measures	4
6	Work with different probability distributions	4
7	Statistical inference using software packages.	8
8	Use presented software packages for fitting and estimation of model parameters and analysis of variance for identification of significant effects	8
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Identify the different methods of entering, importing, and manipulating data with different software packages.	Lecture, Homework, Lab	Exams, quizzes, Coursework
1.2	Recognize the environment of the mathematical package and how to use it to perform different tasks.	Lecture, Homework, Lab	Exams, quizzes, Coursework
1.3	Describe the problem and solve it graphically	Lecture, Homework, Lab	Exams, quizzes, Coursework
1.4	Recognize different methods and their application for solving mathematical and statistical problems.	Lecture, Homework, Lab	Exams, quizzes, Coursework
2.0	**Skills**		
2.1	Analyzing different types of data using software packages.	Lecture/individual or group work, Lab	Exams, quizzes
2.2	Solve problems using a range of formats and approaches in basic science.	Lecture/Individual or group work	Exams, quizzes
2.3	Analyzing real problems and solve them graphically.	Lecture/Individual or group work	Exams, quizzes
2.4	Utilizing appropriate method to solve a given problems.	Lecture/Individual or group work, Lab	Course work
3.0	**Values**		
3.1	Apply knowledge gained during the course using computer applications.	Lecture/Individual or group work	Exams, Reports. Discussion
3.2	Use computer and its applications as computational tools	Lecture/Individual or group work	Exams, Reports. Discussion
3.3	Use the internet to write reports about Mathematical and statistical principles.	Lecture/Individual or group work	Exams, Reports. Discussion
3.4	Apply scientific models and tools effectively.	Lecture/Individual or group work, Lab	Exams, Reports. Discussion

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30%
2	Quizzes, homework, course work	During semester	20%
3	Final exam	End of semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 6 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework and course work problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework and course work will not be given. Students are encouraged to discuss with professor about homework and course work problems. Finally, students have to do more practice with statistical programming software to be more familiar with it.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Gareth, J., Daniela, W., Trevor, H., & Robert, T. (2013). An introduction to statistical learning: with applications in R. Springer. • Landau, S. and Everitt, B.S., 2003. A handbook of statistical analyses using SPSS. Chapman and Hall/CRC
Essential References Materials	• Gareth, J., Daniela, W., Trevor, H., & Robert, T. (2013). An introduction to statistical learning: with applications in R. Springer. • Landau, S. and Everitt, B.S., 2003. A handbook of statistical analyses using SPSS. Chapman and Hall/CRC. • Electronic Materials Recourses.
Electronic Materials	Using SPSS to Understand Research and Data Analysis (Electronic Lecture Notes) www.tutorialspoint.com (Electronic Material about R programming)
Other Learning Materials	Preparing PowerPoint slides for Statistical software packages.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students

Item	Resources
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board, Lab
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

The Eighth Level

توصيف المقرر الدراسي

اسم المقرر:	توصيف مقرر الثقافة الإسلامية (٣)
رمز المقرر:	ICC3203
البرنامج:	البكالوريوس
القسم العلمي:	الدعوة والثقافة الإسلامية
الكلية:	الدعوة وأصول الدين
المؤسسة:	جامعة أم القرى

المحتويات

أ. التعريف بالمقرر الدراسي:

١. الساعات المعتمدة:

٢. نوع المقرر

أ. متطلب جامعة ■ متطلب كلية ☐ متطلب قسم ☐ أخرى ☐

ب. إجباري ■ اختياري ☐

٣. السنة / المستوى الذي يقدم فيه المقرر

٤. المتطلبات السابقة لهذا المقرر (إن وجدت)

ثقافة إسلامية ١٠١ ، ثقافة إسلامية ٢٠١

٥. المتطلبات المتزامنة مع هذا المقرر (إن وجدت)

لا يوجد

٦. نمط الدراسة (اختر كل ما ينطبق)

م	نمط الدراسة	عدد الساعات التدريسية	النسبة
1	**المحاضرات التقليدية**	**لا ينطبق**	**لا ينطبق**
2	**لتعليم المدمج**	**لا ينطبق**	**لا ينطبق**
3	**التعليم الإلكتروني**	**لا ينطبق**	**لا ينطبق**
4	**التعليم عن بعد**	٢٠	%٩٠,٩٠
5	**أخرى: (الاختبارات النصفية والنهائية)**	٢ساعتان	%٩,٠٩

٧. ساعات الاتصال (على مستوى الفصل الدراسي)

م	النشاط	ساعات التعلم
١	محاضرات: (بواقع ساعتين في الأسبوع لمدة ١٠ أسبوعا)	٢٠
٢	معمل أو استوديو	لا ينطبق
٣	دروس إضافية	لا ينطبق
٤	أخرى (تذكر): (الاختبارات النصفية والنهائية)	٢ ساعتان
الإجمالي		٢٢

ب- هدف المقرر ومخرجاته التعليمية:

١. الوصف العام للمقرر:

يقدم هذا المقرر مادة علمية تأصيلية يبين فيها أهمية الأسرة والمجتمع، من حيث مفهومها، ومكانتها، ومقاصد بنائها، وهدي الإسلام في حل المشكلات والتعامل معها، وكما يقدم دراسة تحليلية لأسرتي خليلي الرحمن: إبراهيم ومحمد عليهما الصلاة والسلام.

٢. الهدف الرئيس للمقرر:

- التعرف على أهمية الأسرة ومكانتها.
- إدراك وسطية الإسلام في تعزيز قيمة الأسرة والمجتمع.
- بيان مراعاة الشريعة لحفظ الضرورات الخمس.
- تعريف الطالب بمسؤوليته تجاه مجتمعه.
- التعريف بأسرة إبراهيم عليه السلام، ومحمد صلى الله عليه وسلم.

٣. مخرجات التعلم للمقرر:

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1	**المعرفة والفهم**	
1.1	يعرّف على النظم الإسلامية ومقاصدها ومصادرها وخصائصها	

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1.2	يعدد النظم الإسلامية ومقاصدها ومصادرها وخصائصها	
1.3	يشرح بنظام الأسرة في الإسلام وأهم الشبه المثارة عليه	
1.4	يستعرض مفهوم النظام الاقتصادي الإسلامي وأهم مبادئه	
1.4	يقدم شرحا عن تعريف النظام السياسي في الإسلام وأصوله وحقوق الراعي والرعية	
2	**المهارات**	
2.1	يشرح أهم الشبه المثارة على نظام الأسرة في الإسلام وكيفية الرد عليها	
2.2	يقارن بين النظام الاقتصادي في الإسلام والأنظمة الوضعية	
2.3	حرر مذهب السلف في تحريم الخروج على أئمة المسلمين	
2.4	يفرق بين الحدود والتعازير وقوانين العقوبات الوضعية	
3	**القيم**	
3.1	يشارك زملاءه في الأعمال والتكاليف الجماعية باستقلال ومسؤولية	
3.2	يكون عالقات ناجحة داخل الجامعة وخارجها	
3.3	يتمثل القيم والأخلاق الإسلامية الحميدة	

ج. موضوعات المقرر

م	قائمة الموضوعات	ساعات الاتصال
١	**مفهوم الأسرة، وأهميتها، ومقاصدها:** يدرس الطالب في هذه المفردة مفهوم الأسرة، وأهميتها، ومقاصد بنائها من حيث كونها اللبنة الأولى التي تنشأ فيها الأجيال.	٢
٢	**مراحل تكوين الأسرة:** تتطرق هذه المفردة إلى يان مراحل تكوين الأسرة، من فترة البدء في فكرة الزواج ، وحتى تكوين الأسرة بأفرادها: من زوج وزوجة وأبناء	٢
٣	**الواجبات والحقوق بين الزوجين:** يدرس الطالب في هذه المفردة التعريف بأهم الواجبات والحقوق بين الزوجين، سواء الحقوق المفردة أو المشتركة بينهما. **الواجبات والحقوق بين أفراد الأسرة (الإباء، الأبناء، الأرحام):** يدرس الطالب في هذه المفردة التعريف بأهم الواجبات والحقوق بين أفراد الأسرة الواحدة: حقوق الآباء على الأبناء، وحقوق الأبناء على الآباء، والحقوق بين الأقارب والأرحام.	٢
٤	**الخلافات الأسرية، ومنهج الإسلام في التعامل معها:** في هذه المفردة سيتعلم الطالب منهج الإسلام في بناء الأسرة المسلمة، وعلاج الخلافات الأسرية وفق المنهج الرباني.	٢
٥	**المجتمع: مفهومه، مقاصده، سننه:** تتطرق هذه المفردة إلى التعريف بالمجتمع، وخصائصه، والمقاصد الشرعية للاجتماع، والهدي الشرعي في الاجتماع. **الفروض الكفائية والمسؤولية المجتمعية:** يدرس الطالب في هذه المفردة الفروض الكفائية، وعلاقتها بالمجتمع، وتعريفها، وبيان أنواعها، وفضائلها، وأمثلة عليها كمساعدة الفقراء والمساكين، والإحسان إلى الآخرين.. ونحوها.	٢
٦	**الضرورات الخمس: مفهومها، أهميتها، آثارها:** يدرس الطالب في هذه المفردة مفهوم المحافظة على الضرورات الخمس: الدين، والنفس، والعقل، والعِرض، والمال، وأهميتها، وأثارها الإيجابية على المجتمع.	٢
٧	**نظام الثواب والعقاب وأثره على الفرد والأسرة والمجتمع:** يدرس الطالب في هذه المفردة ما جاءت به الشريعة الإسلامية من نظام الثواب والعقاب، وبيان أثره على الأمن المجتمعي.	٢

٨	**المشكلات الاجتماعية: مظاهرها، علاجها:** تتطرق هذه المفردة إلى المشكلات الاجتماعية، من حيث: تعريفها، وأمثلة عليها، ومظاهرها، وطرق الوقاية والعلاج.	٢
٩	**دراسة تحليلية لأسرة خليل الرحمن إبراهيم عليه السلام، دراسة تحليلية لأسرة النبي محمد ﷺ:** تعنى هاتان المفردتان بدراسة تحليلية لسيرة خليلي الرحمن إبراهيم عليه السلام، ومحمد صلى الله عليه وسلم، ونماذج من سيرتهم الأسرية، كقصة إبراهيم عليه الصلاة والسلام مع ساره وهاجر، ومع إسماعيل عليه السلام، وبناء الكعبة. كذلك قصة حادثة الإفك التي حدثت لبيت النبي صلى الله عليه وسلم. كما تتطرق المفردة إلى كيفية تحليل النص وتطبيقه في حياته الأسرية والاجتماعية.	٢
١٠	**دراسة تحليلية لمجتمع النبي ﷺ في المدينة:** يدرس الطالب في هذه المفردة مجتمع النبي صلى الله عليه وسلم، ومكوناته، ويتعرف على خصائص مجتمع الصحابة رضي الله عنهم.	٢
المجموع		٢٠

د. التدريس والتقييم:

١. ربط مخرجات التعلم للمقرر مع كل من استراتيجيات التدريس وطرق التقييم

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
1.0	**المعرفة والفهم**		
1.1	يتعرف على النظم الإسلامية ومقاصدها ومصادرها وخصائصها	المحاضرات والمناقشات	الاختبارات التحريرية والشفوية. أوراق عمل
1.2	يلم بنظام الأسرة في الإسلام وأهم الشبه المثارة عيه	التعلم الذاتي المحاضرات والمناقشات ربط الطالب بالمراجع الأساسية والمساندة في معرفة هذه المفردات	الاختبارات التحريرية والشفوية عرض البحوث والمناقشة
1.3	يحدد مفهوم النظام الاقتصادي الإسلامي وأهم مبادئه	المحاضرات والمناقشات ربط الطالب بالمراجع الأساسية والمساندة في معرفة هذه المفردات	الاختبارات التحريرية والشفوية. أوراق عمل
1.4	يذكر تعريف النظام السياسي في الإسلام وأصوله وحقوق الراعي والرعية	الاستقراء والعصف الذهني المحاضرات والمناقشات	الاختبارات التحريرية والشفوية.
2.0	**المهارات**		
2.1	يشرح أهم الشبه المثارة على نظام الأسرة في الإسلام وكيفية الرد عليها	العصف الذهني الحوار والمناقشة زيارة بعض المواقع الالكترونية التي تعتني بهذا الموضوع	تقييم الأبحاث وأوراق العمل
2.2	يقارن بين النظام الاقتصادي فري الإسلام الأنظمة الوضعية	ربط الطالب بالمراجع الأساسية والمساندة في معرفة هذه المفردات تكوين ملكة النقد واستخدام أسلوب المقارنة	بحوث وواجبات تقييم قدرة الطلاب على الاستنباط والتحليل
2.3	يحرر مذهب السلف في تحريم الخروج على أئمة المسلمين	التعليم التعاوني الطريقة الاستقرائية	الملاحظة المباشرة والتقييم الجماعي تقييم أبحاث

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
2.4	يفرق بين الحدود والتعازير وقوانين العقوبات الوضعية	التعلم الذاتي التكليف بواجبات	تقييم الأبحاث
3.0	**القيم**		
3.1	يشارك زملاءه في الأعمال والتكاليف الجماعية باستقلال ومسؤولية	التعلم التعاوني الحوار والمناقشة	الملاحظة المستمرة وتقويم الأداء
3.2	يكون علاقات ناجحة داخل الجامعة وخارجها	التعلم التعاوني	الملاحظة المستمرة والتقييم الجما عي
3.3	يتمثل القيم الأخلاق الإسلامية الحميدة	التعليم التعاوني من خلال التكليف بواجبات وأبحاث وأنشطة جماعية التعليم على بناء الشخصية القدوة	الملاحظة المباشرة لسلوك الطلاب وتوجهاتهم

٢. أنشطة تقييم الطلبة

م	أنشطة التقييم	توقيت التقييم (بالأسبوع)	النسبة من إجمالي درجة التقييم
١	الاختبار التحريري والشفوي	منتصف ونهاية الفصل الدراسي	%٦٠
٢	التقويم المستمر	كل أسابيع الدراسة	%١٠
٣	عرض البحوث والمناقشة	التاسع	%١٥
٤	الملاحظة وتقويم الأداء	ابتداء من الأسبوع الرابع	%١٥

أنشطة التقييم (اختبار تحريري، شفهي، عرض تقديمي، مشروع جماعي، ورقة عمل الخ)

هـ - أنشطة الإرشاد الأكاديمي والدعم الطلابي:

- **تعريف الطالب بالمقرر**
- **متابعة بعض الحالات الفردية التي تحتاج إلى اهتمام خاص.**
- **توجيه الطالب الى كيفية الإفادة من التقنيات الحديثة.**
- **الساعات المكتبية.**
- **ربط جميع الطلاب بمرشدين أكاديميين لمساعدتهم على فهم متطلبات البرنامج وعمليات التسجيل.**
- **نشر جميع معلومات الاتصال الخاصة بعضو هيئة التدريس على الصفحة الرئيسية للمقرر الدراسي على البلاك بورد.**

و – مصادر التعلم والمرافق:

١. قائمة مصادر التعلم:

المرجع الرئيس للمقرر	زاد المعاد في هدي خير العباد لابن القيم.
المراجع المساندة	١- السيرة النبوية لابن هشام. ٢- كتاب النكاح من خلال كتب السنة وشروحها. ٣- تحفة المودود بأحكام المولود لابن قيم الجوزية.
المصادر الإلكترونية	المكتبة الرقمية السعودية
أخرى	

٢. المرافق والتجهيزات المطلوبة:

العناصر	متطلبات المقرر
المرافق (القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ)	قاعة دراسية مجهزة افتراضية مكتبة اليكترونية
التجهيزات التقنية (جهاز عرض البيانات، السبورة الذكية، البرمجيات)	أجهزة حاسوب مرتبطة بالنت قاعات افتراضية
تجهيزات أخرى (تبعاً لطبيعة التخصص)	لا يوجد

ز. تقويم جودة المقرر:

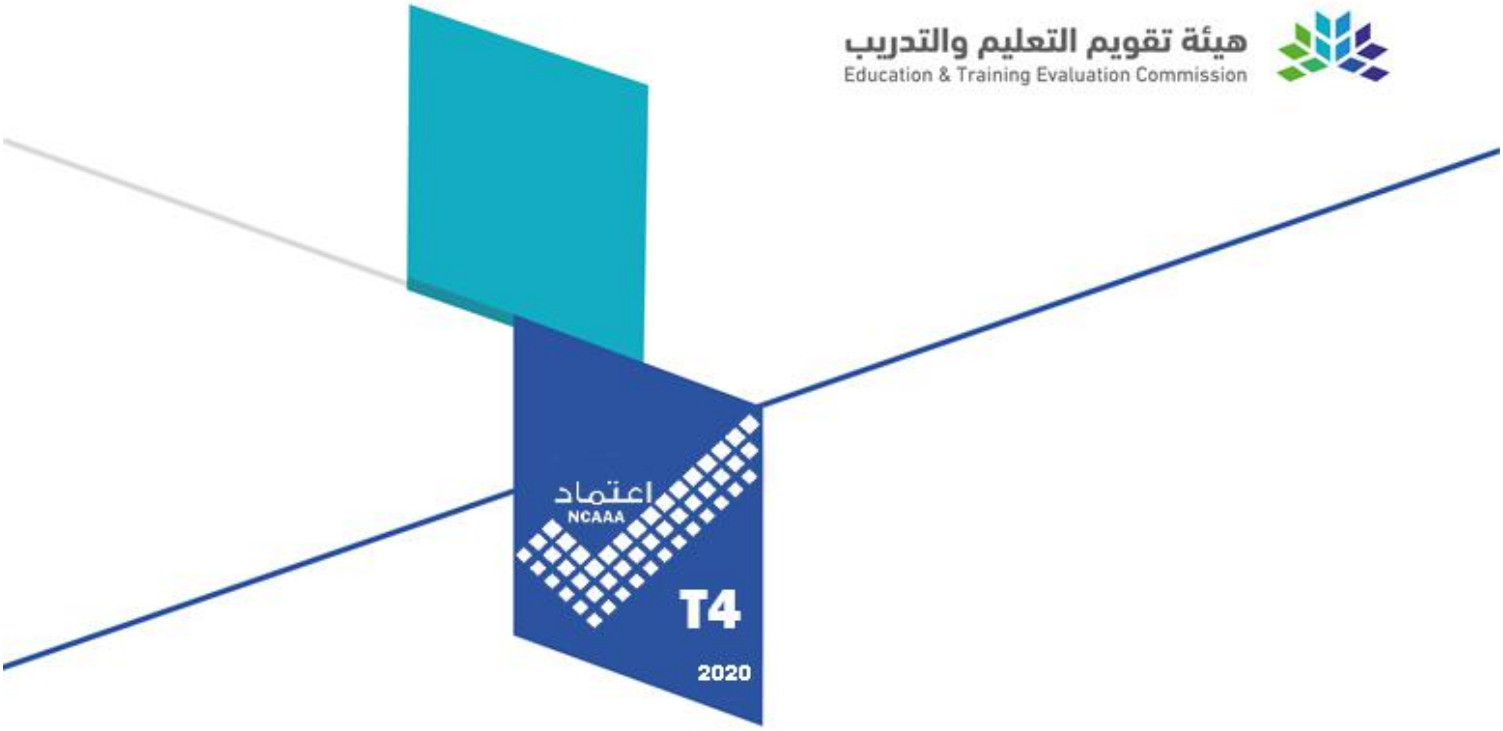
مجالات التقويم	المقيمون	طرق التقييم
فاعلية التدريس	أعضـــاء هيئة التدريس، الطالب، إدارة القسم، لجنة الجودة	غير مباشر (الاستبانات)
فاعلية طرق تقييم الطالب	المراجع النظير	مراجعة عينات عشـــوائية من أوراق إجابات الطلاب
مدى تحصيل مخرجات التعلم	قيادات البرنامج	تقييم مباشر

مجالات التقويم (مثل. فاعلية التدريس، فاعلة طرق تقييم الطلاب، مدى تحصيل مخرجات التعلم للمقرر، مصادر التعلم ... إلخ)
المقيمون (الطلبة، أعضاء هيئة التدريس، قيادات البرنامج، المراجع النظير، أخرى (يتم تحديدها)
طرق التقييم (مباشر وغير مباشر)

ح. اعتماد التوصيف

جهة الاعتماد	مجلس القسم
رقم الجلسة	
تاريخ الجلسة	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Modern Geometry**
Course Code:	**MTH3302**
Program:	**BSc. in Mathematics**
Department:	**Mathematical sciences**
College:	**Applied sciences**
Institution:	**Umm Al-Qura University**

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A. Course Identification

1. Credit hours:	4
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	Level 8/ year 3
4. Pre-requisites for this course (if any)**:**	Foundation of Mathematics MTH1201-4
5. Co-requisites for this course (if any)**:**	

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	Four hours/week	%100
2	Blended	0	0
3	E-learning	0	0
4	Distance learning	0	0
5	Other	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	40
2	Laboratory/Studio	0
3	Tutorial	0
4	Others	0
	Total	40

B. Course Objectives and Learning Outcomes

1. Course Description

The course introduces the basic ideas of modern geometry aiming to create a good teacher of the subject of geometry in high schools. The staring is a revision of basic facts, concept, and ideas in geometry including Angles, congruent triangles, perimeter and area, similar triangles, right triangles, special parts of triangles, quadrilaterals, Polygons, circles, power of points, three-dimensional geometry, curved surfaces. Then Axiomatic systems, finite geometry. Foundation of Euclidean Geometry including a critique of Euclid's elements and a modern set of axioms for Euclidean geometry. The role of parallel postulate. Introduction of Non-Euclidean geometry. Introduction of projective geometry. The course contains Solid Geometry as part of the lectures.

2. Course Main Objective

This course will provide a common mathematical foundation for students in all of the programs, drawing upon the full range of undergraduate courses in mathematics. In addition, it will permit students to build upon and share knowledge already acquired while pointing out areas in which additional study may be needed. In addition, it will develop the communication

skills and understanding of the process of doing mathematics necessary for graduate-level study.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Identify main terminology in basic geometry.	K1, K3
1.2	Identify different methods of recognize the similarity of triangles	K3, K5
1.3	Present basic concepts and properties of quadrilaterals and polygons as well as circle and power of points.	K3, K5
1.4	State the basic rules of solid geometry and the axioms of Euclidean geometry.	K1, K3
1.5	Describe basic projective geometry	K3
1.6	Define finite geometry and three-dimensional geometry.	K1
1.7	State and recognize the rule of parallel pustulates, non-Euclidean geometry, critique of Euclid's elements.	K1
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Compare between triangles, equilaterals and polygons and their properties.	S1, S3
2.2	Use methods of solid geometry.	S2, S5
2.3	Apply geometric structures on projective geometry.	S5, S9
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Prepare for success in disciplines which rely on geometry as part of mathematics, which is the key to understand most of mathematical subjects.	V2, V4
3.2	Interpret Euclidean and Non-Euclidean Geometry.	V3, V4
3.3	Evaluate fundamental concepts of geometry	V2, V3
3.4	Generalize mathematical concepts in problem-solving through axioms of geometry.	V3, V4

C. Course Content

No	List of Topics	Contact Hours
1	**Preliminaries**: Introduction, definitions, and axioms.	6
2	**Plane Euclidean Geometry**: the geometry on E^2	8
3	**Three-Dimensional Euclidean Geometry:** the solid Geometry and surfaces	12
4	**Non-Euclidean Geometry:** an overview on the elliptic and hyperbolic geometry	8
5	**Projective Geometry:** the invariance of projective transformations	6
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Identify main terminology in basic geometry.	Lecture and Tutorials	Exams, quizzes
1.2	Identify different methods of recognize the similarity of triangles	Lecture and Tutorials	Exams, quizzes
1.3	Present basic concepts and properties of quadrilaterals and polygons as well as circle and power of points.	Lecture and Tutorials	Exams, quizzes
1.4	State the basic rules of solid geometry and the axioms of Euclidean geometry.		
1.5	Describe basic projective geometry	Lecture and Tutorials	Exams, quizzes
1.6	Define finite geometry and three dimensional geometry.	Lecture and Tutorials	Exams, quizzes
1.7	State and recognize rule of parallel pustulates, non-Euclidean geometry, critique of Euclid's elements.		
2.0	**Skills**		
2.1	Compare between triangles, equilaterals and polygons and their properties.	Lecture and Individual or group work	Exams, quizzes
2.2	Use methods of solid geometry.	Lecture and Individual or group work	Exams, quizzes
2.3	Apply geometric structures on projective geometry.	Lecture and Individual or group work	Exams, quizzes
3.0	**Values**		
3.1	Prepare for success in disciplines which rely on geometry as part of	Lecture and Individual or group work	Exams, quizzes

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	mathematics, which is the key to understand most of mathematical subjects. (An is a simple group for n not equal 4.)		
3.2	Interpret Euclidean and Non-Euclidean Geometry.	Lecture and Individual or group work	Exams, quizzes
3.3	Evaluate fundamental concepts of geometry	Lecture and Individual or group work	Exams, quizzes
3.4	Generalize mathematical concepts in problem-solving through axioms of geometry.	Lecture and Individual or group work	Exams, quizzes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	6th week	%30
2	Quizes and homeworks	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	1- Introduction to Geometry by Richard Rusczyk (The art of problem solving), January 1, 2007. 2- Euclidean and Non-Euclidean Geometries. By Greenberg, Marven Jay, fourth edition 2007
s	Plane and solid geometry by, J.M. Aarts: Publisher: Springer-Verlag New York Language: English Pages: 349 / 357 ISBN 10: 0387782400 ISBN 13: 9780387782409
Electronic Materials	Art of problems solving (Geometry)
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

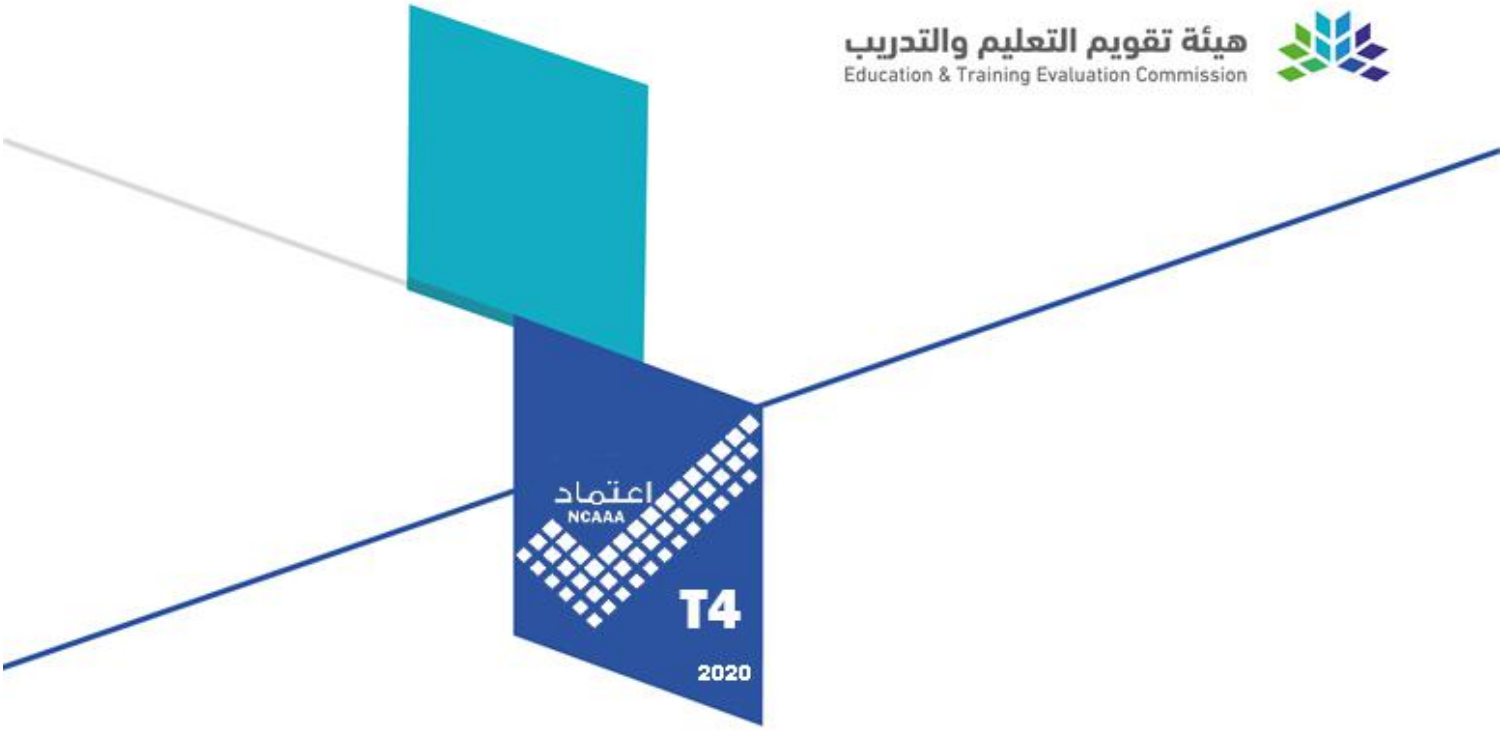
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Prof. Dr. Ahmad Alghamdi and Dr. Yassin Alzubaidi
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Complex Analysis**
Course Code:	**MTH3142**
Program:	**BSc. in Mathematics**
Department:	**Mathematical sciences**
College:	**Applied sciences**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 3
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Eighth level/third year
4. Pre-requisites for this course (if any)**:** Introduction to Complex Analysis (MTH3141-3)
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	Three hours/week	%100
2	Blended	0	0
3	E-learning	0	0
4	Distance learning	0	0
5	Other	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	0
3	Tutorial	0
4	Others (specify)	0
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description Topics covered are: Complex line integrals; Cauchy's theorem and the Cauchy integral formula; zeros of holomorphic functions; the Residue Theorem; calculation of definite integrals and evaluation of infinite series using residues.
2. Course Main Objective The objectives of this course are to: •Introduce students to the Complex line integral and its applications

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	**Apply the methods of complex analysis to evaluate definite integrals and infinite series.**	K3, K5
1.2	**Demonstrate understanding and appreciation of deeper aspects of complex analysis.**	K1, K2
1.3	**Demonstrate skills in communicating mathematics orally and in writing.**	K2, K3, K5
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	**Develop connections of complex analysis with other disciplines**	S1, S2, S4
2.2	**show the ability to work independently and within groups.**	S5, S7

C. Course Content

No	List of Topics	Contact Hours
1	**Chapter 1:** **Complex Integration** **1.1 Contours** **1.2 Contour Integrals** **1.3 Independence of Path** **1.4 Cauchy's Integral Theorem1** **1.5 Cauchy's Integral Formul1 and Its Consequences**	10
2	**Chapter 2: Series Representations for Analytic Functions** **2.1 Sequences and Series** **2.2 Taylor Series** **2.3 Power Series** **2.4 zeros and Singularities** **2.7 The Point at Infinity**	10
3	**Chapter 3: Residue Theory** **3.1 The Residue Theorem** **3.2 Improper Integrals of Certain Functions**	10
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	**Recognize basic knowledge of complex line integral.**	**Lecture and Tutorials**	**Exams, quizes**
1.2	**Residues Theorem. Zero of holomorphic functions**	**Lecture and Tutorials**	**Exams, quizes**
2.0	**Skills**		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.1	define singularities of a function, know the different types of singularities, and be able to determine the points of singularities of a function. Introduce Line integral of complex function. Define integral and contours on the complex plan Compute the series and Laurent series of complex function and the residue of a function	Lecture/Individual or group work	Exams, quizzes
2.2	Application of Laurent Series Zeros and Singularities 2.7 The Point at Infinity	Lecture/Individual or group work	Exams, quizzes
3.0	Values		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	%30
2	Quizes and homeworks	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice : -

Each group of students is assigned to a particular faculty where he or she will provide academic advising during specific academic hours. Each staff will provide at least one session/week. –

There will be an academic advisor how will be a responsible for helping the student by doing the general supervision. –

The people in the library will support the students during the time of the course.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	**1 Churchhill & Brown: Complex Variables and Applications; 517.53 C563**

Essential References Materials	**2. -Complex variables and its application (Eighth Edition) BY James Ward Brown and Ruel V. Churchill** **3. Marsden & Hoffman: Basic Complex Analysis; 517.54 M363b** **4. Conway: Functions of One Complex Variable; 517.53 C767f** **5. Ahlfors: An Introduction to the Theory of Analytic Functions of One Complex Variable; 517.53 A28A Patrick D. Shanahan.**
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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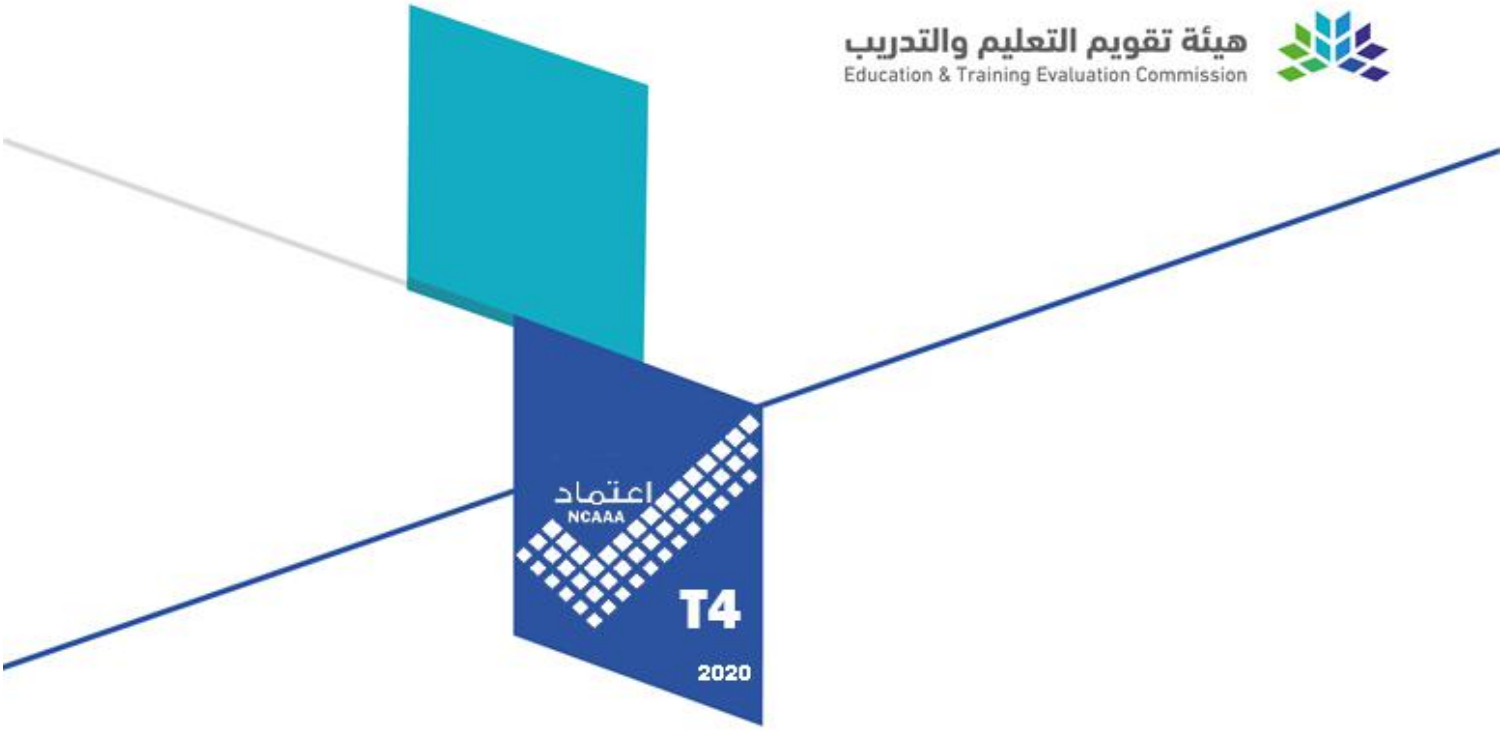
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Applied Mathematics**
Course Code:	**MTH3411**
Program:	**BSc. in Mathematics**
Department:	**Mathematical science**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 3
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Eighth level/Third year
4. Pre-requisites for this course (if any)**:** Ordinary Differential Equations (MTH2121-4) – Analytical Geometry (MTH2301-4)
5. Co-requisites for this course (if any)**:** Not applicable

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	Three hours/week	100%
2	Blended	0	0
3	E-learning	0	0
4	Distance learning	0	0
5	Other	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	0
3	Tutorial	0
4	Others (specify)	0
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

Applied Mathematics is the first course in a series of Physical Mathematics courses. This course studies topics related to forces, momentum, Newton's laws, mass, work, and energy.

2. Course Main Objective

The aim of this course is to introduce the science of kinematics, Forces, Momentum, Newton laws of motion, Variable mass problems, Work and Energy, Rotating frame of reference and the center of mass.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Recognize laws of forces, momentum, work, and energy.	K3
1.2	Get the knowledge of various concepts of particle motion	K1
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Convert a physical problem related to forces, work, and energy into mathematical models and then solve them.	S1, S4, S7
2.2	Solve scientific problems related to the motion of particles.	S2, S5
2.3	Apply the laws studied in this course to the advanced courses.	S2, S5, S7
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Explain the laws of force, work, energy, and motion and be fluent in their use in more advanced mathematics involving these topics.	V1, V4
3.2	Evaluate fundamental concepts of physical mathematics and the interrelationship between mathematics and physics.	V2, V4

C. Course Content

No	List of Topics	Contact Hours
1	Revision on vectors	3
2	Newton's laws of motion	3
3	Kinematics of particles	3
4	Forces, Mass, and Momentum	3
5	Particle motion under gravity in a resisting medium	3
6	Variable mass Problems, Work and Energy	6
7	The motion of particles under the influence of gravity.	3
8	System of Particles, Rotating frame of reference, Central force motion.	6
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**		
1.1	Recognize laws of forces, momentum, work, and energy.	Lecture	Exams, Quizes
1.2	Get the knowledge of various concepts of particle motion	Lecture	Exams, Quizzes Homework
2.0	**Skills**		
2.1	Convert a physical problem related to forces, work, and energy into mathematical models and then solve them.	Lecture	Exams, Quizes, Homework
2.2	Solve scientific problems related to the motion of particles.	Lecture	Exams, Quizes, Homework
2.3	Apply the laws studied in this course to the advanced courses.	Lecture	Exams, Quizes, Homework
3.0	**Values**		
3.1	Explain the laws of force, work, energy, and motion and be fluent in their use in more advanced mathematics involving these topics.	Lecture	Exams, Quizzes, Homework
3.2	Evaluate fundamental concepts of physical mathematics and the interrelationship between mathematics and physics.	Lecture	Exams, Quizzes, Homework

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30%
2	Quizzes and Homeworks	During semester	20%
3	Final exam	End of semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

Each group of students is assigned to a faculty member where he or she will provide academic advising. All faculty members are required to be in their offices outside teaching hours. Each faculty member allocates at least 4 hours per week to give academic advice and to answer to the questions of students about concepts studied during the lectures.

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F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Meriam, J. L., & Kraige, L. G. (2011). Engineering Mechanics: Dynamics: Statics. Wiley Global Education.
Essential References Materials	- Alrasheed, S. (2019). Principles of mechanics: Fundamental university physics (p. 173). Springer Nature. - Ferdinand B., Johnston E., De wolf J., & Mazurek D. P Beer, F., Johnston JR, E. R., DeWolf, J. T., & Mazurek, D. F. (2009). Statics and Mechanics of Materials. McGraw Hill. - Resnick, R., Halliday, D., & Krane, K. (1992). Volume One Physics fourth edition, 417-460.
Electronic Materials	
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 40 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Council of the Mathematics Department
Reference No.	
Date	

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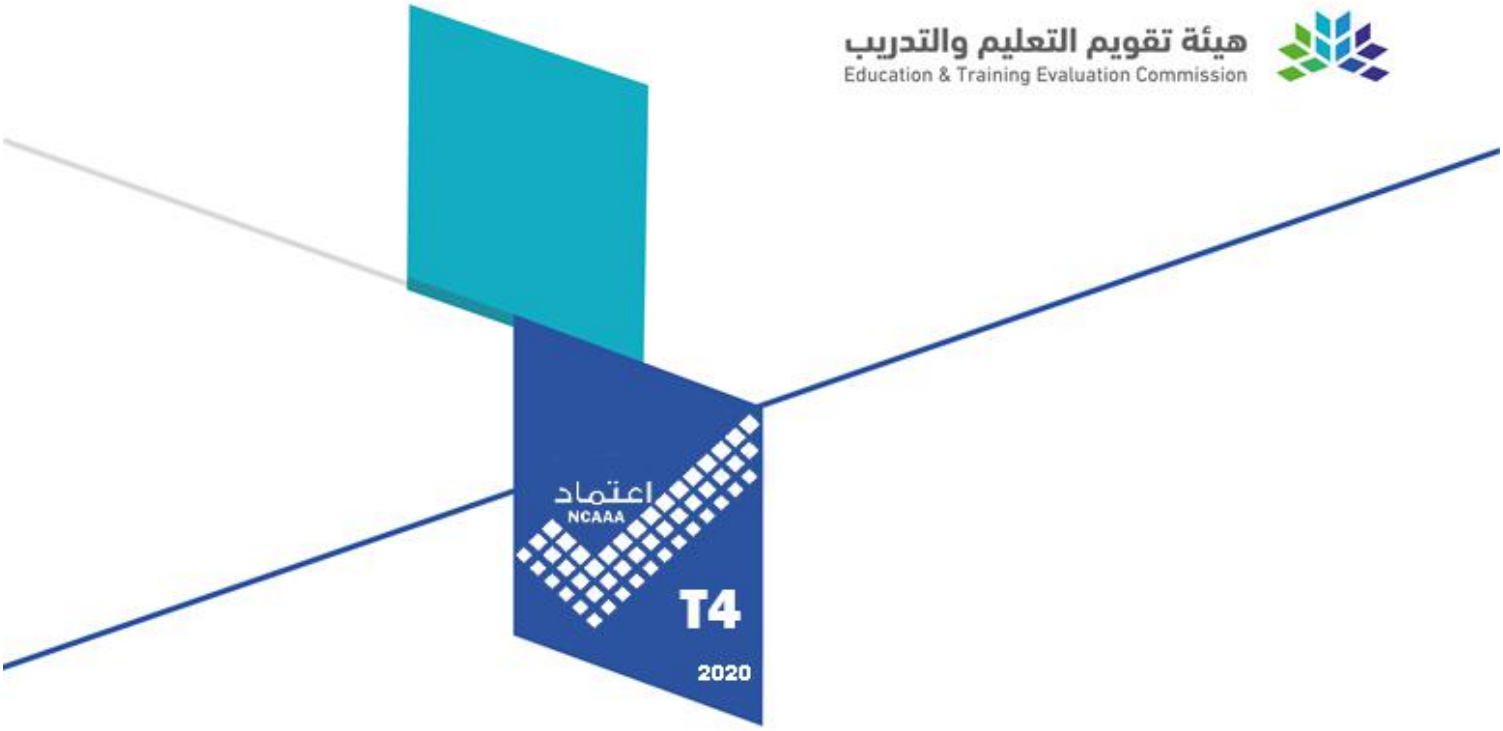
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Introduction to Group Theory**
Course Code:	**MTH3221**
Program:	**BSc. in Mathematics**
Department:	**Mathematical sciences**
College:	**Applied sciences**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 4
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Level 8/ year 3
4. Pre-requisites for this course (if any)**:** Number theory MTH3231-4
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	Four hours/week	%100
2	Blended	0	0
3	E-learning	0	0
4	Distance learning	0	0
5	Other	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	40
2	Laboratory/Studio	0
3	Tutorial	0
4	Others (specify)	0
	Total	40

B. Course Objectives and Learning Outcomes

1. Course Description

Group theory is an essential part of modern mathematics. This course is concerned with an interedition to this science. The beginning will be definitions and examples. Then some properties of groups. Order of an element of a group. Then some concrete examples of groups such as permutation groups, symmetric groups, dihedral groups, and the general and special linear groups. Then Lagrange theorem and theory of cosets, normal subgroups, quotient groups and the full isomorphism theorem of groups. In the end of the course, group actions and permutations representations as well as automorphism of groups are introduced.

2. Course Main Objective

This course will provide a common mathematical foundation for students in all of the programs, drawing upon the full range of undergraduate courses in mathematics. In addition, it will permit students to build upon and share knowledge already acquired while pointing out areas in which additional study may be needed. In addition, it will develop the communication skills and understanding of the process of doing mathematics necessary for graduate-level study.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Identify groups, subgroups and Lagrange Theorem, normal subgroups. Class Equation	K3, K5
1.2	Identify different methods of recognize cyclic and abelian groups.	K3
1.3	Present basic concepts and properties of groups. Recognize Order of an element of a group.	K5
1.4	State the basic rules of isomorphism theorems	K1
1.5	Describe product of groups and the concept of automorphisms	K3, K5
1.6	Define mappings which preserve group structures	K1
1.7	State and recognize Abelian, cyclic, permutations and cosets.	K1
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Compare between cyclic and con-cyclic groups.	S1, S2, S8
2.2	Use methods of isomorphism between groups.	S4, S7, S8
2.3	Apply algebraic structures on groups and their subgroups.	S2, S4, S8
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Prepare for success in disciplines which rely on group theory as part of mathematics, which is the key to understand most of mathematical subjects.	V1, V2
3.2	Interpret permutation representations of groups.	V1, V2
3.3	Evaluate fundamental concepts of groups, cyclic groups, normal subgroups, and the interrelationship between group action and permutation representation.	V2, V2
3.4	Generalize mathematical concepts in problem-solving through integration of new material and modeling which are related to group theory.	V2, V4

C. Course Content

No	List of Topics	Contact Hours
1	**The concept of groups: Definitions and basic examples:** Definition of groups, examples of groups, Caley tables of groups, the order of the group, finite and infinite groups,	4
2	**Properties of groups:** The identity is unique, the inverse is unique, the cancellation laws hold, order of an element in the group, inverse of the product of two elements, homomorphisms of groups. Cartesian product of two groups is a group. Present basic concepts and properties of groups. Recognize Order of an element of a group.	6
3	**Some concrete examples of groups:** Symmetric groups and permutations groups, Dihedral groups, Quaternion groups, groups of matrices (with addition), alternating groups An as a permutation group. Groups of invertible matrices (with multiplication) General linear groups and Special linear groups.	6
4	**Subgroups and Lagrange Theorem:** Defection of subgroup of a group, Criterion for a non-empty subset to be a subgroup of a group, more example for subgroups. Co-sets of a subgroup, Lagrange theorem, partition of a group as cosets, definition of transversal of a group. When the transversal of a subgroup is a subgroup.	6
5	**Cyclic and Abelian groups:** Abelian groups, Center of a group, Cyclic groups. Relationship between cyclic groups and Abelian groups, Example of an abelian group which is not cyclic. Every finite multiplicative subgroup of a field is cyclic group.	6
6	**Normal subgroups and Quotient (Factor) Groups:** Definition of examples of normal subgroup, criteria for subgroup to be normal. Quotient groups, examples of quotient groups, first, second, third and fourth isomorphism theorems of groups. Class Equation.	6
7	**Group Action on non-empty set:** Definition of group action, Orbit stabilizer Theorem, examples, permutation representation, automorphism of groups, automorphism of cyclic groups, characteristic subgroups.	6
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.1	Identify groups, subgroups and Lagrange Theorem, normal subgroups, .Class Equation	Lecture and Tutorials	Exams, quizzes
1.2	Identify different methods of recognize cyclic and abelian groups.	Lecture and Tutorials	Exams, quizzes
1.3	Present basic concepts and properties of groups. Recognize Order of an element of a group.	Lecture and Tutorials	Exams, quizzes
1.4	State the basic rules of isomorphism theorems		
1.5	Describe product of groups and the concept of automorphisms	Lecture and Tutorials	Exams, quizzes
1.6	Define mappings which preserve group structures	Lecture and Tutorials	Exams, quizzes
1.7	State and recognize Abelian, cyclic, permutations and cosets.		
2.0	**Skills**		
2.1	Compare between cyclic and con-cyclic groups.	Lecture and Individual or group work	Exams, quizzes
2.2	Use methods of isomorphism between groups.	Lecture and Individual or group work	Exams, quizzes
2.3	Apply algebraic structures on groups and their subgroups.	Lecture and Individual or group work	Exams, quizzes
3.0	**Values**		
3.1	Prepare for success in disciplines which rely on group theory as part of mathematics, which is the key to understand most of mathematical subjects.	Lecture and Individual or group work	Exams, quizzes
3.2	Interpret permutation representations of groups.	Lecture and Individual or group work	Exams, quizzes
3.3	Evaluate fundamental concepts of groups, cyclic groups, normal subgroups, and the interrelationship between group action and permutation representation.	Lecture and Individual or group work	Exams, quizzes
3.4	Generalize mathematical concepts in problem-solving through integration of new material and modeling which are related to group theory.	Lecture and Individual or group work	Exams, quizzes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	6th week	%30
2	Quizes and homeworks	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	1-Guide to Abstract Algebra by: Carol Whitehead, Edited by David Towers Edition 2nd Edition: ISBN:9780333794470 2- Abstract Algebra by D. Dummit and R. Foote; Publisher: Wiley; 3 edition (July 14, 2003) Language: English ISBN-10: 0471433349 ISBN-13: 978-0471433347 3-Basic Abstract Algebra by: P. B. Bhattacharya, S. K. Jain, S. R. Nagpaul, Cambridge University Press, Jum. II 21, 1415 AH - Mathematics - 487 pages ISBN: 0-521-46081-6 and 0-521-46629-6
Essential References Materials	1- A First Course in Abstract Algebra, 7th Edition 7th edition, by John B. Fraleigh; Publisher: Pearson; 7 edition (November 16, 2002) ISBN-10: 0201763907: ISBN-13: 978-0201763904 2- Modern Algebra: An Introduction 6th Edition, by John R. Durbin; Publisher: Wiley; 6 edition (December 31, 2008) ISBN-10: 0470384433 ISBN-13: 978-0470384435. 3 – Theory and Problems of Abstract Algebra by Frank Ayres and Lloyd R. Jaisingh, Schaum's Outlines Series. Second Edition.
Electronic Materials	- (http://www.math.niu.edu/~beachy/abstract_algebra/study_guide/contents.html) - https://en.wikipedia.org/wiki/group_theory - https://en.wikipedia.org/wiki/Algebraic_structure - http://mathworld.wolfram.com/GroupTheory.html http://mathworld.wolfram.com/topics/GroupTheory.html
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources	Data Show, Smart Board

Item	Resources
(AV, data show, Smart Board, software, etc.)	
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Prof. Dr. Ahmad Alghamdi and Dr. Abdullah Ahmad Asseri
Reference No.	
Date	

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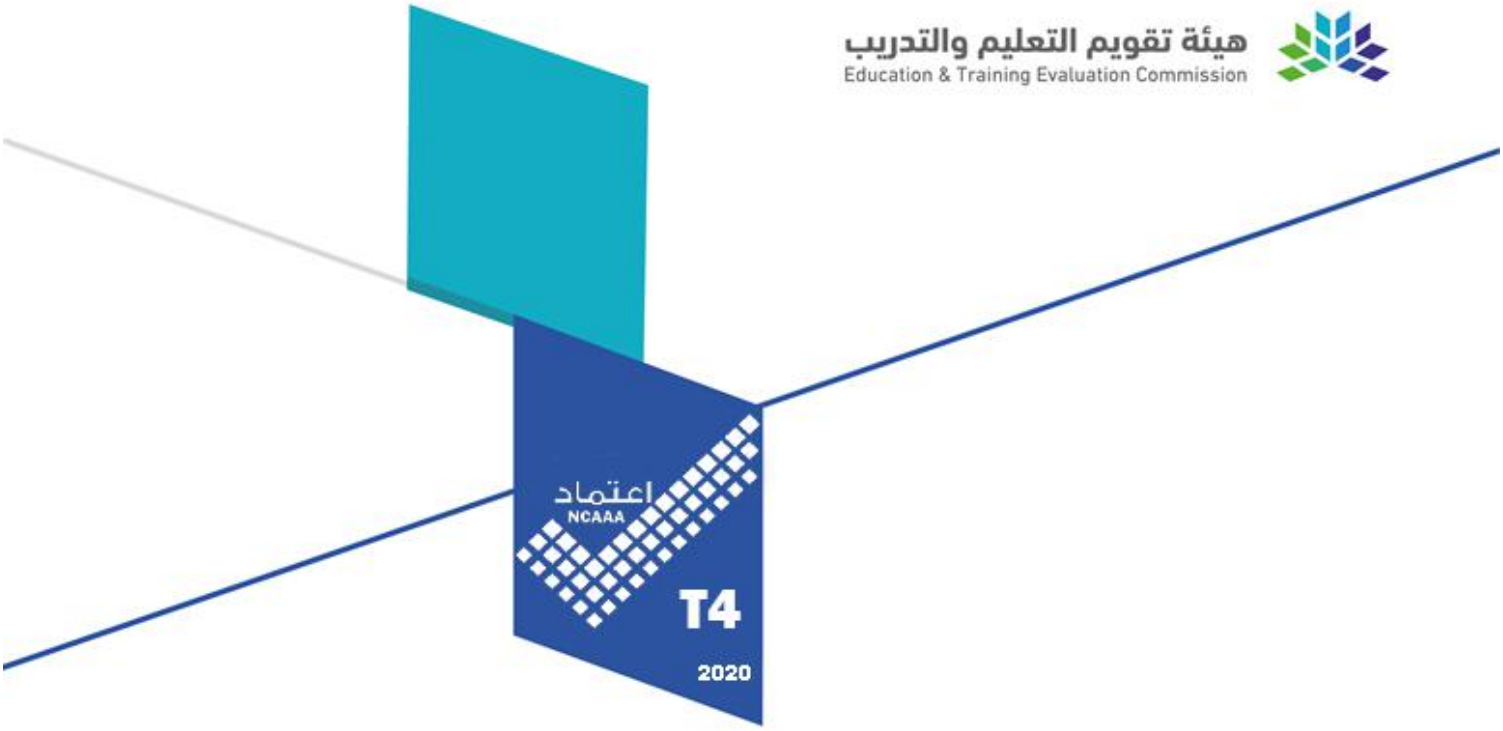
Education & Training Evaluation Commission



Course Specifications

Course Title:	**History of Mathematics**
Course Code:	**MTH3001**
Program:	**BSc. in Mathematics**
Department:	**Mathematical sciences**
College:	**Applied sciences**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	**2**
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	**Level 8/ year 2**
4. Pre-requisites for this course (if any)**:**	**NA**
5. Co-requisites for this course (if any)**:**	**NA**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**0**	**0**
2	**Blended**	0	0
3	**E-learning**	0	**100%**
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**20**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (specify)	**0**
	Total	**20**

B. Course Objectives and Learning Outcomes

1. Course Description

Mathematics is the language of all science. That we believe it is true as modern life depends in the applications of mathematics for all sciences. This course is concerns with the history of mathematics. It focusses in the following items, History of arithmetic and numbers. History of Geometry. History of algebra. Solving equations by radicals and its history. Contributions of Muslims for mathematics. The Mathematics Genealogy Project. The International Mathematical Olympiad (IMO) and its history.

2. Course Main Objective

This course will provide a common mathematical foundation for students in all of the programs, drawing upon the full range of undergraduate courses in mathematics. In addition, it will permit students to build upon and share knowledge already acquired while pointing out areas in which additional study may be needed. In addition, it will develop the communication skills and understanding of the process of doing mathematics necessary for graduate-level study.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Identify the history of arithmetic, numbers and the development of calculations.	K1
1.2	Identify different methods of recognize algebra and geometry.	K3
1.3	Present basic concepts and properties of the history of mathematics.	K3
1.4	State the basic rules of solving equations by radicals.	K1, K3
1.5	Describe mathematical genealogy project.	
1.6	Recognize the contributions of Muslims for Mathematics.	K1, K2
1.7	State and recognize main developments of the IMO.	K3, K5
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Compare between developments of the history of numbers, geometry and algebra.	S1, S8
2.2	Use methods of mathematics genealogy for history of mathematics.	S4, S5, S8
2.3	Apply solving equations by radicals.	S2, S5, S5
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Prepare for success in disciplines which rely on the history of mathematics, which is the key to understand most of mathematical subjects. And understand the huge contributions of Muslims people for mathematical community.	V3, V4
3.2	Interpret the use of geometry in the past.	V2, V4
3.3	Evaluate the solutions of quadratic, cubic and quartic equations using radical process.	V2, V3
3.4	Generalize mathematical genealogy project for linking the past with future in mathematics.	V2, V3, V4

C. Course Content

No	List of Topics	Contact Hours
1	**History of arithmetic and numbers**	2
2	**History of Geometry**	4
3	**History of algebra**	4
4	**Solving equations by radicals and its history**	4
5	**Muslims for mathematics**	2
6	**Contributions of Muslims for mathematics.**	2
7	**The International Mathematical Olympiad (IMO) and its history**	2
Total		20

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**		
1.1	Identify the history of arithmetic, numbers and the development of calculations.	Lecture and Tutorials	Exams, quizzes
1.2	Identify different methods of recognize algebra and geometry.	Lecture and Tutorials	Exams, quizzes
1.3	Present basic concepts and properties of the history of mathematics.	Lecture and Tutorials	Exams, quizzes
1.4	State the basic rules of solving equations by radicals.		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.5	Describe mathematical genealogy project.	Lecture and Tutorials	Exams, quizzes
1.6	Recognize the contributions of Muslims for Mathematics.	Lecture and Tutorials	Exams, quizzes
1.7	State and recognize main developments of the IMO.		
2.0	**Skills**		
2.1	Compare between developments of the history of numbers, geometry and algebra.	Lecture and Individual or group work	Exams, quizzes
2.2	Use methods of mathematics genealogy for history of mathematics.	Lecture and Individual or group work	Exams, quizzes
2.3	Apply solving equations by radicals.	Lecture and Individual or group work	Exams, quizzes
3.0	**Values**		
3.1	Prepare for success in disciplines which rely on the history of mathematics, which is the key to understand most of mathematical subjects. And understand the huge contributions of Muslims people for mathematical community.	Lecture and Individual or group work	Exams, quizzes
3.2	Interpret the use of geometry in the past.	Lecture and Individual or group work	Exams, quizzes
3.3	Evaluate the solutions of quadratic, cubic and quartic equations using radical process.	Lecture and Individual or group work	Exams, quizzes
3.4	Generalize mathematical genealogy project for linking the past with future in mathematics.	Lecture and Individual or group work	Exams, quizzes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	6th week	%30
2	Quizes and homeworks	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	The History of Mathematics: The Oxford Handbook, Edited by Eleanor and Jacqueline (2009).
Essential References Materials	The History Mathematics: A very Short Introduction, Oxford University 2012.
Electronic Materials	https://genealogy.math.ndsu.nodak.edu/
Other Learning Materials	https://www.imo-official.org/

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students (May be the course will be Online)
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Blackboard

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

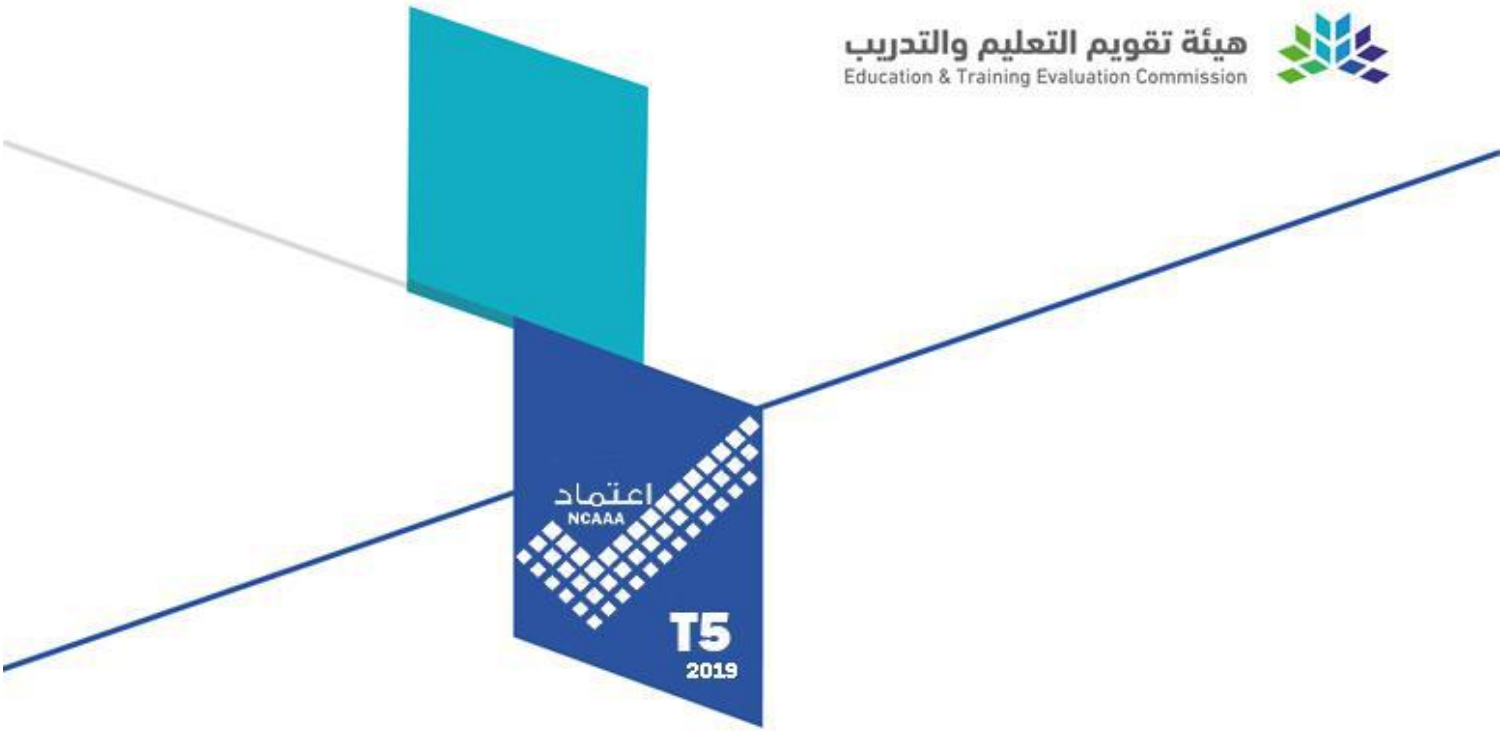
Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Prof. Dr. Ahmad Alghamdi and Dr. Thani Abu Shall
Reference No.	
Date	

The Ninth Level

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Field Experience Specifications

Course Title:	Cooperative Training
Course Code:	
Program:	BSc in Mathematics
Department:	Mathematical Sciences
College:	Applied Sciences
Institution:	Umm Al-Qura University

Table of Contents

A. Field Experience Identification

1. Credit hours: 8 hours
2. Level/year at which this course is offered: semester 9
3. Dates and times allocation of field experience activities. • Number of weeks: (10) week • Number of days: (50) day • Number of hours: (250-300) hour
4. Pre-requisites to join field experience (if any)**:** Approvement of Mathematical Sciences Department

B. Learning Outcomes, and Training and Assessment Methods

1. Field Experience Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Describe training stages.	
1.2	Demonstrate how to merge the educational requirements from university with the needed requirements of working in the labor market.	
1.3	Explain the important job tasks for labor market	
1...		
2	**Skills:**	
2.1	Develop the most accurate practical skills for the labor market through Field Training before graduation.	
2.2	Increase his/her communication skills (e.g. verbal, written, non-verbal, etc), in addition to one's research skills to reach the most appropriate level within the work environment.	
2.3	Become capable of writing and drafting different types of administrative reports	
2.4	Build positive relationships with the training staff.	
3	**Values:**	
3.1	Respect the rules and regulations of the workplace, and to adhere to all appropriate laws to reach the best level of responsibility.	
3.2	Collaborate and contribute responsibly and effectively in teamwork	

2.Alignment of Learning Outcomes with Training Activities and Assessment Methods

Code	Learning Outcomes	Training Methods/Activities	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe training stages.		
1.2	Demonstrate how to merge the educational requirements from university with the needed requirements of working in the labor market.		Progress report, Final presentation
…	Explain the important job tasks for labor market		

Code	Learning Outcomes	Training Methods/Activities	Assessment Methods
2.0	**Skills**		
2.1	Develop the most accurate practical skills for the labor market through Field Training before graduation.		Final report, The faculty advisor's evaluation, Evaluation of field-experience committee
2.2	Increase his/her communication skills (e.g. verbal, written, non-verbal, etc), in addition to one's research skills to reach the most appropriate level within the work environment.		
2.3	Become capable of writing and drafting different types of administrative reports		
2.4	Build positive relationships with the training staff.		
3.0	**Values**		
3.1	Respect the rules and regulations of the workplace, and to adhere to all appropriate laws to reach the best level of responsibility.		Progress report, Final presentation
3.2	Collaborate and contribute responsibly and effectively in teamwork		
…			

3. Field Experience Learning Outcomes Assessment

a. Students Assessment Timetable

#	Assessment task*	Assessment timing (Week)	Percentage of Total Assessment Score
1	Attendance and punctuality at the field location.	Weekly	10%
2	Preparing the plan or a proposal of work.	First week	4%
3	Dependability and reliability, ability for self-learning and search for information.	Weekly	10%
4	Maintaining effective relationships with co-workers.	Weekly	10%
5	Writing a weekly report on his progress.	Weekly	10%
6	Quality of work output.	Weekly	16%
7	Final report.	Final week	20%
8	Final Presentation and/or poster presentation.	Final week	20%

***Assessment task** (i.e., Practical test, oral test, presentation, group project, essay, etc.)

b. Assessment Responsibilities

م	Category	Assessment Responsibility
1	**Teaching Staff**	Attendance and punctuality at the field location. Preparing the plan or a proposal of work. Dependability and reliability, ability for self-learning and search for information. Maintaining effective relationships with co-workers. Writing a weekly report on his progress. Quality of work output.

		Final report. Final Presentation and/or poster presentation.
2	**Field Supervisor**	Attendance and punctuality at the field location. Preparing the plan or a proposal of work. Dependability and reliability, ability for self-learning and search for information. Maintaining effective relationships with co-workers. Writing a weekly report on his progress. Quality of work output.
3	**Others** (specify)	

C. Field Experience Administration

1. Field Experience Locations

a. Field Experience Locations Requirements

Suggested Field Experience Locations	General Requirements*	Special Requirements**
General Authority for Statistics	Approvement of Mathematical Sciences Department	Acceptance from Field experience locations.
Saudi Aramco		
Banks		
Schools and educational institutions		
Research and Statistics Centers		
Companies and financial institutions		

*Ex: provides information technology ،equipment ،laboratories ،halls ،housing ،learning sources ،clinics etc.
**Ex: Criteria of the training institution or related to the specialization, such as: safety standards, dealing with patients in medical specialties, etc.

b. Decision-making procedures for identifying appropriate locations for field experience

1. Preparing an integrated plan for the field experience by the Field Experience Committee, the head of the department displays the topics of field experience and its location for students to choose what suits them best.
2. The students apply to choose one of the displayed field experiences.
3.The supervisor provides the student with guidelines about what kinds of tasks the student is supposed to practice at the field location**.**

2. Supervisory Staff

a. Selection of Supervisory Staff

Selection Items	Field Supervisor	Teaching Staff
Qualifications	Highly qualified field member	Faculty staff
Selection Criteria	10 years' experience	PhD

b. Qualification and Training of Supervisory Staff

(Including the procedures and activities used to qualify and train the supervisory staff on supervising operations, implementing training activities, the follow-up and evaluation of students, etc.)

3. Responsibilities

a. Field Experience Flowchart for Responsibility

including units, departments, and committees responsible for field experience, as evidenced by the relations between them.

1.The Field Experience Committee prepares an integrated plan on field experience based on questionnaires for faculty, students and other institutions, and submits it to the department head.
2.The head of the department displays the topics of field experience and its Institute for students to choose what suits them best.
3.The students apply to choose one of the displayed field experiences.
4.The supervisor (a faculty staff member) should provide the student with guidelines about what kinds of tasks the student is supposed to practice at the field location.
5.The Field Placement Agreements serve as a contract between the University and training organization. These agreements are negotiated annually and must be approved by the Dean of the Applied Science and each organization Superintendent.
6.The students work for 10 weeks (5 days a week, and 5-6 hours a day) during normal semester.
7.The field supervisor, is responsible for guiding and assigning tasks to the student as well as reporting the student's progress to the supervisor in department, and both are responsible for 60% of the Total Assessment Score given in table 3-a (items 1-6).
8.Finally, the student should give a final report and a presentation about his progress in front of the teaching staff (60% of the Total Assessment Score given in table 3-a (items 7-8).

b. Distribution of Responsibilities for Field Experience Activities

Activity	Department or College	Teaching Staff	Student	Training Organization	Field Supervisor
Selection of a field experience site	√		√	√	
Selection of supervisory staff	√		√		
Provision of the required equipment	√			√	
Provision of learning resources	√			√	
Ensuring the safety of the site	√		√	√	√
Commuting to and from the field experience site			√		
Provision of support and guidance		√			√
Implementation of training activities (duties, reports, projects, ...)			√		
Follow up on student training activities		√			√

Activity	Department or College	Teaching Staff	Student	Training Organization	Field Supervisor
Adjusting attendance and leave		√			√
Assessment of learning outcomes	√	√	√	√	√
Evaluating the quality of field experience	√	√	√		
Others (specify)					

4. Field Experience Implementation

a. Supervision and Follow-up Mechanism

1.The student fills the form of the field experience to choose the suited field.
2.The site visit should be done by the faculty advisor to collect students' feedback regularly, if they are trained outside the campus.
3.Students should prepare Data logbook for daily records.
4.Students are expected to give a short report every week to the supervisor.
5.Students are expected to evaluate their field training efficiency, supervisor's performance, and all their feedback related to field-work training for improvement purposes to detect the strength and weak points during the training (using a suitable questionnaire)
6.Quality Assurance Committee analyses all questionnaires results and files a full detailed report and provide the department council with the suggested modification.
7.Proper actions based on the suggested modifications and recommendations will be taken by the department management and faculty deanship to improve the performance and overcome the challenges facing the field training course practice

b. Student Support and Guidance Activities

1.All fields of training should be displayed to the students, to choose the suitable field training.
2.Supervising faculty remains in constant touch with students and his field supervisor.
3.The results and recommendations from the supervisors in the training field about the evaluation of the students (their work technically and their exams and reports and presentations) are submitted to the department and then students take corrective measures in presentation and writing skills.
4.Students report back to the faculty supervisor for any problem arises during the training.
5.Students submit a progress report every week to the academic supervisor by email.

5. Safety and Risk Management

Potential Risks	Safety Actions	Risk Management Procedures
Claim for financial reimbursements from the college against any expenditure for the completion of	Contract an agreement with the Field experience institute.	Select Field experience institute with an agreement in advance.

training program.		

G. Training Quality Evaluation

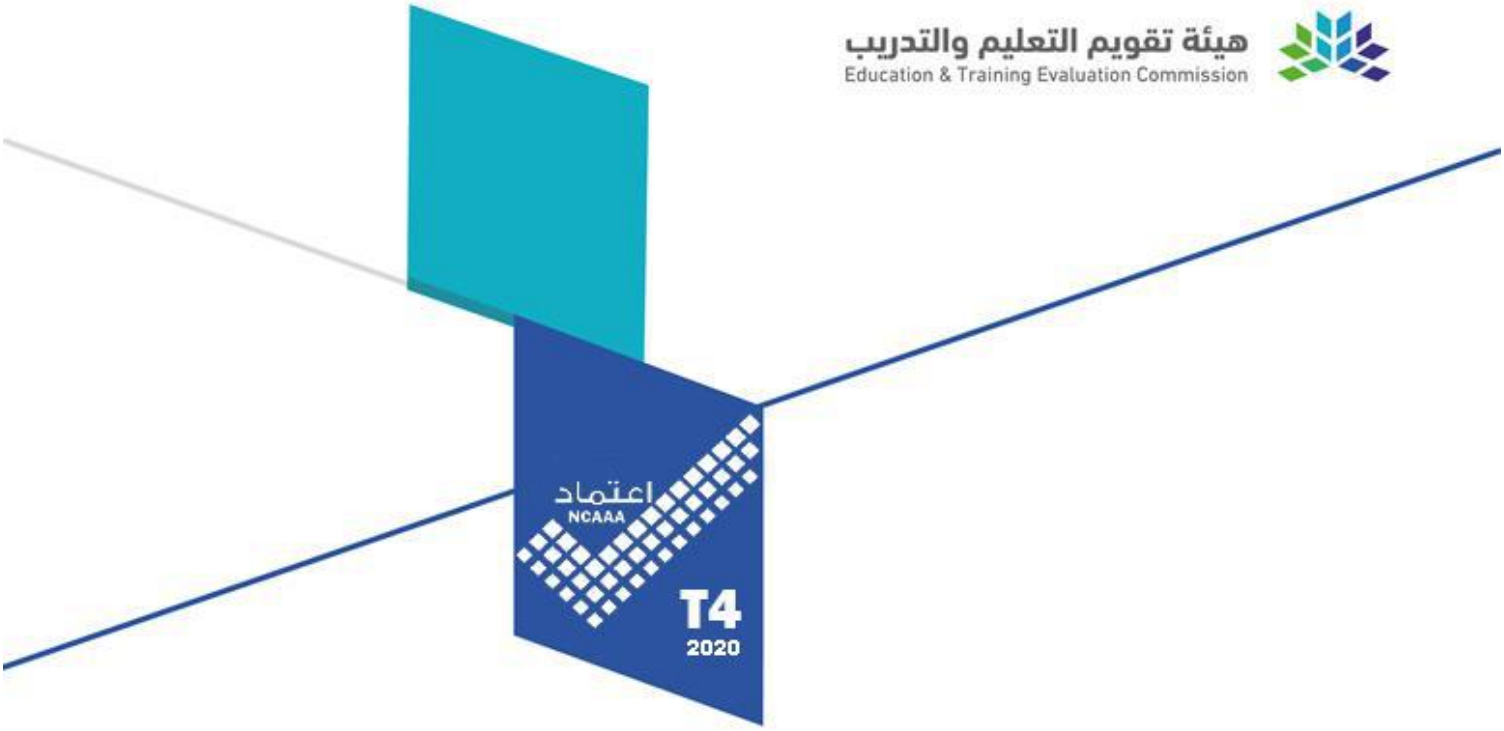
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of Training of trainee. Faculty supervisor Field supervisor	Student Faculty supervisor Field supervisor Field experience committee	Questionnaire. Reports.

Evaluation areas (e.g., Effectiveness of Training and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Supervisory Staff, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

E. Specification Approval Data

Council / Committee	
Reference No.	
Date	

The Tenth Level



توصيف المقرر الدراسي

اسم المقرر:	توصيف مقرر الثقافة الإسلامية (٤)
رمز المقرر:	ICC4204
البرنامج:	البكالوريوس
القسم العلمي:	الدعوة والثقافة الإسلامية
الكلية:	الدعوة وأصول الدين
المؤسسة:	جامعة أم القرى

المحتويات

أ. التعريف بالمقرر الدراسي:

١. الساعات المعتمدة:

٢. نوع المقرر

أ. متطلب جامعة ■ متطلب كلية ☐ متطلب قسم ☐ أخرى ☐

ب. إجباري ■ اختياري ☐

٣. السنة / المستوى الذي يقدم فيه المقرر

٤. المتطلبات السابقة لهذا المقرر (إن وجدت)

ثقافة إسلامية ١٠١ ، ثقافة إسلامية ٢٠١ ، ثقافة إسلامية ٣٠١

٥. المتطلبات المتزامنة مع هذا المقرر (إن وجدت)

لا يوجد

٦. نمط الدراسة (اختر كل ما ينطبق)

م	نمط الدراسة	عدد الساعات التدريسية	النسبة
1	**المحاضرات التقليدية**	**لا ينطبق**	**لا ينطبق**
2	**لتعليم المدمج**	**لا ينطبق**	**لا ينطبق**
3	**التعليم الإلكتروني**	**لا ينطبق**	**لا ينطبق**
4	**التعليم عن بعد**	٢٠	%٩٠,٩٠
5	**أخرى: (الاختبارات النصفية والنهائية)**	٢ساعتان	%٩,٠٩

٧. ساعات الاتصال (على مستوى الفصل الدراسي)

م	النشاط	ساعات التعلم
١	محاضرات: (بواقع ساعتين في الأسبوع لمدة ١٠ أسبوعا)	٢٠
٢	معمل أو استوديو	لا ينطبق
٣	دروس إضافية	لا ينطبق
٤	أخرى (تذكر): (الاختبارات النصفية والنهائية)	٢ ساعتان
الإجمالي		٢٢

ب- هدف المقرر ومخرجاته التعليمية:

١. الوصف العام للمقرر:

يقدم هذا المقرر مادة علمية تأصيلية عن الأخلاق في الإسلام، من حيث مفهومها ومنزلتها وأسسها وأبرز جوانبها، وعن الجانب الخلقي العظيم لرسولنا الكريم صلى الله عليه وسلم ، ثم يعرض تطبيقات أخلاقية ترقى بالمجتمع وتحافظ عليه

٢. الهدف الرئيس للمقرر:

- أن يتعرف الطالب على أهمية ومنزلة الأخلاق في الإسلام .
- أن يدرك الطالب مدى ارتباط الأخلاق بالسعادة في الدارين .
- أن يلم الطالب بالجوانب الخلقية لدى الرسول القدوة ﷺ .
- أن يربط الطالب بين الأخلاق ورقي المجتمع واستقامته .
- أن يتعرف الطالب على تطبيقات القيم والأخلاق ، وأهميتها في واقع حياته

٣. مخرجات التعلم للمقرر:

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1	**المعرفة والفهم**	
1.1	يعّرف سمات المجتمع المسلم والمجتمعات المغايرة	

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1.1	يستعرض مفهوم الأخلاق وأهميتها.	
1.2	يعدد أبرز مصادر الأخلاق في الإسلام، ويلم بخصائص هذه المصادر.	
1.3	يصف أهم الأخلاق الفردية والاجتماعية.	
1.4	يشرح أبرز القضايا النبوية المرتبطة بأخلاق النبي صلى الله عليه وسلم وأثرها على الفرد والجماعة.	
2	**المهارات**	
2.1	يوظف محاسن الأخلاق في الدعوة إلى الله بحكمة وبصيرة.	
2.2	يستخدم الأخلاق الحميدة في توعية وتثقيف الحجاج والمعتمرين.	
2.3	يحلل نصوص القرآن الكريم والسنة النبوية المرتبطة بالأخلاق.	
2.4	يرد على شبه المناوئين للدعوة الإسلامية وفق منهج أخلاقي قويم.	
3	**القيم**	
3.1	يشارك زملاءه في إعداد أبحاث وواجبات متعلقة بالمادة بمسؤولية واستقلالية	
3.2	اكتساب الخلق القويم والقيم الأصيلة من خلال التعلم الذاتي والتعاوني.	
3.3	يتمثل القيم والأخلاق الإسلامية الحميدة وأخلاقيات المهنة	

ج. موضوعات المقرر

م	قائمة الموضوعات	ساعات الاتصال
١	**مدخل إلى الأخلاق في الإسلام:** يدرس الطالب في هذه المفردة مدخلاً عامًا للأخلاق في الإسلام وذلك من حيث : المفهوم، الأهمية، الأسس، الخصائص، المقارنة بالأخلاق قبل الإسلام .	٢
٢	**عناية الإسلام بالأخلاق الفردية:** يدرس الطالب في هذه المفردة تأصيلاً للأخلاق الفردية وبيان أهميتها مع ذكر أمثلة لها :كالصدق، والرفق، والتواضع، وغيرها من الأخلاق الفردية. **عناية الإسلام بالأخلاق الاجتماعية:** يدرس الطالب في هذه المفردة تأصيلاً للأخلاق الاجتماعية وبيان أهميتها مع ذكر أمثلة لها كالأمانة، والوفاء، والتراحم، وغيرها من الأخلاق الاجتماعية.	٢
٣	**ثمرات الأخلاق في الإسلام:** يدرس الطالب في هذه المفردة الثمرات الدنيوية والأخروية للأخلاق في الإسلام	٢
٤	**النبي ﷺ كما وصفه ربه تعالى:** يدرس الطالب في هذه المفردة أخلاق النبي ﷺ التي وصفها به الله تعالى ، وجوانب الاقتداء به ﷺ .	٢
٥	**أخلاق النبي ﷺ مع أسرته وأهل بيته:** يدرس الطالب في هذه المفردة أخلاق النبي ﷺ مع زوجاته ، وأولاده ، وخدمه ، وقرابته ، وجوانب الاقتداء به ﷺ .	٢
٦	**أخلاق النبي ﷺ مع صحابته ومجتمعه:** يدرس الطالب في هذه المفردة أخلاق النبي ﷺ مع المجتمع المسلم حوله ﷺ كالصحابة ونحوهم ، وجوانب الاقتداء به ﷺ .	٢
٧	**أخلاق النبي ﷺ مع المخالفين:** يدرس الطالب في هذه المفردة أخلاق النبي ﷺ مع المخالفين كالمشركين ، والمنافقين ، وأهل الكتاب ، وأهل الأديان الأخرى ، وجوانب الاقتداء به ﷺ	٢
٨	**تعظيم البلد الحرام وخدمة الحجاج والمعتمرين:** يدرس الطالب في هذه المفردة بيان مفهوم تعظيم البلد الحرام ، ومكانته ، وفضائله، وفضل ومكانة خدمة الحجاج والمعتمرين، مع ذكر أمثلة أخلاقية تطبيقية .	٢

٩	**تعزيز سلوكيات المواطن الصالح:** يدرس الطالب في هذه المفردة بيان مفهوم المواطن الصالح في الإسلام، والسلوكيات التي يجب على المواطن التحلي بها، والتأكيد على قيم الانتماء الوطني ، وذكر أمثلة أخلاقية تطبيقية ، وفي مقابل ذلك التحذير من التيارات المنحرفة والجماعات المتطرفة التي تدعو إلى خلاف ذلك .	٢
١٠	**الحث على العمل، تعزيز النزاهة، ومحاربة الفساد:** يدرس الطالب في هذه المفردة بيان مفهوم العمل وكسب الرزق في الإسلام وذكر أمثلة تطبيقية لأخلاقيات المهنة. يدرس الطالب في هذه المفردة بيان مفهوم النزاهة في الإسلام، وأهميته، وذكر أمثلة أخلاقية تطبيقية لمحاربة الفساد.	٢
المجموع		٢٠

د. التدريس والتقييم:

١. ربط مخرجات التعلم للمقرر مع كل من استراتيجيات التدريس وطرق التقييم

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
1.0	**المعرفة والفهم**		
1.1	يعرف مفهوم الأخلاق وأهميتها.	المحاضرات والمناقشات	الاختبارات التحريرية والشفوية. وأوراق عمل
1.2	يلم بأبرز مصادر الأخلاق في الإسلام، ويلم بخصائص هذه المصادر.	التعلم الذاتي ربط الطالب بالمراجع الأساسية والمساندة في معرفة هذه المفردات تكليف الطالب بعمل بحث أو ورقة عمل	الاختبارات التحريرية والشفوية. عرض البحوث والمناقشة
1.3	يذكر أهم الأخلاق الفردية والاجتماعية.	المحاضرات والمناقشات ربط الطالب بالمراجع الأساسية والمساندة في معرفة هذه المفردات	الاختبارات التحريرية والشفوية. وأوراق عمل
1.4	يلم بأبرز القضايا النبوية المرتبطة بأخلاق النبي صلى الله عليه وسلم وأثرها على الفرد والجماعة.	الاستقراء والعصف الذهني المحاضرات والمناقشات	الاختبارات التحريرية والشفوية.
2.0	**المهارات**		
2.1	يوظف محاسن الأخلاق في الدعوة إلى الله بحكمة وبصيرة.	العصف الذهني الحوار والمناقشة زيارة بعض المواقع الالكترونية التي تعتني بهذا الموضوع	التقييم الجماعي أوراق عمل
2.2	يستخدم الأخلاق الحميدة في توعية وتثقيف الحجاج والمعتمرين.	الطريقة الاستقرائية ربط الطالب بالمراجع الأساسية والمساندة في معرفة هذه المفردات	بحوث وواجبات تقييم قدرة الطلاب على الاستنباط والتحليل
2.3	يحلل نصوص القرآن الكريم والسنة النبوية المرتبطة بالأخلاق.	التعليم التعاوني الحوار والمناقشة	الملاحظة المباشرة والتقييم الجماعي
2.4	يرد على شبه المناوئين للدعوة الإسلامية وفق منهج أخلاقي قويم.	التعليم النشط ربط الطالب بالمراجع الأساسية والمساندة في معرفة هذه المفردات	الملاحظة المستمرة تقييم الأبحاث
3.0	**القيم**		

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
3.1	يشـــارك زملاءه في إعداد أبحاث وواجبات متعلقة بالمادة بمسؤولية واستقلالية	التعلم التعاوني التكليف بأبحاث وواجبات وأوراق عمل	الملاحظة المســتمرة وقويم الأداء وتقييم الأبحاث
3.2	اكتساب الخلق القويم والقيم الأصيلة من خلال التعلم الذاتي والتعاوني.	التعلم التعاوني	الملاحظة المستمرة والتقييم الجماعي
3.3	يتمثل القيم والأخلاق الإسـلامية الحميدة وأخلاقيات المهنة	التعليم التعـاوني من خلال التكليف بواجبـات وأبحـاث وأنشطة جماعية	تقييم الأبحاث الملاحظة المباشرة لسلوك الطلاب وتوجهاتهم

٢. أنشطة تقييم الطلبة

م	أنشطة التقييم	توقيت التقييم (بالأسبوع)	النسبة من إجمالي درجة التقييم
١	الاختبار التحريري والشفوي	منتصف ونهاية الفصل الدراسي	٦٠%
٢	التقويم المستمر	كل أسابيع الدراسة	١٠%
٣	عرض البحوث والمناقشة	التاسع	١٥%
٤	الملاحظة وتقويم الأداء	ابتداء من الأسبوع الرابع	١٥%

أنشطة التقييم (اختبار تحريري، شفهي، عرض تقديمي، مشروع جماعي، ورقة عمل الخ)

هـ - أنشطة الإرشاد الأكاديمي والدعم الطلابي:

- **تعريف الطالب بالمقرر**
- **متابعة بعض الحالات الفردية التي تحتاج إلى اهتمام خاص.**
- **توجيه الطالب الى كيفية الإفادة من التقنيات الحديثة.**
- **الساعات المكتبية.**
- **ربط جميع الطلاب بمرشدين أكاديميين لمساعدتهم على فهم متطلبات البرنامج وعمليات التسجيل.**
- **نشر جميع معلومات الاتصال الخاصة بعضو هيئة التدريس على الصفحة الرئيسية للمقرر الدراسي على البلاك بورد.**

و – مصادر التعلم والمرافق:

١. قائمة مصادر التعلم:

المرجع الرئيس للمقرر	الآداب الشرعية للحافظ ابن مفلح المقدسي . النزاهة في مواجهة الفساد : تجربة المملكة العربية السعودية ، لمحمد بن عبد الله الشريف . الشمائل المحمدية للإمام الترمذي .
المراجع المساندة	١- الأخلاق والسير لابن حزم الأندلسي . ٢- زاد المعاد في هدي خير العباد لابن قيم الجوزية . ٣- السيرة النبوية لابن هشام . ٤- الشفا بتعريف حقوق المصطفى صلى الله عليه وسلم للقاضي عياض .
المصادر الإلكترونية	المكتبة السعودية الرقمية
أخرى	

٢. المرافق والتجهيزات المطلوبة:

العناصر	متطلبات المقرر
المرافق (القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ)	قاعة دراسية مجهزة افتراضية مكتبة اليكترونية
التجهيزات التقنية (جهاز عرض البيانات، السبورة الذكية، البرمجيات)	أجهزة حاسوب مرتبطة بالنت قاعات افتراضية
تجهيزات أخرى (تبعاً لطبيعة التخصص)	لا يوجد

ز. تقويم جودة المقرر:

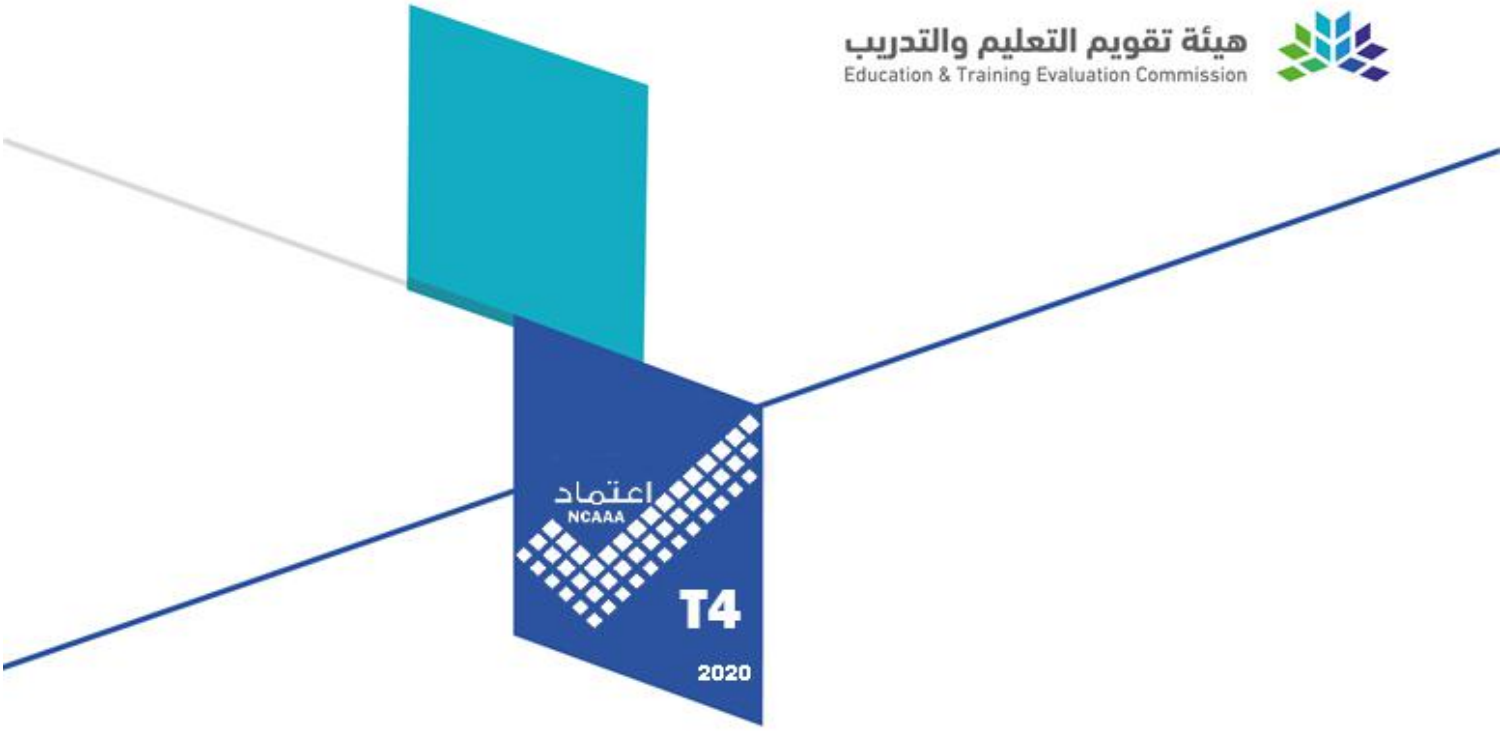
مجالات التقويم	المقيمون	طرق التقييم
فاعلية التدريس	أعضـــاء هيئة التدريس، الطالب، لجنة الجودة، إدارة البرنامج	غير مباشر (الاستبانات)
فاعلية طرق تقييم الطالب	المراجع النظير	مراجعة عينات عشـــوائية من أوراق إجابات الطلاب
مدى تحصيل مخرجات التعلم	قيادات البرنامج	تقييم مباشر

مجالات التقويم (مثل. فاعلية التدريس، فاعلة طرق تقييم الطلاب، مدى تحصيل مخرجات التعلم للمقرر، مصادر التعلم ... إلخ)
المقيمون (الطلبة، أعضاء هيئة التدريس، قيادات البرنامج، المراجع النظير، أخرى (يتم تحديدها)
طرق التقييم (مباشر وغير مباشر)

ح. اعتماد التوصيف

جهة الاعتماد	مجلس القسم
رقم الجلسة	
تاريخ الجلسة	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Rings and Fields Theory**
Course Code:	**MTH4222**
Program:	**BSc. in Mathematics**
Department:	**Mathematical science**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 4	
2. Course type	
a. University ☐ College ☐ Department ☑ Others ☐	
b. Required ☑ Elective ☐	
3. Level/year at which this course is offered: Tenth level/fourth year	
4. Pre-requisites for this course (if any): Introduction to Group Theory	
5. Co-requisites for this course (if any): Not applicable	

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	Four hours/week	100%
2	Blended	0	0
3	E-learning	0	0
4	Distance learning	0	0
5	Other	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	40
2	Laboratory/Studio	0
3	Tutorial	0
4	Others (specify)	0
	Total	40

B. Course Objectives and Learning Outcomes

1. Course Description

This course extends students' background knowledge of basic group theory into rings and fields. In ring theory, this course introduces the basic substructures of rings, to include, subrings, ideals quotient rings, polynomial rings and important classes of rings like integral domains, Unique factorization domains (UFDs) and Euclidean domains (EDs). It also studies mapping between rings that preserve algebraic structure. In field theory, this course introduces subfields, prime fields, finite fields and extension fields.

2. Course Main Objective

The main purpose of this course are learning basic facts of rings and fields theory, integral domains, the field of quotients of an integral domain, rings of polynomials over a commutative rings and their factorizations, the evaluation homeomorphisms for field theory, homeomorphisms and factor rings, Prime and maximal ideals, introduction to extension fields. Namely the topics are:

1-Rings and fields: Definitions and basic examples substructures of rings, ideals

2-Integral domain, the field of fractions of an integral domain.

3-Rings of polynomials and factorization of polynomials over a field

4-Isomorphism theorems of rings.

5-Prime and Maximal ideals

6-Introduction to extension fields and some examples of finite fields.

7-Principal ideal domain (PID), Unique factorization domain (UFD), Euclidean domain (ED).

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	- Name Rings and Fields. - Determine whether a particular subset of a ring is a subring and prove elementary facts about subrings. -List Integral domain, and describe the field of fractions of an integral domain	K1, K3
1.2	- Construct a direct product and a direct some of rings. - Find the characteristic of rings, integral domains and fields.	K1, K4
1.3	Reproduce and outline Rings of polynomials and factorization of polynomials over a field.	K3, K4
1.4	- Determine whether a particular subset is an ideal. - Construct the quotient ring.	K1, K3
1.5	- Determine whether a mapping between rings is a homomorphism (isomorphism) and identify its kernel. -Recall Isomorphism theorems of rings.	K2, K4
1.6	Define Prime and Maximal ideals and characterization of them by quotients for commutative ring.	K1, K4
1.7	Recall Principal ideal domain (PID), Unique factorization domain (UFD), Euclidean domain (ED).	K1, K3
1.8	Define extension fields and outline some examples of finite fields.	K1, K3
2	**Skills: by the end of this course, the student is expected to be able to**	

CLOs		Aligned PLOs
2.1	Interpret Rings and fields	S5
2.2	Analyze Integral domain, and evaluate the field of fractions of an integral domain	S2, S4, S8
2.3	Develop and reconstruct Rings of polynomials and factorization of polynomials over a field.	S2, S4, S8
2.4	Use Isomorphism theorems of rings	S1, S8
2.5	Calculate Prime and Maximal ideals.	S5, S8
2.6	Reconstruct extension fields and develop some examples of finite fields.	S3, S8
2.7	Construct Principal ideal domain (PID), Unique factorization domain (UFD), Euclidean domain (ED).	S3, S8
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Demonstrate communication skills with the teacher and other students in the class. Show ability for mental mathematics.	V2, V4
3.2	Reading and solving basic facts of algebraic structures such as rings and fields. Show ability for mental mathematics.	V3

C. Course Content

No	List of Topics	Contact Hours
1	-Rings: Definitions, examples and basic properties. - Subrings: Definitions, examples and some basic theorems. - Some important elements in the ring as (units "invertible", zero divisors, nilpotent and idempotent). - Cancellation law- Integral domains, fields, subfields and prime fields -The field of fraction of an integral domain.	6
2	- Direct product of rings and direct sum of rings and the relationship between them. - Characteristic of (rings, integral domains and fields).	4
3	Rings of polynomials – Division Algorithm - Factorization of polynomials over a field - Irreducible polynomials.	6
4	-Ideals: definitions, examples and some operations on ideals- principle ideals, principle rings and principle ideal domains. - Quotient rings.	6
5	-Ring Homomorphism and Isomorphism: definition of homomorphism, homomorphic image and kernel and elementary properties of homomorphism- isomorphism. -Ring Isomorphism Theorems.	6

6	Prime and Maximal ideals, relation between these ideals and their quotients.	4
7	Factorization in ring: Principal ideal domain (PID), Unique factorization domain (UFD), Euclidean domain (ED) and the connection between them.	4
8	Introduction to extension fields and some examples of finite Fields such as fields with 4, 8 and 9 elements.	4
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	- Name Rings and Fields. - Determine whether a particular subset of a ring is a subring and prove elementary facts about subrings. -List Integral domain, and describe the field of fractions of an integral domain	Lectures, Tutorials and exams	Written Exams
1.2	- Construct a direct product and a direct some of rings. - Find the characteristic of rings, integral domains and fields.		
1.3	Reproduce and outline Rings of polynomials and factorization of polynomials over a field.		
1.4	- Determine whether a particular subset is an ideal. - Construct the quotient ring.		
1.5	-Determine whether a mapping between rings is a homomorphism (isomorphism) and identify its kernel. -Recall Isomorphism theorems of rings.		
1.6	Define Prime and Maximal ideals and characterization of		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	them by quotients for commutative ring.		
1.7	Recall Principal ideal domain (PID), Unique factorization domain (UFD), Euclidean domain (ED).		
1.8	Define extension fields and outline some examples of finite fields.		
2.0	**Skills**		
2.1	Interpret Rings and fields	Lectures, Tutorials and exams	Written Exams
2.2	Analyze Integral domain, and evaluate the field of fractions of an integral domain		
2.3	Develop and reconstruct Rings of polynomials and factorization of polynomials over a field		
2.4	Use Isomorphism theorems of rings		
2.5	Calculate Prime and Maximal ideals.		
2.6	Reconstruct extension fields and develop some examples of finite fields.		
2.7	Construct Principal ideal domain (PID), Unique factorization domain (UFD), Euclidean domain (ED).		
3.0	**Values**		
3.1	Demonstrate communication skills with the teacher and other students in the class. Show ability for mental mathematics.	Working together Brainstorming: A Method of solving problems in which all members of a group suggest ideas and then discuss them.	Group study to do homework
3.2	Reading and solving basic facts of algebraic structures such as rings and fields. Show ability for mental mathematics.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30%
2	Quizzes and homework's	During semester	20%
3	Final exam	End of semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

-Each group of students is assigned to a particular faculty where he or she will provide academic advising during specific academic hours. Each staff will provide at least one session/week.

-There will be an academic advisor who will be a responsible for helping the student by doing the general supervision.

- The people in the library will support the students during the time of the course.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	**The book:** • **A First Course in Abstract Algebra, 7th Edition, by John B. Fraleigh;** Publisher: Pearson; 7 edition (November 16, 2002)!Language: English ISBN-10: 0201763907:ISBN-13: 978-0201763904. • **Abstract Algebra by D. Dummit and R.Foote**; Publisher: Wiley; 3 edition (July 14, 2003) Language: English ISBN-10: 0471433349, ISBN-13: 978-0471433347**.** • **Algebra by Hungerford**; Publisher: Springer; 8 edition (February 14, 2003) Language: EnglishISBN-10: 0387905189ISBN-13: 978-0387905181**.** • **A first course in Rings and Ideals by David M. Burton;** Publisher: Addison-Wesley Pub. Co. [1970]. ISBN 10: 0201007312 ISBN 13: 9780201007312

Essential References Materials	• **Modern Algebra: An Introduction 6th Edition, by John R. Durbin; Publisher: Wiley; 6 edition (December 31, 2008)!Language: English ISBN-10: 0470384433 ISBN-13: 978-0470384435.** • **First Course in Rings, Fields, and Vector Spaces by P. B Bhaticharya and S. K. Jain**. Publisher: John Wiley & Sons; First Edition (January 1, 1977). Language: English. ISBN- ISBN-10 : 0470990473, ISBN-13 : 978-0470990476. • **Fundamentals of Abstract Algebra by D. S. Malik , John M. Mordeson and M. K. Sen**. Publisher: McGraw-Hill College (November 13, 1996). ISBN-10 : 0070400350, ISBN-13 : 978-0070400351 • **Notes on Algebraic Structures by: Peter J. Cameron: http://www.maths.qmul.ac.uk/~pjc/notes/algstr.pdf**.
Electronic Materials	1- ABSTRACT ALGEBRA ONLINE STUDY GUIDE (http://www.math.niu.edu/~beachy/abstract_algebra/study_guide/contents.html) . 2. https://en.wikipedia.org/wiki/Ring_theory . 3. https://en.wikipedia.org/wiki/Algebraic_structure . 4. http://mathworld.wolfram.com/topics/RingTheory.html , 5. http://mathworld.wolfram.com/topics/FieldTheory.html .
Other Learning Materials	Microsoft Excel

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	-The size of the room should be proportional to the number of students. - Provide enough seats for students. - The number of student not exceed on 30 in the classroom. - Library
Technology Resources (AV, data show, Smart Board, software, etc.)	-Hall is equipped with a computer.. - Provide overhead projectors and related items. -Smart board

Item	Resources
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

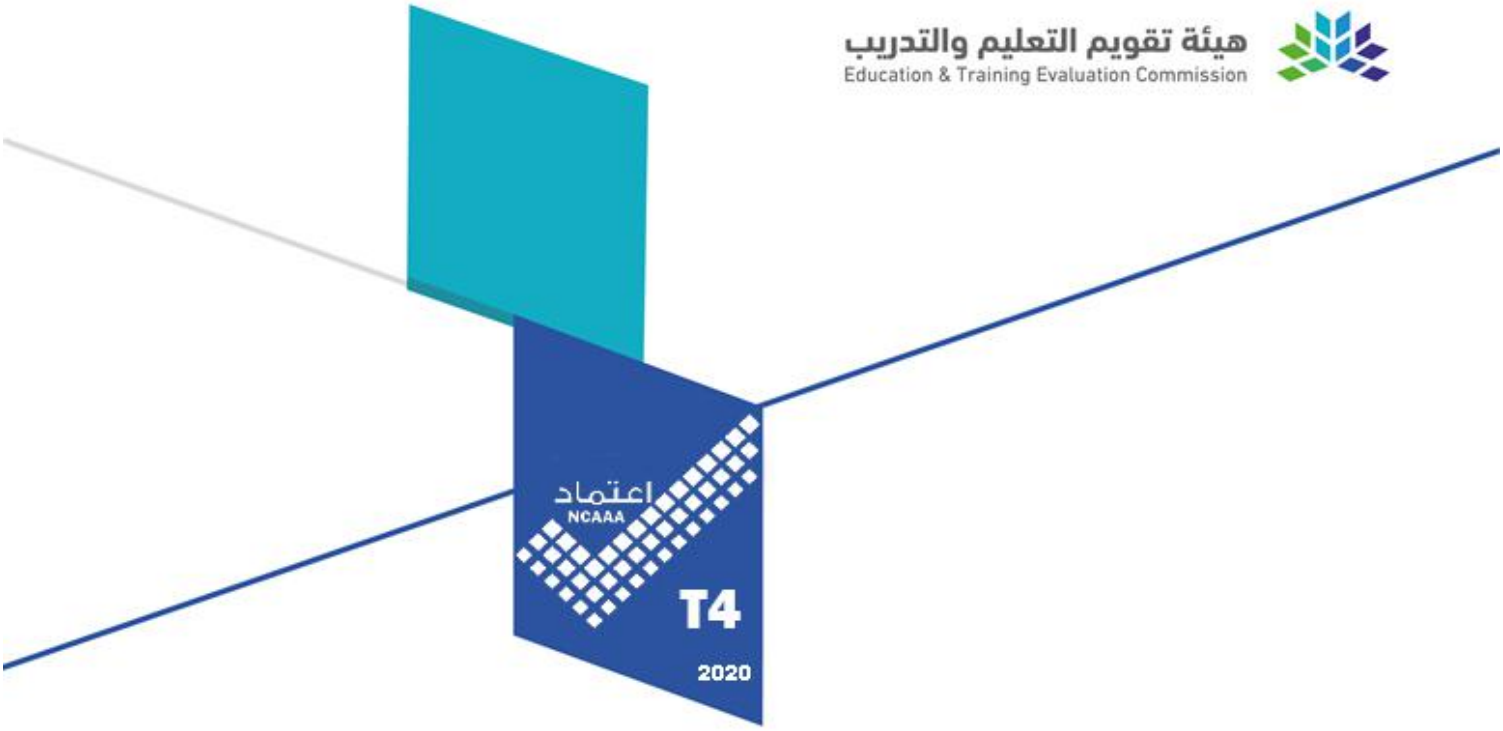
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Elementary Topology
Course Code:	**MTH4311**
Program:	**BSc. in Mathematics**
Department:	**Department of Mathematical Sciences**
College:	**College of Applied Science**
Institution:	**Umm Al-Qura, University**

Table of Contents

A. Course Identification

1. Credit hours: 4
2. Course type **a.** University ☐ College ☐ Department ☐ Others ☐ **b.** Required ☐ Elective ☐
3. Level/year at which this course is offered: Level 9
4. Pre-requisites for this course (if any)**:** Real Analysis 1
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	40	100%
2	**Blended**		
3	**E-learning**		

No	Mode of Instruction	Contact Hours	Percentage
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	40
2	**Laboratory/Studio**	
3	**Tutorial**	
4	**Others** (specify)	
	Total	40

B. Course Objectives and Learning Outcomes

1. Course Description

1.1. Definition of topological spaces and giving many examples. 1.2. Distinguish between open and closed subsets in topological spaces. 1.3. Introducing the concepts of interior, exterior, limit and boundary points and studying their properties. Also introducing the concepts of bases and the subspaces of a given Topology. 1.4 Studying the concepts of continuous, open and closed mappings between topological spaces and their properties. 1.5 Knowledge of topological equivalence concept and topological property. 1.6 Introducing the concepts of compact and connected topological spaces with examples 1.7 Defining separation axioms on topological spaces (examples and properties).

2. Course Main Objective

• Be able to deal with different topological spaces and with some types of points such as interior, isolated, boundary and accumulation points. • Be Familiar with the concepts of open, closed sets and continuous mappings. • Understand the concepts of basis and relative topology. • Deal with open and closed mappings. • Study the concepts of separations axioms. Be familiar with the concept of topological property and hereditary property with its applications.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Improve the ability of formulating a true proofs	K4, K5
1.2	Have the ability of making a right mathematical expression	K4, K5
1.3	Define a topological space, describe the standard examples of topological spaces from the course and demonstrate that they meet the definition	K1, K4
1.4	Define continuous function between topological spaces and demonstrate equivalence of alternative definitions	K1
2	**Skills :**	
2.1	Distinguish between mathematical concepts	S1, S3, S6
2.2	Study topological equivalence and topological property	S4, S5

CLOs		Aligned PLOs
2.3	Study compact spaces, connected spaces and considering their properties.	S5, S6
2...	Study separation axioms and their properties, recognize the basic concepts of topology, be able to determine whether a given space is connected or not, to generate a continuous mapping, and to understand the topological equivalence and topological property on topological spaces.	S4, S5, S9
3	**Values:**	
3.1	Punctual attendance of classes is required.	V1, V5
3.2	Students should demonstrate their sense of responsibility for learning by completing both reading and writing assignments in due time. Students learn to manage their time.	V2, V5
3.3	Accustom students to take responsibility of self –learning	V1, V2
3...	Students should act responsibly and ethically in carrying	V1, V5

C. Course Content

No	List of Topics	Contact Hours
1	Topological Spaces: Definitions and examples.	6
2	Closed sets – Interior, closure and boundary of a set in topological spaces	6
3	Bases and sub bases of a given topology – Relative topology and subspaces.	6
4	Continues functions: Examples - Classification of continuous functions– Topological equivalence and topological properties	10
5	Compactness and connectedness of topological spaces (definitions and examples)	6
6	Separation axioms (To, T1, T2, Regular and normal spaces)- Definitions, examples and properties-Hereditary property.	6
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Improve the ability of formulating a true proofs	Lectures Tutorials Discussion Problem Solving	Exams Homework
1.2	Have the ability of making a right mathematical expression	Lectures Tutorials Discussion Problem Solving	Exams Homework
…	Define a topological space, describe the standard examples of topological spaces from the course and demonstrate that they meet the definition, Define continuous function between topological spaces and demonstrate equivalence of alternative definitions	Lectures Tutorials Discussion Problem Solving	Exams Homework

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	**Skills**		
2.1	Distinguish between mathematical concepts	Homework consisting in solving selected exercises. Encourage and develop self - education	Homework Oral and written tests. Research projects
2.2	Distinguish between mathematical concepts	Homework consisting in solving selected exercises. Encourage and develop self - education	Homework Oral and written tests. Research projects
2.3	Study compact spaces, connected spaces and considering their properties ,Study separation axioms and their properties, recognize the basic concepts of topology, be able to determine whether a given space is connected or not, to generate a continuous mapping, and to understand the topological equivalence and topological property on topological spaces.	Homework consisting in solving selected exercises. Encourage and develop self - education	Homework Oral and written tests. Research projects
3.0	**Values**		
3.1	space is connected or not, to generate a continuous mapping, and to understand the topological equivalence and topological property on topological spaces.	Accustom students to take responsibility of self –learning	Home work. Reports. Quizzes. Discussion
3.2	space is connected or not, to generate a continuous mapping, and to understand the topological equivalence and topological property on topological spaces.	Accustom students to take responsibility of self –learning	Home work. Reports. Quizzes. Discussion
…	Accustom students to take responsibility of self –learning	Accustom students to take responsibility of self –learning	Home work. Reports. Quizzes. Discussion

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework and Quizzes	During the semester	20
2	Mid exam	6	30
4	Final exam.	End the semester	50
5			
6			
7			
8			

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice : 1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week) 1- Office hours per week in the lecturer schedule (3 hours per week). 2- Contact with students by e-mail,SMS, and e-learning facilities.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	"Mícheál O'Searcoid"Metric Spaces, Springer Undergraduate Mathematics Series, 2007
Essential References Materials	schaums_outline_of_theory_and_problems_of_general_topologyLipschutz - 1965 - wuve.pw
Electronic Materials	http://ebookee.org/
Other Learning Materials	such as computer-based programs/CD, professional standards/regulations:Microsoft Word

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	such as computer-based programs/CD, professional standards/regulations:Microsoft Word
Technology Resources (AV, data show, Smart Board, software, etc.)	Available
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

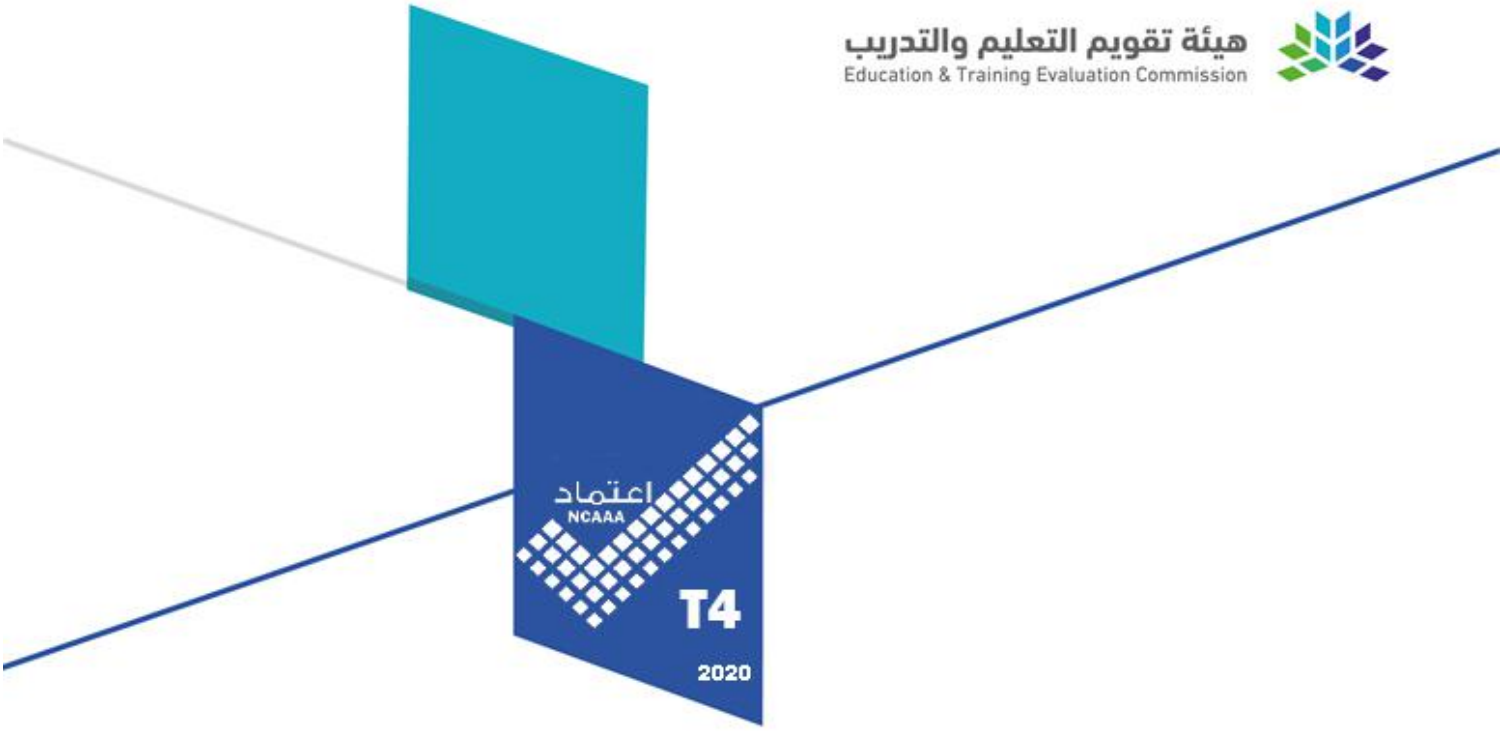
Evaluation Areas/Issues	Evaluators	Evaluation Methods

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Mathematical Statistics
Course Code:	MTH4503-4
Program:	Mathematical Sciences (40400)
Department:	Mathematical Sciences
College:	Applied Sciences
Institution:	Umm Al-Qura University

Table of Contents

A. Course Identification

1. Credit hours:
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Tenth level/fourth year
4. Pre-requisites for this course (if any)**:** Probability Theory
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	Four hours/week	100 %
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	40
2	**Laboratory/Studio**	0
3	**Tutorial**	10
4	**Others** (specify)	0
	Total	50

B. Course Objectives and Learning Outcomes

1. Course Description

This course provides an elementary introduction to Mathematical Statistics. Topics include: Methods of estimation; Properties of estimators: consistency, sufficiency, completeness and uniqueness. Unbiased estimation. The method of moments. Maximum likelihood estimation. Techniques for constructing unbiased estimators and minimum variance unbiased estimators. Bayes estimators. Asymptotic property of estimators. Introduction to confidence intervals; Confidence intervals for parameters of normal distribution. Methods of finding confidence intervals. Fundamental notions of hypotheses testing. The Neyman-Pearson lemma. Most powerful test. Likelihood ratio test. Uniformly most powerful tests. Tests of hypotheses for parameters of normal distribution.

2. Course Main Objective

This course aims to prepare advanced undergraduates and beginning graduate students in the theory of statistics with emphasis on interdisciplinary applications.

3. Course Learning Outcomes

CLOs		Aligned PLOs
K	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
K.1	Define the related basic scientific facts, concepts, principles and techniques in mathematical statistics.	K. 5
K.2	Recognize the relevant theories and their applications in basic mathematics.	
K.3	Understand the basic principles underlying statistical inference (estimation and hypothesis testing)	K. 1
K.4	Be able to construct tests and estimators, and derive their properties	K. 4
S	**Skills : by the end of this course, the student is expected to be able to**	
S.1	Perform point estimation, hypothesis testing and interval estimation under a large variety of discrete and continuous probability models.	S. 5
S.2	Evaluate the properties of these estimators and tests, for both finite sample sizes and asymptotically as the sample size tends to infinity	S.8
S.3	Be able to select optimal estimators.	S. 9
V	**Values: by the end of this course, the student is expected to be able to**	
V.1	Document and articulate the results and conclusions for mathematical statistics techniques applied to actual cases in a variety of disciplines.	V .5
V.2	Hypothesize various advanced statistical techniques for modelling and exploring practical situations.	V. 1
V.3	Apply scientific models and tools effectively.	V. 3
V.4	Apply statistical knowledge gained during the course using computer packages.	V. 5

C. Course Content

No	List of Topics	Contact Hours
1	Sampling Distributions : Sampling Distributions Associated with Normal Populations, Chi-Square Distribution, Student t-Distribution and F-Distribution.	4
2	Point Estimation: Properties of Point Estimators; consistency, sufficiency, completeness and uniqueness ; Unbiased estimation	4
3	The method of moments. Maximum likelihood estimation; Techniques for constructing unbiased estimators and minimum variance unbiased estimators; Bayes estimators. Asymptotic ; property of estimators	4
4	Interval Estimation. (selected by instructor).	4

5	Hypothesis Testing : Sample Size , The Neyman–Pearson Lemma , Likelihood Ratio Tests, Hypotheses for a Single Parameter .	4
6	Analysis of Variance. (selected by instructor).	4
7	Gamma function and gamma distribution.	4
8	Beta function and Beta distribution.	4
9	Introduction to Bayesian Methods, Bayesian Priors, Posteriors.	4
10	Decision Theory; The utility scale, value of information	4
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
K	**Knowledge and Understanding**		
K .1	Understand mathematical descriptions of Sampling Distributions Associated with Normal Populations, Chi-Square Distribution, Student t-Distribution and F Distribution.	Lectures Tutorials Discussion Problem Solving	Exams(Midterm and Final). Quizzes.
K .2	outline proofs of important theorems of the course, and explain the main ideas of the proofs;	Lectures Tutorials Discussion Problem Solving	Exams(Midterm and Final). Quizzes.
K .3	Explain the concept of estimation of parameters and Calculate the problems related to point estimation and interval estimation	Lectures Tutorials Discussion Problem Solving	Exams(Midterm and Final). Quizzes.
K .4	Define and explain the different statistical distributions (e.g., Gamma distribution, Beta distribution) and the typical phenomena that each distribution often describes.	Lectures Tutorials Discussion Problem Solving	Exams(Midterm and Final). Quizzes.
S	**Skills**		
S. 1	Perform point estimation, hypothesis testing and interval estimation under a large variety of discrete and continuous probability models.	Lecture. Small group work.	Exams(Midterm and Final). Quizzes.
S.2	Evaluate the properties of these estimators and tests, for both finite sample sizes and asymptotically as the sample size tends to infinity	Lecture. Small group work.	Exams(Midterm and Final). Quizzes.
S.3	Be able to select optimal estimators.	Lecture. Small group work.	Exams(Midterm and Final).

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
			Quizzes.
V	**Values**		
V.1	Document and articulate the results and conclusions for probability techniques applied to actual cases in a variety of disciplines.	Cooperative education	Exams(Midterm and Final). Quizzes.
V.2	Apply scientific models and tools effectively.	Cooperative education	Exams(Midterm and Final). Quizzes.
V.3	Apply knowledge gained during the course using computer applications	Cooperative education Self-learning	HW Assignments

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30 %
2	Quizzes and HomeWorks	During semester	20 %
3	Final exam	End of semester	50 %

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

Faculty is available for his office hours (minimum 3 hours) per week for regular office hours to meet with the students for consultation and advice. The students are also welcomed to meet the faculty by appointment outside the regular office hours for this course.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Introduction to Mathematical Statistics 8th Edition (2018) by Robert Hogg , Joseph McKean , Allen Craig**.**
Essential References Materials	Mathematical Statistics with Applications 7th Edition (2008) by Dennis Wackerly , William Mendenhall , Richard L. Scheaffer.
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom (4 hours), Capacity = 30 Students (per group)
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

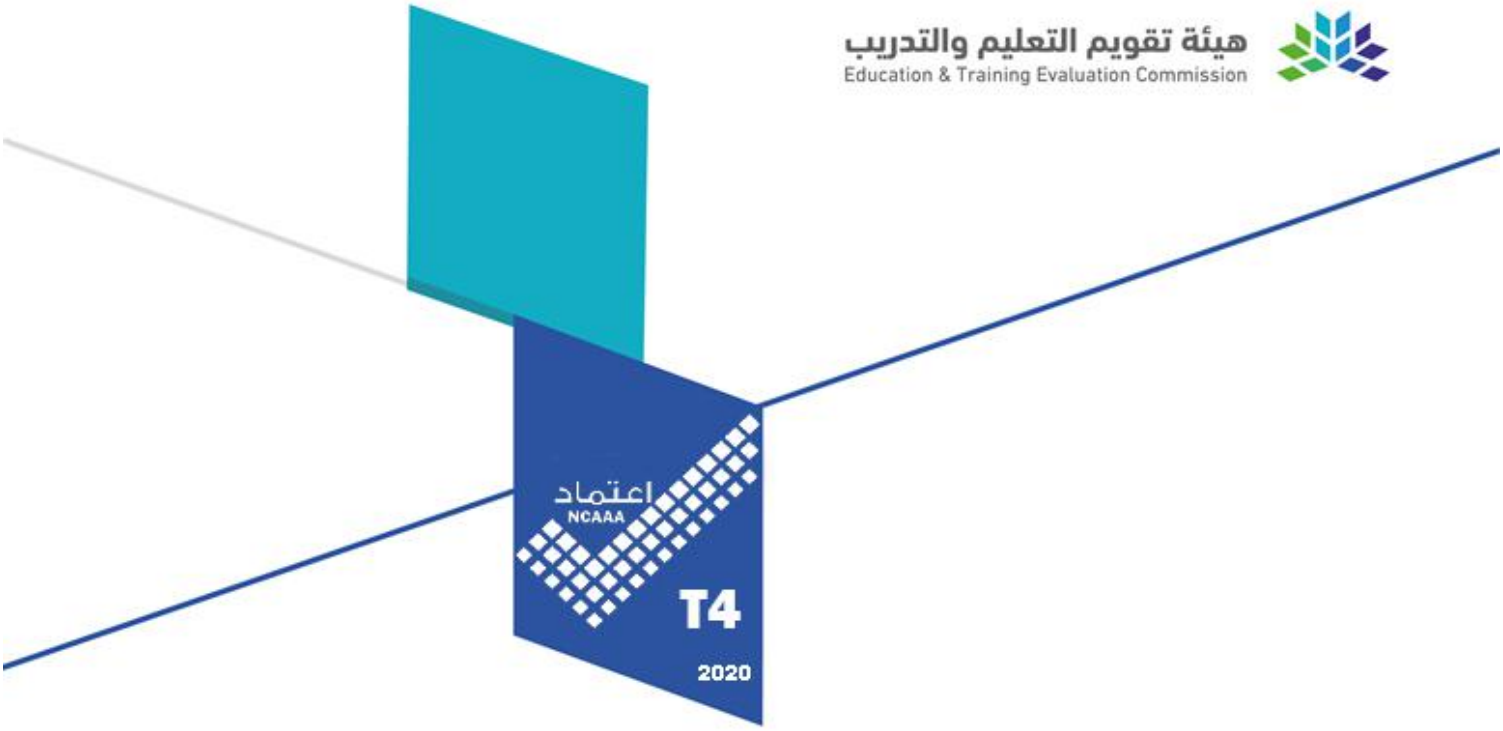
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Numerical Analysis** (1)
Course Code:	**MTH4402**
Program:	**BSc. in Mathematics**
Department:	**Mathematical science**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: **Tenth level/fourth year**
4. Pre-requisites for this course (if any)**:** **Ordinary Differential Equations (MTH2121-4)**
5. Co-requisites for this course (if any)**:** **None**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**40**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (specify)	**0**
	Total	**40**

B. Course Objectives and Learning Outcomes

1. Course Description Numerical analysis is the branch of Mathematics that is concerned with the theoretical foundations of numerical algorithms for the solution of problems arising in different scientific applications. The subject addresses a variety of questions ranging from the approximation of functions and integrals to the approximate solution of algebraic, transcendental, differential and integral equations, with particular emphasis on the stability, accuracy, efficiency and reliability of numerical algorithms. The purpose of this course is to provide an elementary introduction into this active and exciting field, and is aimed to students in their third year of the Bachelor program in Mathematics.
2. Course Main Objective The primary objective of the course is to develop the basic understanding of numerical algorithms and improve skills to implement these algorithms with different programming languages e.g., MATLAB.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Describe different algorithms	K1
1.2	Recall the importance of numerical interpolation	K1
1.3	Recognize different iterative methods (Jacobi –Gauss Seidel)	K4, K5
1.4	List "again" the values and eigenvectors of a symmetric matrix	K1, K5
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Discuss robustness and relative performance of different algorithms	S1, S3, S9
2.2	Apply interpolation methods for solving mathematical problems numerically	S3, S4, S6
2.3	Calculate the errors and the rates of convergence	S3, S5, S9
2.4	Develop numerical algorithms for the solution of algebraic eigenvalue problems	S4, S5, S9
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Evaluate different tools used in ordinary differential equations course	V1, V2
3.2	Recognize the relationship between different areas of mathematics and the connections between mathematics and other disciplines.	V1, V2

C. Course Content

No	List of Topics	Contact Hours
1	**Introduction:** • Definitions of numerical errors e.g., rounding and chopping errors. • Discussion of major sources of errors in numerical analysis.	3
2	**Solution of algebraic equations:** • The Bisection algorithm and its coding. • Newton-Raphson algorithm and its coding. • Properties of the fixed-point algorithm.	6
3	**Solution of linear equations:** • The Concept of Gaussian elimination and Gauss Jordan methods. • The LU factorization of matrices. • The Cholesky factorization **Iterative methods** • Revise the different matrix norms. • Jacobi iteration algorithm. • Gauss-Seidel algorithm.	12
4	**Numerical Interpolation:** • Polynomial interpolation. • Introduction to Lagrange interpolating polynomial.	7

	• Interpolation based on Lagrange interpolating polynomial. • Newton interpolation method using divided differences.	
5	Numerical Differentiation.	5
6	Numerical Integration	5
7	General Revision.	2
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe different algorithms.	Lecture and Tutorials	Exams, Quizzes
1.2	Recall the importance of numerical interpolation	Lecture and Tutorials	Exams, Quizzes
1.3	Recognize different iterative methods (Jacobi –Gauss Seidel)	Lecture and Tutorials	Exams, Quizzes
1.4	Apply interpolation methods for Solving mathematical problems numerically	Lecture and Tutorials	Exams, Quizzes
2.0	**Skills**		
2.1	Discuss robustness and relative performance of different algorithms	Lecture/Individual or group work	Exams, Quizzes
2.2	Apply interpolation methods for solving mathematical problems numerically	Lecture/Individual or group work	Exams, Quizzes
2.3	Develop numerical algorithms for the solution of the algebraic problems	Lecture/Individual or group work	Exams, Quizzes
3.0	**Values**		
3.1	Evaluate different tools used in ordinary differential equations course	Lecture/Individual or group work	Exams, Quizzes
3.2	Recognize the relationship between different areas of mathematics and the connection between mathematics and other disciplines	Lecture/Individual or group work	Exams, Quizzes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	%30
2	Quizzes and HomeWorks	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:
• Office hours (scheduled 3hrs \ week). • Contact with students by e-mail, and e-learning facilities.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	- Numerical Analysis. 9th ed. R.L. Burden and J.D. Faires: Edition Brooks / cole: -73563-538-0-978 .2011136 - An Introduction to Numerical Analysis. Endre Süli, David F. Mayers Cambridge : -0521810264 -2003 .0521007941
Essential References Materials	Numerical Analysis. 9th ed. R.L. Burden and J.D. Faires: Edition Brooks / cole: -73563-538-0-978 .2011136
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

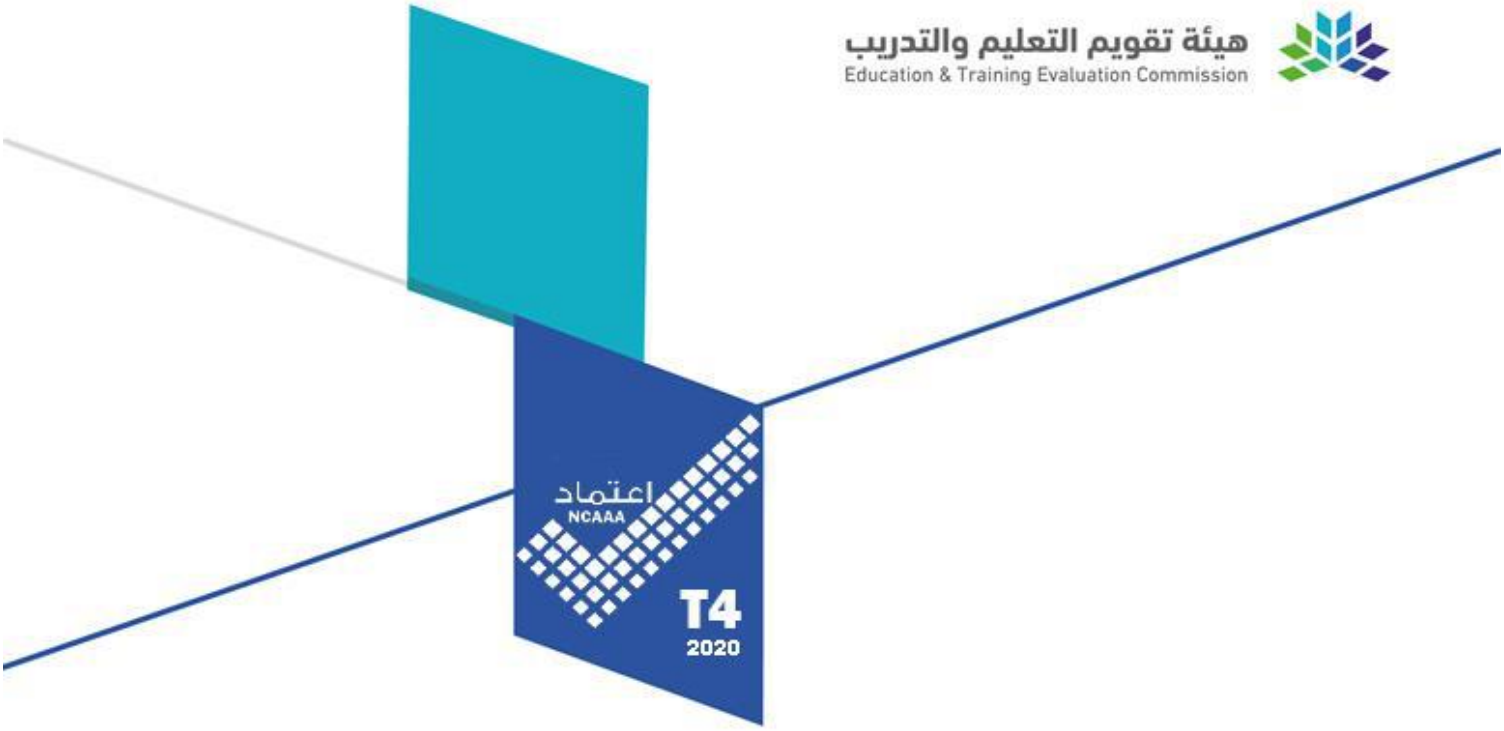
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

The Eleventh Level



توصيف المقرر الدراسي

اسم المقرر:	القرآن كريم (4)
رمز المقرر:	**(QR4104)**
البرنامج:	**البكالوريوس**
القسم العلمي:	**القراءات**
الكلية:	**الدعوة وأصول الدين**
المؤسسة:	**جامعة أم القرى**

المحتويات

أ. التعريف بالمقرر الدراسي:

1. الساعات
المعتمدة: ساعتان.

2. نوع المقرر

أ. متطلب جامعة ☑ متطلب كلية ☐ متطلب قسم ☐ أخرى ☐

ب. إجباري ☑ اختياري ☐

3. السنة / المستوى الذي يقدم فيه المقرر: السنة الرابعة.

4. المتطلبات السابقة لهذا المقرر:
القرآن الكريم (3).

5. المتطلبات المتزامنة مع هذا المقرر:
لا يوجد

6. نمط الدراسة (اختر كل ما ينطبق)

م	نمط الدراسة	عدد الساعات التدريسية	النسبة
1	المحاضرات التقليدية		
2	التعليم المدمج		
3	التعليم الإلكتروني		
4	التعليم عن بعد	20 ساعة	%100
5	أخرى		

7. ساعات الاتصال (على مستوى الفصل الدراسي)

م	النشاط	ساعات التعلم
1	محاضرات	20 ساعة
2	معمل أو إستوديو	
3	دروس إضافية	
4	أخرى (تذكر)	
	الإجمالي	20 ساعة

ب- هدف المقرر ومخرجاته التعليمية:

1. **الوصف العام للمقرر:** يشمل المقرر على أربعة محاور:

1. حفظ نصف الجزء التاسع والعشرين من القرآن الكريم (جزء تبارك): من سورة الملك إلى سورة نوح حفظًا متقنًا.
2. تلاوة ثلاثة أجزاء: من سورة سبأ إلى سورة فصلت.
3. دراسة أحكام التَّجويد.
4. شرح غريب كلمات القرآن: من سورة الملك إلى سورة نوح.

2. الهدف الرئيس للمقرر: – تعليم الطُّلَّاب النُّطق السَّليم لكتاب الله –عزَّ وجلَّ–، وفق طرق الأداء المعتبرة.

– حفظ حزب واحد من القرآن الكريم.

3. مخرجات التعلم للمقرر:

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1	**المعرفة والفهم**	
1.1	أن يحفظ الطَّالب المقدار المقرَّر أسبوعيًّا.	
1.2	أن يتلو الطَّالب القران الكريم بالكيفية الصحيحة.	
1.3	أن يتعرف الطالب على أحكام التجويد.	
1.4	أن يعَرِّف الطَّالب غريب القرآن.	
2	**المهارات**	
2.1	أن يصحح الطالب الأخطاء التي تقع في التلاوة أو الحفظ منه أو من زملائه.	
2.2	أن يطبِّق الطَّالب جميع أحكام التَّجويد تطبيقاً عمليًّا.	
2.3	أن يوضح معاني غريب القرآن.	
2.4	أن يتواصل الطالب مع الآخرين بشكل فعال؛ لإظهار ونقل معارفه ومهاراته.	
2.5	أن يقترح الطالب الأساليب المثلى له ولزملائه لتعلم القرآن الكريم؛ لحل مشكلات التعلم والقراءة؛ مستخدماً الأدوات التقنية والحاسوبية.	
3	**القيم**	
3.1	أن يعمل ضمن فريق المقرر بكفاءة، ومسؤولية.	
3.2	أن يلتزم بآداب وأخلاق قارئ القرآن.	
3.3	أن يقوِّم ذاتياً مستوى أدائه؛ ملتزماً بتحمل مسؤولية تعلمه.	

ج. موضوعات المقرر

م	قائمة الموضوعات	ساعات الاتصال
1	(مقدِّمة تعريفيَّة عن فضل تعلم القرآن الكريم، وأقسام اللحن الجلي والخفي)، وتصحيح تلاوة سورة الملك من 1 إلى 15 مع التَّكليف بحفظها، مع شرح غريب القرآن.	2
2	تسميع سورة الملك من 1 إلى 15، تصحيح تلاوة سورة الملك من 16 إلى 30 مع التَّكليف بحفظها، مع شرح غريب القرآن، تلاوة سورة سبأ.	2
3	تسميع سورة الملك من 16 إلى 30، تصحيح تلاوة سورة القلم من 1 إلى 31 مع التَّكليف بحفظها، مع شرح غريب القرآن، تلاوة سورة فاطر من آية (1) إلى سورة يس آية (27)، شرح درس التجويد (مخارج الحروف الجزء الأول)	2
4	تسميع سورة القلم من 1 إلى 31، تصحيح تلاوة سورة القلم من 32 إلى 52 التَّكليف بحفظها، مع شرح غريب القرآن ، تلاوة سورة يس من آية (28) إلى سورة الصافات آية (76)، شرح درس التجويد (مخارج الحروف الجزء الثاني)	2
5	تسميع سورة القلم من 32 إلى 52، تصحيح تلاوة سورة الحاقة من 1 إلى 24 مع التَّكليف بحفظها، مع شرح غريب القرآن، تلاوة سورة الصافات من آية (77) إلى سورة ص آية (42)، شرح درس التجويد (صفات الحروف)	2

6	تسميع سورة الحاقة من 1 إلى 24، تصحيح تلاوة سورة الحاقة من 25 إلى 52 مع التَّكليف بحفظها، مع شرح غريب القرآن، تلاوة سورة ص من آية (43) إلى سورة الزمر آية (40).	2
7	تسميع سورة الحاقة من 25 إلى 52، تصحيح تلاوة سورة المعارج مع التَّكليف بحفظها، مع شرح غريب القرآن، تلاوة سورة الزمر من آية (41) إلى سورة غافر آية (25)، شرح درس التجويد (إدغام المتماثلين والمتجانسين والمتقاربين).	2
8	تسميع سورة المعارج، تصحيح تلاوة سورة نوح مع التَّكليف بحفظها، مع شرح غريب القرآن، تلاوة سورة غافر من آية (26) لآخر السورة، شرح درس التجويد (ترقيق الراء وتفخيمها).	2
9	تسميع سورة نوح من 1 إلى 20، تلاوة سورة فصلت.	2
10	تسميع سورة نوح من 21 إلى نهاية السورة.	2
المجموع		20

د. التدريس والتقييم:

1. ربط مخرجات التعلم للمقرر مع كل من استراتيجيات التدريس وطرق التقييم

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
1.0	**المعرفة والفهم**		
1.1	أن يحفظ الطَّالب المقدار المقرَّر أسبوعيًّا.	المحاضرة التلقي والسماع العروض التقديمية	التقييم المستمر الاختبارات الشفوية
1.2	أن يتلو الطَّالب القران الكريم بالكيفية الصحيحة.		
1.3	أن يتعرف الطالب على أحكام التجويد.		
1.4	أن يعَرِّف الطَّالب غريب القرآن.		
2.0	**المهارات**		
2.1	أن يصحح الطالب الأخطاء التي تقع في التلاوة أو الحفظ منه أو من زملائه.	المحاضرة الحوار والمناقشة التلقِّي والمحاكاة العرض والاستماع التَّعلم الذاتي العروض التقديمية أسلوب حل المشكلات	الاختبارات الشفوية الاختبارات التحريرية
2.2	أن يطبِّق الطَّالب جميع أحكام التَّجويد تطبيقاً عمليًّا.		
2.3	أن يوضح معاني غريب القرآن.		
2.4	أن يتواصل الطالب مع الآخرين بشكل فعال؛ لإظهار ونقل معارفه ومهاراته.		
2.5	أن يقترح الطالب الأساليب المثلى له ولزملائه لتعلم القرآن الكريم؛ لحل مشكلات التعلم والقراءة؛ مستخدماً الأدوات التقنية والحاسوبية.		
3.0	**القيم**		
3.1	أن يعمل ضمن فريق المقرر بكفاءة ومسؤولية.	التَّعلم الذاتي التَّعليم التعاوني حلقات النقاش ملف الإنجاز	بطاقة الملاحظة
3.2	أن يلتزم بآداب وأخلاق قارئ القرآن.		
3.3	أن يقوِّم ذاتياً مستوى أدائه؛ ملتزماً بتحمل مسؤولية تعلمه.		

2. أنشطة تقييم الطلبة

م	أنشطة التقييم	توقيت التقييم (بالأسبوع)	النسبة من إجمالي درجة التقييم
1	المشاركة وحفظ الآيات وتلاوتها	مستمر	%20
2	الاختبار النصفي	السادس	%20
3	الاختبار النهائي	العاشر	%60

أنشطة التقييم (اختبار تحريري، شفهي، عرض تقديمي، مشروع جماعي، ورقة عمل الخ)

هـ - أنشطة الإرشاد الأكاديمي والدعم الطلابي:

- ساعات الإرشاد الأكاديمي (السَّاعات المكتبية للأستاذ).
- مساعدة الطلبة في توفير المصادر غير المتوفرة في مكتبة الكلِّيَّة.
- مساعدة الطلبة ذوي الاحتياجات الخاصة (ذوي البصيرة) في توفير المصادر ببرايل.
- إحالة الطلبة الوافدات والمتعثرات والموهوبات على لجنة الإرشاد الأكاديمي بالقسم والجهات المعنيَّة بشؤون الطَّلبة.
- تشكيل لجنة تطوير المقرَّرات بالبرنامج، تعنى بمراجعة المفردات وطرق تدريسها وتقييمها، وتقييم المخرجات من خلال المتابعة المستمرة للتَّغذية الرَّاجعة من قبل الطَّلبة وتقارير المدرِّسين، ثم تقدِّم توصياتها لمجلس القسم لتأخذ مجراها الأكاديمي.
- إعداد الأسئلة التَّقويميَّة نهاية الدَّرس والأنشطة المنزليَّة.
- توجيه الطُّلاب لسماع تلاوات المقرئين المجوِّدين من خلال الوسائل المتاحة.
- المقارنة المرجعيَّة بالمقرَّرات المشابهة له في الجهات الأكاديميَّة الأخرى.

و – مصادر التعلم والمرافق:

1. قائمة مصادر التعلم:

المرجع الرئيس للمقرر	-القرآن الكريم. - الميسر في غريب القرآن الكريم المطبوع بمجمع الملك فهد لطباعة المصحف الشريف. - التجويد الميسر المطبوع بمجمع الملك فهد لطباعة المصحف الشريف.
المراجع المساندة	- البرهان في تجويد القرآن/ محمد الصادق قمحاوي. - هداية القارئ إلى تجويد كلام البارئ/ عبد الفتاح السيد عجمي المرصفي. - مذكرة في علم التجويد/ محمد نبهان بن حسين مصري.
المصادر الإلكترونية	- موقع مكتبة جامعة أم القرى. - المكتبة الوقفية. - المكتبة الشاملة. - ملتقى أهل التفسير. - منتديات قراء القرآن.
أخرى	-

2. المرافق والتجهيزات المطلوبة:

العناصر	متطلبات المقرر
المرافق (القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ)	-قاعات دراسية بها عدد من الكراسي والطاولات للاختبارات النصفية والنهائية.

العناصر	متطلبات المقرر
التجهيزات التقنية (جهاز عرض البيانات، السبورة الذكية، البرمجيات)	– الحاسب الآلي. – التطبيقات الالكترونية.
تجهيزات أخرى (تبعاً لطبيعة التخصص)	-

ز. تقويم جودة المقرر:

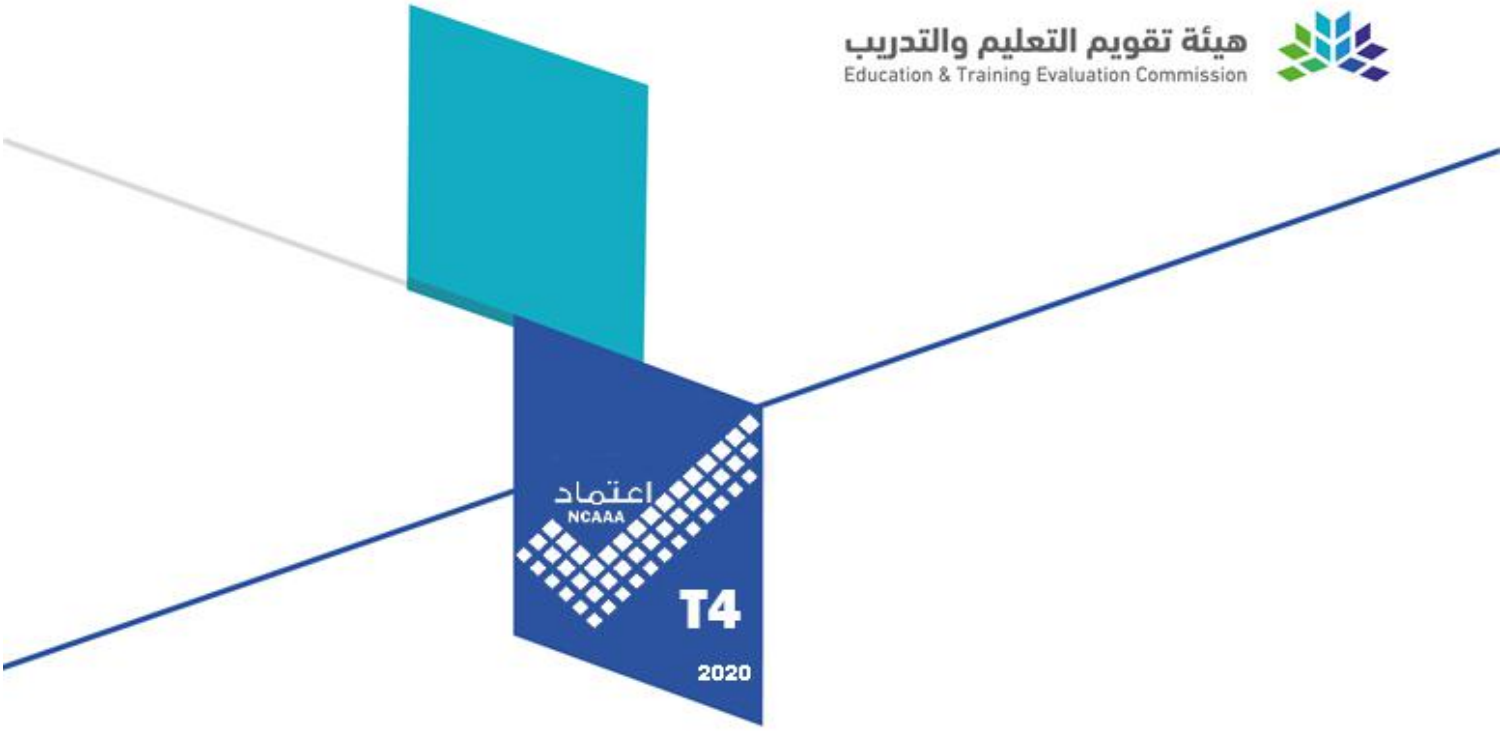
مجالات التقويم	المقيمون	طرق التقييم
تقويم فاعليَّة استراتيجيات التَّدريس المستخدمة	أستاذ زميل يدرِّس نفس المقرَّر.	مباشر: الزِّيارة للفصل وتقرير فاعليَّة استراتيجيَّات التَّدريس المستخدمة.
طرق تقييم الطُّلَّاب	الطُّلَّاب	غير مباشر: استبانة تقييم المقرَّر المتاحة على الموقع الإلكتروني.
مدى تحصيل مخرجات التَّعلم للمقرَّر	قيادة البرنامج	غير مباشر: تقرير المقرَّر.

مجالات التقويم (مثل. فاعلية التدريس، فاعلة طرق تقييم الطلاب، مدى تحصيل مخرجات التعلم للمقرر، مصادر التعلم ... إلخ)
المقيمون (الطلبة، أعضاء هيئة التدريس، قيادات البرنامج، المراجع النظير، أخرى (يتم تحديدها)
طرق التقييم (مباشر وغير مباشر)

ح. اعتماد التوصيف

جهة الاعتماد	
رقم الجلسة	
تاريخ الجلسة	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Research project (1)
Course Code:	MTH4801
Program:	**BSc. in Mathematics**
Department:	**Mathematical science**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	3
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	**Eleventh level/Fourth year**
4. Pre-requisites for this course (if any)**:**	**Passing successfully 140 unit + approval of the department**
5. Co-requisites for this course (if any)**:**	**Not applicable**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	0	0
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Correspondence**	**Three hours/week**	%100
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**0**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (meeting in supervisors office)	**30**
	Total	**30**

B. Course Objectives and Learning Outcomes

1. Course Description

This is an introductory research project aiming to give the students the following criteria:

- Encouraging students to collect problems from web-based reference material and supervise classroom discussions.
- Gain research experience and communication skills
- Update references used in teaching process.
- Use e-learning facilities more efficiently.
- Use computer packages for solving exercises.
- Manage software for applications in the corresponding topic

2. Course Main Objective

Introduce students to emerge mathematical subjects and to improve their knowledge background and skills in this area.
Introduce the students to research atmosphere.
Help students to make a fruitful discussion in a mathematical question or problem.

Gaining knowledge about the resources for obtaining the information, which will help in outgoing research.
Using library, computers and internet for obtaining the required information for handling excellent research.
Getting knowledge about how to write scientific reports.
Implement a small research project.
Make a presentation using up to date presentation packages.
Choosing the appropriate mathematical topic and the corresponding references.
Focus on ethical standards in research, such as guidelines for authorship and copyright, and data-sharing policies while encouraging collaboration.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Learn to handle a scientific project	K1, K5
1.2	Demonstrate detailed knowledge, a systematic understanding, critical thinking, and analysis of fundamental issues relating to a project management practitioner.	K3, K5
1.3	Plan and carry out a detailed and original piece of scientific research and communicate the results.	K3, K5
1.4	Develop important skills in summarizing a research area and understanding the research objectives.	K3, K5
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	State an excellent working knowledge of the project theories.	S1, S2
2.2	Reorganize and understand the basics properties related to the project.	S4, S5
2.3	Outline a mathematical modeling related to any biological phenomena and explain and interpret clearly concepts and outcome results.	S7, S8
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Ability to deal with various sources of knowledge and the ability to exploit and to estimate the time.	V1
3.2	Discuss the results with other colleagues and with supervisors.	V2
3.3	Demonstrate ethical, professional, and legal responsibilities in the dentistry profession.	V4
3.4	Use of Electronic Mail in communicating with others, colleagues and supervisor.	V2, V4

C. Course Content

No	List of Topics	Contact Hours
1	Introduce a subject selected by the lecturer.	2
2	Ways and means of collecting information through the library and	2

	online scientific recourses.	
3	Lear about journals, workshops, seminars, talks, conference, dissertation, report, books, research papers, scientific communications, patent publications, posters, scientific article, impact factor, etc.	2
4	How to find and read appropriate references and software	2
5	Choose a subject and few elementary references.	4
6	Develop some of the results therein.	5
7	Preparation of a first version of the report.	5
8	Discussion of the report and making corrections.	2
9	Prepare a presentation and give a plenary talk (department seminar)	4
10	Prepare a poster with the main theorems and results	2
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Learn to handle a scientific project	➢ discussion during the office hours with the supervisor. ➢ Self working of student on results deduction and interpretation.	➢ Weekly discussion ➢ Progress in writing the report ➢ Seminar presentation ➢ Poster on the overall report
1.2	Demonstrate detailed knowledge, a systematic understanding, critical thinking, and analysis of fundamental issues relating to a project management practitioner.		
1.3	Plan and carry out a detailed and original piece of scientific research and communicate the results.		
1.4	Develop important skills in summarizing a research area and understanding the research objectives.		
2.0	**Skills**		
2.1	State an excellent working knowledge of the project theories.	➢ discussion during the office hours with the supervisor. ➢ Self working of student on results deduction and interpretation.	➢ Weekly discussion ➢ Progress in writing the report ➢ Seminar presentation ➢ Poster on the overall report
2.2	Reorganize and understand the basics properties related to the project.		
2.3	Outline a mathematical modeling related to any biological phenomena and explain and interpret clearly concepts and outcome results.		
3.0	**Values**		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.1	Ability to deal with various sources of knowledge and the ability to exploit and to estimate the time.	➢ discussion during the office hours with the supervisor. ➢ Self working of student on results deduction and interpretation.	➢ Weekly discussion ➢ Progress in writing the report ➢ Seminar presentation ➢ Poster on the overall report
3.2	Discuss the results with other colleagues and with supervisors.		
3.3	Demonstrate ethical, professional, and legal responsibilities in the dentistry profession.		
3.4	Use of Electronic Mail in communicating with others, colleagues and supervisor.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Draft report	Eighth week	%40
2	Final report	Nineth week	%40
3	Presentation	Tenth week	%20

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :
Supervisor.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Research papers and books selected by the lecturer according to the proposed subjects.
Essential References Materials	Recommended Books and Reference Material (Journals, Reports, etc) (Attach List): Latex Manual and Latex Beamer book: LATEX Notes: Practical Tips for Preparing Technical Documents Facsimile Edition by by Kenneth J. Shultis
Electronic Materials	(Depend on the project itself)
Other Learning Materials	Depend on the project itself.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Supervisor Room
Technology Resources (AV, data show, Smart Board, software, etc.)	Internet and/or some computer packages
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	All available research sources such as library and internet.

G. Course Quality Evaluation

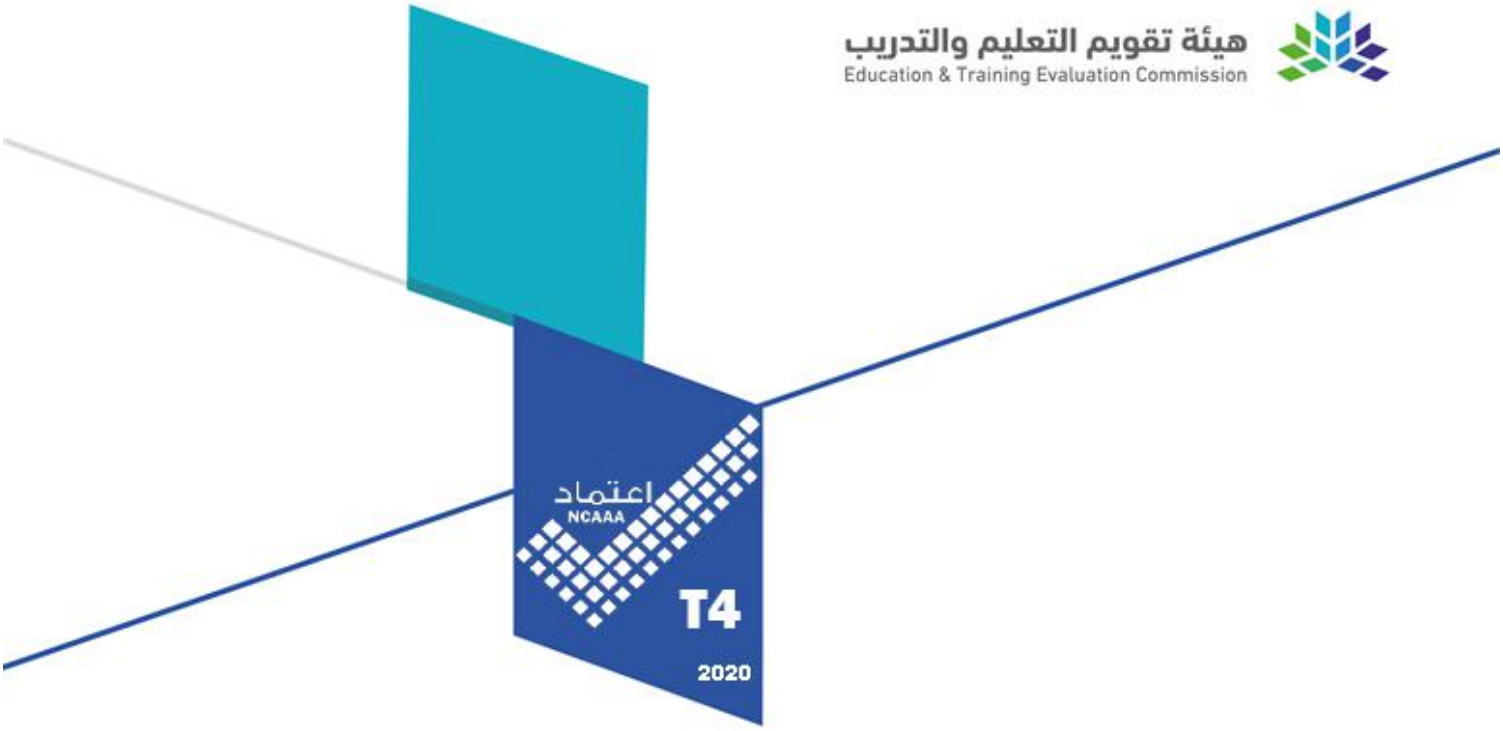
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Prof. Dr. Ahmad Mohammed Alghamdi and Dr. Muntser Saafan
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Mathematical Methods in Continuum Mechanics
Course Code:	MTH4412
Program:	B.Sc. Mathematics
Department:	Mathematical Science
College:	Applied Sciences
Institution:	Umm Al-Qura University

Table of Contents

A. Course Identification

1. Credit hours: 3
2. Course type **a.** University ☐ College ☐ Department ■ Others ☐ **b.** Required ■ Elective ☐
3. Level/year at which this course is offered: eleven
4. Pre-requisites for this course (if any)**: None**
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	3	100%
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	20
2	**Laboratory/Studio**	
3	**Tutorial**	10
4	**Others** (specify)	
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

Continuum mechanics is the study of how materials behave when subjected to external influences. External influences which affect the properties of substance are things such as forces, temperature, chemical reactions and electric phenomena. Examples of forces are gravitational forces, electromagnetic forces and mechanical forces. Solid deform under external forces and so deformations are studied. Fluid moves under external forces and so the velocity of the fluid is studied. Key topics of the course include Tensors, Kinematics and deformation, Conservation laws, Constitutive laws, Nonlinear Elasticity and Linear elasticity.

2. Course Main Objective

The aim of this course is to provide students with the main concepts of Continuum Mechanics and develop the basic mathematical equations which describe how a continuum behaves when subjected to external influences. These basic equations are developed for linear elastic materials and applied to solids and fluids.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Define the concept of tensor and their properties	K1, K4
1.2	Describe the kinematics and the deformation of a rigid body using the concept of tensors	K2, K4
1.3	Recognize Conservation laws	K3, K4
2	**Skills :**	
2.1	Explain the connection between stress and strain using tensors.	S1, S3, S7, S8
2.2	Derive the laws of conservation of mass, linear and angular momentum	S3, S8
2.3	Apply constitutive laws in solving fluids motion problems	S5, S8, S9
3	**Values:**	
3.1	Communicate effectively in both written and oral form.	V2, V3
3.2	Use mathematical methods in solving physical problems	V1, V3, V4
3.3		

C. Course Content

No	List of Topics	Contact Hours
1	**Introduction to Cartesian Tensors** - Introduction to summation convention. Definitions of scalar product, cross product and matrix product in terms of the summation convention. - Definition of the Kronecker delta and the alternating tensor. Properties of the alternating tensor in three dimensions. - Definition of a determinant and definition of the cofactors of a square matrix. Establish connection between a matrix and its adjoint matrix. - Define vector operations of gradient, divergence and curl using summation convention. - Use of the summation convention to establish a selection of vector identities and identities from vector Calculus. - Introduce symmetric tensors, skew-symmetric tensors, isotropic tensors of orders 2, 3 and 4. Eigenvalues and eigenvectors of rank 2 tensors.	8
2	**Kinematics and deformation** - Introduce the concept of a rigid body, description of motion in both Referential coordinates (Lagrangian coordinates) and Spatial coordinates (Eulerian coordinates). - Define what is meant by a deformation. - Define a rigid body motion and demonstrate why it is a rigid body motion. - Introduce the notion of a Material Time derivative. - Define material velocity and material acceleration. - Define the deformation gradient tensor, right Cauchy Green strain tensor (C), left Cauchy Green strain tensor (B), Green Lagrange's strain tensor (E) and Almansi-Hamel strain tensor (€). - Define stretch at a point along a unit vector. - Introduce the polar decomposition theorem (F=RU=VR) and physical significance of U,V and R. - relation between eigen values and eigen vectors of C, B, U and V.	6

	- Principal invariants of C for maximum and minimum stretches.	
3.	- Deduce the deformation rules for elemental areas, volumes and unit vectors. - Define velocity gradient - deduce the deformation rules for the rate of change of line element, angle, area and volume. - Derive representation theorems for positive definite tensors. - How displacement can be written in terms of rotation and displacement? - Describe common deformations such as simple elongation, pure dilatation, pure shear, simple shear. - Establish the Transport Theorem.	6
4.	**Conservation laws** - Derive the Law of Conservation of Mass. - Derive the Law of Conservation of Linear and Angular Momentum. - Use the tetrahedron argument to deduce the connection between the stress vector and the stress tensor. - Derive the Law of Conservation of Energy.	5
5.	**Constitutive laws** - Introduce the concept of a constitutive or phenomenological equation. - Introduce the constitutive function for a classical Thermo-Elastic Material. - Introduce the concept of Superimposed Rigid Body Motions and the concept of Objectivity. Apply this idea to refine the constitutive form of the equations of Thermo-Elasticity	5
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Define the concept of tensor and their properties.	Lecture Individual or group work	Exams Homework.
1.2	Describe the kinematics and deformation of a rigid body using the concept of tensors.	Lecture Individual or group work	
1.3	Recognize Conservation laws.	Lecture Individual or group work	
2.0	**Skills**		
2.1	Explain the connection between stress and strain using tensors.	Lecture Individual or group work	Exams Homework.
2.2	Derive the laws of conservation of mass, linear and Homework. angular momentum	Lecture Individual or group work	
2.3	Apply constitutive laws to solve fluids motion problems.	Lecture Individual or group work	
3.0	**Values**		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.1	Communicate effectively in both written and oral form.	Lecture Individual or group work	Exams Homework.
3.2	Formulate important results and theorems covered by the course	Lecture Individual or group work	
…			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm	6th week	30%
2	Homework +Reports + Quizzes	During the semester	20%
3	Final Examination	End of the semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:
All faculty members are required to give their office hours. Each member allocates at least 3 hours per week to give academic advice to students.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	- Solving problems my means of Continuum mechanics, Eduardo W.V. Chaves (2016). - Continuum Mechanics, A.J.M. Spencer, Dover publications (2004). - C.C Coman: Continuum Mechanics and Linear Elasticity , Solid mechanics and its applications (2020)
Essential References Materials	Illustrated Cartesian tensors with Applications in Mechanics, Fluid Dynamics and Elasticity, A.M. Goodbody, Ellis Horwood (1982)
Electronic Materials	Smart Board and Projector.
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 50 students.
Technology Resources (AV, data show, Smart Board, software, etc.)	data show

Item	Resources
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students	Direct
Quality of learning resources.	Students	Direct
Extent of achievement of course learning outcomes.	Faculty member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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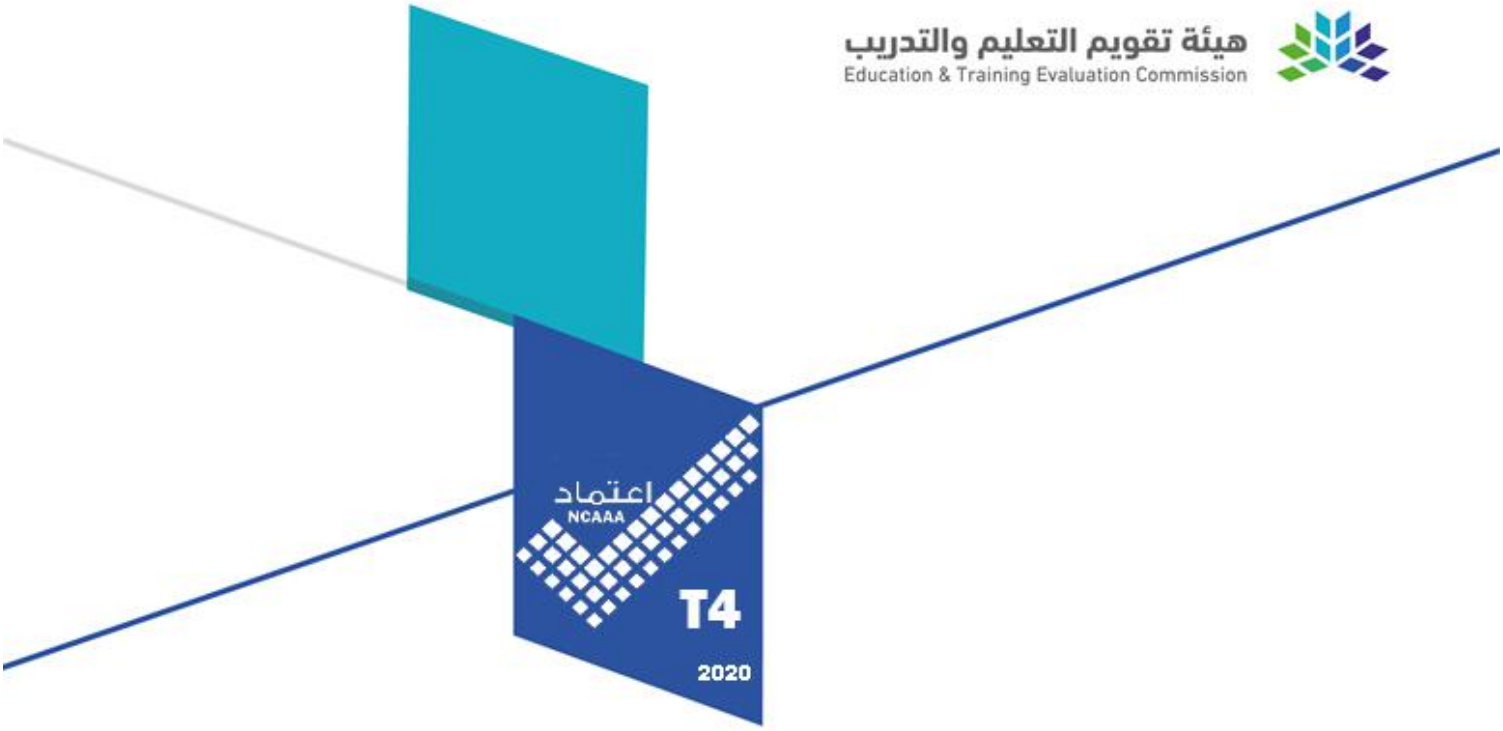

Course Specifications

Course Title:	**Special Functions**
Course Code:	MTH4421
Program:	**B.Sc. in Mathematics**
Department:	**Mathematical Sciences**
College:	**Applied Sciences**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	3
2. Course type	
a.	University ☐ College ☐ Department ■ Others ☐
b.	Required ■ Elective ☐
3. Level/year at which this course is offered:	**Tenth level/Fourth year**
4. Pre-requisites for this course (if any)**:**	**Calculus + Ordinary Differential Equations**
5. Co-requisites for this course (if any)**:**	**Not applicable**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Three hours/week**	100%
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**30**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (specify)	**0**
	Total	**30**

B. Course Objectives and Learning Outcomes

1. Course Description

This course is flexible enough to be presented to undergraduate students or beginning graduate students majoring in applied mathematics, engineering, chemistry or physics who wishes to use special functions. It is an introductory course which presents the fundamental concepts of various types of polynomials and their properties.

2. Course Main Objective

The purpose of this course is to condense into an introductory text the definitions and techniques arising in special functions. The material is presented to develop a physical understanding of the mathematical concepts associated with different types of functions and develop the recurrence relation of various types of polynomials and solve their differential equations.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Define the infinite series in the interval using the Euler's formula.	K1, K4
1.2	Write the Fourier series of even and odd functions,	K4
1.3	Express the polynomials in terms of Fourier series and obtain the necessary deduction.	K1, K4
1.4	Use of Beta and Gamma function in evaluating the complicated integral with ease.	K1, K4
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Express the solution of the physical problem in terms of special functions.	S1, S3, S8
2.2	Apply Laplace transform operator and solve the problems of different nature.	S1, S5, S9
2.3	To express the polynomials in term of Hermite, Laguerre's, Legendre and Bessel functions.	S1, S3, S5, S8
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Find the solution of Hermite equation, Legendre, Laguerre and Bessel by general power series and the proof of orthogonality of Hermite polynomials and recurrence relations for Hermite polynomials using the generating function.	V1, V2, V3
3.2	Demonstrate Fourier transforms, their properties and the solution of the initial boundary value problems for PDEs using Fourier transforms	V2, V3, V4
3.3	Understand the applications of the polynomials mentioned in the content.	V2, V3, V5

C. Course Content

No	List of Topics	Contact Hours
1.	Basic definitions of Fourier series, Fourier series of even and odd functions, periodic functions, Dirichlet's condition, Fourier series expansion of algebraic functions, absolute value function, step-function.	6
2.	Definition and properties of Gamma function, transformations of Gamma functions, use of Gamma function in integrating a function. Definition and properties of Beta function, evaluation of Beta function in an explicit form, transformations of Beta function, use of Beta function in evaluating the integrals, relation between Gamma and Beta functions and Laplace transformation.	8

3.	Definition of Hermite polynomial, Laguerre polynomial and their equations, generating function and recurrence relation. Pochhammer symbols, hypergeometric functions and their properties, differential and integral representation of Hypergeometric functions	8
4.	Definition of Legendre polynomial, Bessel function and their generating function and recurrence relation. Definition of orthogonality, Orthogonal set of functions, Orthogonality of Hermite, Laguerre's, Legendre and Bessel functions.	8
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Identify polynomials and their differential equation, series solution.	Lecture and Tutorials	Exams, quizzes
1.2	Knowledge of Laplace operator and Fourier transformation.	Lecture and Tutorials	Exams, quizzes
1.3	Present an account of basic concepts and definitions of polynomials.	Lecture and Tutorials	Exams, quizzes
1.4	Describe the polynomials in term of special functions and able to find its generating function.	Lecture and Tutorials	Exams, quizzes
2.0	**Skills**		
2.1	Demonstrate the ability for solving mathematical problems involving polynomials described by differential equations.	Lecture/Individual or group work	Exams, quizzes
2.2	Explain the Fourier series technique.	Lecture/Individual or group work	Exams, quizzes
2.3	Apply Laplace transform in the solution of some physical problems of science and engineering.	Lecture/Individual or group work	Exams, quizzes
3.0	**Values**		
3.1	Recognize the notions of Pochhammer symbols and obtained hypergeometric function from these symbols.	Lecture/ Self-learning through the website	Exams, quizzes
3.2	Interpret graphical and qualitative representations of solutions to problems.	Lecture/ Self-learning through the website	Exams, quizzes
3.3	Generalize mathematical concepts in problem and their applications in physics and chemistry.	Lecture/Individual or group work	Exams, quizzes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30%
2	Quizes and homeworks	During semester	20%
3	Final exam	End of semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

All faculty members are required to give their office hours. Each member allocates at least 3 hours per week to give academic advice to students.

Students are required to complete the home assignments and attend regular lectures

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Special Functions of mathematical physics and Chemistry, by Sneddon, I. N. (1996). • Special functions: A graduate text by Richard Beals (2010) • Handbook of special functions: derivatives, integrals, series and other formulas by Yury A. Brychkov (2008).
Essential References Materials	None
Electronic Materials	Laptop, smart board, and projector.
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate at least 30 students.
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

Dep. Elective 1

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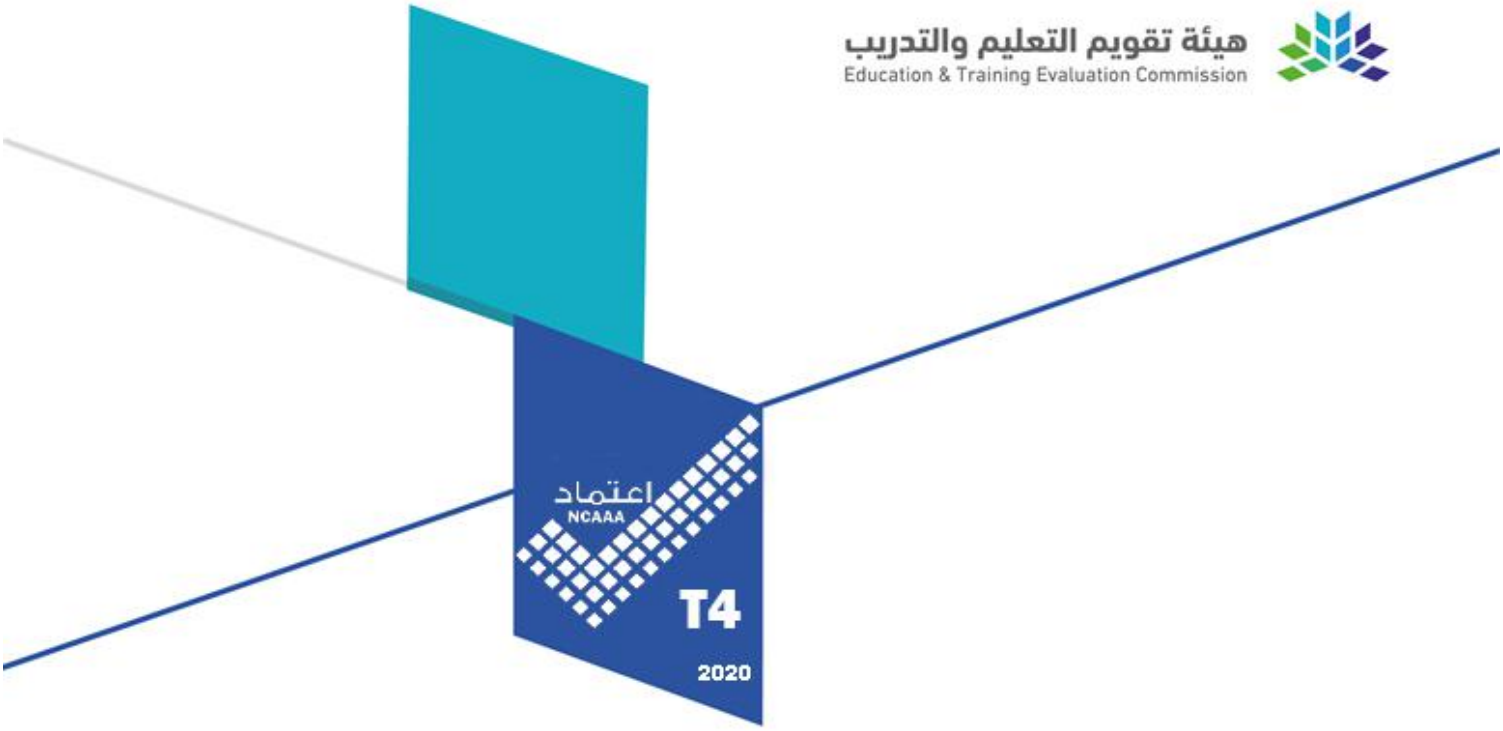

Course Specifications

Course Title:	**Sets Theory**
Course Code:	**MTH4202**
Program:	**BSc. in Mathematics**
Department:	**Mathematical science**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 3
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: 10 level/4 year or after
4. Pre-requisites for this course (if any)**:** Foundation of Mathematics (MTH1201-4)
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	Four hours/week	%100
2	Blended	0	0
3	E-learning	0	0
4	Distance learning	0	0
5	Other	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	40
2	Laboratory/Studio	0
3	Tutorial	0
4	Others (specify)	0
	Total	40

B. Course Objectives and Learning Outcomes

1. Course Description The aim is to provide the students with a basic knowledge of axiomatic and combinatorial set theory, to prepare the students for research in set theory and for using set theory as a tool in mathematical areas such as general topology, algebra and functional analysis.
2. Course Main Objective The first part of the course involves axiomatic set theory. The course proceeds onto a treatise on infinite sets and on the different cardinal numbers that lead to transfinite arithmetic. Axiom of Choice and its equivalent representations are then introduced. Finally Lattice theory is also discussed

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	**Explain well-orders, ordinal numbers, transfinite recursion and induction, cardinal numbers, and cardinality.**	K1, K2
1.2	**Use the axiom of choice in discussing cardinality.**	K2, K4
1.3	**Characterize which of the partially ordered sets are lattices?**	K1, K4
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	**to formalize statements**	S1, S3, S8
2.2	**to formalize mathematical theorems in the framework of set theory**	S5, S8
2.3	**Demonstrate that a grouset is a lattice**	S1, S8

C. Course Content

No	List of Topics	Contact Hours
1	**1- Revision of the concept of set, relations, equivalent and order relations and equivalent of sets** **2- Axiom of choice and its equivalent to Zorn's Lemma with some examples and applications**	**12**
2	**3- Ordinal numbers and algebra of ordinal numbers** **4- Cardinal numbers and its algebra**	**12**
3	**5- Lattices : Definitions and examples** **6- Sublatices and some properties** **7 - Mobuis Inversion Formula and some of its applications**	**16**
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	**Demonstrate comprehension of algorithms and axioms.**	**Lecture and Tutorials**	**Exams, quizes**
1.2	**Define cardinality, discuss and prove Cantor's Theorem and discuss the status of the Continuum Hypothesis,**		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	Explain basic concepts and prove basic facts about ordinals and well-ordered sets.		
1.2	**Recognize the relevant theories uf lattices.**	**Lecture and Tutorials**	**Exams, quizes**
2.0	**Skills**		
2.1	**Understand the Axiom of choice and its equivalence to Zorn's Lemma with some examples and applications**	**Lecture/Individual or group work**	**Exams, quizzes**
2.2	**Understand the notion of lattices with appkucations**	**Lecture/Individual or group work**	**Exams, quizzes**
3.0	**Values**		
3.1	**Prepare for success in disciplines which rely complex numbers, and in more advanced mathematics which incorporate these topics**	**Lecture/Individual or group work**	**Exams, quizzes**

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	%30
2	Quizes and homeworks	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice : -

Each group of students is assigned to a particular faculty where he or she will provide academic advising during specific academic hours. Each staff will provide at least one session/week. –

There will be an academic advisor how will be a responsible for helping the student by doing the general supervision. –

The people in the library will support the students during the time of the course.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	**Set Theory and Related Topics: By Lipschutz, S. (Schaum Publishing Company)**

Essential References Materials	**1-Problems and Theorems in Classical Set Theory. By Péter Komjáth and Vilmos Totik (SBN-13: 978-0387-30293-5)** **2-Set Theory and its Philosophy. By Michael Potter (ISBN 0–19–927041–4)**
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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Course Specifications

Course Title:	**Differential Geometry**
Course Code:	**MTH4303**
Program:	**BSc. in Mathematics**
Department:	**Mathematical science**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	3
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☐ Elective ☑
3. Level/year at which this course is offered:	Fourth year
4. Pre-requisites for this course (if any)**:**	Vector Calculus MTH2105-3
5. Co-requisites for this course (if any)**:**	Not applicable

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	Three hours/week	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**30**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (specify)	**0**
	Total	**30**

B. Course Objectives and Learning Outcomes

1. Course Description

Differential geometry is the study of geometric properties of curves, surfaces, and their higher dimensional analogues using the methods of calculus. It has a long and rich history, and, in addition to its intrinsic mathematical value and important connections with various other branches of mathematics, it has many applications in various physical sciences, e.g., solid mechanics, computer tomography, or general relativity. Differential geometry is a vast subject. In this elementary introductory course we develop much of the language and many of the basic concepts of differential geometry in the simpler context of curves and surfaces in ordinary 3 dimensional Euclidean space.

2. Course Main Objective

The aim is to build both a solid mathematical understanding of the fundamental notions of differential geometry and sufficient visual and geometric intuition of the subject. We hope that this course is of interest to students from a variety of math, science and engineering backgrounds, and that after completing this course, the students will be in a position to (i) apply their knowledge and skills in this course to their related subjects, (ii) be ready to study more advanced topics such as global properties of curves and surfaces.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Determine curvature of curves in different coordinate systems	K1
1.2	Parameterize curves	K3
1.3	Derive Serret Frenet formulae	K1
1.4	Recall the local canonical form and corresponding curves	K4
1.5	Recognize first and second fundamental forms	K1
1.6	Examine Principal Gaussian and mean curvatures	K5
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Describe regular surfaces	S3
2.2	Distinguish types of curvature and torsion	S1
2.3	Analyze geodesic lines and curves	S4
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Exemplify important concepts in specific cases	V5
3.2	Formulate important results and theorems covered by the course	V2
3.3	Relate the theory, methods and techniques of the course to solve mathematical problems	V3

C. Course Content

No	List of Topics	Contact Hours
1	Skew and plane curves- arc length – tangent- Oculating plane- normal plane	5
2	curvature - Principal normal – circle of curvature- binormal- torsion- rectifying plane	6
3	Serret Frenet formulas - cylindrical helix – involutes and evolutes – Pertrand curves	6
4	Parametric equations of a surface- tangent plane to a surface- linear element of a surface	5
5	First and second fundamental quadratic forms of a surface	3
6	Normal curvature of a surface- lines of curvature of a surface- geodesics	5
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**		
1.1	Determine curvature of curves in different coordinate systems	Lecture and Tutorials	Exams, quizes
1.2	Parameterize curves	Lecture and Tutorials	Exams, quizes
1.3	Derive Serret Frenet formulae	Lecture and Tutorials	Exams, quizes
1.4	Use the local canonical form and corresponding curves	Lecture and Tutorials	Exams, quizes
1.5	Recognize first and second fundamental forms	Lecture and Tutorials	Exams, quizes
1.6	Examine Principal Gaussian and mean curvatures	Lecture and Tutorials	Exams, quizes
2.0	**Skills**		
2.1	Describe regular surfaces	Lecture/Individual or group work	Exams, quizes
2.2	Distinguish types of curvature and torsion	Lecture/Individual or group work	Exams, quizes
2.3	Analyze geodesic lines and curves	Lecture/Individual or group work	Exams, quizes
3.0	**Values**		
3.1	Exemplify important concepts in specific cases	Lecture/Individual or group work	Exams, quizes
3.2	Formulate important results and theorems covered by the course	Lecture/Individual or group work	Exams, quizes
3.3	Use the theory, methods and techniques of the course to solve mathematical problems	Lecture/Individual or group work	Exams, quizes
3.4	Present mathematical arguments to others	Lecture/Individual or group work	Exams, quizes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	%30
2	Quizes and homeworks	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 3 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no

copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	1- Differential Geometry of Curves and Surfaces, Manfredo P. do Carmo, 1976, Prentice Hall.
Essential References Materials	1-Elementary Differential Geometry, Barrett O'Neill, 1997, Academic Press. 2- Differential Geometry of Curves and Surfaces, Kristopher Tapp, 2016, Springer
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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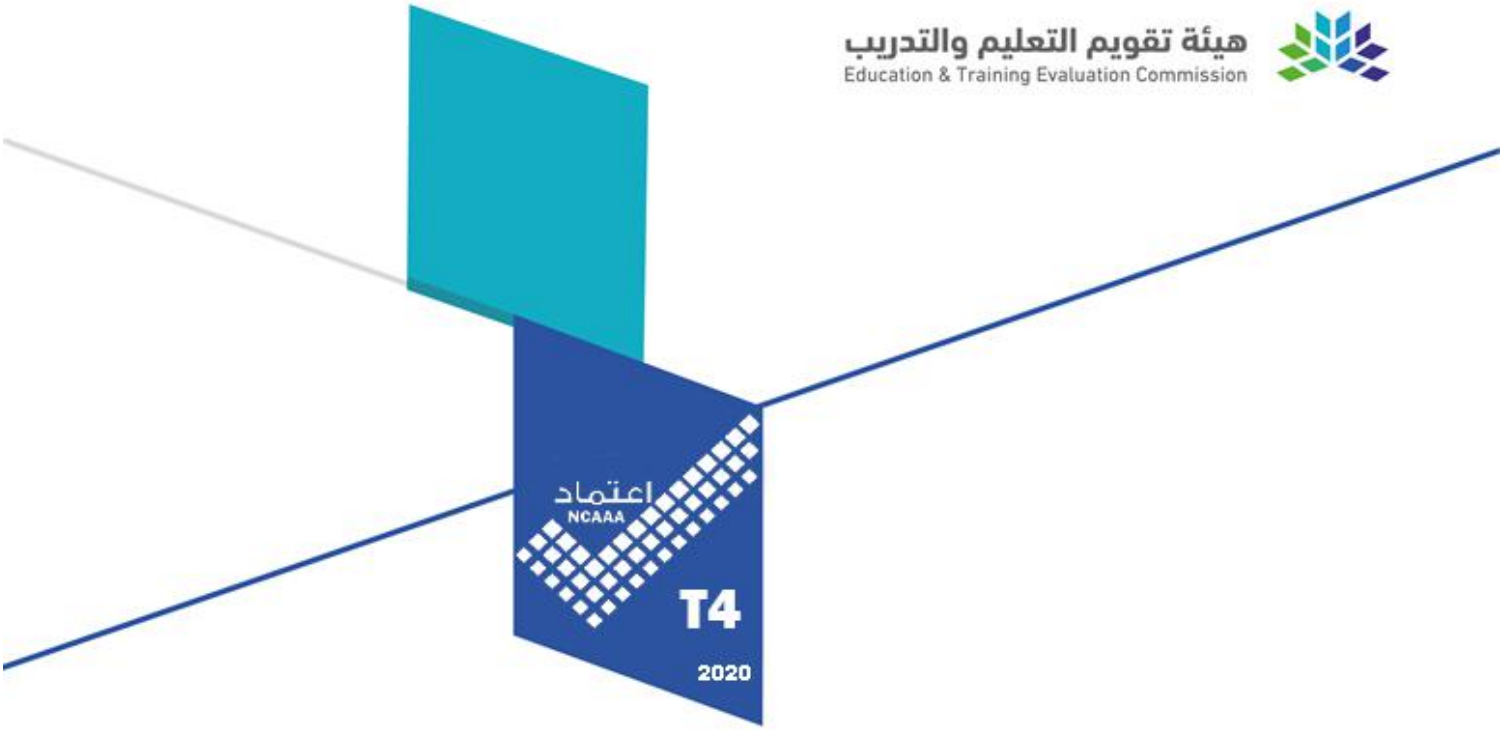


Course Specifications

Course Title:	**Advanced Linear Algebra**
Course Code:	**MTH4213**
Program:	**BSc. In Mathematics**
Department:	**Mathematical science**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

H. Course Identification

1. Credit hours: 3
2. Course type **a.** University ☐ College ☐ Department ■ Others ☐ **b.** Required ☐ Elective ■
3. Level/year at which this course is offered: Eleventh level/fourth year
4. Pre-requisites for this course (if any)**:** Linear algebra 2
5. Co-requisites for this course (if any)**:** Non

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	0	0
2	Blended	0	0
3	E-learning	Three hours/week	%100
4	Distance learning	0	0
5	Other	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	0
3	Tutorial	0
4	Others (specify)	0
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

Linear Algebra is an area of mathematics that deals with the properties and applications of vectors, matrices, and other related mathematical structures. Interestingly, these topics readily lend themselves to a very rigorous study of the underlying mathematical theory, as well as to a broadly applications-oriented study of concepts, methods, and algorithms. This course will place roughly equal emphasis on theory and applications.

Main topics we will cover are included in this advance course in linear algebra. The course description are as follows: Revisions of: Caley Hamilton theorem, Characteristic polynomials, minimum polynomials and the spectral of a linear transformation. Then more theory of diagonalizations and quadratic forms. Then the exponential of a square matrix and the relationship between determinant of exponential of a square matrix and the exponential of the trace of the same matrix. Main objective is to deliver the notion of tensor product of two matrices (Kronecker product). Tensor product of two vector spaces. Modules as a generalization of vector spaces. One main objective is the notion of Modules over principal ideal domains.

2. Course Main Objective

This course will provide a common mathematical advanced foundations related to theory of linear algebra for students in all of the programs, drawing upon the full range of undergraduate courses in mathematics. In addition, it will permit students to build upon and share knowledge already acquired while pointing out areas in which additional study may be needed. In addition, it will develop the communication skills and understanding of the process of doing mathematics necessary for graduate-level study.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Definition and properties of the matrix exponential and its determinant	K1, K4
1.2	Describe the tensor product of two matrices.	K1, K3
1.3	Describe the tensor product of vector spaces and its basic properties.	K1, K3
1.4	Outline modules, submodules, quotients, and direct sum of modules	K1, K4
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Demonstrate accurate and efficient use of advanced algebraic techniques	S1, S5, S8
2.2	Calculate the matrix exponential and its determinant.	S1, S8
2.3	Perform tensor product.	S2, S8
2.4	Distinguish between vector spaces and modules.	S3, S8
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Analyze quantitative data verbally, graphically, symbolically and numerically	V1, V4
3.2	Communicate quantitative data verbally, graphically, symbolically and numerically	V3, V4
3.3	Integrate appropriately technology into mathematical processes	V2, V4
3.4	Generalize mathematical concepts in problem-solving through integration of new material and modeling	V1, V2, V4

C. Course Content

No	List of Topics	Contact Hours
1	Some revisions of: Caley Hamilton theorem, Characteristic polynomials, minimum polynomials and the spectral of a linear transformation.	6
2	More Theory of diagonalizations and quadratic forms.	3
3	The exponential of a square matrix and the relationship between determinant of exponential of a square matrix and the exponential of the trace of the same matrix.	3
4	Tensor product of two matrices (Kronecker product).	2
5	Tensor product of two vector spaces.	6
6	Modules as a generalization of vector spaces.	6

7	Modules over principal ideal domains.	4
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Definition and properties of the matrix exponential and its determinant	Lecture and Tutorials	Exams, quizzes
1.2	Describe the tensor product of two matrices.	Lecture and Tutorials	Exams, quizzes
1.3	Describe the tensor product of vector spaces and its basic properties.	Lecture and Tutorials	Exams, quizzes
1.4	Outline modules, submodules, quotients, and direct sum of modules	Lecture and Tutorials	Exams, quizzes
2.0	**Skills**		
2.1	Demonstrate accurate and efficient use of advanced algebraic techniques	Lecture/Individual or group work	Exams, quizzes, Homework
2.2	Calculate the matrix exponential and its determinant	Lecture/Individual or group work	Exams, quizzes, Homework
2.3	Perform tensor product. .	Lecture/Individual or group work	Exams, quizzes, Homework
2.4	Distinguish between vector spaces and modules.	Lecture/Individual or group work	Exams, quizzes, Homework
3.0	**Values**		
3.1	Analyze quantitative data verbally, graphically, symbolically and numerically	Lecture/Individual or group work	Exams, quizzes, research essays
3.2	Communicate quantitative data verbally, graphically, symbolically and numerically	Lecture/Individual or group work	Exams, quizzes, research essays
3.3	Integrate appropriately technology into mathematical processes	Lecture/Individual or group work	Exams, quizzes, research essays
3.4	Generalize mathematical concepts in problem-solving through integration of new material and modeling	Lecture/Individual or group work	Exams, quizzes, research essays

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	%30
2	Quizzes, homework, and research essays	During semester	%20
4	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Roman, Steven, S. Axler, and F. W. Gehring. Advanced linear algebra. Vol. 3. New York: Springer, 2005. • Hoffman, Kenneth. Linear algebra. Englewood Cliffs, NJ, Prentice-Hall, 1971.
Essential References Materials	• Weintraub, Steven H. A Guide to Advanced Linear Algebra. No. 44. MAA, 2011. • G. Strang, Introduction to Linear Algebra. 5th Edition. Wellesley, MA: Wellesley-Cambridge Press, 2016.
Electronic Materials	https://en.wikipedia.org/wiki/Linear_algebra
Other Learning Materials	Computing data for matrices such eigenvalues and eigenvectors using computer packages.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students or Online via Blackboard if the administration approved Online Teaching for this Course
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board

Item	Resources
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Blackboard

G. Course Quality Evaluation

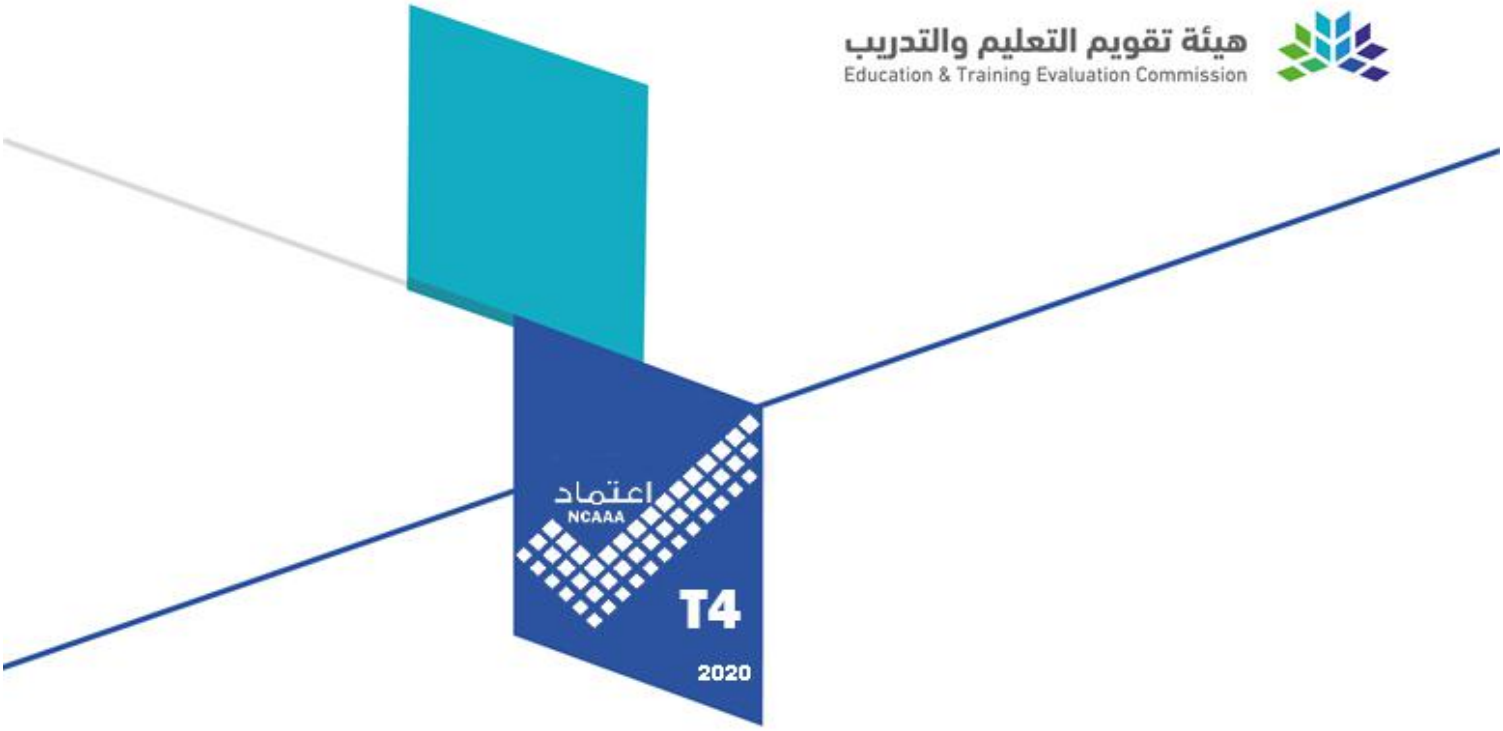
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Prof. Ahmad Mohammed Alghamdi and Eman Allugmani
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	General Topology
Course Code:	**MTH4312**
Program:	**BSc. in Mathematics**
Department:	**Department of Mathematical Sciences**
College:	**College of Applied Science**
Institution:	**Umm Al-Qura, University**

Table of Contents

A. Course Identification

1. Credit hours: 3
2. Course type **a.** University ☐ College ☐ Department ☐ Others ☐ **b.** Required ☐ Elective ☐
3. Level/year at which this course is offered: Level 12
4. Pre-requisites for this course (if any)**:** Elementary Topology
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	30	100%
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	
3	**Tutorial**	
4	**Others** (specify)	
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

This course provides an introduction to topology, which is the field of mathematics concerned with a formalization of the notion of "shape". Most of the course will focus on the area within topology known as point set topology. We will define topological spaces and discuss some important examples, such as metric spaces. We will study a variety of properties of topological and metric spaces, including compactness, connectedness, , product spaces, convergence, function spaces ,and path connectedness

2. Course Main Objective

The purpose of this course is to introduce students by the concepts of topology. Precisely, students will be able to state basic definitions such as that of a topology, basis for a topology, sub-basis for a topology, open sets, closed sets, subspace and product topologies, injective, surjective, bijective and continuous maps between topological spaces, homeomorphism, connectedness, compactness, Hausdorff, normal and regular topological spaces. Students will also be able to use these notions in constructing mathematical arguments and proofs. In

addition, students will be able to recite examples of standard topological spaces, and recite or create examples of topological spaces having various properties. Students will be able to complete with rigor some basic proofs of theorems involving topological spaces.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and understanding**	
1.1	Recall terms, definitions and theorems related to topology	K1, K4
1.2	Outline concepts such as open and closed sets, interior, closure and boundary	K3, K4
1.3	Recognize the connection between metric spaces and topological spaces	K2, K4
1...	Memorize various notions of compactness	K2, K4
2	**Skills :**	
2.1	Classify properly the most important examples of topological spaces	S1, S8
2.2	Apply the main features of metric spaces to prove the "metrizability" of a topological space	S3, S5, S9
2.3	Use continuous functions and homeomorphisms to examine structure of topological spaces	S6, S8
2...	Employ Bolzano-Weiestrass property to study the compactness of metric spaces	S2, S3, S8
3	**Values:**	
3.1	Evaluate theoretical concepts in topology to understand real world applications	V1, V2
3.2	Write clear and precise proofs of the main results	V2, V3
3.3	Develop the theories, methods and techniques of the course to solve complex mathematical problems	V1, V3, V4

C. Course Content

No	List of Topics	Contact Hours
1	Topological Spaces: Definitions,properties and examples	5
2	Basis ,subbasis ,subspaces.Separation Axioms	5
3	Cartesian products of spaces ,Product topology and Properties of Product and Quotient spaces	5
4	The metric spaces : examples - the metric problem	5
5	Continuous Functions: Examples - Classification of continuous functions over the topological and metric spaces - topological Equivalence, Examples, Topological and Hereditery properties.	5
6	Compact spaces, Locally compact spaces, Compactness by the endpoint, Compactness by sequences connectedness, components, path connectedness and locally connectedness.	5
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Recall terms, definitions and theorems related to topology	Lecture Tutorials	Exams (Quizzes, Midterm and Final). Written and possibly oral exam at the end of the course. In addition, compulsory work may be given during the course
1.2	Outline concepts such as open and closed sets, interior, closure and boundary	Lecture Tutorials	Exams (Quizzes, Midterm and Final). Written and possibly oral exam at the end of the course. In addition, compulsory work may be given during the course
…	Recognize the connection between metric spaces and topological spaces, Memorize various notions of compactness	Lecture Tutorials	Exams (Quizzes, Midterm and Final). Written and possibly oral exam at the end of the course. In addition, compulsory work may be given during the course
2.0	**Skills**		
2.1	Classify properly the most important examples of topological spaces	Lecture Individual or group work	Exams (Quizzes, Midterm and Final). Homework
2.2	Apply the main features of metric spaces to prove the "metrizability" of a topological space	Lecture Individual or group work	Exams (Quizzes, Midterm and Final). Homework
…	Use continuous functions and homeomorphisms to examine structure of topological spaces, Employ Bolzano-Weiestrass property to study the compactness of metric spaces L	Lecture Individual or group work	Exams (Quizzes, Midterm and Final). Homework
3.0	**Values**		
3.1	Evaluate theoretical concepts in topology to understand real world applications	Lecture Individual or group work	work Exams (Quizzes, Midterm and Final). Research Essays

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.2	Write clear and precise proofs of the main results	Lecture Individual or group work	work Exams (Quizzes, Midterm and Final). Research Essays
…	Develop the theories, methods and techniques of the course to solve complex mathematical problems	Lecture Individual or group work	work Exams (Quizzes, Midterm and Final). Research Essays

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework and Quizzes	During the semester	20
2	Mid exam	6	30
4	Final exam.	End the semester	50
5			
6			
7			
8			

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

Each group of students is assigned to a faculty member where he or she will provide academic advising. All faculty members are required to be in their offices outside teaching hours. Each faculty member allocates at least 4 hours per week to give academic advice and to answer to the questions of students about concepts studied during the lectures.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Munkres J. R.; Topology, Second Edition. Prentice Hall, Incorporate. New York, 2000.
Essential References Materials	Sidney A. Morris, Book: topology without tears, 2006.
Electronic Materials	http://www.mathramz.com/xyz/index.php http://math.niu.edu./ http://ntnu.no/conservation
Other Learning Materials	Libraries

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students.
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students	Direct
Quality of learning resources	Students	Direct
Quality of learning resources	Students	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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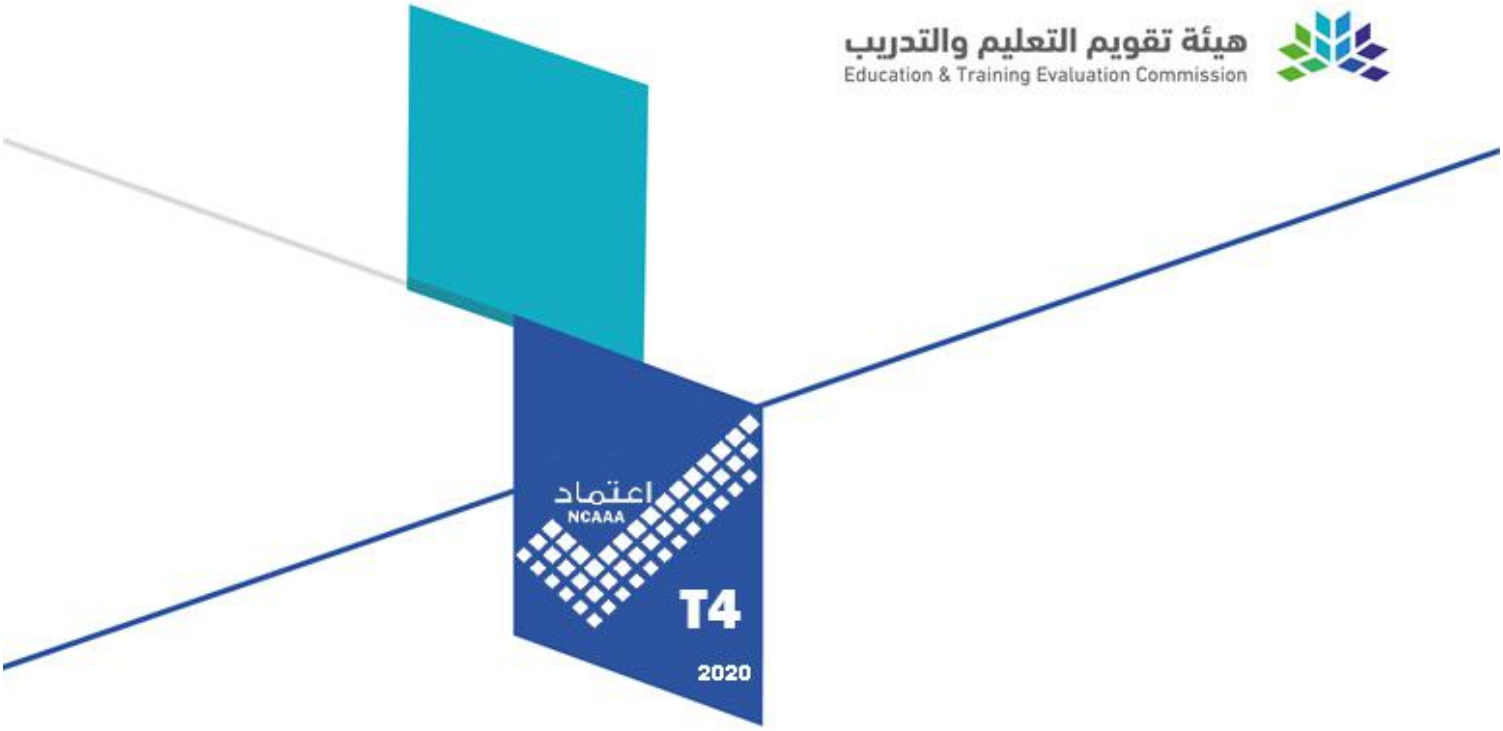
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Group Theory**
Course Code:	**MTH4223**
Program:	**BSc. in Mathematics**
Department:	**Mathematical sciences**
College:	**Applied sciences**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	**4**
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☐ Elective ☑
3. Level/year at which this course is offered:	**Level 8/ year 3**
4. Pre-requisites for this course (if any)**:**	**Introduction to Group Theory MTH3221-4**
5. Co-requisites for this course (if any)**:**	

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**30**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (specify)	**0**
	Total	**30**

B. Course Objectives and Learning Outcomes

1. Course Description

Group theory is an essential part of modern mathematics. This course is an advanced in group theory. This is an advanced course of group theory which contains the following topics, as Revision of the concept of groups and group actions on sets, (Cayley's Theorem as an application) and Burnside counting argument and Orbit Stabilizer Theorem as a consequence of group action. Sylow Theorems are an essential part of the course. Then composition series, nilpotent and solvable groups, free abelian groups and free groups, simplicity of the alternating group and the projective special linear group, and the fundamental theorem of finitely generated abelian groups. The course, will emphasize both the theory and the examples.

2. Course Main Objective

This course will provide a common mathematical foundation for students in all of the programs, drawing upon the full range of undergraduate courses in mathematics. In addition, it will permit students to build upon and share knowledge already acquired while pointing out areas in which additional study may be needed. In addition, it will develop the communication

skills and understanding of the process of doing mathematics necessary for graduate-level study.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Identify groups, group actions and Sylow Theorems, nilpotent and solvable groups.	K1, K3
1.2	Identify different methods of recognize finitely generated abelian groups.	K2
1.3	Present basic concepts and properties of simple groups.	K3, K4
1.4	State the basic rules of semidirect product of two groups	K1, K3
1.5	Describe Burnside counting argument and its applications	K1, K4
1.6	Define direct and semidirect product of groups.	K3, K4
1.7	State and recognize simple, nilpotent, solvable groups.	K1, K3, K4
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Compare between nilpotent and non-nilpotent groups.	S3, S8
2.2	Use methods of Burnside counting argument and its applications	S6, S8
2.3	Apply algebraic structures on projective PSL special linear groups and their subgroups.	S3, S5, S8
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Prepare for success in disciplines which rely on simple group theory as part of mathematics, which is the key to understand most of mathematical subjects. (An is a simple group for n not equal 4.)	V2, V4
3.2	Interpret free groups and free abelian groups.	V3
3.3	Evaluate fundamental concepts of groups, cyclic groups, normal subgroups, and the interrelationship between group action of p-groups	V2, V3
3.4	Generalize mathematical concepts in problem-solving through Sylow theorems of new material and modeling which are related to group theory.	V4

C. Course Content

No	List of Topics	Contact Hours
1	**Revision of the concept of groups and group actions on sets, Cayley's Theorem as application**	4
2	**Finite p-groups and Sylow's Theorems**	6
3	**Simple Groups and Simplicity of An, PSL**	4
4	**Direct and Semidirect Product of groups and compositions series.**	4
5	**Free Abelian Groups and Free Groups**	4
6	**Fundamental Theorem of finitely generated Abelian groups**	4
7	**Finite Nilpotent and Soluble Groups**	4
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Identify groups, group actions and Sylow Theorems, nilpotent and solvable groups.	Lecture and Tutorials	Exams, quizzes
1.2	Identify different methods of recognize finitely generated abelian groups.	Lecture and Tutorials	Exams, quizzes
1.3	Present basic concepts and properties of simple groups.	Lecture and Tutorials	Exams, quizzes
1.4	State the basic rules of semidirect product of two groups		
1.5	Describe Burnside counting argument and its applications	Lecture and Tutorials	Exams, quizzes
1.6	Define direct and semidirect product of groups and composition series	Lecture and Tutorials	Exams, quizzes
1.7	State and recognize simple, nilpotent, solvable groups.		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	**Skills**		
2.1	Compare between nilpotent and non-nilpotent groups.	Lecture and Individual or group work	Exams, quizzes
2.2	Use methods of Burnside counting argument and its applications	Lecture and Individual or group work	Exams, quizzes
2.3	Apply algebraic structures on projective PSL special linear groups and their subgroups.	Lecture and Individual or group work	Exams, quizzes
3.0	**Values**		
3.1	Prepare for success in disciplines which rely on simple group theory as part of mathematics, which is the key to understand most of mathematical subjects. (An is a simple group for n not equal 4.)	Lecture and Individual or group work	Exams, quizzes
3.2	Evaluate fundamental concepts of groups, cyclic groups, normal subgroups, and the interrelationship between group action of p-groups	Lecture and Individual or group work	Exams, quizzes
3.3	Evaluate fundamental concepts of groups, cyclic groups, normal subgroups, and the interrelationship between group action and permutation representation.	Lecture and Individual or group work	Exams, quizzes
3.4	Generalize mathematical concepts in problem-solving through Sylow theorems of new materials and modeling which are related to group theory.	Lecture and Individual or group work	Exams, quizzes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	6th week	%30
2	Quizes and homeworks	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	1- A course in group theory by John S. Rose: Publisher: Cambridge University Press Language: English Pages: 318 ISBN 10: 0521214092 ISBN 13: 9780521214094, Year (1978) 2- Abstract Algebra by D. Dummit and R. Foote; Publisher: Wiley; 3 edition (July 14, 2003) Language: English ISBN-10: 0471433349 ISBN-13: 978-0471433347 3-Basic Abstract Algebra by: P. B. Bhattacharya, S. K. Jain, S. R. Nagpaul, Cambridge University Press, Jum. II 21, 1415 AH - Mathematics - 487 pages ISBN: 0-521-46081-6 and 0-521-46629-6 3- Algebra by Thomas W. Hungerford, Edition: 8th Publisher: Springer Language: English Pages: 504 / 265 ISBN 10: 0387905189 ISBN 13: 9780387905181, Year:(2003) 4- A course in group theory by John F. Humphreys, publisher: Oxford University Press Language: English Pages: 292 ISBN 10: 0198534590 ISBN 13: 9780198534594 Series: Oxford science publications Year (1996)
Essential References Materials	1- A First Course in Abstract Algebra, 7th Edition 7th edition, by John B. Fraleigh; Publisher: Pearson; 7 edition (November 16, 2002) ISBN-10: 0201763907: ISBN-13: 978-0201763904 2- Modern Algebra: An Introduction 6th Edition, by John R. Durbin; Publisher: Wiley; 6 edition (December 31, 2008) ISBN-10: 0470384433 ISBN-13: 978-0470384435. 3 – Theory and Problems of Abstract Algebra by Frank Ayres and Lloyd R. Jaisingh, Schaum's Outlines Series. Second Edition.
Electronic Materials	- (http://www.math.niu.edu/~beachy/abstract_algebra/study_guide/contents.html) - https://en.wikipedia.org/wiki/group_theory - https://en.wikipedia.org/wiki/Algebraic_structure - http://mathworld.wolfram.com/GroupTheory.html http://mathworld.wolfram.com/topics/GroupTheory.html
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board

Item	Resources
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

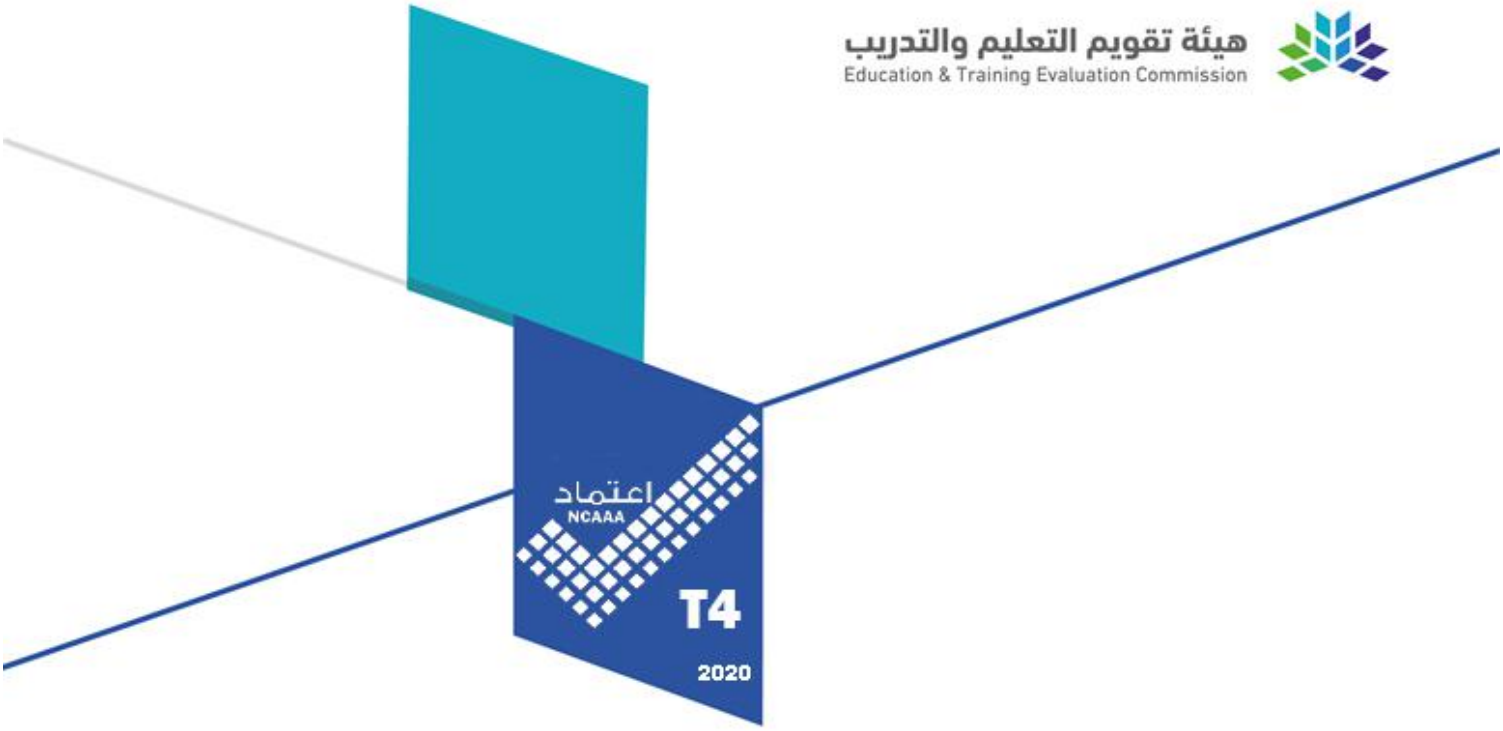
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Prof. Dr. Ahmad Alghamdi and Dr. Abdullah Ahmad Asseri
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Introduction to Functional Analysis
Course Code:	MTH4151
Program:	BSc. in Mathematics
Department:	Mathematical sciences
College:	Applied sciences
Institution:	Umm Al-Qura University

Table of Contents

A. Course Identification

1. Credit hours: 3
2. Course type **a.** University ☐ College ☐ Department ■ Others ☐ **b.** Required ☐ Elective ■
3. Level/year at which this course is offered: Fourth year
4. Pre-requisites for this course (if any)**:** MTH2112-4
5. Co-requisites for this course (if any)**:** Not applicable

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	Four hours/week	%100
2	Blended	0	0
3	E-learning	0	0
4	Distance learning	0	0
5	Other	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	24 Hours
2	Tutorial	4 Hours
3	Midterm Exam	2 Hours
	Total	30 Hours

B. Course Objectives and Learning Outcomes

1. Course Description

An introduction to the elements of functional analysis in Banach spaces and Hilbert spaces.

2. Course Main Objective

- To study certain topological-algebraical structures and the methods by which the knowledge of these methods can be applied to analytic problems.
- The objectives of the course is the study of the main properties of bounded operators between Banach and Hilbert spaces.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	To learn to recognize the fundamental properties of normed spaces and of the transformations between them.	K1, K3

CLOs		Aligned PLOs
1.2	Understand the notions of inner product	K4
1.3	Identify metric and normed spaces	K2
1.4	Basic theorems in functional analysis	K4
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Sate definitions of a vector norm and an inner product on complex vector space	S1, S8
2.2	Give some examples of Banach spaces and Hilbert spaces.	S3, S5, S9
2.3	Prove the basic results about spaces and linear operators.	S1, S8, S9
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Write clear and precise proofs.	V2, V3
3.2	Use the theories, methods and techniques of the course to solve functional analysis problems.	V3, V4
3.3	Solve continuity, linearity and convergence problems in metric, normed, Banach and Hilbert spaces.	V2, V3, V4

C. Course Content

No	List of Topics	Contact Hours
1	Normed spaces, Banach spaces	8 Hours
2	Inner product spaces, Hilbert spaces	8 Hours
3	Linear operators. Dual space	8 Hours
4	Others (Tutorials, Exam, …)	6 Hours
	Total	30 Hours

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Normed spaces, Banach spaces	Lecture and Tutorials	Exam
1.2	Inner product spaces, Hilbert spaces		
1.3	Linear operators. Dual space		
2.0	**Skills**		
2.1	Prove the basic properties of vector norms and inner products	Lecture/Individual or group work	Exam
2.2	Prove the basic results concerning the Banach spaces and Hilbert spaces		
2.3	Verify the boundedness of some linear maps		
3.0	**Values**		
3.1	Appraise the Banach space as a ‘‘complete normed vector space’’	Lecture/Individual or	Exam

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.2	Appraise the Hilbert space as a ‘‘complete inner product space’’	group work	
3.3	Justify the choice of different steps in problems resolution procedure.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30 %
2	Quizes and homeworks	During semester	20 %
3	Final exam	End of semester	50 %

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures. Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	The course will not be based on any particular textbook
References Materials	Erwin Kreyszig, Introductory functional analysis with applications, John Wiley and sons, 1978
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms

Item	Resources
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

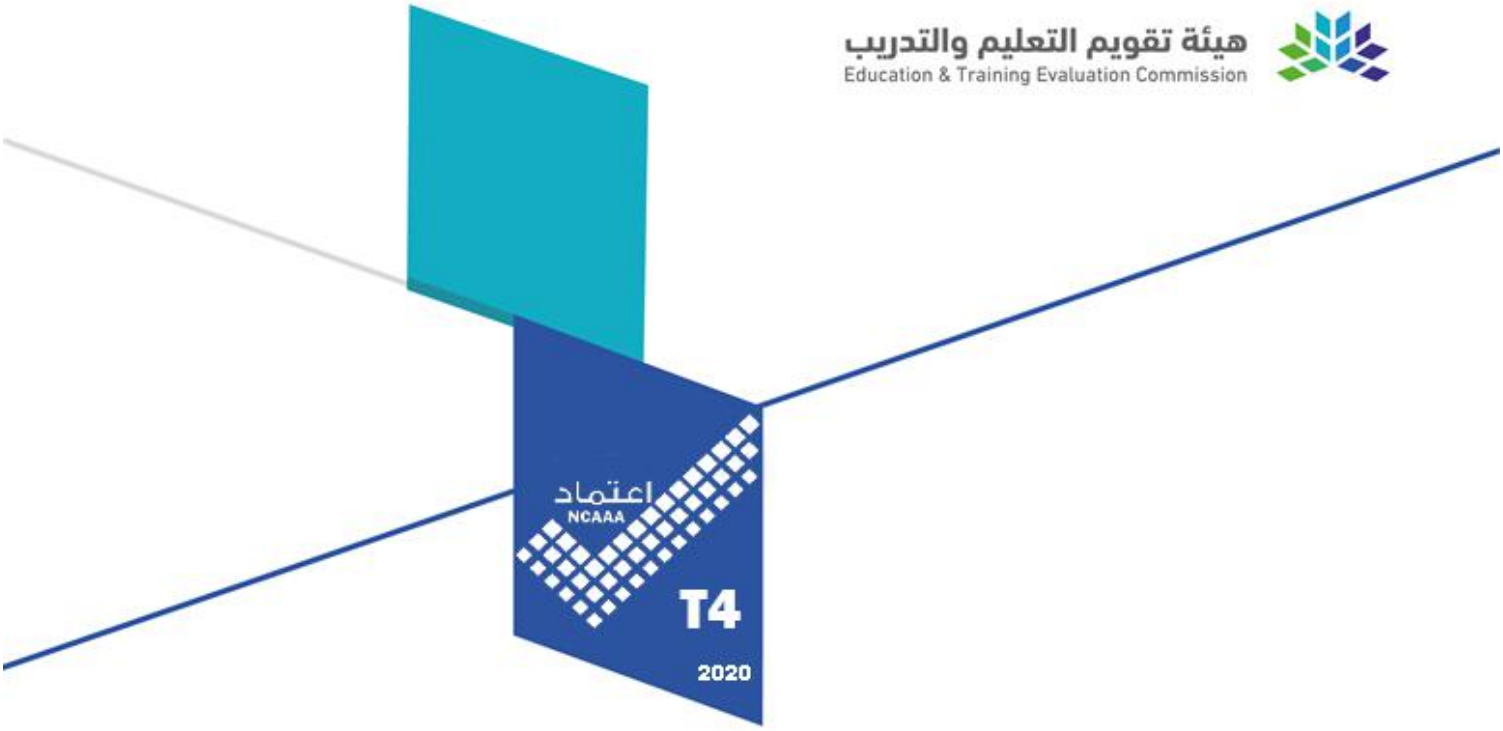
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Graph Theory**
Course Code:	**MTH4252**
Program:	**BSc. in Mathematics**
Department:	**Mathematical sciences**
College:	**Applied sciences**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	3
2. Course type	
a.	University [ ] College [ ] Department [*] Others [ ]
b.	Required [ ] Elective [*]
3. Level/year at which this course is offered:	Optional
4. Pre-requisites for this course (if any)**:**	Discrete Mathematics
5. Co-requisites for this course (if any)**:**	

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	Three hours/week	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	0
3	**Tutorial**	0
4	**Others** (specify)	0
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

Graph theory is very important in pure mathematics as well as in applied mathematics. Graph theory can be used to study and investigate many phenomena in Physics, Chemistry, Computer Sciences, Information systems, Sc ecology and Business activities. In fact, graph theory is a good source to apply mathematics in the real life. So, this is an introductory course in this field which is basic in the sense that this is the first time for students to learn the subject.

2. Course Main Objective

This course will provide a common mathematical foundation for students in all of the programs, drawing upon the full range of undergraduate courses in mathematics. In addition, it will permit students to build upon and share knowledge already acquired while pointing out areas in which additional study may be needed. In addition, it will develop the communication skills and understanding of the process of doing mathematics necessary for graduate-level study.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Identify graphs.	K2
1.2	Identify simple graphs.	K2
1.3	Present basic concepts of graphs and their operations.	K1, K3
1.4	State the Handshaking Theorem.	K1, K3
1.5	Identify planar graphs and colorings	K2, K4
1.6	Describe some properties of graphs	K3
1.7	Describe the degree sequences.	K3
1.8	Determine the types of graphs: Eulerian and Hamiltonian graphs.	K2, K4
1.9	State the isomorphism of graphs.	K1, K3
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Compare between directed and undirected graphs.	S2, S4
2.2	Use matrices to define Representation graphs.	S5, S6, S8
2.3	Apply trees and connectivity on graphs.	S5, S8
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Prepare for success in disciplines which rely on Graph theory, which is the key to understand most of applied mathematical subjects.	V1
3.2	Interpret graphical and qualitative representations of solutions to problems	V3
3.3	Evaluate fundamental concepts of graphs, simple graphs, directed and undirected graphs, and the interrelationship between trees and connectivity, and planar graphs and colorings.	V2, V4
3.4	Generalize mathematical concepts in problem-solving through integration of new material and modeling.	V2, V3, V4

C. Course Content

No	List of Topics	Contact Hours
1	Definitions and examples of graphs: Basic concepts of graphs, Simple graphs, directed and undirected graphs, degrees, Handshaking theorem, isomorphism of graphs,	2
2	Types of graphs: Eulerian and Hamiltonian Graphs, Complete graphs, Bi-partite graphs, Wheels Graphs, Planar Graphs	6
3	Graph properties and operations of graphs	4
4	Degree Sequences	2
5	Representation Graphs by Matrices	4
6	Trees and connectivity	6
7	Planar Graphs and colorings	6
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Identify graphs.	Lecture and Tutorials	Exams, quizzes
1.2	Identify simple graphs.	Lecture and Tutorials	Exams, quizzes
1.3	Present basic concepts of graphs and their operations.	Lecture and Tutorials	Exams, quizzes
1.4	State the Handshaking Theorem.		
1.5	Identify planar graphs and colorings	Lecture and Tutorials	Exams, quizzes
1.6	Describe some properties of graphs	Lecture and Tutorials	Exams, quizzes
1.7	Describe the degree sequences.		
1.8	Determine the types of graphs: Eulerian and Hamiltonian graphs.		
1.9	State the isomorphism of graphs.		
2.0	**Skills**		
2.1	Compare between directed and undirected graphs.	Lecture and Individual or group work	Exams, quizzes
2.2	Use matrices to define Representation graphs.	Lecture and Individual or group work	Exams, quizzes
2.3	Apply trees and connectivity on graphs.	Lecture and Individual or group work	Exams, quizzes
3.0	**Values**		
3.1	Prepare for success in disciplines which rely on Graph theory, which is the key to understand most of applied mathematical subjects.		Exams, quizzes

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.2	Interpret graphical and qualitative representations of solutions to problems	Lecture and Individual or group work	Exams, quizzes
3.3	Evaluate fundamental concepts of graphs, simple graphs, directed and undirected graphs, and the interrelationship between trees and connectivity, and planar graphs and colorings.	Lecture and Individual or group work	Exams, quizzes
3.4	Generalize mathematical concepts in problem-solving through integration of new material and modeling.	Lecture and Individual or group work	Exams, quizzes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	6^{th} week	%30
2	Quizes and homeworks	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	1- Graph theory by: Ashay Dharwadker and Shariefuddin Pirzada, Amazon 2011 ISBN:1466254998. 2- Discrete Mathematics and its applications by Kenneth H. Rosen McGraw Hill international Edition ISBN-13: 978-007-124474-9, ISBN-10: 007-124474-3.
Essential References Materials	**H-** Graph theory by Harary: AddisonWesley 1969. 2- Introduction to graph theory by Wilson R. J. Oliver and Boyd, Edinburgh 1972,
Electronic Materials	https://en.wikipedia.org/wiki/Graph_theory

Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Prof. Dr. Ahmad Alghamdi and Dr. Maha Alshareef
Reference No.	
Date	

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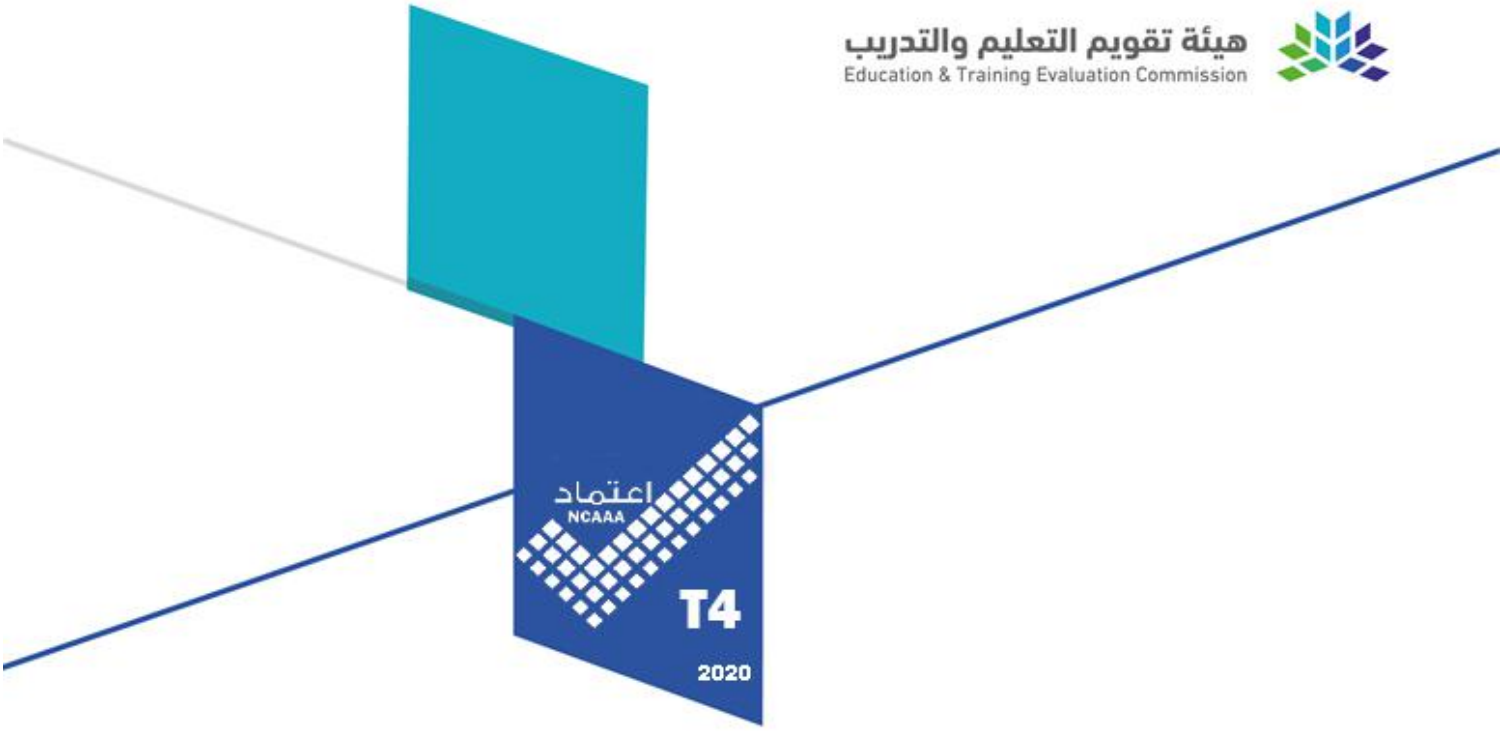
Education & Training Evaluation Commission



Course Specifications

Course Title:	Calculus of Variations
Course Code:	MTH4161
Program:	BSc. in Mathematics
Department:	Mathematical sciences
College:	Applied sciences
Institution:	Umm Al-Qura University

Table of Contents

A. Course Identification

1. Credit hours:	**4**
2. Course type	
a.	University ☐ College ☐ Department ☒ Others ☐
b.	Required ☒ Elective ☐
3. Level/year at which this course is offered:	**Elective / Forth year**
4. Pre-requisites for this course (if any)**:**	**Real Analysis 2 + Differential Equations**
5. Co-requisites for this course (if any)**:**	**Not applicable**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Three hours/week**	**%100**
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**24**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (Exams, Quizzes, Activities, …	**6**
	Total	**30**

B. Course Objectives and Learning Outcomes

1. Course Description

This course is an introductory course to the theory of the calculus variations. Key topics of the course include minimizers of functionals, Euler-Lagrange equations, Dirichlet integral, relaxation theory, regularity of minimizers.

2. Course Main Objective

The primary objective of the course is to introduce students to the concepts of the calculus of variations. Students will gain the basic and important knowledge about the topic. They will be able to investigate the existence and the regularity of minimizers of certain functionals. They will develop the ability to describe and analyze some models using related functionals.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	

CLOs		Aligned PLOs
1.1	Recognize the characteristics of some function spaces of importance such as Lp spaces and Sobolev spaces.	K1, K4
1.2	Define the Dirichlet Integral and recognize its properties.	K3, K4
1.3	Define the basic concept of a minimizer of a functional.	K1, K3
1.4	Recall the concepts of regularity of a minimizer	K3, K4
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Investigate the existence of a minimizer of some functionals	S1, S5, S8
2.2	Derive Euler- Lagrange Equations	S3, S8, S9
2.3	Relate a minimizer to the corresponding Euler- Lagrange Equations	S6, S8
2.4	Determine the regularity of a minimizer of some functionals	S5, S8, S9
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Be able to describe and analyze some models using related functionals.	V2, V3
3.2	Use the theories, methods and techniques to solve some problems.	V2, V3
3.3	Justify the choice of different steps in problem resolution procedure.	V3, V3, V4
3.4	Show the ability to work independently and within groups.	V2

C. Course Content

No	List of Topics	Contact Hours
1	**Preliminaries:** Holder Continuity, Lp Spaces, Sobolev Spaces, Convex Analysis.	8
2	**Classical and Direct Methods** Introduction, Euler-Lagrange Equation, Dirichlet Integral, vectorial case, and Relaxation theory.	8
3	**Regularity** The one dimensional case. Dirichlet Problem, Some General results	8
4	**Others** Exam, Quizzes, Activities,…	6
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Recognize the characteristics of some function spaces of importance such as Lp spaces and Sobolev spaces.	Lecture and Tutorials	Exams, Exams, quizzes Homework

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.2	Define the Dirichlet Integral and recognize its properties.	Lecture and Tutorials	Exams, quizzes Homework
1.3	Define the basic concept of a minimizer of a functional.	Lecture and Tutorials	Exams, quizzes Homework
1.4	Recall the concepts of regularity of a minimizer	Lecture and Tutorials	Exams, quizzes Homework
2.0	**Skills**		
2.1	Investigate the existence of a minimizer of some functionals	Lecture/Individual or group work	Exams, quizzes Homework
2.2	Derive Euler- Lagrange Equations	Lecture/Individual or group work	Exams, quizzes Homework
2.3	Relate a minimizer to the corresponding Euler- Lagrange Equations	Lecture/Individual or group work	Exams, quizzes Homework
2.4	Determine the regularity of a minimizer of some functionals	Lecture/Individual or group work	Exams, quizzes Homework
2.5	Investigate the existence of a minimizer of some functionals	Lecture/Individual or group work	Exams, quizzes Homework
3.0	**Values**		
3.1	Be able to describe and analyze some models using related functionals.	Lecture/Individual or group work	Exams, quizzes Homework
3.2	Use the theories, methods and techniques to solve some problems.	Lecture/Individual or group work	Exams, quizzes Homework
3.3	Justify the choice of different steps in problem resolution procedure.	Lecture/Individual or group work	Exams, quizzes Homework
3.4	Show the ability to work independently and within groups.	Lecture/Individual or group work	Exams, quizzes Homework

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30%
2	Quizes and homeworks	During semester	20%
3	Final exam	End of semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Introduction to the Calculus o Variations, Bernard Dacorogna, 2004
Essential References Materials	• Calculus o Variations, M. Giaquinta, S. Hildebrandt • Ordinary and Partial Differential Equations, M. D. Raisinghania,
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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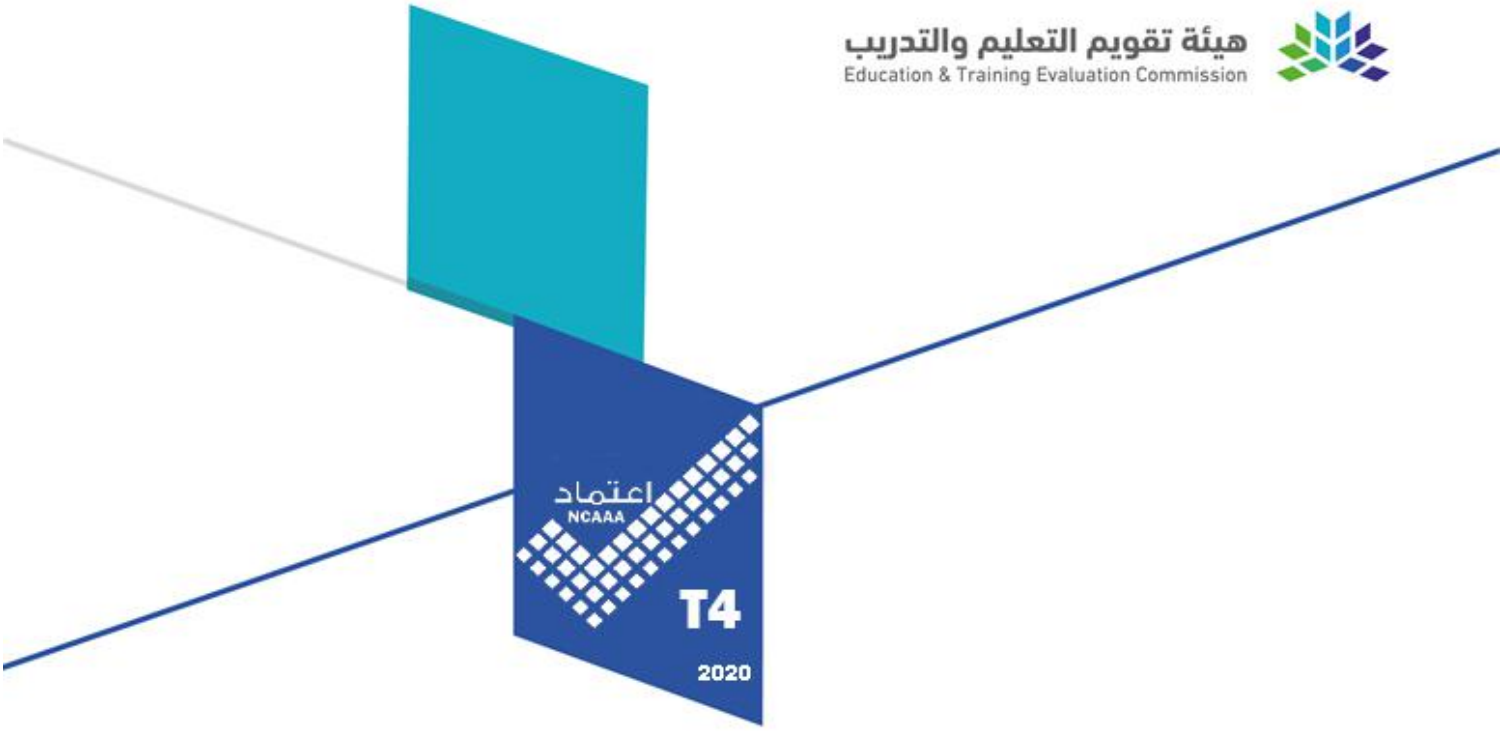
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Coding Theory**
Course Code:	**MTH4241**
Program:	**BSc. in Mathematics**
Department:	**Mathematical sciences**
College:	**Applied sciences**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	**3**
2. Course type	
a.	University [ ] College [ ] Department [*] Others [ ]
b.	Required [ ] Elective [*]
3. Level/year at which this course is offered:	**10 -12 level/4 year**
4. Pre-requisites for this course (if any)**:**	**Rings and fields theory. 4044407-3**
5. Co-requisites for this course (if any)**:**	

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**30**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (specify)	**0**
	Total	**30**

B. Course Objectives and Learning Outcomes

1. Course Description

Coding theory is a new subject in mathematical sciences. This course is an introductory course aiming to give students some basic knowledge in this science. This includes the concept and different method of describing codes as well as main theorems concerning the main aim of coding theory.

2. Course Main Objective

This course will provide a common mathematical foundation for students in all of the programs, drawing upon the full range of undergraduate courses in mathematics. In addition, it will permit students to build upon and share knowledge already acquired while pointing out areas in which additional study may be needed. In addition, it will develop the communication skills and understanding of the process of doing mathematics necessary for graduate-level study.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Identify statements, coding and related terminology.	K2, K4
1.2	Identify – weight and distance - Generating and check matrices.	K2
1.3	Present basic concepts of linear codes.	K1
1.4	State the main problem of coding theory	K3, K4
1.5	Describe some well-known types of codes such as BCH, Reed-Solomon-Muller codes.	K1, K3
1.6	Define the notion of group rings	K1, K3
1.7	Recognize linear codes as ideals	K2, K4
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Compare between codes (BCH, Reed Solomon and Reed Muller).	S1, S8
2.2	Use methods of solving problems for coding theory.	S3, S4
2.3	Apply algebraic structures on coding theory.	S5, S6, S8
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Prepare for success in disciplines which rely on coding theory and their types.	V1, V3
3.2	Interpret the main problem of coding theory.	V3
3.3	Evaluate fundamental concepts of group rings for coding and zero divisors type codes.	V2, V3
3.4	Generalize mathematical models using linear codes.	V5

C. Course Content

No	List of Topics	Contact Hours
1	**Introduction and motivation of coding theory:** Basic definitions – weight and distance - Generating and check matrices- Encoding Error correcting codes; the main problem of coding theory.	6
2	**Linear Codes:** Codes over finite fields – Equivalent codes - Cyclic linear Codes.	3
3	**Bose–Chaudhuri–Hocquenghem (BCH Codes)** Finite fields – Minimal polynomials – Cyclic Hamming codes - Decoding 2 error correcting BCH code.	6
4	**Reed-Solomon Codes:** Codes over Galois Fields with characteristic 2, Reed-Solomon codes.	3
5	**Reed- Muller Codes:** Constructing Reed-Muller codes – Decoding Reed-Muller codes.	3
6	**Codes and Group Rings** The notion of group rings and their structure, Linear codes as ideals in group rings, Group rings as matrices, unit-type codes.	6
7	**Zero divisors type codes:** Zero divisors type codes.	3
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Identify statements, coding and related terminology.	Lecture and Tutorials	Exams, quizzes
1.2	Identify – weight and distance - Generating and check matrices.	Lecture and Tutorials	Exams, quizzes
1.3	Present basic concepts of linear codes	Lecture and Tutorials	Exams, quizzes
1.4	State the main problem of coding theory		
1.5	Describe some well-known types of codes such as BCH, Reed-Solomon-Muller codes.	Lecture and Tutorials	Exams, quizzes
1.6	Define the notion of group ring.	Lecture and Tutorials	Exams, quizzes
1.7	Recognize linear codes as ideals		
2.0	**Skills**		
2.1	Compare between codes (BCH, Reed Solomon and Reed Muller).	Lecture and Individual or group work	Exams, quizzes
2.2	Interpret the main problem of coding theory.	Lecture and Individual or group work	Exams, quizzes

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.3	Apply algebraic structures on coding theory.	Lecture and Individual or group work	Exams, quizzes
3.0	**Values**		
3.1	Prepare for success in disciplines which rely on coding theory and their types.	Lecture and Individual or group work	Exams, quizzes
3.2	Interpret the main problem of coding theory.	Lecture and Individual or group work	Exams, quizzes
3.3	Evaluate fundamental concepts of group rings for coding and zero divisors type codes.	Lecture and Individual or group work	Exams, quizzes
3.4	Generalize mathematical models using linear codes..	Lecture and Individual or group work	Exams, quizzes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	6th week	%30
2	Quizes and homeworks	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	1- Hoffman et. al., Coding Theory the essentials, Marcel Dekker, Inc.270 Madison Ave. New York. United states. ISBN:978-0-8247-8611-3. 2- Introduction to the theory of Error-Correcting Codes.New York: WILEY, 1998. ISBN:047119047-9. 3- Steven Roman, Coding and Information Theory, Springer-Verlag 1992. Berlin. ISBN: 978-0-387-97812-3.
Essential References Materials	

Electronic Materials	
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Prof. Dr. Ahmad Alghamdi and Dr Omiama Alshanqiti
Reference No.	
Date	

Dep. Elective 2

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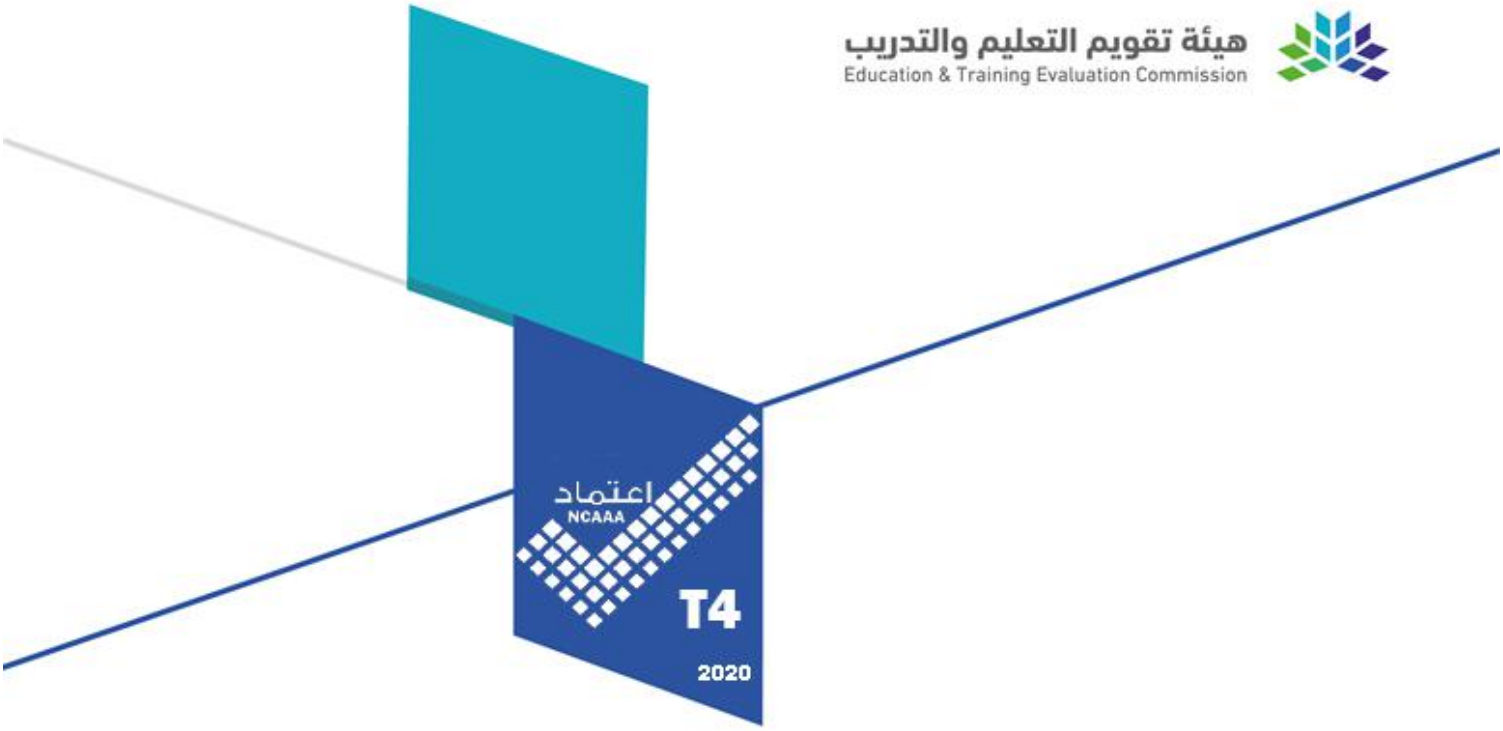

Course Specifications

Course Title:	**Numerical Analysis (2)**
Course Code:	**MTH4403**
Program:	**BSc. Mathematics**
Department:	**Department of Mathematical Sciences**
College:	**College of Applied Science**
Institution:	**Umm Al-Qura, University**

Table of Contents

A. Course Identification

1. Credit hours:
2. Course type **a.** University ☐ College ☐ Department ■ Others ☐ **b.** Required ☐ Elective ■
3. Level/year at which this course is offered: **level 12**
4. Pre-requisites for this course (if any)**: Numerical Analysis 1**
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	30	100%
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	20
2	**Laboratory/Studio**	
3	**Tutorial**	10
4	**Others** (specify)	
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

Many real-world problems are not solvable analytically, meaning that it is necessary to develop numerical methods to solve these problems. Additionally, applying these methods to large problems requires the algorithms to be implemented in a computer language such as MATLAB. This course addresses both the theoretical development of numerical methods and their implementation in MATLAB

2. Course Main Objective

Many real-world problems are not solvable analytically, meaning that it is necessary to develop numerical methods to solve these problems. Additionally, applying these methods to large problems requires the algorithms to be implemented in a computer language such as MATLAB. This course addresses both the theoretical development of numerical methods and their implementation in MATLAB

This course will introduce you to the essential problems and solution techniques of numerical linear algebra, including square linear systems, eigenvalue problems, and least squares

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Have knowledge and understanding of interpolation using different approaches	K1, K3
1.2	Have knowledge and understanding of various numerical methods	K3, K4
1.3	Be able to integrate related topics from separate parts of the course	K1, K3, K4
2	**Skills :**	
2.1	Formulate and solve relatively complicated mathematical models for real world problems where there is dependence in both time and space	S1, S3, S4, S5, S8
2.2	Be able to follow specialized and application-oriented technical literature in the area	S7, S9
2.3	Formulate and solve relatively complicated mathematical models for real world problems where there is dependence in both time and space	S1, S3, S4, S5, S7, S8
3	**Values:**	
3.1	Effectively work alone and in groups on the solution of problems	V2
3.2		
3.3		
3...		

C. Course Content

No	List of Topics	Contact Hours
1	Interpolation using Cubic Spline method	6
2	Interpolation using Least squares method	3
3	Interpolation using Least squares method by orthogonal polynomial	6
4	Chebyshev polynomials and Economization of Power series	6
5	Rational function approximation	3
6	Trigonometric Polynomial approximation	6
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.1	Have knowledge and understanding of interpolation using different approaches	Lectures - Discussions, and homework	
1.2	Have knowledge and understanding of various numerical methods	Lectures - Discussions, and homework	Short quizzes, periodical and final exams.
1.3	Be able to integrate related topics from separate parts of the course	Lectures - Discussions, and homework	Short quizzes, periodical and final exams.
2.0	**Skills**		
2.1	Formulate and solve relatively complicated mathematical models for real world problems where there is dependence in both time and space	Lectures - Discussions, and homework	Short quizzes, periodical and final exams.
2.2	Be able to follow specialized and application-oriented technical literature in the area	Lectures - Discussions, and homework	Short quizzes, periodical and final exams.
2.3	Formulate and solve relatively complicated mathematical models for real world problems where there is dependence in both time and space	Lectures - Discussions, and homework	Short quizzes, periodical and final exams.
3.0	**Values**		
3.1	Effectively work alone and in groups on the solution of problems	Lectures - Discussions, and homework	Short quizzes, periodical and final exams.
3.2			
…			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Periodic exam (1)	6	30%
3	Home work	During the semester	20%
4	Final exam	End the semester	50%
5			
6			
7			
8			

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	R.Burden, J.Faires: Numerical Analysis 9 th edition
Essential References Materials	
Electronic Materials	
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	(Classrooms, laboratories, demonstration rooms/labs, etc.
Technology Resources (AV, data show, Smart Board, software, etc.)	Smart board. - Classroom is equipped with a computer. - Provide projectors and related items.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Matlab software – Smart board

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students	Direct
Quality of learning resources.	Students	Direct
Extent of achievement of course learning outcomes.	Faculty member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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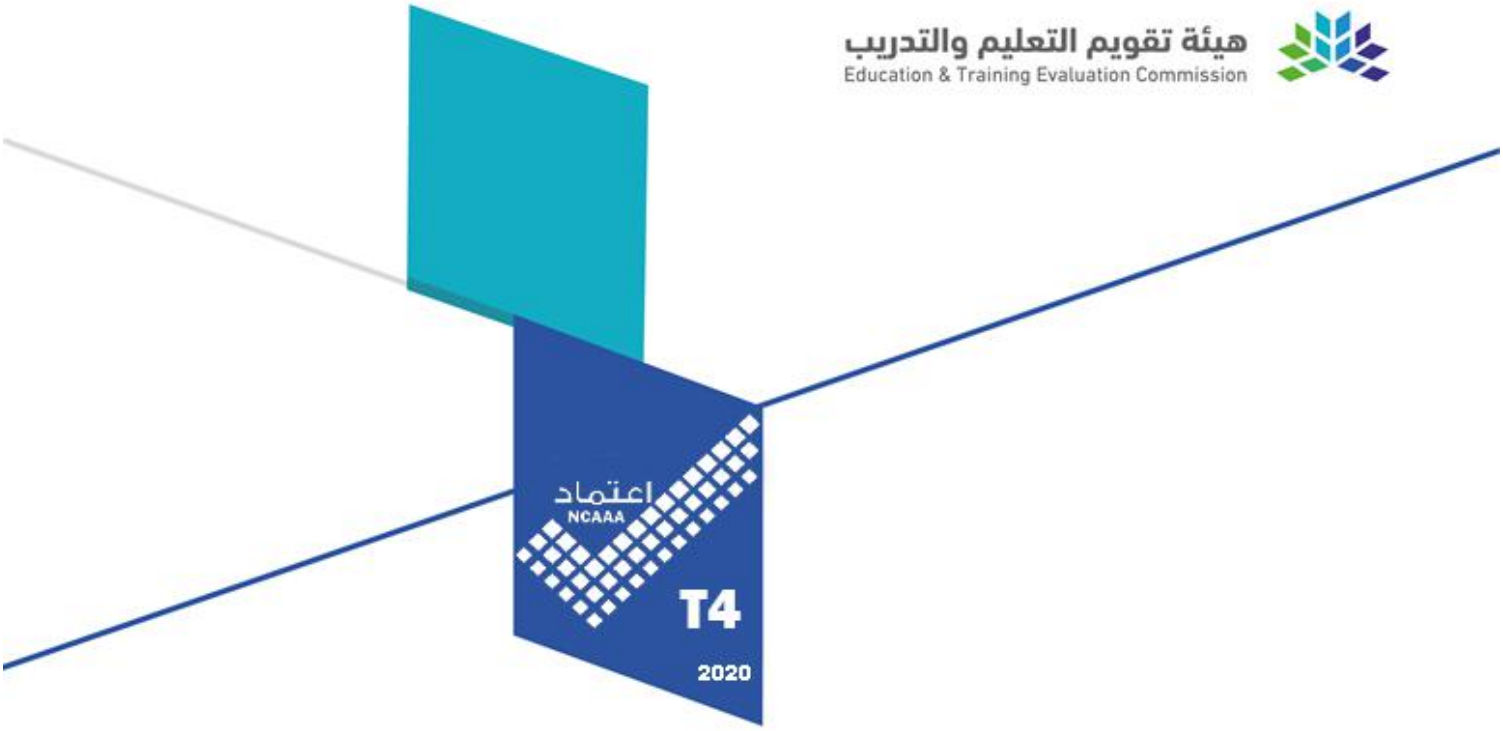

Course Specifications

Course Title:	**Tensor Calculus**
Course Code:	**MTH4431**
Program:	**B.Sc. in Mathematics**
Department:	**Mathematical Sciences**
College:	**Applied Sciences**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	**3**
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☐ Elective ☑
3. Level/year at which this course is offered:	**Tenth or Twelfth level/Fourth year**
4. Pre-requisites for this course (if any)**:**	**Analytical Geometry + Partial Differential Equations**
5. Co-requisites for this course (if any)**:**	**Not applicable**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Three hours/week**	100%
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**30**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**10**
4	**Others** (specify)	**0**
	Total	**40**

B. Course Objectives and Learning Outcomes

1. Course Description

This is an introductory course which presents the fundamental concepts from the subject area of tensor calculus. The material presented is suitable for a course in applied mathematics and is flexible enough to be presented to undergraduate students or beginning graduate students majoring in applied mathematics, engineering or physics.

2. Course Main Objective

The purpose of this course is to condense into an introductory text the definitions and techniques arising in tensor calculus. The material is presented to develop a physical understanding of the mathematical concepts associated with tensor calculus and develop the basic equations of tensor calculus, differential geometry and continuum mechanics which arises in engineering applications. From these basic equations one can go on to develop models of applied mathematics.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Identify the difference between scalar, vectors and tensors.	K2
1.2	Write tensors in index notation and define quantities which can be represented by a letter with subscripts or superscripts attached which determines the order of the system.	K3, K4
1.3	Apply the summation convention in the quantities and easily express the long equations in a very simple form in index notation.	K4
1.4	Learn how scalars, vectors, matrices and higher order array can be thought of as a component of a tensor quantity.	K1, K4
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Represent various physical laws in a form which is independent of the coordinate system chosen.	S1, S5, S8
2.2	Apply coordinate transformation from one coordinate system to another coordinate system.	S3, S8, S9
2.3	To identify whether a quantity is a tensor quantity or not?	S6, S8
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Express the tensor quantities as a tool to solve problems of engineering.	V1, V2
3.2	Describe tensor by a set of functions, termed as components, just as a vector is determined by a set of components.	V2, V3
3.3	Understand how the set of all admissible transformations of coordinates form a group.	V2, V4
3.4	Define the tensor character of covariant and contravariant laws.	V2, V3

C. Course Content

No	List of Topics	Contact Hours
1.	Basic definitions of vectors and tensors, dummy and free index, summation convention, Kronecker delta and e-permutation symbols	4
2.	Tensor notation on matrices, e-δ identity, application of indicial notation on various vector quantities, transformation law of co-ordinates, contravariant vector and tensor, covariant vector and tensors, mixed tensors, rank of a tensors, tensors of higher rank, symmetric and skew-symmetric tensors.	10

3.	Tensor Algebra-Addition and subtraction of tensors, multiplication by a scalar, inner product and outer product, contraction, covariant differentiation and Christoffel symbols.	10
4.	Theorems of Gauss, Green and stokes for fields and integration theorem.	6
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Identify vectors and tensors of different nature	Lecture and Tutorials	Exams, quizzes
1.2	Knowledge of index notation	Lecture and Tutorials	Exams, quizzes
1.3	Present an account of basic concepts and definitions for tensor calculus.	Lecture and Tutorials	Exams, quizzes
1.4	Describe the mathematical quantities in term of tensors.	Lecture and Tutorials	Exams, quizzes
2.0	**Skills**		
2.1	Demonstrate the ability for solving mathematical problems involving vectors and tensors	Lecture/Individual or group work	Exams, quizzes
2.2	Explain the transformation laws and their applications.	Lecture/Individual or group work	Exams, quizzes
2.3	Apply tensors rules in the solution of some physical problems of science and engineering.	Lecture/Individual or group work	Exams, quizzes
3.0	**Values**		
3.1	Recognize the notions of tensors and higher rank and their physical interpretation.	Lecture/ Self-learning through the website	Exams, quizzes
3.2	Interpret graphical and qualitative representations of solutions to problems.	Lecture/ Self-learning through the website	Exams, quizzes
3.3	Generalize mathematical concepts in problem-solving through tensor calculus	Lecture/Individual or group work	Exams, quizzes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30%
2	Quizes and homeworks	During semester	20%
3	Final exam	End of semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice: All faculty members are required to give their office hours. Each member allocates at least 3 hours per week to give academic advice to students. Students are required to complete the home assignments and attend regular lectures

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Heinbockel, J. H., Introduction to Tensor Calculus and Continuum Mechanics (1996). • Tensor Analysis with Applications by Zafar Ahsan, Anamaya Publication, 2008. • Schaum's Outline of Tensor Calculus, BY David C. Kay, 2011. D. C. Kay "Theory and Problems of Tensor Calculus" McGraw-Hill 1988 • Spiegel, E.C., Vector and an Introduction to Tensor Analysis, (McGraw Hill, 2016).
Essential References Materials	Tensor calculus - Wikipedia https://en.wikipedia.org › wiki › Tensor calculus
Electronic Materials	Laptop, smart board, and projector.
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate at least 30 students.
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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Education & Training Evaluation Commission

اعتماد NCAAA T4 2020

Course Specifications

Course Title:	**Integral Equations**
Course Code:	**MTH4131**
Program:	**BSc. in Mathematics**
Department:	**Mathematical science**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 3
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☐ Elective ☑
3. Level/year at which this course is offered: Eleventh level/ Fourth year
4. Pre-requisites for this course (if any)**:** Ordinary differential equations
5. Co-requisites for this course (if any)**:** Not applicable

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	Three hours/week	%100
2	Blended	0	0
3	E-learning	0	0
4	Distance learning	0	0
5	Other	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	0
3	Tutorial	0
4	Others (specify)	0
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

This course introduces the basics of the science of integral equations, including the classification of integral equations. The conversion of ordinary differential equations to integral equations and the converse. Also, discuss some famous techniques for solving integral equations with continuous kernels.

2. Course Main Objective

The objective of the course is to achieve an elementary knowledge of integral equations. The goals are mainly efficiency in converting differential equations into integral equations, and then solving linear integral equations; using different techniques.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Define the related basic concepts, theories, and principles to integral equations.	K1, K4
1.2	Recognize the classifications of integral equations.	K3, K4
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Construct the exact solution for some initial or boundary value problems using integral equations techniques.	S1, S3, S8
2.2	Use methods for obtaining solutions to some kinds of integral equations	S5, S8, S9
2.3	Compare several methods for solving different kinds of integral equations.	S2, S8, S9
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Develop the concept of the connection of integral equations with many mathematical and physical disciplines.	V2, V3, V4
3.2	Solve problems using a range of formats, theorems, and methods.	V1, V2
3.3	Ability to analyze mathematical problems and to implement short programs for solving it.	V1, V2, V5

C. Course Content

No	List of Topics	Contact Hours
1	Introductory Concepts (Definition of an integral equation, Types of the integral equations, Linear integral equations, Classification of linear integral equations with respect to its formula and its kernel).	3
2	The relation between differential Equations and Integral Equations (Converting IVP to Volterra integral equations. Converting Volterra integral equations to IVP. Converting BVP to Fredholm integral equations. Converting Fredholm integral equations to BVP).	6
3	Some methods to solve Fredholm integral equation with continuous kernel: (The degenerate kernel, successive approximations, resolvent kernel method)	9
4	Collocation method and Galerkin method	3
5	Some methods to solve Volterra integral equation with continuous kernel: (successive approximations, resolvent method, and Laplace transform)	6
6	Abel's integral equations (Abel's integral equations and the generalized Abel's integral equations, the Laplace transform method)	3
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Define the related basic concepts, theories, and principles to integral equations.	Lecture and Tutorials	Exams, Quizzes Homework
1.2	Recognize the classifications of integral equations.	Lecture and Tutorials	
2.0	**Skills**		
2.1	Construct the exact solution for some initial or boundary value problems using integral equations techniques.	Lecture/Individual or group work	Exams, Quizzes Discussion
2.2	Use methods for obtaining solutions to some kinds of integral equations	Lecture/Individual or group work	
2.3	Compare several methods for solving different kinds of integral equations.	Lecture/Individual or group work	
3.0	**Values**		
3.1	Develop the concept of the connection of integral equations with many mathematical and physical disciplines.	Lecture/Individual or group work	Exams, Homework Discussion
3.2	Solve problems using a range of formats, theorems, and methods.	Lecture/Individual or group work	
3.3	Ability to analyze mathematical problems and to implement short programs for solving it.	Lecture/Individual or group work	

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	%30
2	Quizzes and homework	During the semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with a professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Linz, P. (1985). *Analytical and numerical methods for Volterra equations.* Society for Industrial and Applied Mathematics.
Essential References Materials	Rahman, M. (2007). *Integral equations and their applications*. WIT press.
Electronic Materials	
Other Learning Materials	Delves, L. M., & Mohamed, J. L. (1988). *Computational methods for integral equations*. CUP Archive.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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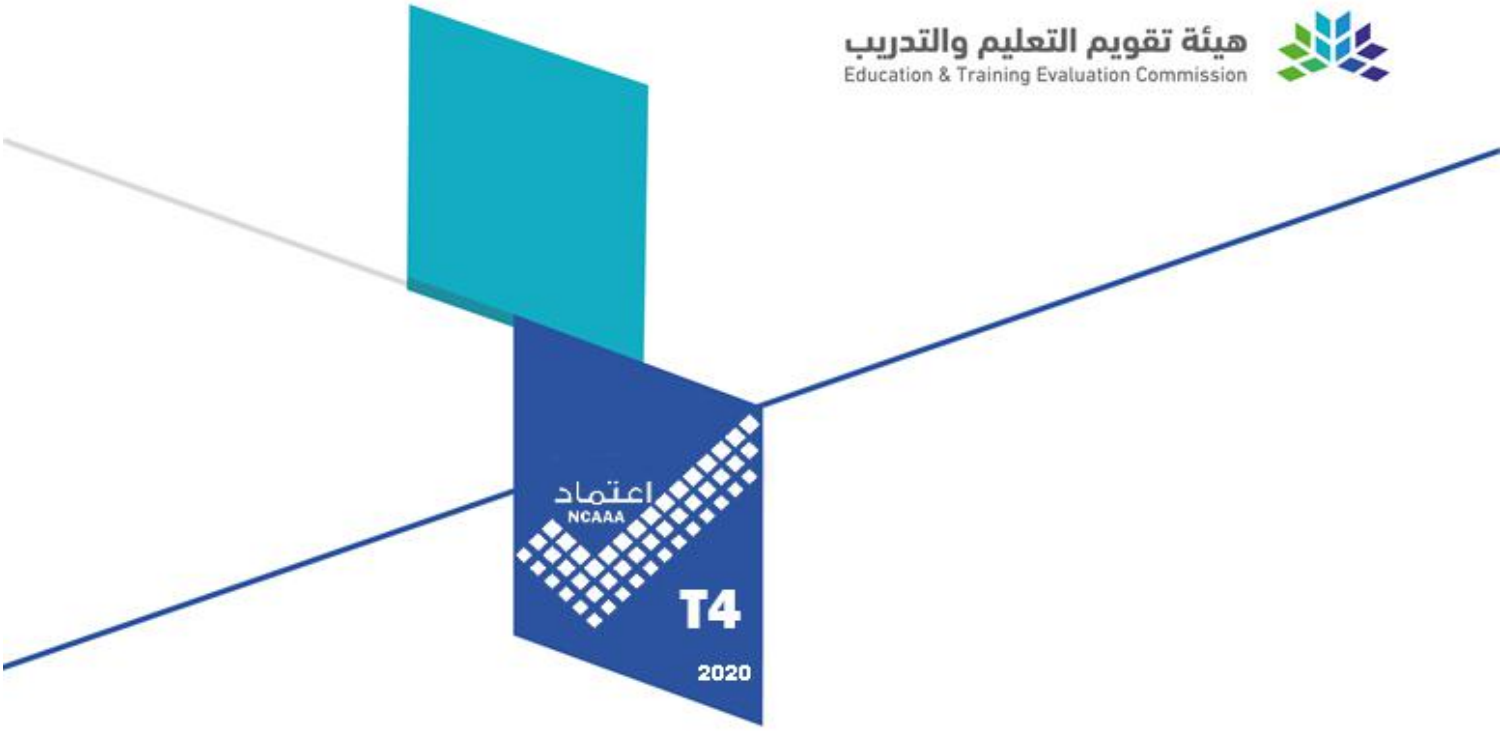
Education & Training Evaluation Commission



Course Specifications

Course Title:	Fundamentals of Biomathematics
Course Code:	MTH4461
Program:	BSc. in Mathematics
Department:	Mathematical sciences
College:	Applied sciences
Institution:	Umm Al-Qura University

Table of Contents

A. Course Identification

1. Credit hours:	**3**
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☐ Elective ☑
3. Level/year at which this course is offered:	**Eleventh level/Fourth year**
4. Pre-requisites for this course (if any)**:**	**Ordinary differential equations**
5. Co-requisites for this course (if any)**:**	**Not applicable**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Three hours/week**	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**30**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (specify)	**0**
	Total	**30**

B. Course Objectives and Learning Outcomes

1. Course Description

Mathematical methods are increasingly becoming important in the study of biological systems. This course will introduce mathematical models for some biological phenomenon such as growth, spread of infectious diseases, competition between species and prey-predator relationships.

2. Course Main Objective

The course objective is to help students get to know with the application of mathematics in biology and how can mathematical terms describe a biological phenomenon. Moreover, it helps students to derive information on the long-time run about the phenomenon in consideration.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Learn some basic tools in the mathematical modeling of Biological systems and processes,	K1, K2, K5

CLOs		Aligned PLOs
1.2	Learn how to model simple biological systems and processes	K3, K5
1.3	Describe the meaning of the mathematical terms of an equation	K2, K5
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Distinguish between continuous and discrete time models.	S1, S3, S5, S7, S9
2.2	Demonstrate an understanding of modeling population dynamics, including interacting populations.	S5, S7, S8
2.3	Demonstrate an understanding of the dynamics of epidemics.	S7, S9
2.4	Learn how to interpret the results obtained analytically	S1, S9
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Work effectively in groups and independently	V2
3.2	Communicate discipline specific information in a written form with appropriate referencing	V1, V2, V5

C. Course Content

No	List of Topics	Contact Hours
1	**Discrete-time Single Species Population Dynamics** - Exponential Growth Model - Logistic Growth Model - Delay Mode	6
2	**Continuous-time Single Species Population Dynamics** - Exponential Growth Model - Logistic Growth Model - Metapopulation Model	6
3	**Population Dynamics of Interacting Species** - Prey-Predator Models: Lotka-Volterra System - Modelling the Predator Functional Response - Competition - Mutualism - Interacting Metapopulations	9
4	**Infectious Diseases** - Epidemics Models - Diseases in Metapopulation	9
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.1	Learn some basic tools in the mathematical modeling of Biological systems and processes,	Lecture and Tutorials	Exams, HomeWorks
1.2	Learn how to model simple biological systems and processes	Lecture and Tutorials	Exams, HomeWorks
1.3	Describe the meaning of the mathematical terms of an equation	Lecture and Tutorials	Exams, HomeWorks
2.0	**Skills**		
2.1	Distinguish between continuous and discrete time models.	Lecture/Individual or group work	Exams, HomeWorks
2.2	Demonstrate an understanding of modeling population dynamics, including interacting populations.	Lecture/Individual or group work	Exams, HomeWorks
2.3	Demonstrate an understanding of the dynamics of epidemics.	Lecture/Individual or group work	Exams, HomeWorks
2.4	Learn how to interpret the results obtained analytically	Lecture/Individual or group work	Exams, HomeWorks
3.0	**Values**		
3.1	Work effectively in groups and independently	Lecture/Individual or group work	Exams, HomeWorks
3.2	Communicate discipline specific information in a written form with appropriate referencing	Lecture/Individual or group work	Exams, HomeWorks

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	%30
2	Quizes and homeworks	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	➢ Mathematical Biology, J. D. Murray, Volume I: An Introduction. (2002) Springer-Verlag Berlin Heidlberg ➢ Essential Mathematical Biology, N. F. Britton. (2003) Springer-Verlag London Limited.
Essential References Materials	➢ A course in Mathematical Biology: Quantitative Modeling with Mathematical and Computational Methods, Gerda de Vries and et all (2006). Society for Industrial and Applied Mathematics (SIAM)-US
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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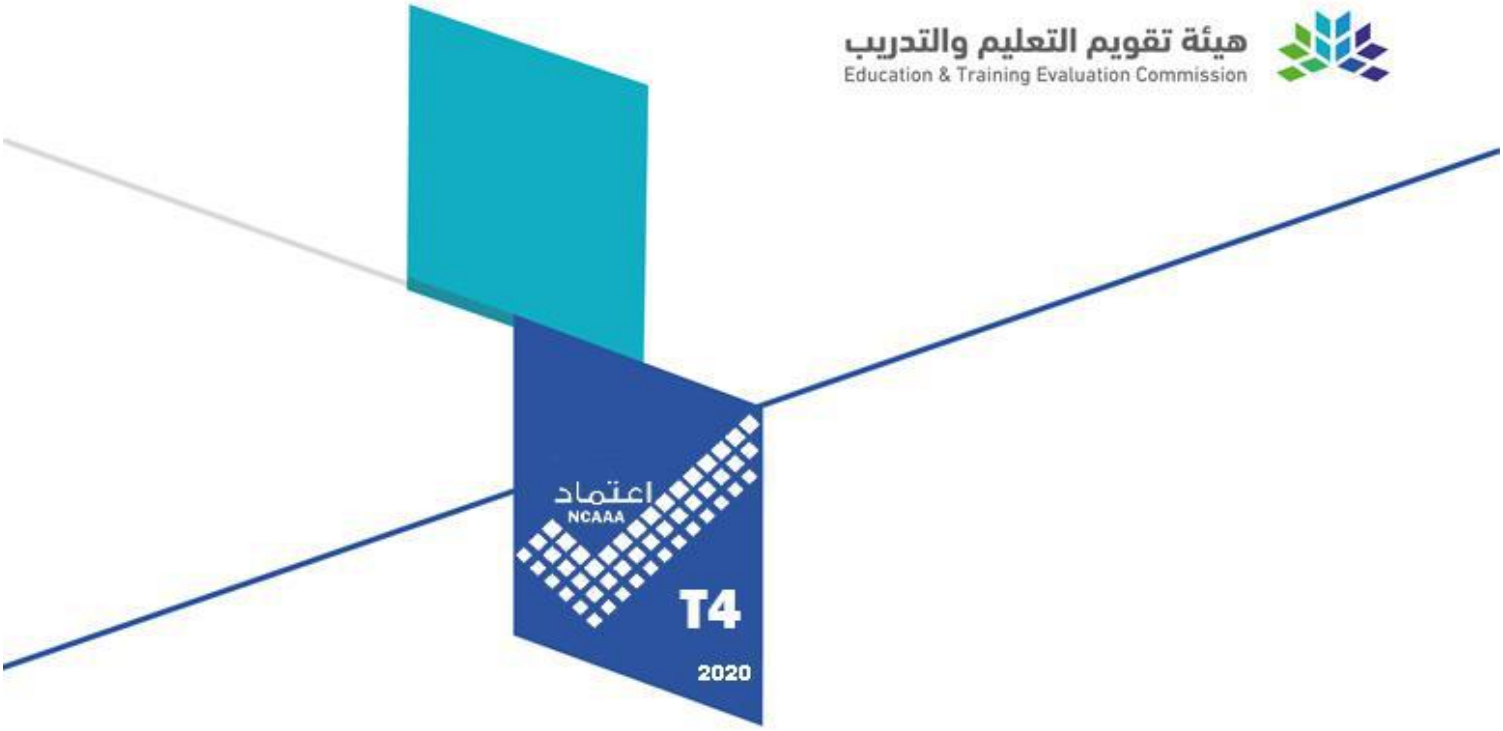
Education & Training Evaluation Commission



Course Specifications

Course Title:	Mathematical Optimization
Course Code:	MTH4451-3
Program:	BSc. in Mathematics
Department:	Mathematical Sciences
College:	Applied Sciences
Institution:	Umm Al-Qura University

Table of Contents

A. Course Identification

1. Credit hours: 3
2. Course type **a.** University ☐ College ☐ Department ☒ Others ☐ **b.** Required ☐ Elective ☒
3. Level/year at which this course is offered: Eleventh level/Fourth year
4. Pre-requisites for this course (if any)**:** **Multivariable Calculus + Linear Algebra 1**
5. Co-requisites for this course (if any)**:** **None**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	3	100%
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	20
2	**Laboratory/Studio**	0
3	**Tutorial**	10
4	**Others** (specify)	0
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

Optimization plays a major role in financial and economic theory, eg in maximizing a company's profits or minimizing its production costs. How to achieve such optimality is the concern of this course, which develops the theory and practice of maximizing or minimizing a function of many variables, either with or without constraints. This course lays a solid foundation for progression onto more advanced topics, such as dynamic optimization, which are central to the understanding of realistic economic and financial scenarios.

2. Course Main Objective

On completion of this module, students should be able to:

- Determine the definiteness of quadratic forms.
- Determine exactly extrema of functions of several variables, with or without constraints, using Lagrange multipliers.
- Determine extrema of functions of several variables subject to inequality constraints, using both classical and Kuhn-Tucker approaches.
- Apply the theory to a range of problems arising in Mathematical Economics.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Have an enhanced knowledge of the basic concept of mathematical optimization and elementary examples.	
1.2	Students will be able to understand and practice of maximizing or minimizing a function of many variables.	
1.3	Students will be able to transform an optimization problem into its standard form.	
1.4	Students will be able to understand and apply the optimality conditions for unconstrained and constrained optimization problems.	
2	**Skills :**	
2.1	Students will be able to formulate and solve an optimization problem for a given application.	
2.2	Students will be able to solve the optimization problem for a function of many variables, either with or without constraints.	
2.3	Students will be able to know how to interpret results of simplex problems for unconstrained and constrained optimization.	
3	**Values:**	
3.1	Understanding of mathematical optimization concepts.	
3.2	Improve the knowledge of students for self-learning abilities.	
3.3	Recognize, formulate, and solve linear optimization problems.	

C. Course Content

No	List of Topics	Contact Hours
1	Partial derivatives, total derivatives, gradient vectors, directional derivatives, implicit differentiation.	5
2	Jacobian, Taylor series, Hessian matrix, extrema.	5
3	Quadratic forms and eigenvalues, definiteness using principal minor tests, local extrema.	5
4	Unconstrained optimization, applications in economics, Cobb-Douglas production functions.	5
5	Constrained maximization with equality constraints, Jacobian derivative, constraint qualifications, Lagrange multipliers, constrained quadratic forms.	5
6	Bordered Hessian, constrained maximization and minimization, Kuhn-Tucker theory, application to mean-variance portfolio theory and the Markowitz model.	5
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Have an enhanced knowledge of the basic concept of mathematical optimization and elementary examples.	Traditional Lectures, Tutorial, Homework consisting in solving selected exercises.	Exams, quizzes, Homework
1.2	Students will be able to understand and practice of maximizing or minimizing a function of many variables.		
1.3	Students will be able to transform an optimization problem into its standard form.		
1.4	Students will be able to understand and apply the optimality conditions for unconstrained and constrained optimization problems.		
2.0	**Skills**		
2.1	Students will be able to formulate and solve a linear optimization problem for a given application.	Traditional Lectures, Tutorial, Homework consisting in solving selected exercises.	Exams, quizzes, Homework
2.2	Students will be able to solve the optimization problem for a function of many variables, either with or without constraints.		
2.3	Students will be able to know how to interpret results of simplex problems for unconstrained and constrained optimization.		
3.0	**Values**		
3.1	Understanding of mathematical optimization concepts.	Traditional Lectures, Tutorial, Homework consisting in solving selected exercises.	Exams, quizzes, Homework
3.2	Improve the knowledge of students for self-learning abilities.		
3.3	Recognize, formulate, and solve linear optimization problems.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Assignments, Quizzes, and/or project	During semester	20%
2	Midterm exam	Sixth Week	30%
3	Final exam	Final Week	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 3 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.
Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	1) C. P. Simon, L. Blume 1994: Mathematics for economists, W. W. Norton (Highly recommended). 2) A. C. Chiang 1984: Fundamental methods of mathematical economics (International Edn.), McGraw-Hill (very good).
Essential References Materials	1) A. Ostaszewski, Mathematics in economics : models and methods, Blackwell, 1993. 2) Enid R. Pinch 2002: Optimal control and the calculus of variations. Oxford Science Publications.
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom (3 hours), Capacity = 30 Students (per group)
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct Assessment via Quizzes, Midterm Exams, and Final Exam
Extent of Course Learning	Faculty Member	Direct

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Outcomes (CLOs) attainment		

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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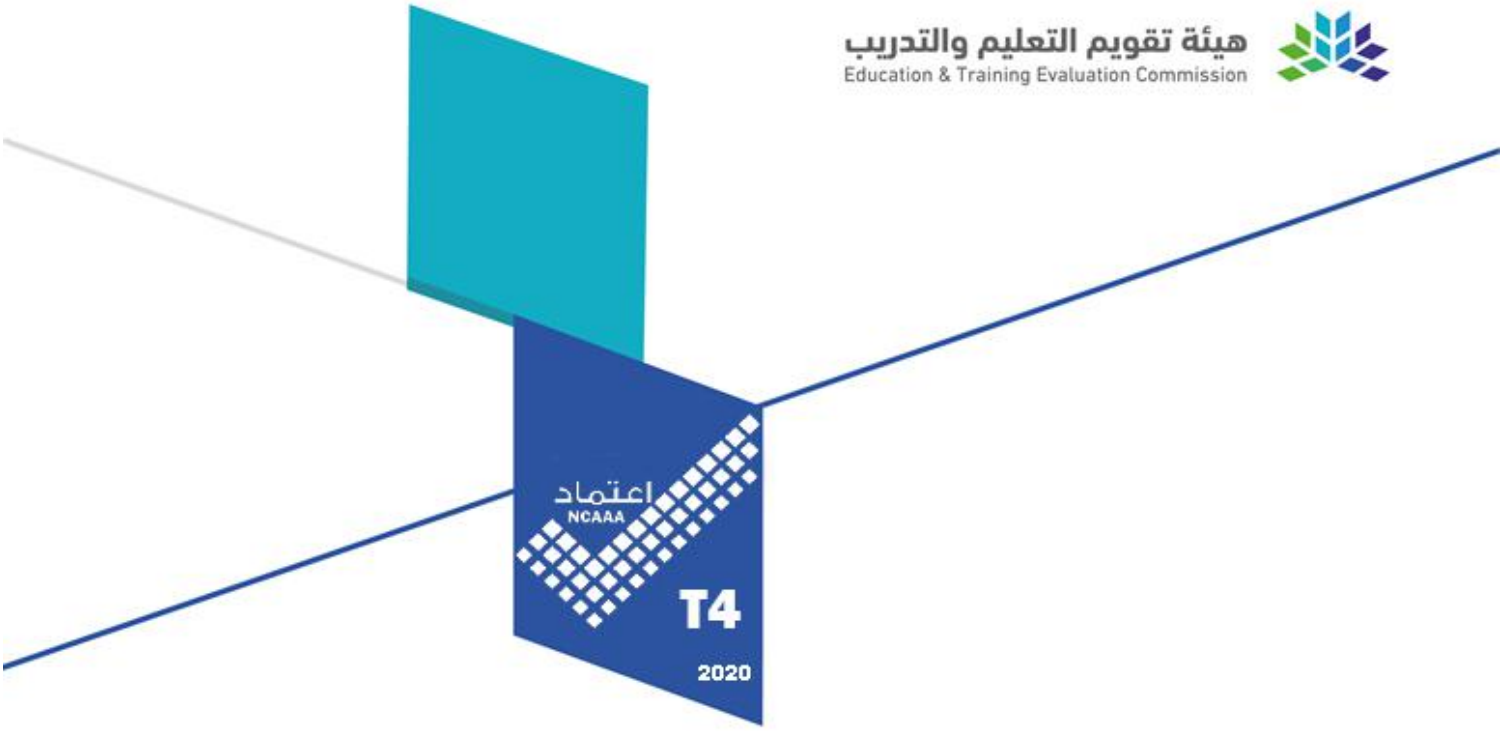
Education & Training Evaluation Commission



Course Specifications

Course Title:	Discrete systems and integrability
Course Code:	MTH4441
Program:	BSc. in Mathematics
Department:	Mathematical Sciences
College:	Applied Sciences
Institution:	Umm Al-Qura University

Table of Contents

A. Course Identification

1. Credit hours: 3
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☐ Elective ☑
3. Level/year at which this course is offered: Eleventh level/Fourth year
4. Pre-requisites for this course (if any)**:** **Partial differential equations**
5. Co-requisites for this course (if any)**:** **Not applicable**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Three hours/week**	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**24**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**6**
4	**Others** (specify)	**0**
	Total	**30**

B. Course Objectives and Learning Outcomes

1. Course Description

This module aims at giving an introduction of the modern theory and at highlighting its many intriguing connections with other areas in mathematics, such as the theory of special functions, algebra and (discrete) geometry, and with physics.

2. Course Main Objective

On completion of this module, students should be able to:

- Construct simple solutions of ordinary and partial difference equations.
- Use Backlund transformations to obtain discrete equations from continuous ones and vice versa.
- Manipulate Lax pairs and overdetermined systems of linear difference equations.
- Derive continuum limits from integrable difference equations.
- Derive integrable mappings from lattice equations and the corresponding invariants.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Have an enhanced knowledge of the basic concepts of integrable systems and elementary examples.	K1, K4
1.2	Apply theoretical concepts in discrete integrable systems to answer questions of scientific interest.	K3
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Recognize the basic concepts of discrete integrable systems.	S1, S8
2.2	The ability of deriving discrete equations from continuous ones and vice versa.	S3, S5, S9
2.3	The ability of constructing simple solutions of ordinary and partial difference equations.	S3, S8
2.4	The ability of deriving integrable mappings from lattice equations and the corresponding invariants.	S1, S2, S8
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Understanding of mathematical concepts.	V2
3.2	Have the ability to prove fundamental results using different techniques.	V2, V3
3.3	Be able to explore and analyze the geometric properties of integrable mappings for selected difference equations.	V2, V3, V4

C. Course Content

No	List of Topics	Contact Hours
1	Difference equations.	6
2	Backlund transformations and discrete equations.	6
3	Integrability of partial difference equations	6
4	Continuum limits of lattice partial difference equations	6
5	One-dimensional lattice and maps	6
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Have an enhanced knowledge of the basic concepts of integrable systems and elementary examples.		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.2	Apply theoretical concepts in discrete integrable systems to answer questions of scientific interest.	Lecture and Tutorials	Exams, quizzes, Homework
2.0	**Skills**		
2.1	Recognize the basic concepts of discrete integrable systems.	Lecture/Individual or group work, Homework consisting in solving selected exercises.	Exams, quizzes, Homework
2.2	The ability of deriving discrete equations from continuous ones and vice versa.		
2.3	The ability of constructing simple solutions of ordinary and partial difference equations.		
2.4	The ability of deriving integrable mappings from lattice equations and the corresponding invariants.		
3.0	**Values**		
3.1	Understanding of mathematical concepts.	Lecture/Individual or group work, Homework consisting in solving selected exercises.	Exams, quizzes, Homework
3.2	Have the ability to prove fundamental results using different techniques.		
3.3	Be able to explore and analyze the geometric properties of integrable mappings for selected difference equations.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	%30
2	Quizes and homework	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 3 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Hietarinta, Jarmo, Nalini Joshi, and Frank W. Nijhoff. Discrete systems and integrability. Vol. 54. Cambridge university press, 2016.
Essential References Materials	1) B. Grammaticos, Y. Kosmann-Schwarzbach and T. Tamizhmani, Eds., Discrete integrable systems, (Springer Verlag, 2004). 2) L.M. Milne-Thomson, The calculus of finite differences, re-edited by AMS Chelsea publications (American Math. Soc., 2000). 3) A.I Bobenko and Yu. B. Suris, Discrete differential geometry, Graduate Studies in mathematics vol. 98, (American Math Soc., 2008). 4) Yu. Suris, The problem of integrable discretization: Hamiltonian approach, (Birkhauser Verlag, 2003).
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

The Twelfth Level

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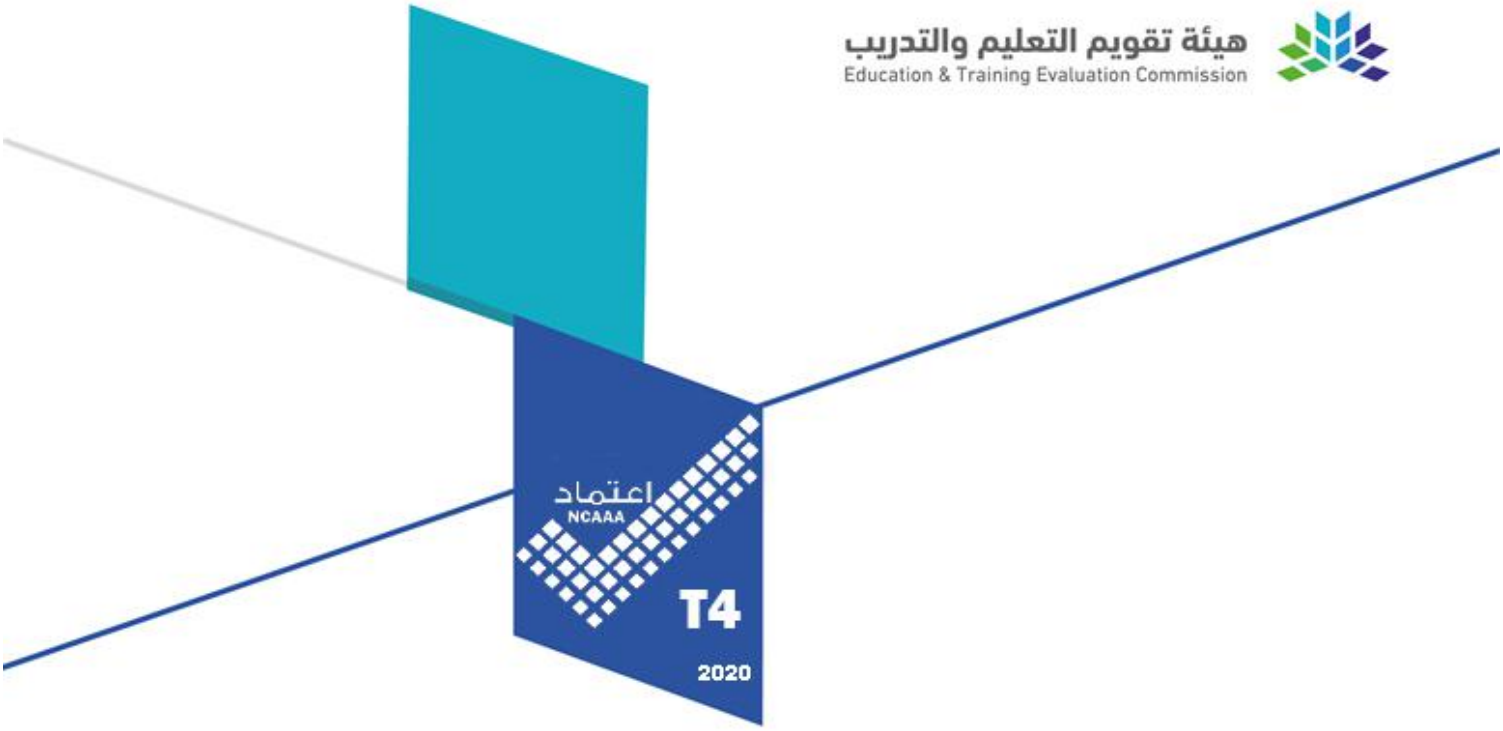
Education & Training Evaluation Commission



Course Specifications

Course Title:	Research project (2)
Course Code:	MTH4802
Program:	**BSc. in Mathematics**
Department:	**Mathematical science**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 3	
2. Course type	
a. University ☐ College ☐ Department ☑ Others ☐	
b. Required ☑ Elective ☐	
3. Level/year at which this course is offered: Twelve level/Fourth year	
4. Pre-requisites for this course (if any): Research Project (1)	
5. Co-requisites for this course (if any): Not applicable	

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	0	0
2	Blended	0	0
3	E-learning	0	0
4	Correspondence	Three hours/week	%100
5	Other	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	0
2	Laboratory/Studio	0
3	Tutorial	0
4	Others (meeting in supervisors office)	30
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description

This course is the second one course for research project. That students will continue their investigations for a specific moderate problem in the field of mathematics. We assume that the students get all these items in the first research project methods and he is ready for advanced technique for dealing with mathematical problems.

- Encouraging students to collect problems from web-based reference material and supervise classroom discussions.
- Gain research experience and communication skills
- Update references used in teaching process.
- Use e-learning facilities more efficiently.
- Use computer packages for solving exercises.
- Manage software for applications in the corresponding topic

2. Course Main Objective

Introduce students to emerge mathematical subjects and to improve their knowledge

background and skills in this area.
Introduce the students to research atmosphere.
Help students to make a fruitful discussion in a mathematical question or problem.
Gaining knowledge about the resources for obtaining the information, which will help in outgoing research.
Using library, computers and internet for obtaining the required information for handling excellent research.
Getting knowledge about how to write scientific reports.
Implement a small research project.
Make a presentation using up to date presentation packages.
Choosing the appropriate mathematical topic and the corresponding references.
Focus on ethical standards in research, such as guidelines for authorship and copyright, and data-sharing policies while encouraging collaboration.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Learn to handle a scientific project	K1, K5
1.2	Demonstrate detailed knowledge, a systematic understanding, critical thinking, and analysis of fundamental issues relating to a project management practitioner.	K3, K5
1.3	Plan and carry out a detailed and original piece of scientific research and communicate the results.	K3, K5
1.4	Develop important skills in summarizing a research area and understanding the research objectives.	K3, K5
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	State an excellent working knowledge of the project theories.	S1, S2
2.2	Reorganize and understand the basics properties related to the project.	S4, S5
2.3	Outline a mathematical modeling related to any biological phenomena and explain and interpret clearly concepts and outcome results.	S7, S8
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Ability to deal with various sources of knowledge and the ability to exploit and to estimate the time.	V1
3.2	Discuss the results with other colleagues and with supervisors.	V2
3.3	Demonstrate ethical, professional, and legal responsibilities in the dentistry profession.	V4
3.4	Use of Electronic Mail in communicating with others, colleagues and supervisor.	V2, V4

C. Course Content

No	List of Topics	Contact Hours
1	Introduce a subject selected by the lecturer.	2
2	Ways and means of collecting information through the library and online scientific recourses.	2
3	Lear about journals, workshops, seminars, talks, conference, dissertation, report, books, research papers, scientific communications, patent publications, posters, scientific article, impact factor, etc.	2
4	How to find and read appropriate references and software	2
5	Choose a subject and few elementary references.	4
6	Develop some of the results therein.	5
7	Preparation of a first version of the report.	5
8	Discussion of the report and making corrections.	2
9	Prepare a presentation and give a plenary talk (department seminar)	4
10	Prepare a poster with the main theorems and results	2
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Learn to handle a scientific project	➢ discussion during the office hours with the supervisor. ➢ Self working of student on results deduction and interpretation.	➢ Weekly discussion ➢ Progress in writing the report ➢ Seminar presentation ➢ Poster on the overall report
1.2	Demonstrate detailed knowledge, a systematic understanding, critical thinking, and analysis of fundamental issues relating to a project management practitioner.		
1.3	Plan and carry out a detailed and original piece of scientific research and communicate the results.		
1.4	Develop important skills in summarizing a research area and understanding the research objectives.		
2.0	**Skills**		
2.1	State an excellent working knowledge of the project theories.	➢ discussion during the office hours with the supervisor.	➢ Weekly discussion ➢ Progress in writing the report
2.2	Reorganize and understand the basics properties related to the project.		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.3	Outline a mathematical modeling related to any biological phenomena and explain and interpret clearly concepts and outcome results.	➢ Self working of student on results deduction and interpretation.	➢ Seminar presentation ➢ Poster on the overall report
3.0	**Values**		
3.1	Ability to deal with various sources of knowledge and the ability to exploit and to estimate the time.	➢ discussion during the office hours with the supervisor. ➢ Self working of student on results deduction and interpretation.	➢ Weekly discussion ➢ Progress in writing the report ➢ Seminar presentation ➢ Poster on the overall report
3.2	Discuss the results with other colleagues and with supervisors.		
3.3	Demonstrate ethical, professional, and legal responsibilities in the dentistry profession.		
3.4	Use of Electronic Mail in communicating with others, colleagues and supervisor.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Draft report	Eighth week	%40
2	Final report	Nineth week	%40
3	Presentation	Tenth week	%20

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :
Supervisor.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Research papers and books selected by the lecturer according to the proposed subjects. 1- How to Write a Great Research Paper by Beverly Chin, ISBN 13:9780471431541 ISBN 10:0471431540 Year(2004). 2- How to Write a Research Paper by: Kendal Simon. anguage: English,Pages:332,ISBN 10:8740310698 ISBN 13:9788740310696 (Bookboon, 2015. — 332). 3- LATEX Notes: Practical Tips for Preparing Technical Documents Facsimile Edition by by Kenneth J. Shultis

Essential References Materials	Recommended Books and Reference Material (Journals, Reports, etc) (Attach List): Writing Great Research Papers by: Laurie Rozakis, Year: 2007, Edition:2 Publisher: McGraw-Hill Language: English Pages: 206 ISBN 10:0071488480.
Electronic Materials	Depend on the project itself.
Other Learning Materials	Depend on the project itself.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Supervisor Room
Technology Resources (AV, data show, Smart Board, software, etc.)	Internet and/or some computer packages
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	All available research sources such as library and internet.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Prof. Dr. Ahmad Mohammed Alghamdi and Dr. Abdullah Alahmari
Reference No.	
Date	

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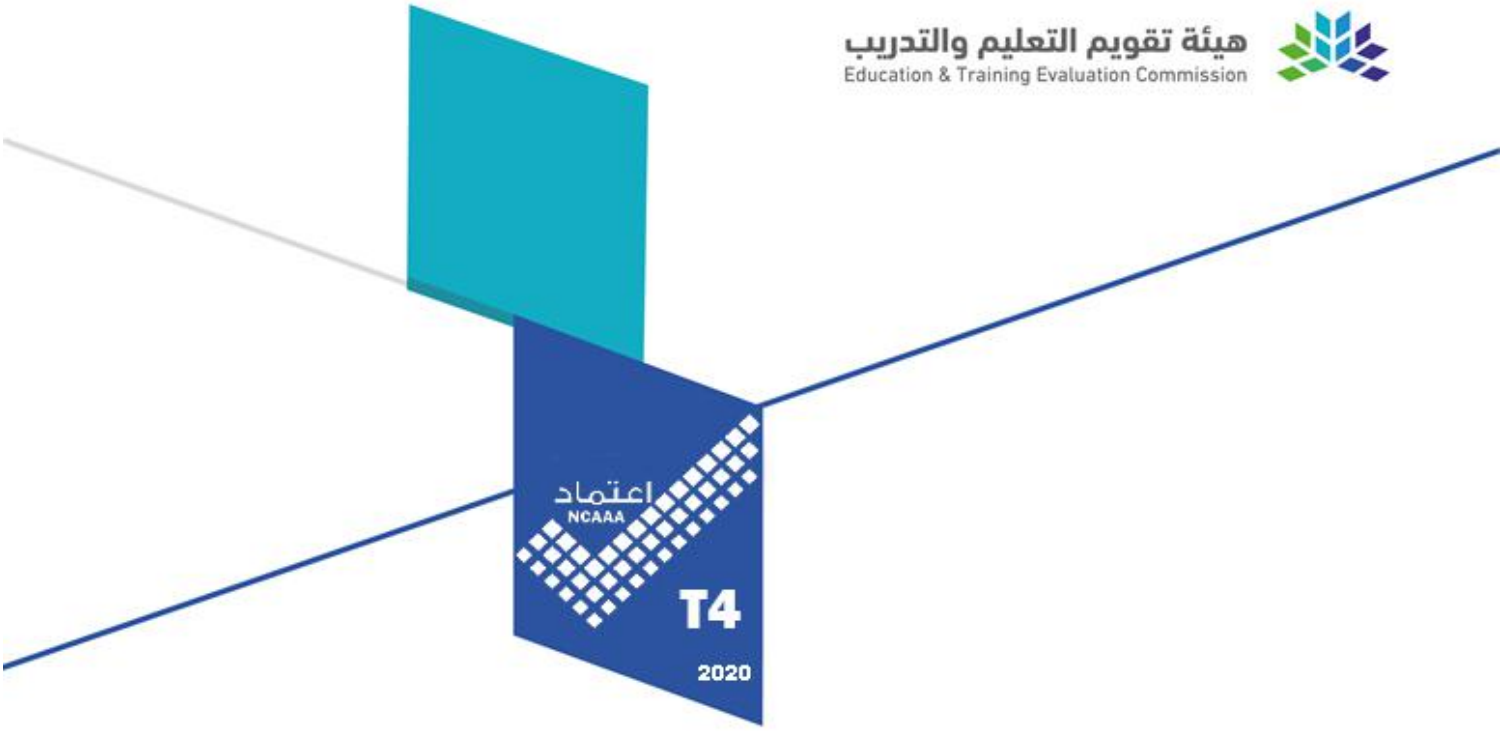
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Measure and integration**
Course Code:	**MTH4114**
Program:	**BSc. in Mathematics**
Department:	**Mathematical sciences**
College:	**Applied sciences**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 4
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: 12 level
4. Pre-requisites for this course (if any)**:** **Real Analysis II (**MTH2113-4**), Real Analysis I (**MTH2112-4**)**
5. Co-requisites for this course (if any)**: None**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**40**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (specify)	**0**
	Total	**40**

B. Course Objectives and Learning Outcomes

1. Course Description **This module aims to introduce Lebesgue's theory of measure and integration, which extends the familiar notions of volume and "area under a graph" associated with the Riemann integral.**
2. Course Main Objective **Measure spaces, measures, outer measures. The Lebesgue measure on R^n. Measurable functions, the monotone convergence theorem,** **Fatou's Lemma. Integrable functions,** **Lebesgue's dominated convergence theorem and applications.** **Inequalities of Hölder and Minkowski, Lp-spaces, simple facts about Banach and Hilbert spaces., transformation formula for the Lebesgue measure on Rn.**

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	**Describe the Measure.**	K1, K5
1.2	**Determine the measurable functions.**	K4, K5
1.3	**Find out which functions can be integrated, and prove the main properties of the Lebesgue integral.**	K4
1.4	**Apply and manipulate convergence theorem for the integrals.**	K4
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	**calculate different quantities, such as integrals, using convergence theorems, or Fourier series of simple functions**	S3, S5, S6
2.2	**Determine whether mathematical objects satisfy certain conditions, such as whether a given function is measurable or integrable;**	S1, S4, S9
2.8	**Use the concepts and results of the course for proving or disproving statements which the student has not previously seen**	S4, S5, S9

C. Course Content

No	List of Topics	Contact Hours
1	**Preliminaries**	**6**
2	**Lebesgue measure.** **Measurable functions and their properties.**	**14**
3	**Construction and properties of Lebesgue integral.**	**14**
4	**Convergence Theorems.**	**6**
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	**At the end of this module students should be able to:**	**Lecture and Tutorials**	**Exams, quizes**

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	• Understand the construction and properties of Lebesgue measure, including the notion and properties of null set; • Understand the construction of the Lebesgue integral and know its key properties; • Compute Lebesgue integrals using the Fundamental Theorem of Calculus, Monotone and Dominated Convergence Theorems, and the Tonelli and Fubini Theorems. coordinates Define the related basic scientific facts, concepts, principles and techniques calculus		
2.0	**Skills**		
2.1	▪ Ability to apply the measure theory and integration to solve a variety of problems in analysis. ▪ Ability to understand and to develop the statements of the main results in integration and to apply them in examples. ▪ Acquire skills in communicating mathematics orally as well as in writing.	Lecture/Individual or group work	Exams, quizzes
3.0	**Values**		
3.1	Prepare for success in disciplines which rely measure theory, and in more advanced mathematics which incorporate these topics	Lecture/Individual or group work	Exams, quizzes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	%30
2	Quizes and homeworks	During semester	%20
3	Final exam	End of semester	%50

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice : -

Each group of students is assigned to a particular faculty where he or she will provide academic advising during specific academic hours. Each staff will provide at least one session/week. –

There will be an academic advisor how will be a responsible for helping the student by doing the general supervision. –

The people in the library will support the students during the time of the course.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	**John J. Benedetto, Wojciech Czaja, *Integration and Modern Analysis*. Birkh?er. 2009.**
Essential References Materials	**1. Lebesgue Measure and Integration: An introduction, F. Burk** **2.Measure, Integral, Derivative: A course on Lebesgue's theory, S. Ovchinnikov** **3. An introduction to classical real analysis, (Karl, R. Stromberg)** **4. Rudin, W.: Real and Complex Analysis, Third Edition, McGraw-Hill Book Company (1987).**
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of	Faculty Member	Direct

Evaluation Areas/Issues	Evaluators	Evaluation Methods
course learning outcomes		

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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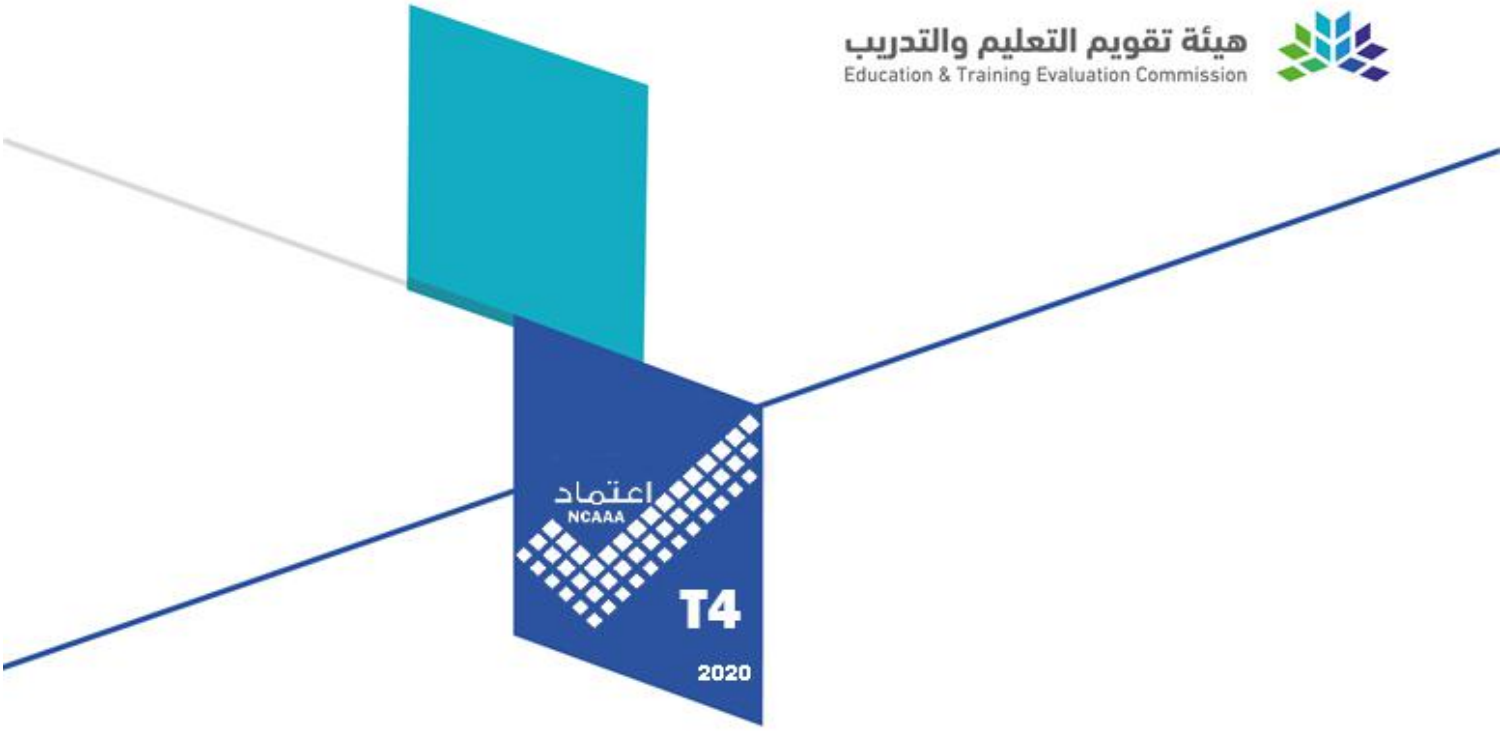
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Mathematical Methods of Fluid Mechanics**
Course Code:	**MTH4413**
Program:	**BSc. in Mathematics**
Department:	**Mathematical sciences**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 3
2. Course type **a.** University ☐ College ☐ Department ■ Others ☐ **b.** Required ■ Elective ☐
3. Level/year at which this course is offered: Twelfths level/forth year
4. Pre-requisites for this course (if any)**:** Mathematical Methods of Fluid Mechanics (MTH4412-3)
5. Co-requisites for this course (if any)**:** Not applicable

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	Three hours/week	100%
2	Blended	0	0
3	E-learning	0	0
4	Distance learning	0	0
5	Other	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	24
2	Laboratory/Studio	0
3	Tutorial	0
4	Others (specify)	6
	Total	30

B. Course Objectives and Learning Outcomes

1. Course Description **The role of the course is to introduce concepts and quantitative techniques for the study of Fluid Mechanics and to introduce different types of flow.**
2. Course Main Objective The primary objective of the course is to introduce students to the concepts of different fluids properties**, kinematics**, and physical problems. In addition students will introduced to the concept of **conservation laws.** Among the objectives we can cite the understanding of the different types of fluid flows

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Recognize basic knowledge of fluid flow and its properties and characteristics and its use in various fields.	K1, K3
1.2	Get the knowledge of various physical terms such as shear, stress, pressure, vorticity etc.	K2, K3
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	How to use the physical laws and principles in understanding the subject?	S1, S3, S5, S8
2.2	How to simplify problems and analyze phenomena?	S1, S9
2.3	Ability to explain the idea with the students own words.	S7, S8
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Solve problems using a range of formats, approaches, explanation, and summarizing techniques.	V2, V3
3.4	Write or plot diagram that describes the flow type.	V1, V2, V4

C. Course Content

No	List of Topics	Contact Hours
1	Introduction and Kinematics: Pressure, surface tension streamlines, path lines stream functions, potential functions and forces	5
2	Derivation of conservation laws and Stress tensor	5
3	Ideal Fluid	3
4	Introduction to viscous /inviscid flow	5
5	Potential flow	3
6	Navier–Stokes Equation: derivation and some applications	6
7	Revision+ tests+ quizzes+ tutorials	3
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Recognize basic knowledge of fluid flow and its properties and characteristics and its use in various fields.	Lecture and Tutorials	Exams, quizzes
1.2	Get the knowledge of various		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	physical terms such as shear, stress, pressure, vorticity etc.		
2.0	**Skills**		
2.1	How to use the physical laws and principles in understanding the subject?	Lecture/Individual or group work	Home Assignments
2.2	How to simplify problems and analyze phenomena?	Solving problem	Tutorials and brain storming session
2.3	Ability to explain the idea with the students own words.	Lecture/Individual or group work/ discussions	Assigning projects
3.0	**Values**		
3.1	Work independently, present oral presentation using literatures from the web and	Lecture/Individual or group work	Exams, Quizzes, Homework

2. Assessment Tasks for Students

No	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30%
2	Quizzes and Homework	During semester	20%
3	Final exam	End of semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

Each group of students is assigned to a faculty member where he or she will provide academic advising. All faculty members are required to be in their offices outside teaching hours. Each faculty member allocates at least 4 hours per week to give academic advice and to answer to the questions of students about concepts studied during the lectures.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Mechanics of continuous media (2nd edition), S. C. Hunter, 1976 Fluid Mechanics (7th edition), F. M. White, 2009

Essential References Materials	Introduction to Fluid Mechanics: Fundamentals and Applications, H. Oertel, 2003
Electronic Materials	None
Other Learning Materials	Mathlab

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 40 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Computer labs

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Council of the Mathematics Department
Reference No.	
Date	

Dep. Elective 3

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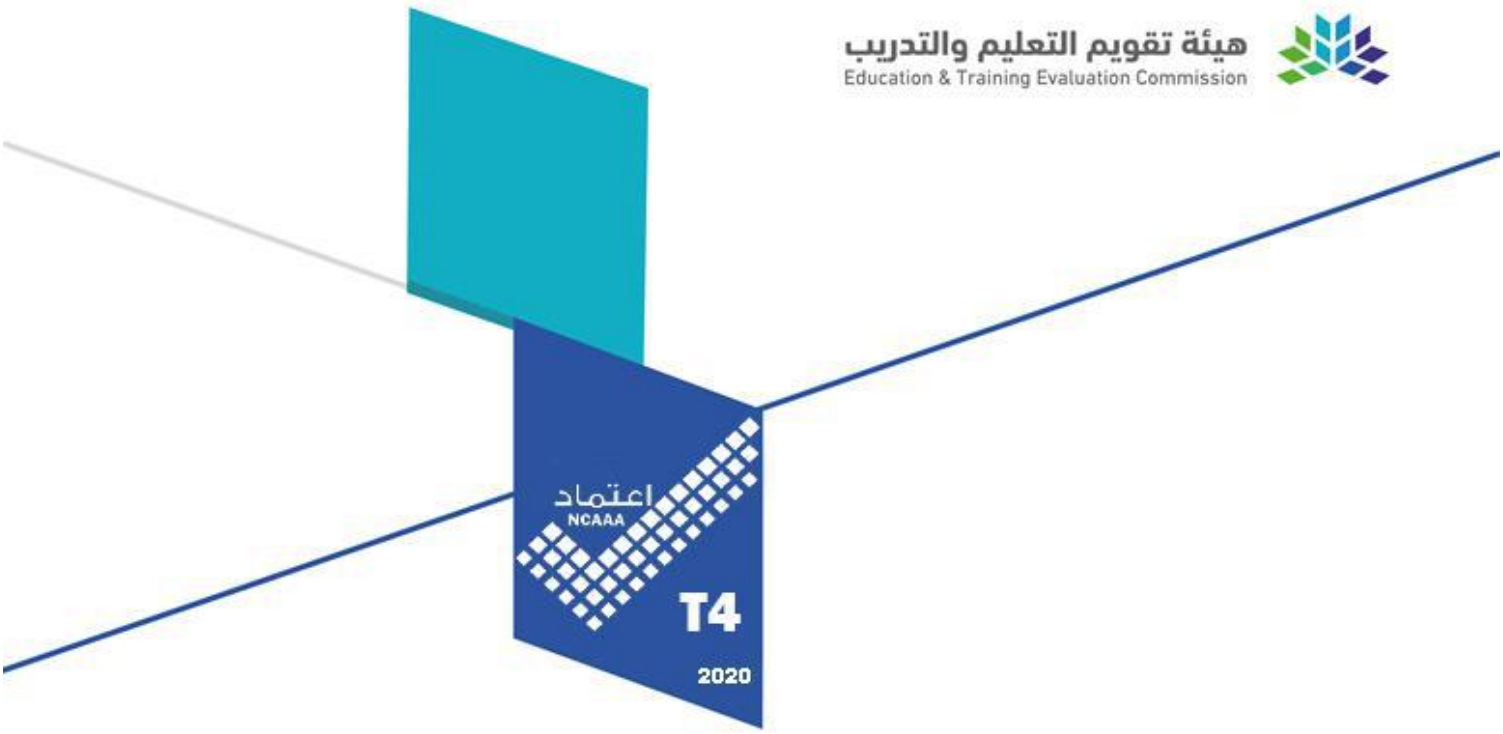
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Financial Mathematics**
Course Code:	
Program:	**BSc. in Financial Mathematics and Actuarial Science**
Department:	**Mathematical Science**
College:	**Applied Science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	**4**
2. Course type	
a.	University ☐ College ☐ Department ☐ Others ☐
b.	Required √ Elective ☐
3. Level/year at which this course is offered:	**Seventh level/third year**
4. Pre-requisites for this course (if any)**:**	**Arithmetic Integration**
5. Co-requisites for this course (if any)**:**	**Not applicable**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	%١٠٠
2	**Blended**	٠	٠
3	**E-learning**	٠	٠
4	**Distance learning**	٠	٠
5	**Other**	٠	٠

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**40**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**0**
4	**Others** (specify)	**0**
	Total	**40**

B. Course Objectives and Learning Outcomes

1. Course Description

Financial Mathematics will provide students an introduction to provide students with a solid foundation in numerical models used to value financial securities and assess risk. Topics include time value of money, annuities and cash flows, loans, bonds, general cash flows and portfolios, immunization, and swaps.

2. Course Main Objective

To provide an understanding of the basic concepts of financial mathematics and the application of these concepts in calculating present and cumulative values for various streams of cash flows as a basis for future use in the following areas: Reserving, Valuation, Pricing, Asset/Liability Management, Investment Income, Capital Budgeting, and Valuation of Contingent Cash Flows.

3. Course Learning Outcomes

CLOs	Aligned PLOs

CLOs		Aligned PLOs
1	**Knowledge and understanding**	
1.1	To be able to: a. Given any three of interest rate, period of time, present value, current value, and future value, calculate the remaining item using simple or compound interest. Solve time value of money equations involving variable force of interest. b. Given any one of the effective interest rates, the nominal interest rate the effective discount rate, the nominal discount, or the force of interest.	
1.2	To be able to define and recognize the definitions of annuity-immediate, annuity due, perpetuity, level payment annuity, arithmetic annuity, geometric annuity.	
1.3	To be able to define and recognize the definitions of the following terms: principal, interest, term of loan, outstanding balance, final payment (drop payment, balloon payment), amortization, sinking fund.	
1.4	To be able to define and recognize the definitions of the following terms: term of loan, Outstanding balance, final payment (drop payment, balloon payment).	
1.5	To be able to define and recognize the definitions of the following terms: securities, price of the bond, redemption value, par value/face value, yield rate, coupon, coupon rate, term of bond, book value, amortization of premium, accumulation of discount, callable.	
1.6	To be able to define and recognize the definitions of the following terms: Measuring the rate of return of an investment (Yield rate, Dollar-weighted rate of return, Time-weighted rate of return), and **Interest rate sensitivity (**Duration" Macaulay and modified", convexity "Macaulay and modified")	
1.7	To be able to define and recognize the definitions of the following terms: Asset -Liability Matching and Immunization (Redington immunization, full immunization)	
1.8	To be able to define and recognize the definitions of the following terms: Definitions of swap rate, swap term or swap tenor, notional amount	
2	**Skills :**	
2.1	Report the value equation given a set of cash flows and an interest rate.	
2.2	Give sufficient information of immediate or due, present value, future value, current value, interest rate, payment amount, and term of annuity, the candidate will be able to calculate any remaining item.	
2.3	To be able to find any four of term of loan, interest rate, payment amount, payment period, principal, finding the remaining item. To be able to calculate the outstanding balance at any point in time. Also, To be able to given the quantities, except one, in a sinking fund arrangement calculate the missing quantity.	
2.4	To be able to calculate the value of book value, amortization of premium, accumulation of discount, Redemption value, face value, Yield rate, Term of bond, point in time that a bond has a given book value, amortization of premium, or accumulation of discount.	
2.5	To be able to calculate the dollar-weighted and time- weighted rate of return	

CLOs		Aligned PLOs
	and calculate the duration and convexity of a set of cash flows.	
2.6	To be able to construct an investment portfolio to fully immunize, to match present value and duration, and portfolio to exactly match the set of liability cash flows.	
2.7	To be able to calculate the swap rate in an interest rate swap, deferred or otherwise, and with either constant or varying notional amount.	
3	**Values:**	
3.1	Prepare for success in disciplines that rely on Financial Mathematics and in more advanced financing which incorporate these topics, such as Time Value of Money, Annuities, Loans, and Bonds	
	Develop connections within branches of Financial Mathematics and between arithmetic Integration, Probability, and other disciplines.	
3.2	Apply scientific models and tools effectively.	
3.3	Apply knowledge gained during the course using computer applications	
3...	show the ability to work independently and within groups	

C. Course Content

No	List of Topics	Contact Hours
1	Brief reminder of the underlying mathematics. a. Geometric series and sum, b. derivatives and integrals, c. Maclaurin series for exponentials.	2
2	Time value of money or measurement of interest a. The concept of simple interest and the factors affecting the determination of the value of interest, Maturity, or accumulated value. b. compound interest and the basic concepts of long-term investing. c. Interest rate, effective rate, nominal rate, and force rate of discount, varying interest, and inflation of interest	6
3	Annuities: a. Annuity -immediate b. Annuity- due c. Annuity value any date d. Perpetuities e. Varying annuities f. Annuity whose payment form a geometric progression g. Annuity whose payment form an arithmetic progression.	8
4	Loan repayments a. term of loan. b. Outstanding balance, final payment (drop payment, balloon payment). c. Amortization schedule.	4
5	**Bonds and securities valuations.** a. Type of securities	8

	b. Price of the bond, redemption value, par value/face value, yield rate, coupon, coupon rate, term of bond c. book value, amortization of premium, accumulation of discount, d. callable.	
6	Measuring the rate of return of an investment a. Yield rate, b. Dollar-weighted rate of return, **c.** Time-weighted rate of return. **Interest rate sensitivity** a. Duration (Macaulay and modified), b. convexity (Macaulay and modified)	4
7	Asset -Liability Matching and Immunization a. Redington immunization b. full immunization	4
8	**Interest Rate Swaps** a. Definitions: swap rate, swap term or swap tenor, notional amount, deferred swap b. General Formula: **spot interest rate, f**orward rate, c. Special Formula d. Net payment, market value of a swap,	4
Total		

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**		
1.1	To be able to: a. Given any three of interest rate, period of time, present value, current value, and future value, calculate the remaining item using simple or compound interest. Solve time value of money equations involving variable force of interest. b. Given any one of the effective interest rates, the nominal interest rates the effective discount rate, the nominal discount, or the force of interest.	Lectures Tutorials Discussion Problem Solving group work	Exams Home work.
1.2	To be able to define and recognize or evaluate the Time Value of Money, Annuities, Loans, and Bonds.		
1.3	To be able to define and recognize the definitions of the following terms: Definitions of swap rate, swap term or swap tenor, notional amount		
2.0	**Skills**		
2.1	Report the value equation given a set of	Lectures	Exams

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	cash flows and an interest rate.	Tutorials Solve Problem Brain Storming group work	Quizzes. Homework. Discussion
2.2	Give sufficient information of immediate or due, present value, future value, current value, interest rate, payment amount, and term of annuity, the candidate will be able to calculate any remaining item.		
2.3	To be able to find any four of term of loan, interest rate, payment amount, payment period, principal, finding the remaining item. To be able to calculate the outstanding balance at any point in time. Also, To be able to given the quantities, except one, in a sinking fund arrangement calculate the missing quantity.		
3.0	**Values**		
3.1	Prepare for success in disciplines that rely on Financial Mathematics and in more advanced financing which incorporate these topics, such as Time Value of Money, Annuities, Loans, and Bonds	Lectures Tutorials Solve Problem Brain Storming group work	Exams Quizzes. Homework. Discussion
3.2	Develop connections within branches of Financial Mathematics and between arithmetic Integration, Probability, and other disciplines.		
2.3	Apply scientific models and tools effectively.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	%۳۰
2	Quizzes and HomeWorks	During semester	%۲۰
3	Final exam	End of semester	%۵۰

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:
All faculty members are required to be in their offices outside of class hours. Each member will provide at least 4 hours per week to give academic advice to students and to better explain concepts covered in lectures. Students are required to complete homework assignments. Students are welcome to work together on the homework. However, each student must turn in their own assignments, and students are not allowed to copy from another student's work. Deadline extensions for homework will not be granted. Students are encouraged to talk to the professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Vaaler, L.J.F., Harper, S.K., and Daniel, J.W. Mathematical Interest Theory (Third Edition), 2019, The Mathematical Association of America, ISBN: 978-1-4704-4393-1
Essential References Materials	Kellison, S.G., *The Theory of Interest* (Third Edition), 2009, Irwin/McGraw-Hill, ISBN: 125921544X or 978-1259215445
Electronic Materials	Broverman, S.A., Mathematics of Investment and Credit (Seventh Edition), 2017, ACTEX Publications, ISBN 978-1-63588-221-6
Other Learning Materials	Francis, J. and Ruckman, C., Interest Theory – *Financial Mathematics and Deterministic Valuation*; (Second Edition), 2018, ActuarialBrew, ISBN 978-0998160412 Chan, Wai-Sum, and Tse, Yiu-Kuen, *Financial Mathematics for Actuaries*, Second Edition, 2018, World Scientific Publishing Company, ISBN: 978-9813224667 (hard cover) or 978-9813224674 (paperback). ADDITIONAL REFERENCES : ○ FM-25-17 Interest Rate Swaps ○ FM-24-17 Using Duration and Convexity to Approximate Change in Present Value ○ Notation and terminology used for Exam FM ○ FM-26-17 Determinants of Interest Rates.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct
Effectiveness of teaching and assessment	Students	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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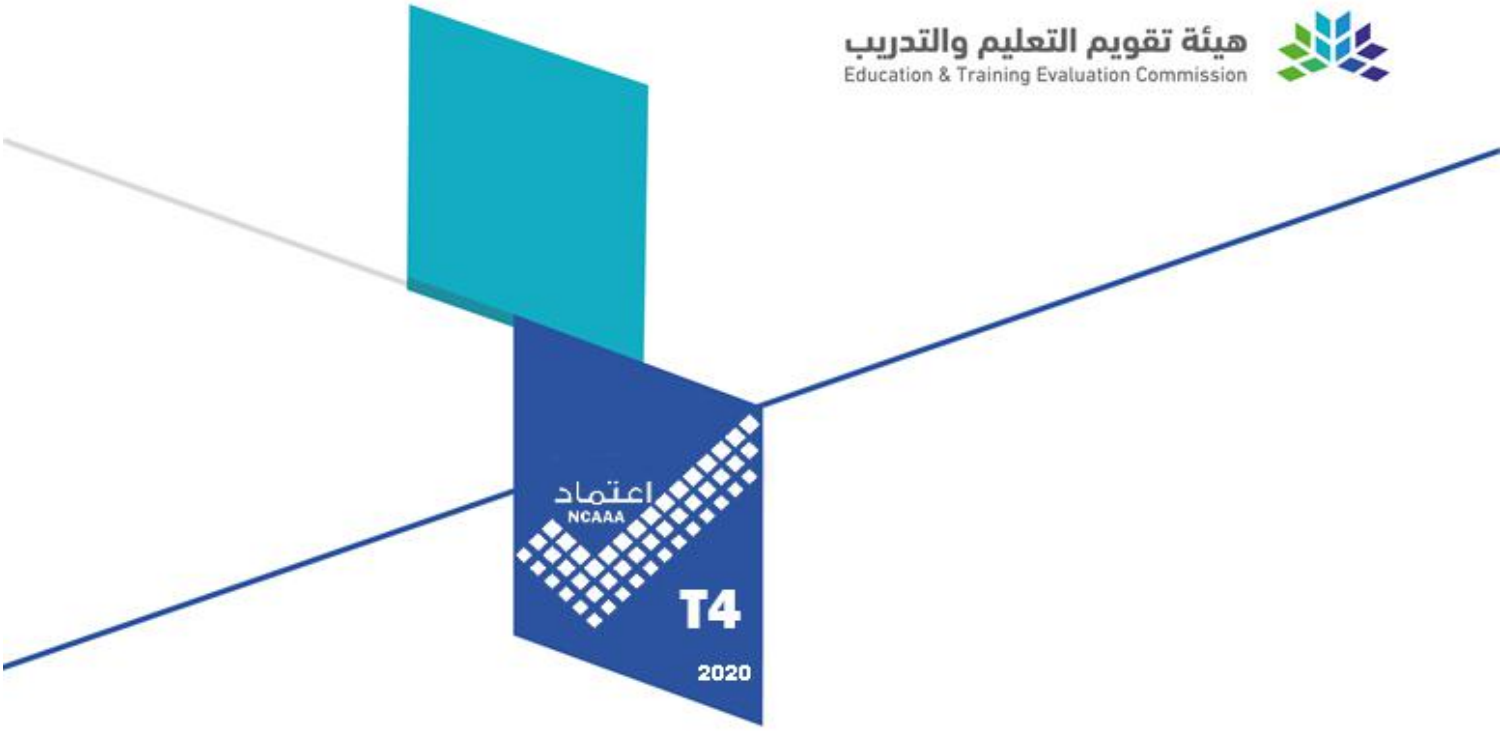
Education & Training Evaluation Commission



Course Specifications

Course Title:	Stochastic processes
Course Code:	
Program:	**BSc. in Financial Mathematics and Actuarial Science**
Department:	**Mathematical science**
College:	**Applied science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 4
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Year 3 / level 7
4. Pre-requisites for this course (if any)**:** **Introduction to real analysis and Actuarial probability**
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	%100
2	**Blended**	0	0
3	**E-learning**	0	0
4	**Distance learning**	0	0
5	**Other**	0	0

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**40**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**10**
4	**Others** (specify)	**0**
	Total	**50**

B. Course Objectives and Learning Outcomes

1. **Course Description** A stochastic process is a set of random variables indexed by time or space. Stochastic modelling is an interesting and challenging area of probability and statistics that is widely used in the applied sciences. In this course, you will acquire the theoretical knowledge and practical skills essential for the analysis of stochastic systems. You will learn the basic concepts of the theory of stochastic processes and study different types of stochastic processes including Markov chains, Poisson processes and birth-and-death processes.
2. Course Main Objective The course objective is to achieve an elementary knowledge of stochastic processes. This module provides a rigorous introduction to this topic. Students will develop a solid mathematical background in stochastic processes that will allow them to understand key results from modern mathematical finance.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Identify and apply the most appropriate stochastic process technique for a given applied problem.	K3
1.2	Define basic concepts from the theory of Markov chains and present proofs for the most important theorems.	K4
1.3	Interpret and understand the solution for a stochastic process application.	K1
1.4	Compute probabilities of transition between states and return to the initial state after long time intervals in Markov chains.	K3
2	**Skills : by the end of this course, the student is expected to be able to**	
2.1	Interpret and understand the solution for a stochastic process application.	S5
2.2	Apply probability and matrix theory to solve stochastic models.	S3
2.3	Determine limit probabilities in Markov chains after an infinitely long period.	S3
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Document and articulate the results and conclusions for stochastic process techniques applied to actual cases in a variety of disciplines.	V5
3.2	Apply the theory to model real phenomena and answer some questions in applied mathematical finance.	V1
3.3	Apply scientific models and tools effectively.	V1
3.4	Apply knowledge gained during the course using computer applications	V5

C. Course Content

No	List of Topics	Contact Hours
1	**Introduction** : definition of stochastic process, type of stochastic processes, properties of stochastic processes, some common stochastic processes , in particular, Wiener process and its application	4
2	**Markov chain**: definitions and examples, multistep transition probabilities, classification of states, stationary distributions, limit behavior,	12
3	**Poisson processes**: defining the Poisson process, compound Poisson processes, transformations, memoryless property	8
4	**Branching processes**: discrete time branching processes, extinction probabilities, continuous time branching processes	8
5	**Birth-and-death processes:** pure birth process, pure death process	8
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
K	**Knowledge and Understanding**		
K.1	Identify and apply the most appropriate stochastic process technique for a given applied	Lectures Tutorials Discussion Problem Solving	Exams(Midterm and Final). Quizzes.
K.2	Apply probability and matrix theory to solve stochastic models.	Lectures Tutorials Discussion Problem Solving	Exams (Midterm and Final). Quizzes.
K.3	Interpret and understand the solution for a stochastic process application.	Lectures Tutorials Discussion Brain Storming	Exams(Midterm and Final). Quizzes.
S	**Skills**		
S.1	Interpret and understand the solution for a stochastic process application.	Lecture. Small group work.	Exams(Midterm and Final). Quizzes.
S.2	Apply probability and matrix theory to solve stochastic models.	Lecture. Small group work.	Exams(Midterm and Final). Quizzes.
S.3	Determine limit probabilities in Markov chains after an infinitely long period.	Lecture. Small group work.	Exams(Midterm and Final). Quizzes.
V	**Values**		
V.1	Document and articulate the results and conclusions for stochastic process techniques applied to actual cases in a variety of disciplines.	Cooperative education	Exams(Midterm and Final). Quizzes.
V.2	Apply the theory to model real phenomena and answer some questions in applied mathematical finance.	Cooperative education	Exams(Midterm and Final). Quizzes.
V.3	Apply knowledge gained during the course using computer applications	Cooperative education	Coursework Self-study

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30%
2	Quizzes and Homework	During semester	20 %
3	Final exam	End of semester	50 %

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

Each group of students is assigned to a faculty member where he or she will provide academic advising. All faculty members are required to be in their offices outside teaching hours. Each faculty member allocates at least 4 hours per week to give academic advice and to answer to the questions of students about concepts studied during the lectures.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	1- Essentials of Stochastic Processes (Springer Texts in Statistics) 3rd ed. 2016 Edition by Rick Durrett. ISBN-13: 978-3319456133 ISBN-10: 331945613X. 2- A First Course in Stochastic Processes , 2nd Edition by, Samuel Karlin, Howard E. Taylor Published by Elsevier Science Publishing Co Inc, United States (1975) ISBN 10: 0123985528 ISBN 13: 9780123985521
Essential References Materials	1- Probability and Random Processes, 2nd Edition, by Geoffrey R. Grimmett , David R. Stirzaker , Publisher Oxford University Press; 3rd edition (August 2, 2001), Language: English ISBN-10 : 0198572220 ISBN-13 : 978-0198572220 2- Understanding Markov Chains: Examples and Applications 3rd Edition , by Nicolas Privault, Publisher Springer, (2018) ،ISBN 978-9811306587
Electronic Materials	
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources	

Item	Resources
(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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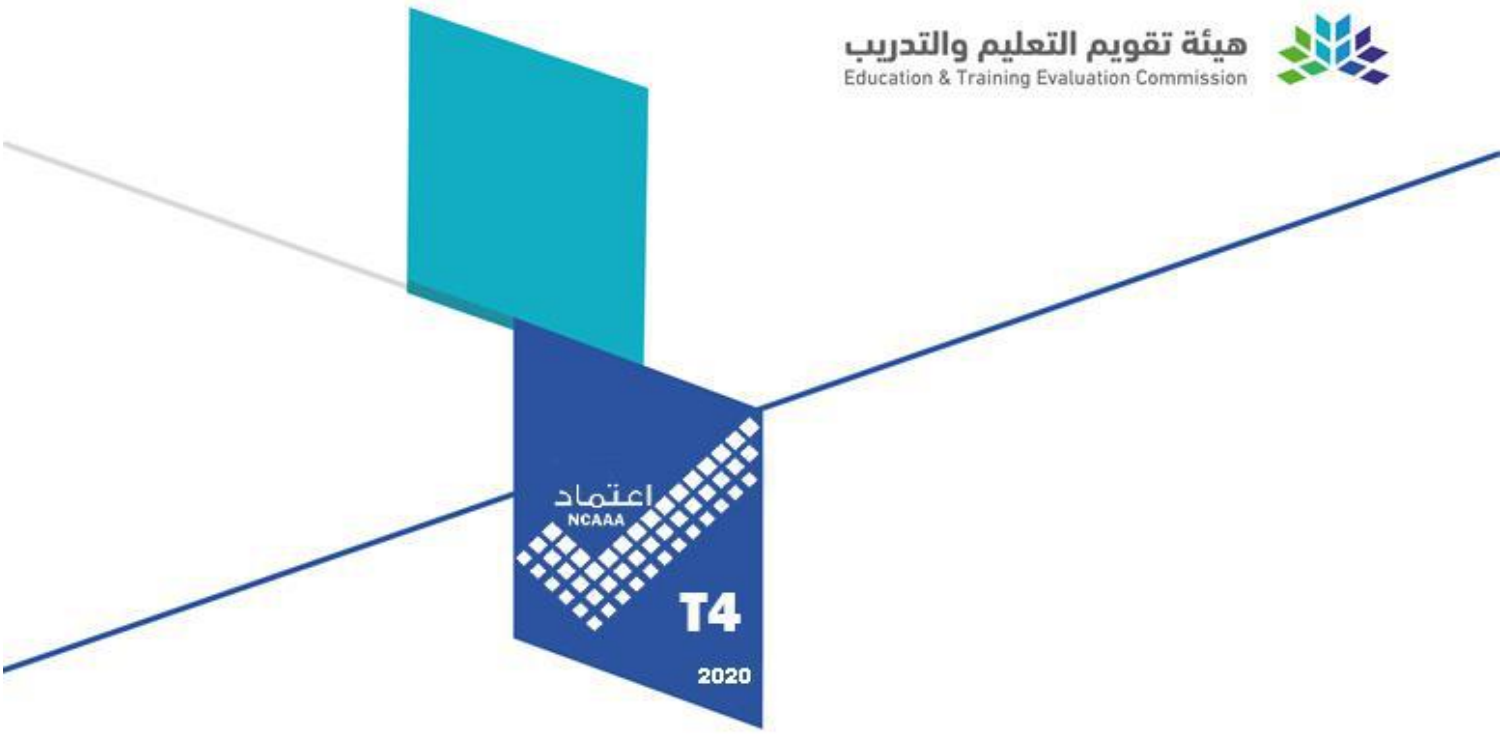
Education & Training Evaluation Commission



Course Specifications

Course Title:	Statistical Methods
Course Code:	
Program:	**BSc. in Financial Mathematics and Actuarial Science**
Department:	**Mathematical Science**
College:	**Applied Science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	**4**
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☐ Elective ☑
3. Level/year at which this course is offered:	**Level 11/4th year**
4. Pre-requisites for this course (if any)**:**	**Elementary statistics and probability**
5. Co-requisites for this course (if any)**:**	**Not applicable**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	**100%**
2	**Blended**	.	.
3	**E-learning**	.	.
4	**Distance learning**	.	.
5	**Other**	.	.

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**40**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**10**
4	**Others** (specify)	**0**
	Total	**50**

B. Course Objectives and Learning Outcomes

1. Course Description

The course aims at providing the basics of hypothesis testing in statistical data analysis such as in correlation and regression parameters, comparisons of averages, testing for variability and proportions using parametric and non parametric distribution as t, chi square binomial, and F distributions. The class is applied using examples from real life and in statistical software.

2. Course Main Objective

The course objective is to determine the aspects of a question for which statistics can provide relevant information by identify statistical methods that are suitable for exploring, describing and analyzing science data using statistical software. Also, Analyze statistical studies, particularly regarding appropriate experimental design, and select appropriate statistical analyses to get useful information from data.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Perform hypothesis testing using the five steps, and understand the null, alternative hypotheses, critical values for the z test and state the decision.	
1.2	Test the difference between two means, using the z test. Test the difference between two means for independent samples, using the t test. Test the difference between two means for dependent samples. Test the difference between two proportions. Test the difference between two variances or standard deviations.	
1.3	Draw a scatter plot for a set of ordered pairs. Compute the correlation coefficient and perform its hypothesis of testing. Compute the equation of the regression line. Compute the coefficient of determination. Compute the standard error of the estimate. Find a prediction interval. Be familiar with the concept of multiple regression.	
1.4	Perform chi-square Test for goodness of fit, Test two variables for independence, and test proportions for homogeneity.	
1.5	Use the one-way ANOVA technique to determine if there is a significant difference among three or more means. Determine which means differ, using the Scheffé or Tukey test if the null hypothesis is rejected in the ANOVA. Use the two-way ANOVA technique to determine if there is a significant difference in the main effects or interaction.	
1.6	Test hypotheses, using the sign test, Wilcoxon rank sum test, signed-rank test, Kruskal-Wallis test and runs test. Compute the Spearman rank correlation coefficient.	
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Demonstrate skills in hypothesis testing for means , for single populations and comparison of two or more populations.	
2.2	Demonstrate skills in hypothesis testing for medians and proportions, for single populations and comparison of two or more populations.	
2.3	Demonstrate skills in inference for regression and ANOVA techniques.	
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Students shall be able to analyze data using various parametric and non-	

CLOs		Aligned PLOs
	parametric methods.	
3.2	Students will be in a position to visualize the scope of experimental designs in getting valid and efficient results.	
3.3	Students will decide to select an appropriate experimental design and analyze the same to interpret the results so obtained	

C. Course Content

No	List of Topics	Contact Hours
1	Hypothesis Tests	8
2	Testing the Difference Between Two Means, Two Proportions, and Two Variances	8
3	Correlation and Regression	8
4	Chi-Square Tests	4
5	Analysis of Variance	4
6	Nonparametric Statistics	8
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

CLOs		Teaching Strategies	Assessment Methods
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**		
1.1	Perform hypothesis testing using the five steps, and understand the null, alternative hypotheses, critical values for the z test and state the decision.	Lecture and Tutorials	Exams, quizes
1.2	Test the difference between two means, using the z test. Test the difference between two means for independent samples, using the t test. Test the difference between two means for dependent samples. Test the difference between two proportions. Test the difference between two variances or standard deviations.	Lecture and Tutorials	Exams, quizes
1.3	Draw a scatter plot for a set of ordered pairs. Compute the correlation coefficient and perform its hypothesis of testing. Compute the equation of the regression line. Compute the coefficient of determination. Compute the standard error of the estimate. Find a prediction interval. Be familiar with the concept of multiple regression.	Lecture and Tutorials	Exams, quizes

CLOs		Teaching Strategies	Assessment Methods
1.4	Perform chi-square Test for goodness of fit, Test two variables for independence, and test proportions for homogeneity.	Lecture and Tutorials	Exams, quizes
1.5	Use the one-way ANOVA technique to determine if there is a significant difference among three or more means. Determine which means differ, using the Scheffé or Tukey test if the null hypothesis is rejected in the ANOVA. Use the two-way ANOVA technique to determine if there is a significant difference in the main effects or interaction.	Lecture and Tutorials	Exams, quizes
1.6	Test hypotheses, using the sign test, Wilcoxon rank sum test, signed-rank test, Kruskal-Wallis test and runs test. Compute the Spearman rank correlation coefficient.	Lecture and Tutorials	Exams, quizes
2	**Skills: by the end of this course, the student is expected to be able to**		
2.1	Demonstrate skills in hypothesis testing for means , for single populations and comparison of two or more populations.	Lecture and Tutorials	Exams, quizes
2.2	Demonstrate skills in hypothesis testing for medians and proportions, for single populations and comparison of two or more populations.	Lecture and Tutorials	Exams, quizes
2.3	Demonstrate skills in inference for regression and ANOVA techniques.	Lecture and Tutorials	Exams, quizes
3	**Values: by the end of this course, the student is expected to be able to**		
3.1	Students shall be able to analyse data using various parametric and non-parametric tests.	Lecture and Tutorials	Exams, quizes
3.2	Students will be in a position to visualize the scope of experimental designs in getting valid and efficient results.	Lecture and Tutorials	Exams, quizes
3.3	Students will decide to select an appropriate experimental design and analyse the same to interpret the results so obtained	Lecture and Tutorials	Exams, quizes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	30%
2	Quizes and homeworks	During semester	20%
3	Final exam	End of semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures.

Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Bluman, A. G. (2018). *Elementary statistics: A step by step approach*. McGraw-Hill, 10th edition. • Devore, Jay L. Probability and Statistics for Engineering and the Sciences. Cengage learning, 2011.
Essential References Materials	Statistics and Data Analysis in Geology (3e), J.C. Davis, Wiley 2002
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board, statistical software
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

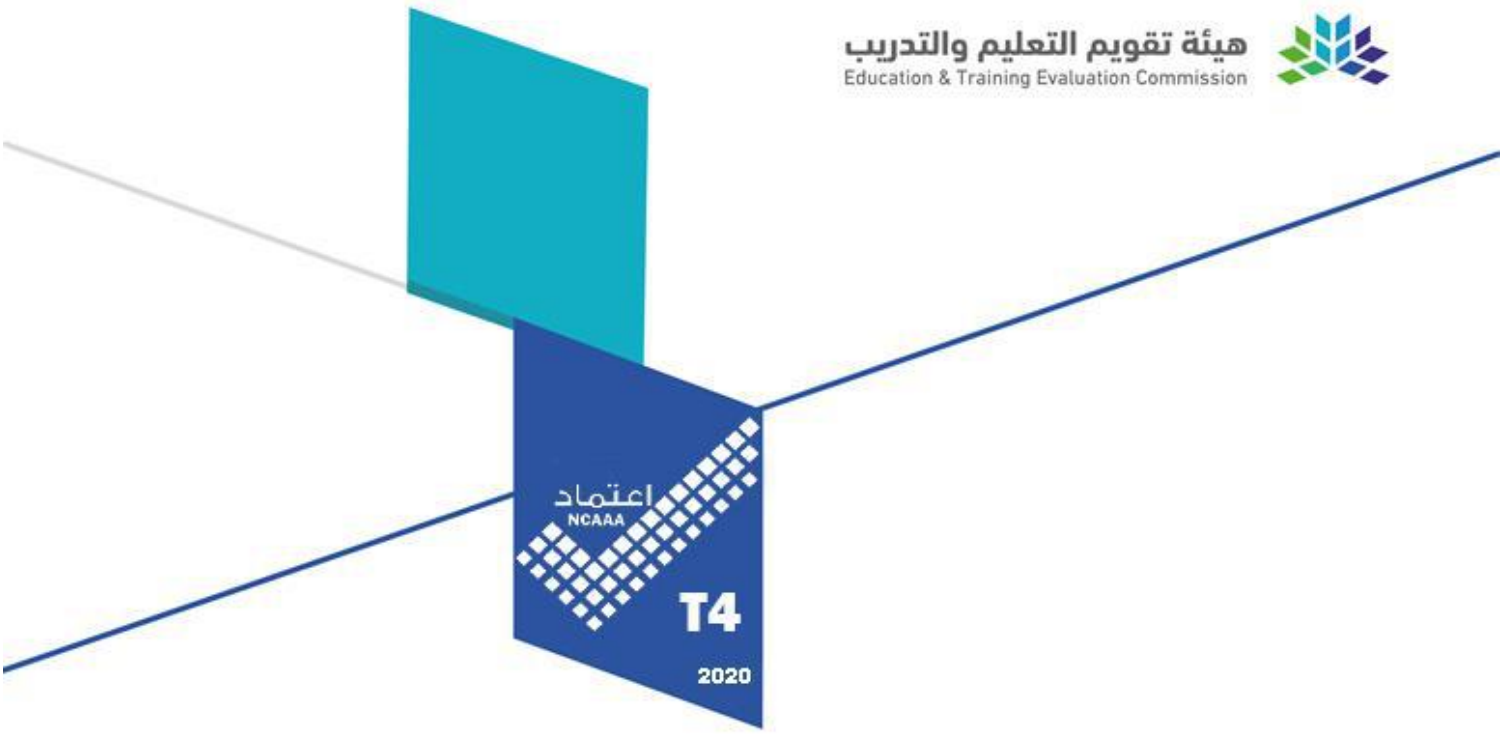
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Regression Analysis**
Course Code:	
Program:	**BSc. in Financial Mathematics and Actuarial Science**
Department:	**Mathematical Science**
College:	**Applied Science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 4
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Level 10/ 4th year
4. Pre-requisites for this course (if any)**:** Statistical Packages
5. Co-requisites for this course (if any)**: Non**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Four hours/week**	%١٠٠
2	**Blended**	٠	٠
3	**E-learning**	٠	٠
4	**Distance learning**	٠	٠
5	**Other**	٠	٠

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**40**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**10**
4	**Others** (specify)	**0**
	Total	**50**

B. Course Objectives and Learning Outcomes

1. Course Description

In this course, one of the most popular techniques of Data Analysis is studied with some statistical software such as R. It starts briefly with study of the simple linear regression model, and then moves widely to study the multiple linear regression model. It covers important topics that are commonly used in real-life applications; some related topics of statistical regression analysis will be studied such as estimation of the regression model parameters, confidence intervals, hypotheses testing, Sum of Squares (Regression, Error and Total) and Coefficient of Determination and Correlation.

2. Course Main Objective

After completing the course:

- Students will be familiar with the methodology and applications of standard techniques of regression analysis.
- Students will be able to select the best model to analyze data.
- Students will be able to explore some of the wide range of real-life situations occurring in different fields that can be investigated using regression statistical models.
- Students will have ability to give right interpretations of statistical results.
- Students will have ability to use statistical packages in data analysis.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Understand and describe the relationships between many variables.	
1.2	Understand of the regression models parameter.	
1.3	Understand the basic mathematical steps in fitting a linear statistical model.	
1.4	Developing statistical inferences of the regression model	
1.5	Understand, study and analysis problems that are arising in the different real-life situations.	
2	**Skills :**	
2.1	Data management.	
2.2	Ability to construct the regression model	
2.3	To have understanding about the use of different techniques in the data analysis and their underlying assumptions under different situations.	
2.4	Ability of using software for the calculations in the regression models, such as R	
3	**Values:**	
3.1	Prepare the student to work independently and as part of team during the class and discussion outside the class.	
3.2	To explore some of the wide range of real-life situations occurring in different fields that can be investigated using regression statistical models.	
3.3		
3...		

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to basic concepts of probability and statistics	2
2	Simple Linear Regression Model.	4
3	Estimation of the Unknown Parameters of the Simple Linear Regression Model.	4
4	Properties of the Least Square Method	2
5	Confidence Estimation of the Least Square Estimated of the Coefficient of the Simple Linear Regression Model.	2
6	Hypotheses Testing of the Simple Linear Regression Model.	2
7	Predication and Residual Analysis of the Simple Linear Regression Model.	4
8	Multiple Linear Regression Model; Model Adequacy Checking and Multicollinearity.	8
9	Estimation of the Unknown Parameters of the Multiple Linear Regression Model.	4
10	Hypothesis Testing of the Multiple Linear Regression Model.	2
11	Prediction and Residual Analysis of the Multiple Linear Regression Model.	2
12	Variable Selection and Model Building.	4
Total		40

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Foundation about theory of regression models.	Lecture	Written exams
1.2	The methods of estimation, properties of the estimators, and applications	Lecture	Written exams
1.3	To acquire knowledge about the regression models and their applications.	Lecture	Written exams

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	**Skills**		
2.1	Data management.	Lecture+ Laboratory	Written Exams+ Project
2.2	Ability to build the regression model	Lecture+ Laboratory	Written Exams+ Project
2.3	To have understanding about the use of different techniques in the data analysis and their underlying assumptions under different situations.	Lecture+ Laboratory	Written Exams
2.4	Ability of using software for the calculations in the regression models, such as R.	Lecture+ Laboratory	Project
3.0	**Values**		
3.1	Work independently and as part of team during the course.	Laboratory+ teamwork	Discussion in the classroom
3.2	Developing the communication skills through writing project reports.	Laboratory	Project
3.3	Use the computer for analyzing and processing the real data.	Laboratory	Project

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	%۳۰
2	Quizzes and HomeWorks	During semester	%۲۰
3	Final exam	End of semester	%۵۰

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

Include amount of time teaching staff are expected to be available each week:

- Office hours: 4 hours/ week
- Communications by e- mail

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Applied Linear Regression Models, 5th Edition, M.H. Kutner, Nachtsheim, Neter, McGraw-Hill, ISBN 0073014664 (Required)
Essential References Materials	• Douglas C. Montgomery, Elizabeth A. Peck, G. Geoffrey Vining.," INTRODUCTION TO LINEAR REGRESSION ANALYSIS", 5th Edition, (2012), John Wiley & Sons, Inc • Chatterjee, S and Hadi A. S., (2012) Regression Analysis by Example, 5-th Edition, John Wiley & Sons, Inc. • Weisberg S. (2005), Applied Linear Regression, 3rd Edition, John Wiley & Sons, Inc.
Electronic Materials	Websites on the internet that are relevant to the topics of the course.
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom
Technology Resources (AV, data show, Smart Board, software, etc.)	R- Statistical software Data show Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Non

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	Students	Indirect (Survey)
Quality of learning resources	Students	Indirect (Survey)
Achievement of course learning outcomes	Faculty	Direct (Written exams + Project)

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	

Date	

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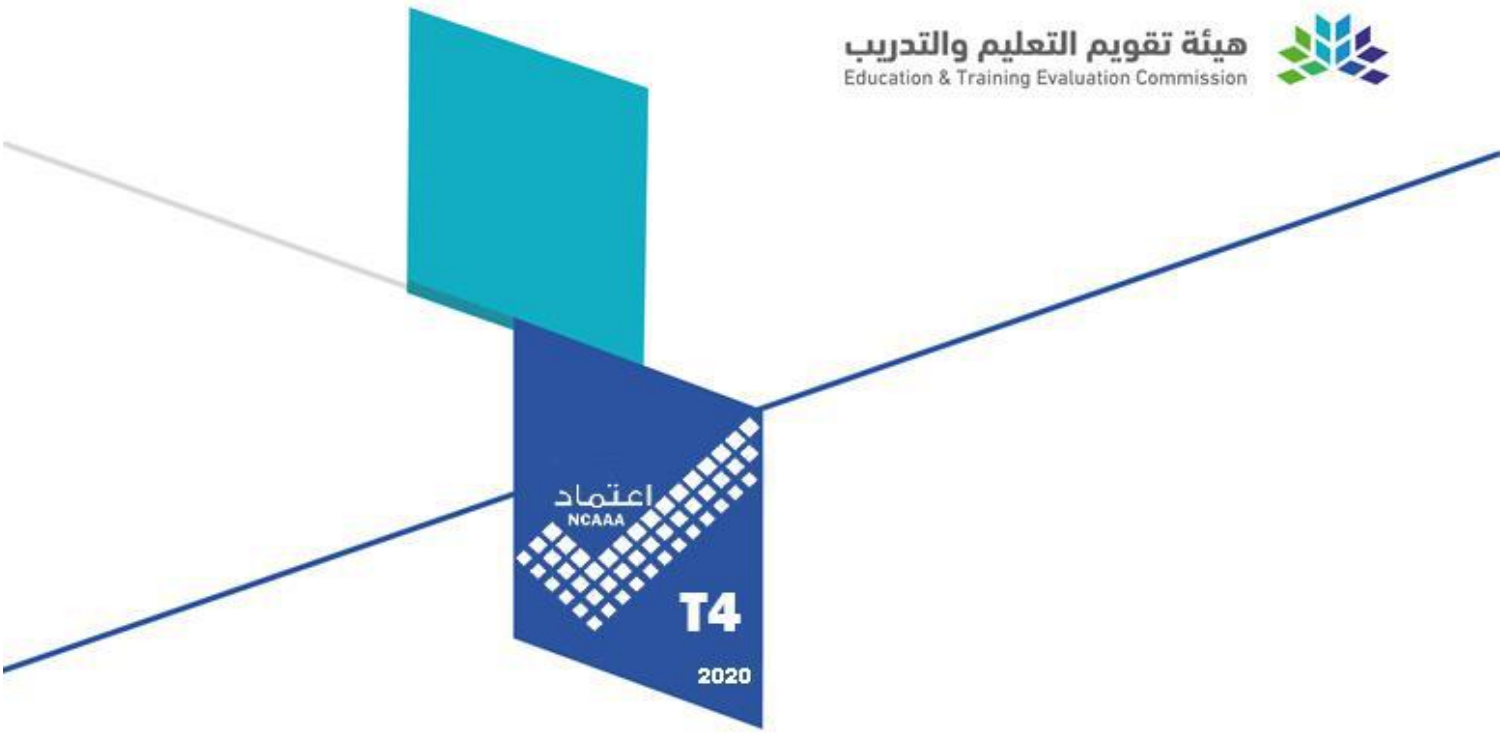
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Data Analysis**
Course Code:	
Program:	**BSc. in Financial Mathematics and Actuarial Science**
Department:	**Mathematical Science**
College:	**Applied Science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	**3**
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☐ Elective ☑
3. Level/year at which this course is offered:	**12 level/Fourth year**
4. Pre-requisites for this course (if any)**:**	**Integration Calculus**
5. Co-requisites for this course (if any)**:**	**Not applicable**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**Three hours /week**	%١٠٠
2	**Blended**	٠	٠
3	**E-learning**	٠	٠
4	**Distance learning**	٠	٠
5	**Other**	٠	٠

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**20**
2	**Laboratory/Studio**	**0**
3	**Tutorial**	**10**
4	**Others** (specify)	**0**
	Total	**30**

B. Course Objectives and Learning Outcomes

1. Course Description

This course introduces fundamental concepts of data analytics, including framing business problems, data wrangling, exploratory data analysis, statistical learning models, data analysis software and programming, communicating and operationalizing analysis results, and data ethics. The course focuses on applications of data analytic methods in framing and answering strategic questions facing decision makers in a variety of business sectors.

2. Course Main Objective

By the end of the course, students should be able to apply suitable data analysis methods (univariate, multivariate) to address real world case studies problems.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding: by the end of this course, the student is expected to be able to**	
1.1	Use basic tools and methods to obtain, assess and prepare data for analysis	
1.2	Utilize exploratory data analysis methods to understand characteristics of data sets	
1.3	Calculate and interpret parameter estimates and associated inferential statistics	
2	**Skills: by the end of this course, the student is expected to be able to**	
2.1	Compare the methods of solution developed in data analysis.	
2.2	Recognize situations in which multivariate data analysis methods can be applied, and identify the necessary concepts and techniques are to solve a specific problem.	
2.3	Communicate analysis results verbally and in writing.	
3	**Values: by the end of this course, the student is expected to be able to**	
3.1	Prepare for success in disciplines which rely on differential equations, and in more advanced mathematics which incorporate these topics, such as Partial Differential Equations	
3.2	Interpret graphical and qualitative representations of solutions to problems	
3.3	Evaluate fundamental concepts of differential equations, and the interrelationship between differential equations and linear algebra	
3.4	Generalize mathematical concepts in problem-solving through integration of new material and modeling	

C. Course Content

No	List of Topics	Contact Hours
1	Definition of a differential equation: degree and order. Elimination of arbitrary constants	٢
2	First Order Differential Equations: Existence theorem, separation of variables, homogeneous equations, exact equations, linear equations, method of integrating factors, non-exact equations and Bernoulli equation.	١٢
3	Homogeneous higher order linear Equations with constant coefficients	٨
4	Non-homogeneous linear Equations: undetermined coefficients, variation of parameters, Inverse differential operator	١٠
5	The Laplace Transform	٨
Total		٤٠

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Identify linear and nonlinear equations	Lecture and Tutorials	Exams, quizes
1.2	Examine higher order differential equations	Lecture and Tutorials	Exams, quizes
1.3	Present an account of basic concepts and definitions for differential equations	Lecture and Tutorials	Exams, quizes
1.4	Describe exact equations and its solutions	Lecture and Tutorials	Exams, quizes
2.0	**Skills**		
2.1	Compare the methods of solution developed in higher order and solution in second/first order equations	Lecture/Individual or group work	Exams, quizes
2.2	Use methods for obtaining exact solutions of linear homogeneous and nonhomogeneous differential equations	Lecture/Individual or group work	Exams, quizes
2.3	Apply elementary Laplace transform techniques	Lecture/Individual or group work	Exams, quizes
3.0	**Values**		
3.1	Prepare for success in disciplines which rely on differential equations, and in more advanced mathematics which incorporate these topics, such as Partial Differential Equations	Lecture/Individual or group work	Exams, quizes
3.2	Interpret graphical and qualitative representations of solutions to problems	Lecture/Individual or group work	Exams, quizes
3.3	Evaluate fundamental concepts of differential equations, and the interrelationship between differential equations and linear algebra	Lecture/Individual or group work	Exams, quizes
3.4	Generalize mathematical concepts in problem-solving through integration of new material and modeling	Lecture/Individual or group work	Exams, quizes

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Sixth week	%۳۰
2	Quizzes and HomeWorks	During semester	%۲۰
3	Final exam	End of semester	%۵۰

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice : All faculty members are required to be in their offices outside teaching hours. Each member allocates at least 4 hours per week to give academic advice to students and to better explain the concepts seen during the lectures. Students are required to complete the homework problems. Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted. Deadline extensions for homework will not be given. Students are encouraged to discuss with professor about homework problems.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Elementary Differential Equations, 8th edition, 1997, Earl D. Rainville, Phillip E. Bedient • William E. Boyce and Richard C. DiPrima: Elementary Differential Equations and Boundary Value Problems, 10th edition
Essential References Materials	Polking, Boggess and Arnold, *Differential Equations with Boundary Value Problems*, second edition, Pearson Prentice-Hall
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Large classrooms that can accommodate more than 30 students
Technology Resources (AV, data show, Smart Board, software, etc.)	Data Show, Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

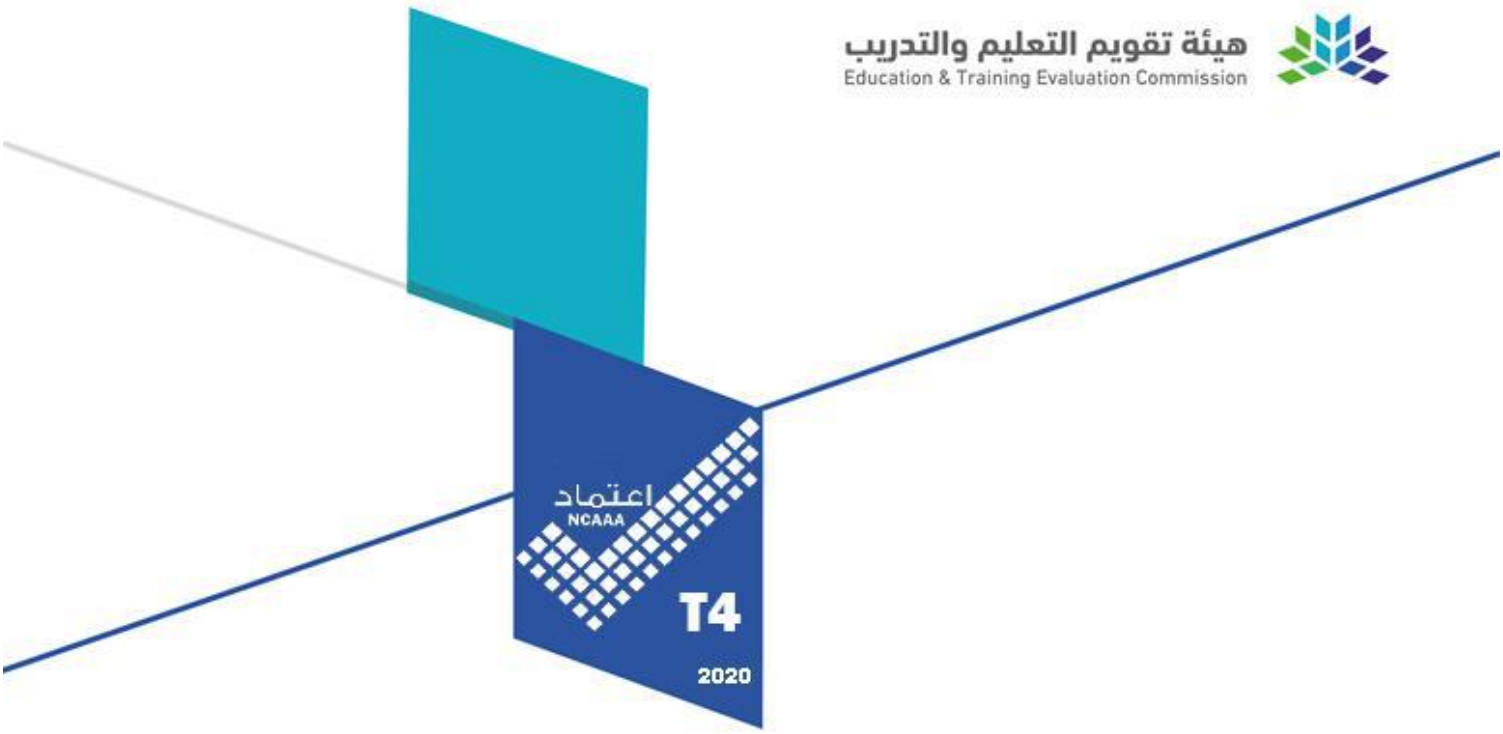
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct
Quality of learning resources	Students	Direct
Extent of achievement of course learning outcomes	Faculty Member	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Computer Programming (1)
Course Code:	CS 1211
Program:	Bachelor of Science in Computer Science
Department:	Computer Science
College:	Computing & Information Systems
Institution:	Umm Al-Qura University

Table of Contents

A. Course Identification

1. Credit hours:3
2. Course type **a.** University ☐ College ■ Department ☐ Others ☐ **b.** Required ■ Elective ☐
3. Level/year at which this course is offered: level 2/ 1st year
4. Pre-requisites for this course (if any): SE 1101
5. Co-requisites for this course (if any): None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	50	100%
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	20
2	**Laboratory/Studio**	30
3	**Tutorial**	
4	**Others** (specify)	
	Total	50

B. Course Objectives and Learning Outcomes

1. Course Description

This course introduces the basic concepts of computer programming to students with some problem-solving skills to solve complex problems. Students will be using a high-level programming language, to learn the fundamentals of computer programming skills including how to write, compile, and run programs using relevant tools for program development. Topics include variables and data types, methods, console input/output, control structures, coding styles, and the mechanics of running, testing, and debugging.

In this course, students will carry out practical projects that involve subsets of coding tasks in the lab alongside traditional lectures. Students will work individually as well as in pairs or small groups for some of the tasks. The course is organized to utilize a combination of project-based learning strategies and in-class lectures.

2. Course Main Objective

To equip students with the fundamental knowledge required to develop a procedural program using a high-level programming language.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Recognize high-level programming language	K1
1.2	Recognize basic control and repetition structures	K1
2	**Skills:**	
2.1	Design basic objects	S1
2.2	Analyze programming problems and implement programs that realize the required logic.	S1
2.3	Use the command line and relevant IDEs for writing, formatting, compiling, running, and debugging code.	S1
3	**Values:**	
3.1	`	

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to high-level programming languages (general background, programming errors, coding styles, and how to edit, compile, and run programs in relevant IDE)	5
2	Variables, data types, assignment statements, constants, data type conversions, arithmetic expressions, and the String type	10
3	input/output	5
4	Control statements and Boolean expressions	10
5	Loops and repetition structures	10
6	Methods and using parameters	10
Total		50

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Recognize high-level programming language	Lectures, discussions, lab project-based tasks and assignments, self-test at the beginning of each lecture, and participation in solving examples	Participations, quizzes, lab exercises, assignments, and exams
1.2	Recognize basic control and repetition structures	Lectures, discussions, lab project-based tasks and assignments, self-test at the beginning of each lecture, and	Participations, quizzes, lab exercises, assignments and exams

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
		participation in solving examples	
2.0	Skills		
2.1	Design basic objects	Lectures, discussions, lab project-based tasks and assignments, self-test at the beginning of each lecture, and participation in solving examples	Quizzes, lab exercises, and exams
2.2	The ability to analyze programming problems and implement programs that realize the required logic.	Lab exercises	Quizzes, lab exercises, and exams
2.3	Use the command line and relevant IDEs for writing, formatting, compiling, running, and debugging code.	Lab exercises	Lab exercises and assignments
3.0	Values		
3.1	Use type-error messages, memory leaks, and dangling-pointer to debug a program	Lectures, discussions, lab project-based tasks and assignments, self-test at the beginning of each lecture, and participation in solving examples	Quizzes, lab exercises, and exams

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Lab exercises	1-10	30%
2	Mid-term exam	5-6	15%
3	Practical exam	10-11	15%
4	Final exam	11-12	40%

Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

Two office hours for each week of the course are designated for individual student consultations and academic advice.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	W. Savitch, JAVA: an introduction to problem solving and programming, global edition. Philadelphia, PA: Pearson Education, 2018.
Essential References Materials	Book and Slides
Electronic Materials	Slides and related handouts
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom & Laboratory
Technology Resources (AV, data show, Smart Board, software, etc.)	Relevant IDEs Overhead projector and internet connection
Other Resources (Specify, e.g., if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct and Indirect
Quality of learning resources	Faculty	Direct

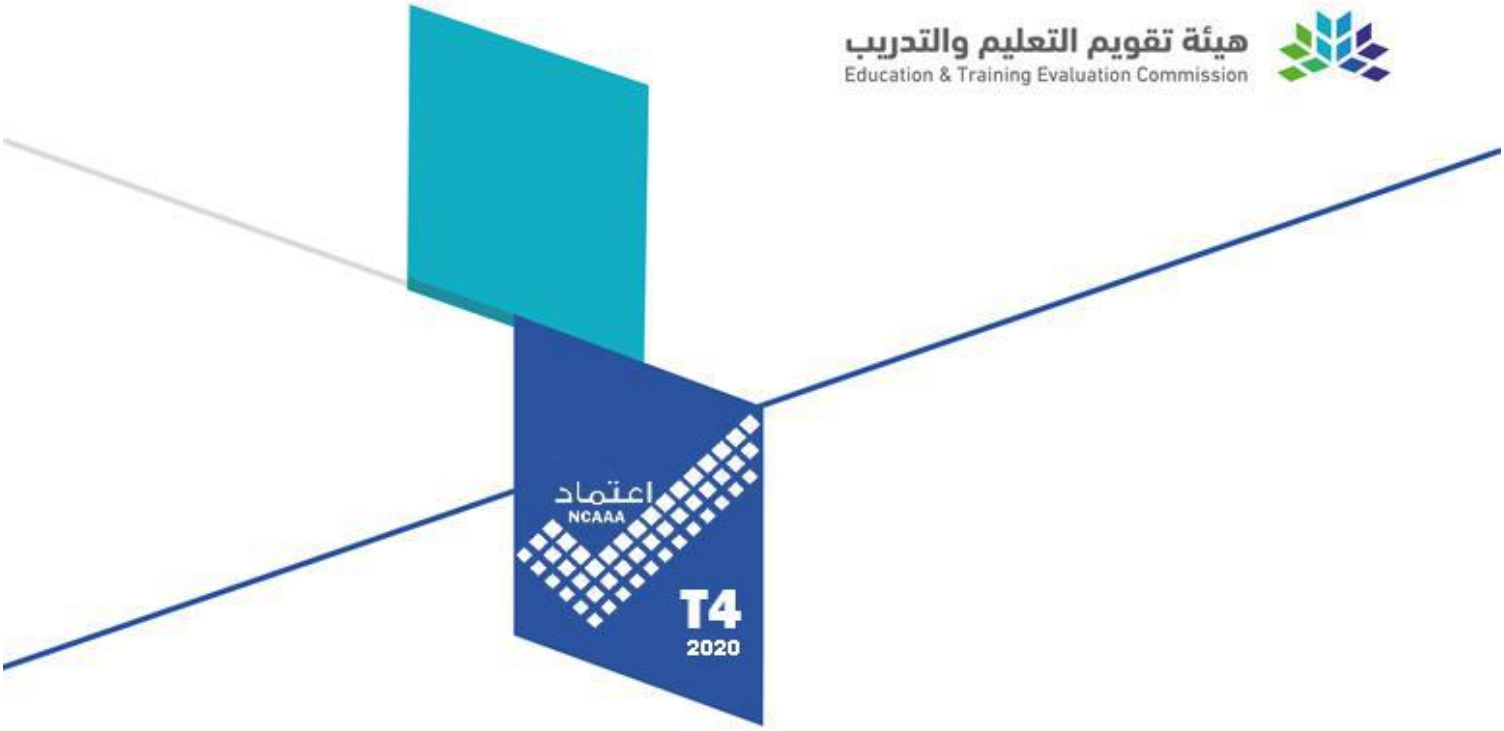
Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

توصيف المقررات العامة

General Courses Specification



توصيف المقرر الدراسي

اسم المقرر:	مقدمة في الذكاء الاصطناعي
رمز المقرر:	AI 2001
البرنامج:	
القسم العلمي:	**علوم الحاسب الآلي**
الكلية:	**الحاسب الآلي ونظم المعلومات**
المؤسسة:	**جامعة ام القرى**

المحتويات

أ. التعريف بالمقرر الدراسي:

١. الساعات المعتمدة: ٢
٢. نوع المقرر **أ.** متطلب جامعة [✓] متطلب كلية [ ] متطلب قسم [ ] أخرى [ ] **ب.** إجباري [ ] اختياري [✓]
٣. المتطلبات السابقة لهذا المقرر التقنية الرقمية (متطلب جامعة)
٤. المتطلبات المتزامنة مع هذا المقرر (إن وجدت) لا يوجد

٥. نمط الدراسة (اختر كل ما ينطبق)

م	نمط الدراسة	عدد الساعات التدريسية	النسبة
1	**المحاضرات التقليدية**		
2	**التعليم المدمج**		
3	**التعليم الإلكتروني**	✓	١٠٠٪
4	**التعليم عن بعد**	✓	١٠٠٪
5	**أخرى**		

٦. ساعات الاتصال (على مستوى الفصل الدراسي)

م	النشاط	ساعات التعلم
١	محاضرات	٢٠ ساعة
٢	معمل أو إستوديو	
٣	دروس إضافية	
٤	أخرى (تذكر)	
	الإجمالي	٢٠ ساعة

ب- هدف المقرر ومخرجاته التعليمية:

١. الوصف العام للمقرر: هذا المقرر يقدم للطالب الثقافة المعرفية اللازمة في مجال الذكاء الاصطناعي من خلال التعرف على المفاهيم الأساسية للذكاء الاصطناعي. وكيفية بناء تطبيقات الذكاء الاصطناعي التي تقدم حلول تخدم المجتمع. بإضافة إلى توضيح استخدامات الذكاء الاصطناعي في مجالات متعددة مثل (خدمة ضيوف الرحمن، التعليم، صحة، تجارة، صناعة ..... وغيرها).
٢. الهدف الرئيس للمقرر يهدف هذا المقرر إلى تطوير معرفة المتعلم في مجال الذكاء الاصطناعي وكيفية فهم وتطبيق المبادئ الاساسية للذكاء الاصطناعي لتطوير حلول تخدم مجالات تخصص الطلبة وتعريف الطالب بالاستراتيجية الوطنية للمملكة في البيانات والذكاء الاصطناعي.

٣. مخرجات التعلم للمقرر:

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1	**المعرفة والفهم**	
1.1	القدرة على شرح المفاهيم الأساسية للذكاء الاصطناعي	

مخرجات التعلم للمقرر		رمز مخرج التعلم المرتبط للبرنامج
١,٢	القدرة علي التعرف علي تطبيقات الذكاء الاصطناعي	
١,٣	القدرة على ربط تطبيقات الذكاء الاصطناعي بتحديات الحياة اليومية	
٢	**المهارات**	
٢,١	اكتساب القدرة على التمييز بين الأدوات المستخدمة لبناء تطبيقات الذكاء الاصطناعي	
٣	**القيم**	
٣,١	تقدير فوائد الذكاء الاصطناعي في تسهيل الأمور الحياتية	
٣,٢	تقدير الجوانب الأخلاقية لاستخدام الذكاء الاصطناعي	

ج. موضوعات المقرر

م	قائمة الموضوعات	ساعات الاتصال
١	التعريف بمعنى الذكاء الاصطناعي والتطرق لنشأة وتطور الذكاء الاصطناعي	٢
٢	استراتيجية المملكة الوطنية للبيانات والذكاء الاصطناعي	٢
٣	مفاهيم الذكاء الاصطناعي والتفريق بين تعلم الآلة والتعليم العميق	٢
4	كيفية عمل التقنيات المستخدمة في تطبيقات الذكاء الاصطناعي	٢
5	أدوات تطوير تطبيقات الذكاء الاصطناعي	٤
6	تطبيقات الذكاء الاصطناعي في القطاعات المختلفة (التعليم، صحة، تجارة، صناعة .....و غيرها)	٤
7	تأثير الذكاء الاصطناعي في الحياة اليومية	٢
8	الجوانب الأخلاقية لاستخدام الذكاء الاصطناعي	٢
	المجموع	٢٠

د. التدريس والتقييم:

١. ربط مخرجات التعلم للمقرر مع كل من استراتيجيات التدريس وطرق التقييم

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
١,٠	**المعرفة والفهم**		
١,١	القدرة على شرح المفاهيم الأساسية للذكاء الاصطناعي	محاضرات، قراءات وتعلم ذاتي، التدريبات والانشطة أثناء الدرس وخارجه، المواقع والأدوات المتوفرة عبر شبكة الانترنت	الاختبارات الإلكترونية والواجبات عبر منصة التعليم الالكترونية
١,٢	القدرة على التعرف على تطبيقات الذكاء الاصطناعي	محاضرات، قراءات وتعلم ذاتي، التدريبات والانشطة أثناء الدرس وخارجه، المواقع والأدوات المتوفرة عبر شبكة الانترنت	الاختبارات الإلكترونية والواجبات عبر منصة التعليم الالكترونية
١,٣	القدرة على ربط تطبيقات الذكاء الاصطناعي بتحديات الحياة اليومية	محاضرات، قراءات وتعلم ذاتي، التدريبات والانشطة أثناء الدرس و خارجه، المواقع والأدوات المتوفرة عبر شبكة الانترنت	الاختبارات الإلكترونية والواجبات عبر منصة التعليم الالكترونية
٢,٠	**المهارات**		
٢,١	اكتساب القدرة على التمييز بين الأدوات المستخدمة لبناء تطبيقات الذكاء الاصطناعي	محاضرات، قراءات وتعلم ذاتي، التدريبات والانشطة أثناء الدرس و خارجه، المواقع والأدوات المتوفرة عبر شبكة الانترنت	الاختبارات الإلكترونية والواجبات عبر منصة التعليم الالكترونية

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
٣,٠	**القيم**		
٣,١	تقدير فوائد الذكاء الاصطناعي في تسهيل الأمور الحياتية	محاضرات، قراءات وتعلم ذاتي، التدريبات والانشطة أثناء الدرس وخارجه، المواقع والأدوات المتوفرة عبر شبكة الانترنت	الاختبارات الإلكترونية والواجبات عبر منصة التعليم الالكترونية
٣,٢	تقدير الجوانب الأخلاقية لاستخدام الذكاء الاصطناعي	محاضرات، قراءات وتعلم ذاتي، التدريبات والانشطة أثناء الدرس وخارجه، المواقع والأدوات المتوفرة عبر شبكة الانترنت	الاختبارات الإلكترونية والواجبات عبر منصة التعليم الالكترونية

٢. أنشطة تقييم الطلبة

م	أنشطة التقييم	توقيت التقييم (بالأسبوع)	النسبة من إجمالي درجة التقييم
١	المشاركة	١-١٠	٥٪
٢	اختبارات سريعة	١-١٠	١٠٪
٣	واجبات	١-١٠	١٥٪
٤	اختبار تحريري نصفي	٥-٦	٢٠٪
٥	اختبار تحريري نهائي	١١-١٢	٥٠٪

أنشطة التقييم (اختبار تحريري، شفهي، عرض تقديمي، مشروع جماعي، ورقة عمل الخ)

هـ - أنشطة الإرشاد الأكاديمي والدعم الطلابي:

يتم تخصيص ساعات مكتبية أسبوعية بمعدل ساعة أسبوعيا على الأقل
إرشاد الطالب إلى بعض المواقع الإلكترونية للإفادة منها. عقد حلقات نقاش بحثية يتم من خلالها شرح وتحليل بعض تطبيقات الذكاء الاصطناعي المستخدمة في حياتنا اليومية من خلال تطبيقات الأجهزة الذكية.

و – مصادر التعلم والمرافق:

١. قائمة مصادر التعلم:

المرجع الرئيس للمقرر	المحتوى الالكتروني للمقرر
المراجع المساندة	Nell Dale, John Lewis, (2020) Computer Science Illuminated, 7th Edition, Jones & Bartlett Learning. Artificial Intelligence – A Modern Approach (3rd Edition) By Stuart Russell & Peter Norvig. Artificial Intelligence for Humans, Volume 1: Fundamental Algorithms. ByJeff Heaton.
المصادر الإلكترونية	/https://teachablemachine.withgoogle.com /https://monkeylearn.com Orange Data Mining - Data Mining
أخرى	

٢. المرافق والتجهيزات المطلوبة:

العناصر	متطلبات المقرر
المرافق (القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ)	
التجهيزات التقنية (جهاز عرض البيانات، السبورة الذكية، البرمجيات)	معامل افتراضية نظام تعلم الكتروني
تجهيزات أخرى (تبعاً لطبيعة التخصص)	

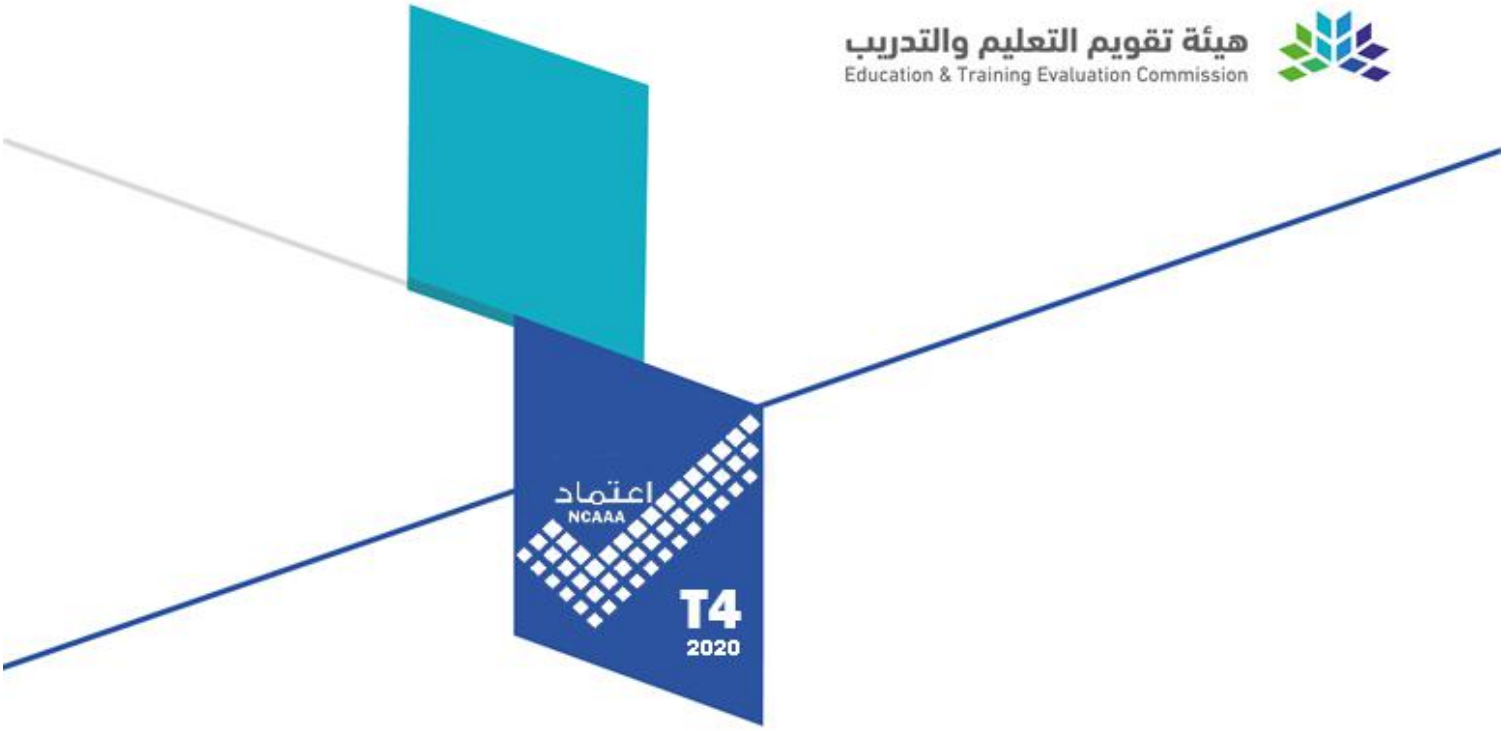
ز. تقويم جودة المقرر:

مجالات التقويم	المقيمون	طرق التقييم
فاعلية التدريس	الطلبة	غير مباشر (استبانات)
فاعلية طرق تقييم الطلاب	المراجع النظير	غير مباشر (استبانات)
مدى تحصيل مخرجات التعلم للمقرر	أعضاء هيئة التدريس	مباشر
مصادر التعلم	المراجع النظير	مباشر أو غير مباشر

مجالات التقويم (مثل. فاعلية التدريس، فاعلة طرق تقييم الطلاب، مدى تحصيل مخرجات التعلم للمقرر، مصادر التعلم ... إلخ)
المقيمون (الطلبة، أعضاء هيئة التدريس، قيادات البرنامج، المراجع النظير، أخرى (يتم تحديدها)
طرق التقييم (مباشر وغير مباشر)

ح. اعتماد التوصيف

جهة الاعتماد	مجلس القسم
رقم الجلسة	
تاريخ الجلسة	



توصيف المقرر الدراسي

اسم المقرر:	مهارات التأهيل المهني
رمز المقرر:	**BA1901**
البرنامج:	
القسم العلمي:	**إدارة الأعمال**
الكلية:	**إدارة الأعمال**
المؤسسة:	**جامعة أم القرى**

المحتويات

أ. التعريف بالمقرر الدراسي:

1. الساعات المعتمدة:
2. نوع المقرر أ. متطلب جامعة [√] متطلب كلية [ ] متطلب قسم [ ] أخرى [ ] ب. إجباري [ ] اختياري [√]
3. السنة / المستوى الذي يقدم فيه المقرر
4. المتطلبات السابقة لهذا المقرر (إن وجدت)
5. المتطلبات المتزامنة مع هذا المقرر (إن وجدت)

6. نمط الدراسة (اختر كل ما ينطبق)

م	نمط الدراسة	عدد الساعات التدريسية	النسبة
1	**المحاضرات التقليدية**		
2	**التعليم المدمج**		
3	**التعليم الإلكتروني**		
4	**التعليم عن بعد**	2	%100
5	**أخرى**		

7. ساعات الاتصال (على مستوى الفصل الدراسي)

م	النشاط	ساعات التعلم
1	محاضرات	20
2	معمل أو إستوديو	
3	دروس إضافية	
4	أخرى (تذكر)	
	الإجمالي	20

ب- هدف المقرر ومخرجاته التعليمية:

1. الوصف العام للمقرر:

المقرر يساهم في تمكين الطالب من الإلمام بالمهارات الضرورية التي تؤهله للحصول على وظيفة، وأبعد من هذا تعزيز قدراته ومهاراته لتحقيق النجاح الوظيفي في مساره المهني مستقبلاً.

2. الهدف الرئيس للمقرر

المقرر يهدف أساساً لمساعدة الطالب في بناء تصور عن شخصيته وميوله المهني، وتزويده بالمهارات والمعارف اللازمة للحصول على وظيفة أثناء الدراسة الجامعية أو بعد التخرج، وعلى كيفية الاستعداد الجيد لسوق العمل. بالإضافة إلى ذلك؛ يركز المقرر على طيف واسع من أساسيات النجاح الوظيفي في المسار المهني للطالب في وظيفته المستقبلية، وتدريبه على بناء خطة تطبيقية للتطوير المهني المستمر يستفيد منها طوال حياته المهنية، بالإضافة إلى تعريفه بأساليب تصميم الوظيفة وتعزيز الارتباط الوظيفي مع مهارات التوازن بين العمل والحياة. يهدف المقرر كذلك لتدريب الطالب على مهارات الاتصال في بيئة العمل وتزويد الطالب بمعرفة عميقة عن حقوقه وواجباته الوظيفية وأخلاقيات السلوك المهني الرشيد، بالإضافة إلى مهارات عديدة كالعمل مع فرق العمل ومهارات الإلقاء والتقديم والتعامل مع العملاء والمستفيدين.

3. مخرجات التعلم للمقرر:

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1	**المعرفة والفهم**	
1.1	أن يصف/يحدد الطالب شخصيته واهتماماته ومهاراته ونقاط قوته	
1.2	أن يميز أساسيات السلوك الإنساني في بيئة العمل	
1.3	أن يذكر الطالب حقوقه وواجباته الوظيفية	
1.4		
1.5		
2	**المهارات**	
2.1	أن يستعرض الطالب مهاراته في البحث عن وظيفة	
2.2	أن يصمم الطالب سيرة ذاتية ملائمة لاحتياجات سوق العمل	
2.3	أن يصمم الطالب خطة شخصية للتطوير المهني المستمر	
3	**القيم**	
3.1	أن يبدي الطالب اهتماماً نحو السلوك الأخلاقي في العمل	
3.2	أن يحترم الطالب الواجبات الوظيفية الملقة على عاتقه	
3.3	أن ينمو شعور الطالب نحو أهمية العلامة الشخصية وهويته الرقمية	
3...		

ج. موضوعات المقرر

م	قائمة الموضوعات	ساعات الاتصال
1	الاستعداد الوظيفي: التقييم الذاتي وتحديد الشخصية والاهتمامات والمهارات ونقاط القوة	2
2	الاستعداد الوظيفي: أنواع الوظائف ومهارات البحث عن عمل ودور التلمذة المهنية والتطوع	2
3	الاستعداد الوظيفي: تصميم السيرة الذاتية واجتياز المقابلات	2
4	السلوك الإنساني في بيئة العمل: الحقوق والواجبات الوظيفية والسلوك الأخلاقي في العمل	2
5	السلوك الإنساني في بيئة العمل: القدرات، التعلم، الاتجاهات، الرضا الوظيفي	2
6	السلوك الإنساني في بيئة العمل: أساسيات العمل مع فرق العمل	2
7	السلوك الإنساني في بيئة العمل: مهارات الاتصال في بيئة العمل	2
8	السلوك الإنساني في بيئة العمل: القيادة ومهارات إتباع القادة	2
9	النمو المهني: أساسيات المالية الشخصية	2
10	النمو المهني: مهارات التطوير المهني المستمر	2
11	النمو المهني: الإيسام الشخصي والهوية الرقمية	2
	المجموع	

د. التدريس والتقييم:

1. ربط مخرجات التعلم للمقرر مع كل من استراتيجيات التدريس وطرق التقييم

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
1.0	**المعرفة والفهم**		
1.1	أن يصف/يحدد الطالب شخصيته واهتماماته ومهاراته ونقاط قوته	المحاضرات - المناقشات	اختبار تحديد الشخصية والميول المهني – المشاركة الفصلية
1.2	أن يميز أساسيات السلوك الإنساني في بيئة العمل	المحاضرات - المناقشات	التكليفات – الاختبارات – المشاركة الفصلية
1.3	أن يذكر الطالب حقوقه وواجباته الوظيفية	المحاضرات - المناقشات	التكليفات – الاختبارات – المشاركة الفصلية

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
2.0	**المهارات**		
2.1	أن يستعرض الطالب مهاراته في البحث عن وظيفة	المحاضرات - المناقشات	المشروع الجماعي – الاختبارات – المشاركة الفصلية
2.2	أن يصمم الطالب سيرة ذاتية ملائمة لاحتياجات سوق العمل	المحاضرات - المناقشات	مشروع تصميم السيرة الذاتية – الاختبارات – المشاركة الفصلية
2.3	أن يصمم الطالب خطة شخصية للتطوير المهني المستمر	المحاضرات - المناقشات	مشروع خطة التطوير المهني المستمر – الاختبارات – المشاركة الفصلية
3.0	**القيم**		
3.1	أن يبدي الطالب اهتماماً نحو السلوك الأخلاقي في العمل	المحاضرات - القراءة الموجهة	دراسة حالات
3.2	أن يحترم الطالب الواجبات الوظيفية الملقة على عاتقه	المحاضرات - القراءة الموجهة	دراسة حالات
3.3	أن ينمو شعور الطالب نحو أهمية العلامة الشخصية وهويته الرقمية	المحاضرات - القراءة الموجهة	تصميم صفحة لينكد-إن

2. أنشطة تقييم الطلبة

م	أنشطة التقييم	توقيت التقييم (بالأسبوع)	النسبة من إجمالي درجة التقييم
1	خطة للتطوير المهني المستمر	11	10
2	تصميم السيرة الذاتية وصفحة لينكد-إن	8	15
3	اختبار نصفي	6	20
4	اختبار نهائي	12	40
5	عرض تقديمي جماعي	12	15
6			
7			
8			

أنشطة التقييم (اختبار تحريري، شفهي، عرض تقديمي، مشروع جماعي، ورقة عمل الخ)

هـ - أنشطة الإرشاد الأكاديمي والدعم الطلابي:

- تحديد أوقات الساعات المكتبية وإحاطة الطلاب بها
- تزويد الطلاب بخطة المقرر وآلية التقييم من بداية الفصل الدراسي، ومراجعتها معهم دورياً
- تتبع حالات الطلاب منخفضي الأداء وتقديم الدعم اللازم لهم

و – مصادر التعلم والمرافق:

1. قائمة مصادر التعلم:

المرجع الرئيس للمقرر	• السلوك التنظيمي: سلوك الأفراد والجماعات في المنظمات – الأستاذ الدكتور/محمد زناتي • يُنظر في المراجع المساندة أيضاً
المراجع المساندة	• كتاب المسار: دليل التطوير المهني – الأستاذ مشاري الغامدي • كتاب فن البحث عن وظيفة – الأستاذ أحمد بادويلان • كتاب: ثاني لفة يمين – د. أمجد الجنباز

	• *Kaiden, S. ed., 2016. Find Your Fit: A Practical Guide to Landing a Job You'll Love. Association for Talent Development. : https://www.amazon.com/Find-Your-Fit-Practical-Landing-ebook/dp/B01LY7XO6K • *Stella Cottrell (2021). Skills for Success: Personal Development and Employability: 4th ed (Macmillan Study Skills) • Ranjit Singh Malhi 2009. Make Yourself Employable: How Graduates Can Hit the Ground Running! – الكتاب مترجم في جرير: اجعل نفسك جديراً بالتوظيفhttps://www.jarir.com/jarir-publication-282205762.html • Roy Horn 2020. The Business Skills Handbook. https://www.koganpage.com/product/business-skills-handbook-9781843982180-cipd • Robbins and Judge (2022). Essentials of Organizational Behavior. 15th edition.
المصادر الإلكترونية	• مقياس الميول المهنية – مركز قياس: https://etec.gov.sa/ar/productsandservices/Qiyas/CommStandards/Pages/Professional.aspx • اللائحة التنفيذية للموارد البشرية في الخدمة المدنية - https://hrsd.gov.sa/ar • موقع البوابة الوطنية للعمل - طاقات: https://www.taqat.sa/web/guest • موقع العمل المرن: https://mrn.sa/ • موقع المنصة الوطنية للتدريب الإلكتروني - دروب: https://doroob.sa/ar/ • أكاديمية مسك - https://hub.misk.org.sa/?lang=ar • Myers-Briggs Type Indicator (MBTI): https://www.myersbriggs.org/my-mbti-personality-type/ • DISC: https://www.discprofile.com/ • The Big Five Personality Test: https://www.outofservice.com/bigfive/
أخرى	المكتبة الرقمية السعودية

2. المرافق والتجهيزات المطلوبة:

العناصر	متطلبات المقرر
المرافق (القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ)	قاعات دراسية تناسب عدد الطلاب
التجهيزات التقنية (جهاز عرض البيانات، السبورة الذكية، البرمجيات)	جهاز حاسوب مزود بالانترنت، سبورة ذكية
تجهيزات أخرى (تبعاً لطبيعة التخصص)	

ز. تقويم جودة المقرر:

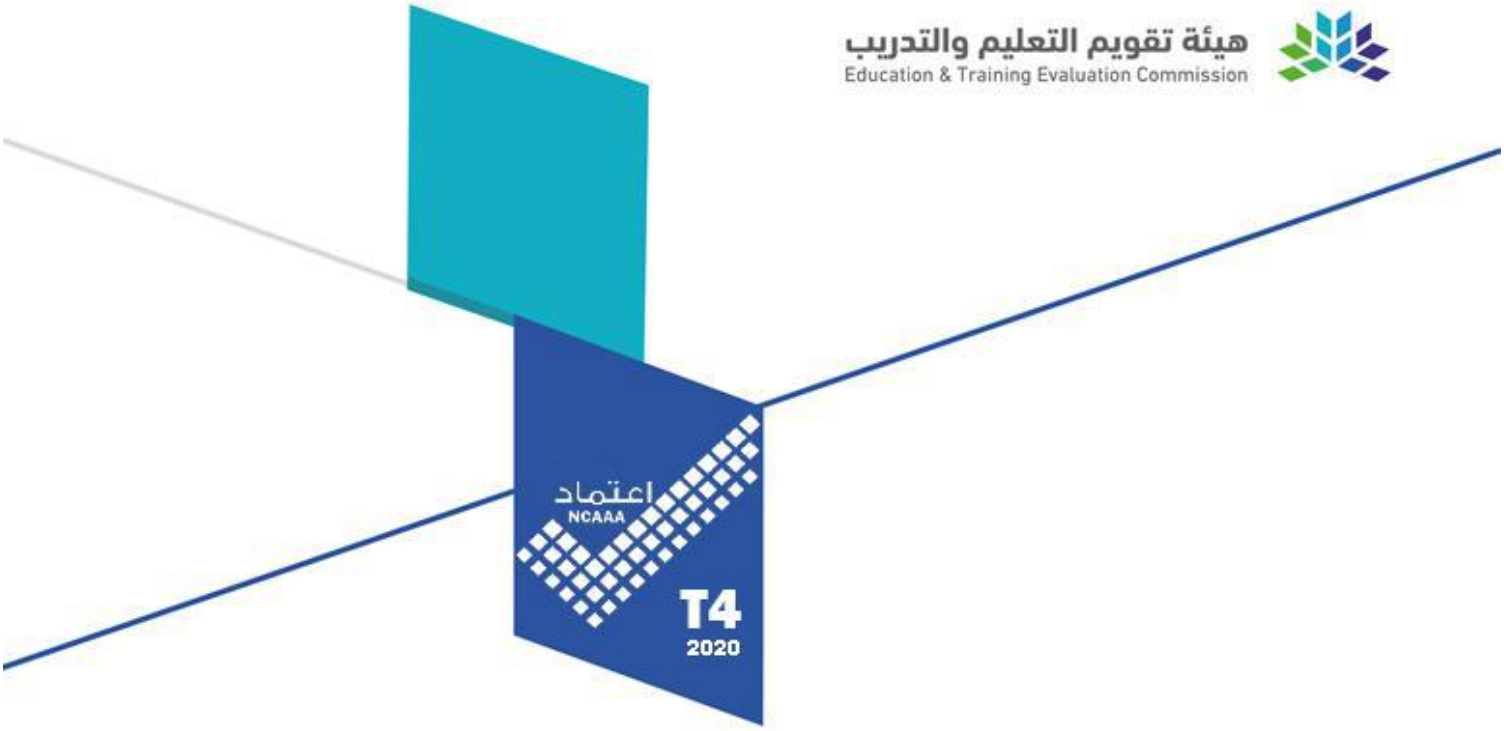
مجالات التقويم	المقيمون	طرق التقييم

مجالات التقويم	المقيمون	طرق التقييم
فاعلية التدريس	الطلاب – منسق المقرر – رئيس القسم – قيادات البرنامج	استطلاعات مباشرة، وملاحظة غيرمباشرة
فاعلية طرق تقييم الطلاب	المراجع النظير - منسق المقرر – رئيس القسم – قيادات البرنامج	مباشرة: عينة عشوائية من نماذج تقييم الطلاب وأعمالهم
مدى تحصيل مخرجات التعلم للمقرر	المراجع النظير - منسق المقرر – رئيس القسم – قيادات البرنامج	مباشرة: نتائج الطلاب في الاختبارات الدورية والنهائية

مجالات التقويم (مثل. فاعلية التدريس، فاعلة طرق تقييم الطلاب، مدى تحصيل مخرجات التعلم للمقرر، مصادر التعلم ... إلخ)
المقيمون (الطلبة، أعضاء هيئة التدريس، قيادات البرنامج، المراجع النظير، أخرى (يتم تحديدها)
طرق التقييم (مباشر وغير مباشر)

ح. اعتماد التوصيف

جهة الاعتماد	
رقم الجلسة	
تاريخ الجلسة	



توصيف المقرر الدراسي

اسم المقرر:	التغذية والصحة Nutrition and Health
رمز المقرر:	
البرنامج:	
القسم العلمي:	التغذية الاكلينيكية
الكلية:	العلوم الطبية التطبيقية
المؤسسة:	جامعة أم القرى

المحتويات

أ. التعريف بالمقرر الدراسي:

1. الساعات المعتمدة: 2 ساعة معتمدة
2. نوع المقرر أ. متطلب جامعة [√] متطلب كلية [ ] متطلب قسم [ ] أخرى [ ] ب. إجباري [ ] اختياري [√]
3. السنة / المستوى الذي يقدم فيه المقرر: **أحد المتطلبات المؤسسية الاختيارية (متطلب جامعي)**
4. المتطلبات السابقة لهذا المقرر (إن وجدت) **لا يوجد**
5. المتطلبات المتزامنة مع هذا المقرر (إن وجدت) **لا يوجد**

6. **نمط الدراسة** (اختر كل ما ينطبق)

م	نمط الدراسة	عدد الساعات التدريسية	النسبة
1	**المحاضرات التقليدية**		-
2	**التعليم المدمج**		-
3	**التعليم الإلكتروني**	8	%40
4	**التعليم عن بعد**	8	%40
5	**أخرى** (مجموعات عمل)	4	%20
	الاجمالي	20	%100

7. **ساعات الاتصال** (على مستوى الفصل الدراسي)

م	النشاط	ساعات التعلم
1	محاضرات	2 ساعة
2	معمل أو إستوديو	-
3	دروس إضافية	-
4	أخرى (تذكر) **أنشطة ومهام تقدم من الطلبة**	-
	الإجمالي	2 ساعة أسبوعيا

ب- هدف المقرر ومخرجاته التعليمية:

1. الوصف العام للمقرر:

لمقرر التغذية والصحة دورا كبيرا في تنمية المعارف والمهارات الخاصة بأساسيات التغذية السليمة في الصحة والمرض وذلك من خلال التعرف على المفاهيم الأساسية في التغذية والعناصر الغذائية وتمثيلها الغذائي وعلاقة ذلك بالصحة والمرض لدى الانسان وكذلك ماهية الغذاء المتوازن وتخطيط الوجبات والحميات الغذائية وعلاقة ذلك بالأمراض والنشاط البدني وسلامة الغذاء، حيث يساعد كل ذلك في تحسين الحالة الغذائية الصحية على مستوى الفرد والأسرة والمجتمع.

2. الهدف الرئيس للمقرر

يهدف مقرر التغذية والصحة الى:

1. تنمية المعارف الخاصة بمكونات الغذاء الصحي والاحتياجات اليومية للوقاية من الامراض المختلفة
2. تنمية المهارات المتعلقة باختيار الغذاء الصحي والمشكلات الصحية الناتجة عن سوء التغذية
3. اكساب الطلبة المهارات الأساسية لتخطيط الوجبات والحميات الغذائية في الصحة والمرض وخلال النشاط البدني
4. المساعدة في تطوير الصحة العامة من خلال تطبيق السلامة الغذائية وتصحيح المفاهيم الغذائية الخاطئة
5. تدريب الطلبة على تصميم برنامج غذائي صحي

3. مخرجات التعلم للمقرر:

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1	**المعرفة والفهم**	
1.1	وصف المفاهيم الأساسية في التغذية والعناصر الغذائية وتمثيلها الغذائي وعلاقة ذلك بالصحة والمرض لدى الانسان	
1.2	معرفة الخطوط العريضة لآليات اختيار الغذاء المتوازن الصحي وتخطيط الوجبات والحميات الغذائية وعلاقة ذلك بالأمراض والنشاط البدني وسلامة الغذاء	
2	**المهارات**	
2.1	تطبيق التوازن الأمثل للطاقة بالجسم والاحتياجات الغذائية	
2.2	بناء مهارات اختيار الغذاء المتوازن الصحي وتخطيط الوجبات والحميات الغذائية	
2.3	استيفاء متطلبات التغذية في الصحة والمرض وأثناء ممارسة النشاط البدني وتطبيق سلامة الغذاء	
3	**القيم**	
3.1	بناء المعايير الأخلاقية والكفاءة والنزاهة واحترام الآخرين والعمل الجماعي	
3.2	الالتزام بتعاليم ديننا الإسلامي والسلوك الحضاري والتفكير الإبداعي الابتكاري والأداء الجيد	

ج. موضوعات المقرر

م	قائمة الموضوعات	ساعات الاتصال
1	مفاهيم ومصطلحات في مجال التغذية وأهميتها	2
2	العناصر الغذائية الكبرى والصغرى والماء (مصادرها والاحتياج الغذائي RDI &RDA)	2
3	الأيض الغذائي للعناصر الغذائية وتوازن الطاقة	2
4	تخطيط الوجبات (حساب السعرات الحرارية، المجموعات والبدائل الغذائية)	2
5	اعداد الانظمة الغذائية المختلفة	2
6	الغذاء المتوازن وموضة الأنظمة والحميات الغذائية (Atkins Diet، Vegan Diet، Ketogenic Diet، Macrobiotic Diet)	2
7	التغذية في الصحة والمرض	2
8	التغذية والنشاط البدني	2
9	البطاقة الغذائية وسلامة وأمن الغذاء	2
10	قضايا واتجاهات حديثة في الغذاء والتغذية وتصحيح المفاهيم الغذائية الخاطئة	2
	المجموع	20

د. التدريس والتقييم:

1. ربط مخرجات التعلم للمقرر مع كل من استراتيجيات التدريس وطرق التقييم

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
1.0	**المعرفة والفهم**		
1.1	وصف المفاهيم الأساسية في التغذية والعناصر الغذائية وتمثيلها الغذائي وعلاقة ذلك بالصحة والمرض لدى الانسان	المحاضرات العمل في مجموعات	الاختبارات التحريرية بطاقات الملاحظة
1.2	معرفة الخطوط العريضة لآليات اختيار الغذاء المتوازن الصحي وتخطيط الوجبات والحميات الغذائية وعلاقة ذلك بالأمراض والنشاط البدني وسلامة الغذاء	الواجبات المنزلية الفردية والجماعية المناقشة والحوار	تقويم الواجبات المنزلية تقويم المشاركة في الحوار
2.0	**المهارات**		
2.1	تطبيق التوازن الأمثل للطاقة بالجسم والاحتياجات الغذائية	الخرائط الذهنية	التمارين الشفهية والتحريرية
2.2	بناء مهارات اختيار الغذاء المتوازن الصحي وتخطيط الوجبات والحميات الغذائية	النمذجة والتمارين	بطاقات الملاحظة

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
2.3	استيفاء متطلبات التغذية في الصحة والمرض وأثناء ممارسة النشاط البدني وتطبيق سلامة الغذاء	حل المشكلات	الاختبارات التحريرية
3.0	**القيم**		
3.1	بناء المعايير الأخلاقية والكفاءة والنزاهة واحترام الآخرين والعمل الجماعي	التكليفات الجماعية الحوار والمناقشة	تقويم الاعمال الجماعية دوريا
3.2	الالتزام بتعاليم ديننا الإسلامي والسلوك الحضاري والتفكير الإبداعي الابتكاري والأداء الجيد	التكليفات الفردية	تقويم الاعمال الفردية دوريا

2. أنشطة تقييم الطلبة

م	أنشطة التقييم	توقيت التقييم (بالأسبوع)	النسبة من إجمالي درجة التقييم
1	المشاركة الفعالة في الأنشطة الصفية للمقرر	كل الاسابيع	5
2	المشاركة الفعالة في الأنشطة اللاصفية للمقرر	كل الاسابيع	5
3	العروض التقديمية	كل الاسابيع	10
4	مشروعات وتكليفات جماعية	9 و10	20
5	أوراق عمل فردية	9 و10	10
6	الاختبار التحريري	11 أو 12	50
	المجموع		100

أنشطة التقييم (اختبار تحريري، شفهي، عرض تقديمي، مشروع جماعي، ورقة عمل الخ)

هـ - أنشطة الإرشاد الأكاديمي والدعم الطلابي:

1- تواجد منسقي المقرر أسبوعياً في "ساعات مكتبية" في اوقات محددة ومعلنة للطلبة
2- التواصل المستمر مع الطلبة عن بُعد طيلة أيام الأسبوع، والرد المستمر على استفساراتهم
3- تقديم الدعم المستمر وتقديم المساندة المعنوية لهم
4- التواصل يكون عبر البريد الإلكتروني، ووسائل التواصل الإلكترونية الأخرى
5- متابعة أداء الطلبة وتسليم واجباتهم وعرض المحاضرات وملخص المقرر في ملف المقرر على البلاك بورد وعلى موقع جامعة أم القرى
6- استخدام الوسائل والبرنامج المحادثة والغرفة الصوتية للتواصل الفوري على البلاك بورد او الويبكس
7- تطبيق عملي ومتابعة تنفيذ للواجبات الفصلية والأنشطة وتنفيذ عدد من البرامج التدريبية الموجهة للطلبة في ضوء احتياجاتهم الفعلية.
8- توفير الدعم والاستشارات أولا من منسق المقرر للطلاب المتعثرين وأصحاب الهمم والطلاب المتميزين وتوجيههم الى وحدة الإرشاد الأكاديمي بعمادة الجامعة للإرشاد والدعم النفسي والأكاديمي

و – مصادر التعلم والمرافق:

1. قائمة مصادر التعلم:

المرجع الرئيس للمقرر	مبادئ تغذية الانسان والتمثيل الغذائي -طبعة ثانية-د فهد عبد الحميد الشربجي- دار عدن للنشر والطباعه-2011و رقم إيداع: 20\14\9\2011
المراجع المساندة	روشتات غذائية- د جودة محمد عواد-دار صرح للنشر-القاهرة -مصر 2013-طبعة أولى- رقم إيداع: 2789\2013 الغذاء والتغذية- طبعه ثانية-د عزت امين ود فاروق شاهين واخرون- اشراف المكتب الإقليمي لمنظمة الصحة العلمية للشرق الأوسط- دار نشر أكاديميا إنترناشيونال-بيروت-لبنان- رقم دولي(8-0082-3-9953) تغذية الرياضيين-طبعه أولى-دكتور عبدالرحمن المصيقر-الموسسة العربية للطباعه-البحرين-1989-رقم الإيداع: 1989\د.ع. 798
المصادر الإلكترونية	https://www.moh.gov.sa/Pages/Default.aspx وزارة الصحة السعودية دليل السعرات الحرارية لخفض الوزن= الغذاء والتغذية - دليل السعرات الحرارية لخفض الوزن (moh.gov.sa) فيديو من وزارة الصحة وزارة الصحة التغذيةBing video - الهيئة العامة للغذاء والدواء(sfda.gov.sa) الهيئة العامة للغذاء والدواء - قطاع الغذاء(sfda.gov.sa) الموقع الرسمي لمنظمة الصحة العالمية(who.int) عربي

	المجلات العلمية الخاصة بالتغذية - التغذية الإكلينيكية - كلية العلوم الطبية التطبيقية | جامعة أم القرى (uqu.edu.sa) Arab Center for Nutrition | المركز العربي للتغذية Arab Center for Nutrition | المركز العربي للتغذية (acnut.com)
أخرى	لا يوجد

2. المرافق والتجهيزات المطلوبة:

العناصر	متطلبات المقرر
المرافق (القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ)	التدريس اونلاين ويتطلب: 1- برنامج بلاك بورد 2- برنامج ويبكس 3- شبكة انترنت مجانية وقوية للطلاب
التجهيزات التقنية (جهاز عرض البيانات، السبورة الذكية، البرمجيات)	غير مطلوب
تجهيزات أخرى (تبعاً لطبيعة التخصص)	برنامج قياس الاحتياجات الغذائية وتخطيط الوجبات (Food Processor software)

ز. تقويم جودة المقرر:

مجالات التقويم	المقيمون	طرق التقييم
تقييم الاقران	أعضاء هيئة التدريس .	إعداد لجان التنسيق للتدقيق والمتابعة للامتحانات والمراجعة الدورية.
عمل استبانة مرحلية لتقييم عملية التدريس - .التقويم الذاتي المستمر.	الطلبة - .أعضاء هيئة التدريس - .قيادات برنامج.	استبيانات تقييم المقرر
المراجعة الدورية الداخلية للمقرر (لجنة الخطط الدراسية والجداول) متابعة لجنة الإعداد العام لعضو هيئة التدريس وتقويم الأداء في تقديمه المقرر وفعالية الأدوات المستخدمة لتقديمه وعمل التقارير اللازمة .	لجنة تطوير المناهج -الطلبة-لجنة الجودة	استبيانات الطلاب-تحليل نتائج الاختبارات الفصلية والنهائية تقرير المقرر وأداء مخرجات التعلم

مجالات التقويم (مثل. فاعلية التدريس، فاعلة طرق تقييم الطلاب، مدى تحصيل مخرجات التعلم للمقرر، مصادر التعلم ... إلخ)
المقيمون (الطلبة، أعضاء هيئة التدريس، قيادات البرنامج، المراجع النظير، أخرى (يتم تحديدها)
طرق التقييم (مباشر وغير مباشر)

ح. اعتماد التوصيف

خبير المقرر	د/ عبير محمد الجعدي
التوقيع	

جهة الاعتماد	لجنة تطوير المناهج وسير العملية التعليمية بقسم التغذية الاكلينيكية
رقم الجلسة	الجلسة الحادية عشرة
تاريخ الجلسة	1443/9/23هـ؛ الموافق 2022/4/24م

منسق البرنامج	د/ وداد فؤاد أزهر
التوقيع	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA
T4 2020

توصيف المقرر الدراسي

اسم المقرر:	مقدمة في الضيافة
رمز المقرر:	**TOR1101**
البرنامج:	إدارة السياحة والضيافة
القسم العلمي:	إدارة السياحة والفندقة
الكلية:	إدارة الإعمال
المؤسسة:	جامعة ام القرى

المحتويات

أ. التعريف بالمقرر الدراسي:

1. الساعات المعتمدة: 2 ساعة معتمدة

2. نوع المقرر

أ. متطلب جامعة ■ متطلب كلية ☐ متطلب قسم ☐ أخرى ☐

ب. إجباري ☐ اختياري ■

3. السنة / المستوى الذي يقدم فيه المقرر:

الثالثة / السابعة

4. المتطلبات السابقة لهذا المقرر (إن وجدت)

لا يوجد

5. المتطلبات المتزامنة مع هذا المقرر (إن وجدت)

لا يوجد

6. نمط الدراسة (اختر كل ما ينطبق)

م	نمط الدراسة	عدد الساعات التدريسية	النسبة
1	المحاضرات التقليدية		
2	التعليم المدمج		
3	التعليم الإلكتروني		
4	التعليم عن بعد	22	% 100
5	أخرى		

7. ساعات الاتصال (على مستوى الفصل الدراسي)

م	النشاط	ساعات التعلم
1	محاضرات	22
2	معمل أو إستوديو	
3	دروس إضافية	
4	أخرى (تذكر)	
	الإجمالي	22

ب- هدف المقرر ومخرجاته التعليمية:

1. الوصف العام للمقرر:

تزداد اهمية صناعة السياحة كل يوم لما تمثلة من جزء اصيل في الدخل القومي لأغلب الدول حول العالم وللتطورات المتلاحقة في المجال حتى أصبحت ثالث أكبر صناعة على مستوى العالم بنسبة 10% من اجمالي الناتج الإجمالي العالمي، وتوظف يعادل 10% من اجمالي الوظائف على مستوى العالم. ويستمد هذا المقرر اهميته من كون السياحة ركيزة أساسية في رؤية المملكة 2030. واهمية ما فيه من قطاعات أخرى مثل قطاع الضيافة جزء أصيل في الثقافة والشخصية السعودية ومستمدة من شرف خدمة ضيوف الرحمن التي توارثناها جيلا بعد جيل، وقطاع المطاعم الذي يمثل أهمية بالغة على اقتصادات الدول وخصوصا في المملكة العربية السعودية الغنية بتنوع اطعمتها واطباقها المستمدة من تنوع ثقافتنا، وقطاع الفعاليات الذي يشكل مطلب رئيسي لتعزيز جودة الحياة للمواطن والمقيم على ارض المملكة. بالإضافة إلى السعي المستمر من الجهات والهيئات السعودية المختلفة للتطوير وتقديم اعلى المستويات العالمية في الخدمات لضيوف الرحمن. مع ما تشهده المملكة من مشروعات عملاقة متلاحقة لا تتوقف وحدها السماء.

2. الهدف الرئيس للمقرر

يهدف المقرر إلى تقديم المعارف الاساسية المتعلقة بالعمل في صناعة السياحة. مما يؤهل الطالب للتعرف على المكونات الرئيسية لهذه الصناعة المهمة، وحاجة الدول للاستفادة منها في تنمية اقتصاداتها وخلق فرص وظيفية لأبنائها، وفهم المستجدات الدولية المتعلقة بهذه الصناعة وما تتضمنها من قطاعات مختلفة مثل قطاع الضيافة، قطاع النقل، قطاع الفعاليات وموارد الجذب السياحي وقطاع التجزئة.

3. 3. مخرجات التعلم للمقرر:

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1	**المعرفة والفهم**	
1.1	التعرف على انواع السياحة ومفاهيمها والمحفزات الأساسية وسلوك السائح	
1.2	التعرف على أنواع المنظمات المحلية والعالمية التي تدير وتشرف على قطاع السياحة	
1.3	التعرف على صناعة الضيافة وما تتضمنه من قطاعات أخرى مثل الفنادق والمطاعم والمقاهي وقطاع الاعاشة	
1.4	التعرف على صناعة الفعاليات وانواعها وخصائصها وكيفية إدارتها وتسويقها	
1.5	التعرف عناصر صناعة السياحة والضيافة في المملكة العربية السعودية	
1.6	التعرف على مقومات الجذب السياحي في مناطق المملكة العربية السعودية	
1.7	تطوير برنامج سياحي به مكونات مختلفة من صناعة الضيافة وآليات العمل السياحي	
2	**المهارات**	
2.1	عمل عروض عن الاتيكيت والبروتوكول اخلاقيات ممارسة المهنة	
2.2	كتابة بحث عن صناعة الضيافة والسياحة	
3	**القيم**	
3.1	تحقيق المعارف الأساسية لصناعة السياحة واهميتها الاقتصادية والثقافية والاجتماعية للدول وليكون متلقي هذا المقرر من طلاب وطالبات عنصر فاعل في المجتمع وتنميته.	

ج. موضوعات المقرر

م	قائمة الموضوعات	ساعات الاتصال
1	مقدمة لصناعة السياحة.	2
2	مفهوم السياحة والنظريات السياحية المختلفة	2
3	الانماط السياحية ومقومات الجذب السياحي	2
4	اهم أنواع السياحة وطرق الاستفادة منها في اقتصاد الدول	2
5	المنتج السياحي وموارد الجذب السياحي في المملكة واهميتها الاقتصادية	2
6	التنمية السياحية المستدامة	2
7	أعمال شركات السياحة والسفر	2
8	مقدمة لصناعة الضيافة وانواع المنشئات الفندقية	2
9	انواع المطاعم وخدمات الاعاشة وطرق تقديم الخدمة	2
10	إدارة الفعاليات	2
11	اخلاقيات العمل والسفر في مجال السياحة والضيافة	2
	المجموع	22

د. التدريس والتقييم:

4. 1. ربط مخرجات التعلم للمقرر مع كل من استراتيجيات التدريس وطرق التقييم

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
1.0	**المعرفة والفهم**		
1.1	التعرف على مفهوم السياحة والسائح واهميتها الاقتصادية والثقافية والاجتماعية وبعض النظريات الاساسية	المحاضرات التفاعل خلال المحاضرات العروض التفاعلية	الاختبارات القصيرة الاختبارات النهائية البحث العرض
1.2	التعرف على اهم قطاعات السياحة مثل قطاع الضيافة والفعاليات والنقل وقطاع التجزئة	المحاضرات التفاعل خلال المحاضرات العروض التفاعلية	الاختبارات القصيرة الاختبارات النهائية البحث العرض
1.3	التعرف على المنتج السياحي وموارد الجذب عالميا وفي المملكة العربية السعودية	المحاضرات التفاعل خلال المحاضرات	الاختبارات النهائية البحث

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
		العروض التفاعلية	العرض
1.4	التعرف على صـــناعة الضـــيافة بجميع قطاعتها وطرق الخدمة والتعامل مع العملاء	المحاضرات التفاعل خلال المحاضرات العروض التفاعلية	الاختبارات النهائية البحث العرض
1.5	التعرف على قطـاع الفعـاليـات بجميع أنواعهـا واشكالها وطرق ادارتها وتسويقها	المحاضرات التفاعل خلال المحاضرات العروض التفاعلية	الاختبارات النهائية البحث العرض
1.5	التعرف على اهم الأســس الأخلاقية في العمل في قطاع السياحة وأيضـا اخلاقيات السـائح عند سـفره لاي وجهة سياحية	المحاضرات التفاعل خلال المحاضرات العروض التفاعلية	الاختبارات النهائية البحث العرض
2.0	**المهارات**		
2.1	مهارة كتابة الأبحاث وتقديم العروض المرئية	التفاعل خلال المحاضرات العروض التفاعلية	البحث العرض
2.2	مهارة العمل الجماعي من خلال كتابة مشـــاريع مشتركة	التفاعل خلال المحاضرات	البحث
3.0	**القيم**		
3.1	المثابرة والإصرار لتحقيق النجاح والتميز	التفاعل خلال المحاضرات العروض التفاعلية	البحث العرض
3.2	الحرص على نجـاح الجميع من خلال العمـل الجماعي	التفاعل خلال المحاضرات العروض التفاعلية	البحث العرض
3.3	الايمان بان العمل الجاد هو ما تقوم عليه الامم	التفاعل خلال المحاضرات العروض التفاعلية	البحث العرض

5. 2. أنشطة تقييم الطلبة

م	أنشطة التقييم	توقيت التقييم (بالأسبوع)	النسبة من إجمالي درجة التقييم
1	حضور وغياب ومشاركات أو اختبارات قصيرة (كويز)	جميع الأسابيع	%10
2	الاختبار النصفي	7 - 6	%20
3	بحث جماعي	10	%20
4	عرض تقديمي	11	%10
5	الاختبار النهائي	13	%40

أنشطة التقييم (اختبار تحريري، شفهي، عرض تقديمي، مشروع جماعي، ورقة عمل الخ)

هـ - أنشطة الإرشاد الأكاديمي والدعم الطلابي:

يتمتع كل طالب بجامعة ام القرى عبر المنظومة الاكاديمية بمرشد أكاديمي محدد له في المنظومة ودعم ومتابعة من رئيس القسم المقدم لهذا المقرر. ويتاح عضو هيئة التدريس المدرس للمقرر لمدة نصف ساعة اسبوعياً بمكتبة للقاء الطلاب أو عن طريق البلاكبورد او الويبيكس لتقديم لهم الدعم والارشاد الأكاديمي.

و – مصادر التعلم والمرافق:

6. 1. قائمة مصادر التعلم:

المرجع الرئيس للمقرر	مدخل إلى السياحة والسفر والطيران – أ. حميد الطائي – تاريخ النشر 2022/2/4 – الناشر: مؤسسة الوراق للنشر والتوزيع Lucius Walker (2017) Tourism and Hospitality Management, Published by Library Press, New York, NY 10001, USA.
المراجع المساندة	مبادئ صناعة الضيافة – أ. يوسف محمد حافظ حماقي – تاريخ النشر 2019/1/1 الناشر: دار الكتاب الحديث John Walker and Josielyn Walker (2019) Introduction to Hospitality, Edition 8, Pearson Education, Florida Chiranjib kumar (2017) Introduction To Tourism & Hospitality, 1st edition, CreateSpace Independent Publishing Platform, ISBN 978-1541064492. Ruth Dowson and David Bassett (2018) Event Planning and Management: Principles, Planning and Practice, 2nd Edition, Kogan, ISBN 0749483318.
المصادر الإلكترونية	
أخرى	اخلاقيات صناعة السياحة والضيافة – د. مصطفى يوسف كافي – تاريخ النشر 2014 الناشر: مكتبة المجتمع العربي للنشر والتوزيع

7.

8. 2. المرافق والتجهيزات المطلوبة:

العناصر	متطلبات المقرر
المرافق (القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ)	منصة اليكترونية مثل البلاكبورد
التجهيزات التقنية (جهاز عرض البيانات، السبورة الذكية، البرمجيات)	برنامج البلاكبورد والويبيكس
تجهيزات أخرى (تبعاً لطبيعة التخصص)	غير مطلوب

ز. تقويم جودة المقرر:

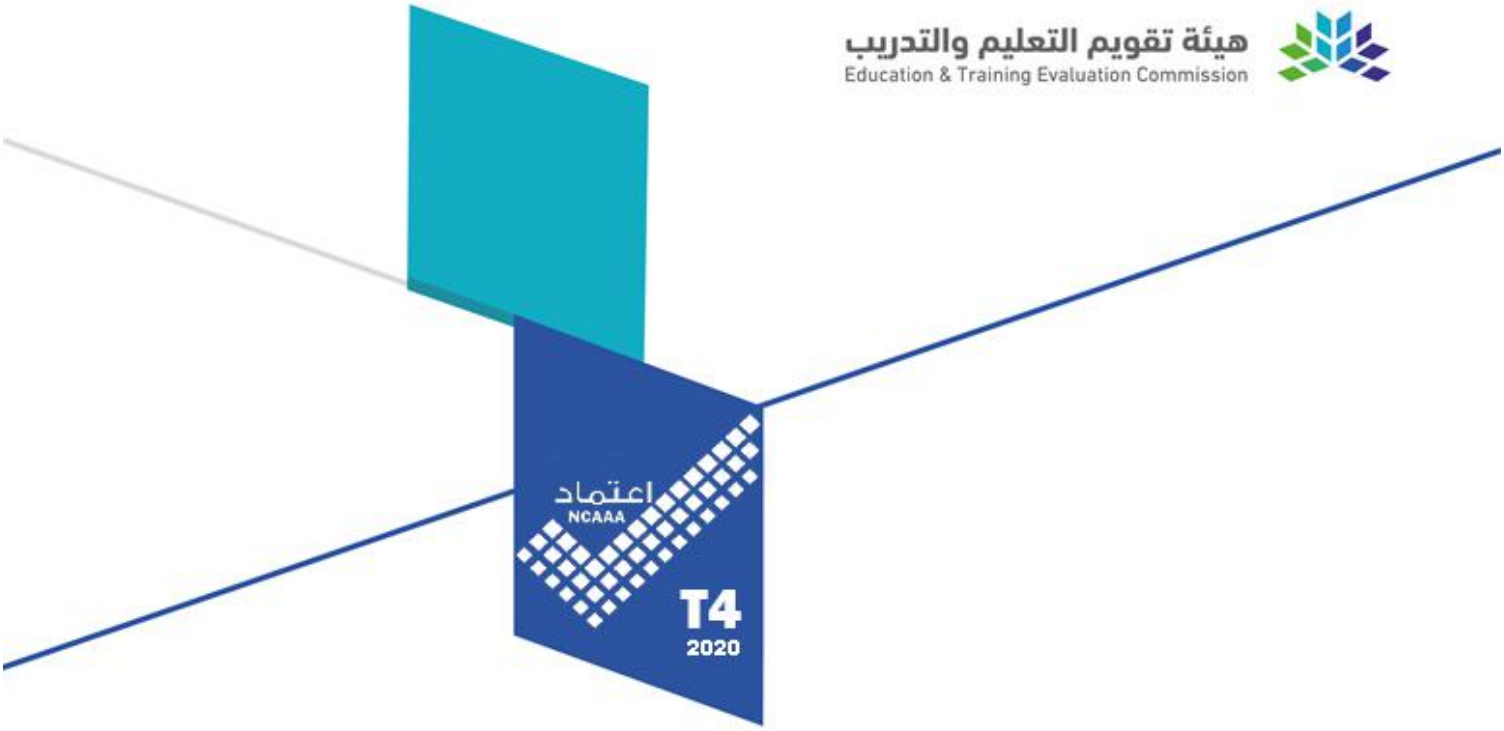
مجالات التقويم	المقيمون	طرق التقييم
مدى تحصيل مخرجات التعلم للمقرر	لجنة الجودة بقسم إدارة السياحة والفندقة	نتائج الاستبيان مع الطلاب نتائج الطلاب مراجعات لجنة الجودة
فاعلية التدريس	الطلاب	استبيانات أراء الطلاب

مجالات التقويم (مثل. فاعلية التدريس، فاعلة طرق تقييم الطلاب، مدى تحصيل مخرجات التعلم للمقرر، مصادر التعلم ... إلخ)

المقيمون (الطلبة، أعضاء هيئة التدريس، قيادات البرنامج، المراجع النظير، أخرى (يتم تحديدها)
طرق التقييم (مباشر وغير مباشر)

ح. اعتماد التوصيف

جهة الاعتماد	قسم إدارة السياحة والفندقة
رقم الجلسة	
تاريخ الجلسة	



توصيف المقرر الدراسي

اسم المقرر:	ريادة الأعمال والابتكار
رمز المقرر:	**BA1902**
البرنامج:	
القسم العلمي:	**إدارة الأعمال**
الكلية:	**إدارة الأعمال**
المؤسسة:	**جامعة أم القرى**

المحتويات

أ. التعريف بالمقرر الدراسي:

1. الساعات المعتمدة:

2. نوع المقرر

أ. متطلب جامعة [√] متطلب كلية [ ] متطلب قسم [ ] أخرى [ ]

ب. إجباري [ ] اختياري [√]

3. السنة / المستوى الذي يقدم فيه المقرر

4. المتطلبات السابقة لهذا المقرر (إن وجدت)

5. المتطلبات المتزامنة مع هذا المقرر (إن وجدت)

6. نمط الدراسة (اختر كل ما ينطبق)

م	نمط الدراسة	عدد الساعات التدريسية	النسبة
1	المحاضرات التقليدية		
2	التعليم المدمج		
3	التعليم الإلكتروني		
4	التعليم عن بعد	2	%100
5	أخرى		

7. ساعات الاتصال (على مستوى الفصل الدراسي)

م	النشاط	ساعات التعلم
1	محاضرات	20
2	معمل أو إستوديو	
3	دروس إضافية	
4	أخرى (تذكر)	
	الإجمالي	20

ب- هدف المقرر ومخرجاته التعليمية:

1. الوصف العام للمقرر:

يسعى المقرر إلى تمكين الطلاب بالمعارف والمهارات اللازمة والتي تؤهله إلى توليد الأفكار الإبداعية وتحويلها الى مشاريع تطبيقية وفق قواعد وأسس انشاء المشاريع الريادية الناجحة.

2. الهدف الرئيس للمقرر

يهدف هذا المقرر الحيوي إلى مساعدة الطلاب على التعرف على المفاهيم المتعلقة بالعمل الحر والإلمام بمبادئ وأسس ريادة الأعمال والابتكار والمنهجيات والأدوات الفعالة لتوليد الأفكار الإبداعية ثم تحويلها الى مشاريع ريادية. كما يهدف هذا المقرر إلى توجيه الطلاب إلى المساهمة في تقديم حلول مبتكرة للمشاكل الاجتماعية وتوليد فرص العمل لأبناء المجتمع من خلال المشاريع المبتكرة، إصافة إلى التميز وتحقيق العوائد المربحة. كما يركز هذا المقرر على بناء شخصية الريادي بتوضيح اهم الصفات والخصائص التي تميزه عن غيره وتمكنه من المشاركة في تحقيق النمو الاقتصادي والمشاركة في ازدهار الوطن. كما يهدف المقرر إلى تدريب الطلاب على تكوين فرق العمل وإدارتها والعمل تحت الضغط في ظل ارتفاع درجات المخاطرة.

3. مخرجات التعلم للمقرر:

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1	**المعرفة والفهم**	
1.1	تعريف اساسيات ريادة الأعمال	
1.2	تحديد فرص المشاريع الريادية	
1.3	شرح كيفية إعداد خطة المشروع	
1.4	فهم أساسيات الابتكار وادواته	
1.5		
2	**المهارات**	
2.1	تحليل الأفكار القابلة للتحول الى مشاريع ريادية	
2.2	تصميم نموذج العمل	
2.3	تحليل الأفكار القابلة للتحول الى مشاريع ريادية	
3	**القيم**	
3.1	أن يبدي الطالب اهتماماً نحو السلوك الأخلاقي في إنشاء المشاريع الريادية	
3.2	أن يحترم الطالب الواجبات الوظيفية الملقة على عاتقه	
3.3	أن يزداد شعور الطالب نحو أهمية التفكير الإبداعي وتأسيس المشاريع الناشئة	
3...		

ج. موضوعات المقرر

م	قائمة الموضوعات	ساعات الاتصال
1	مقدمة عن ريادة الأعمال؛ كيف يبدأ الشخص عملاً تجارياً، لمحة تاريخية موجزة عن الأعمال التجارية الريادية عالمياً ومحلياً، كيف يستفيد المجتمع من ريادة الأعمال، أنواع ريادة الأعمال، خصائص رواد الأعمال.	2
2	مقدمة عن الابتكار والفرق بينه وبين الاختراع والابداع – أنواع الابتكار – حقوق الملكية الفكرية – التفكير النقدي والإبداعي - الإبتكار في عالم الأعمال.	2
3	توليد أفكار العمل التجاري والتقييم الأوّلي لها؛ التعرف على المشكلات في السوق والتفكير في الحلول - تحديد وتحليل واختيار الفرص للأعمال التجارية من خلال الوعي باحتياجات السوق.	2
4	التحليل الخارجي للأعمال التجارية؛ تحديد الصناعة والعمال والمنافسين، إنشاء الخريطة التنافسية، الميزة التنافسية.	2
5	تطوير المنتجات والخدمات – تطوير النموذج الأولي - إعادة التمحور.	2
6	بناء فريق العمل - إدارة الموارد البشرية؛ عناصر الموارد البشرية، عملية تعيين الموظفين، وسائل الاحتفاظ بالموظفين ،الجوانب ذات الصلة بفترة تجربة الموظف وإنهاء عمله، اللوائح والقوانين للموظفين، الجوانب الفريدة للموارد البشرية داخل الأعمال التجارية العائلية.	2
7	مهام وإستراتيجية العمل؛ تطوير قائمة ملفات أصول الشركة وقدراتها، تقسيم القائمة إلى أصول عادية وأصول الفريدة، تقييم القدرة التنافسية للموارد والقدرات وبناء نموذج الأعمال.	2
8	التمويل والمحاسبة للأعمال التجارية؛ المسائل المالية الأساسية التي ينطوي عليها بدء عمل تجاري، أساسيات تمويل العمل التجاري، أهمية المحاسبة الصحيحة عند بدء عمل تجاري. التحليل المالي والتجاري للأعمال التجارية؛ التحليل المبني على الفرضيات، أهمية الأساس المالي القوي في العمل التجاري الريادي، أساليب قياس الأداء تحليل النسب والانحراف والحساسية، استطلاعات الرأي القصيرة في المجال التجاري– أنواع التمويل ومراحله - العرض على المستثمرين.	2
9	التسويق في الأعمال التجارية: أساسيات خطة التسويق، كيفية وضع نموذج تسعير، أنواع الترويج المختلفة المتوفرة للأعمال التجارية الجديدة، أساليب إدارة المبيعات.	2

10	المسائل القانونية المتعلقة بالعمل التجاري الجديد؛ الأشكال القانونية المختلفة للأعمال التجارية لتحديد أفضل تصميم للعمل التجاري الجديد المقترح، أساسيات العقود، دور عقود الإيجار في الإنشاء القانوني للعمل التجاري الجديد، أوجه استفادة الأعمال التجارية الجديدة من القوانين والقواعد واللوائح، أهمية حقوق النشر والعلامات التجارية وبراءات الاختراع للعمل التجاري الجديد، الدور الذي يلعبه التأمين في مجموعة المخاطر التي يتعرض لها العمل التجاري الجديد، كيفية تكوين مجلس استشاري ومجلس إدارة فعالَيْن.	2
المجموع		

د. التدريس والتقييم:

1. ربط مخرجات التعلم للمقرر مع كل من استراتيجيات التدريس وطرق التقييم

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
1.0	**المعرفة والفهم**		
1.1	شرح الأساس المنطقي وراء بدء عمل تجاري ريادي، وتحديد نوعية الأشخاص الذين ينطبق عليهم وصف رواد الأعمال وتأثير الأعمال التجارية الريادية على المجتمع عالمياً ومحلياً.	المحاضرات - المناقشات	العروض التقديمية وتكوين الفرق والتقييمات الذاتية الفردية
1.2	وصف الموارد الريادية المتاحة لرواد الأعمال	المحاضرات - المناقشات	
1.3	وصف الخطوات اللازمة لتنمية فكرة ريادة الأعمال	المحاضرات - المناقشات	
2.0	**المهارات**		
2.1	تحديد فرص ريادة الأعمال من خلال استخدام عمليات التفكير النقدي والإبداعي	المحاضرات - المناقشات	العروض التقديمية وتكوين الفرق والتقييمات الذاتية الفردية
2.2	معرفة احتياجات العملاء لإنشاء النموذج الأولي للمنتج	المحاضرات – المناقشات – مقاطع فيديو	
2.3	إنشاء وبناء العروض التقديمية وملف العرض على مستثمر	المحاضرات - المناقشات	
3.0	**القيم**		
3.1	تحليل فرص ريادة الأعمال من منظور المملكة العربية السعودية وكذلك من المنظور العالمي	المحاضرات - القراءة الموجهة	دراسة حالات
3.2	تحقق من صحة القرارات الريادية من خلال الاستفادة من آراء وملاحظات العملاء	المحاضرات - القراءة الموجهة	دراسة حالات

2. أنشطة تقييم الطلبة

م	أنشطة التقييم	توقيت التقييم (بالأسبوع)	النسبة من إجمالي درجة التقييم
1	تقييم الوعي الذاتي بنقاط القوة والضعف في ريادة الأعمال - التقييم الذاتي 1	2	%5
2	تقييم نقاط القوة والضعف في التفكير النقدي والإبداعي لرواد الأعمال - التقييم الذاتي	3	%5
3	تقييم خصائص ريادة الأعمال والقدرة على العمل بفعالية في فرق ريادة الأعمال- التقييم الذاتي	4	%10
4	تحديد نقاط الضعف في السوق	5	%5
5	إختبار دوري	6	%10
6	واجبات الفريق 1: النموذج الأولي والتحقق من العميل	7	%5
7	واجبات الفريق 2: مخطط نموذج لعمل التجاري	8	%5
8	واجبات الفريق 3: العرض التقديمي النهائي على المستثمرين	10	%5
9	الإختبار النهائي	11	%50

أنشطة التقييم (اختبار تحريري، شفهي، عرض تقديمي، مشروع جماعي، ورقة عمل الخ)

هـ - أنشطة الإرشاد الأكاديمي والدعم الطلابي:

- تحديد أوقات الساعات المكتبية وإحاطة الطلاب بها
- تزويد الطلاب بخطة المقرر وآلية التقييم من بداية الفصل الدراسي، ومراجعتها معهم دورياً
- تتبع حالات الطلاب منخفضي الأداء وتقديم الدعم اللازم لهم

و – مصادر التعلم والمرافق:

1. قائمة مصادر التعلم:

المرجع الرئيس للمقرر	• "ريادة الأعمال، الفن والعلم والعمليات، والمقومات اللازمة للنجاح" تشارلز إي بامفورد وغاري دي بروتون
المراجع المساندة	الكتاب الإثرائي المصمم من قبل منشآت ويحتوي على دراسة حالات ومقالات ذات صلة بالمنهج الرئيسي
المصادر الإلكترونية	فيديوهات رقمية مصممة من قبل منشآت
أخرى	المكتبة الرقمية السعودية

2. المرافق والتجهيزات المطلوبة:

العناصر	متطلبات المقرر
المرافق (القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ)	قاعات دراسية تناسب عدد الطلاب
التجهيزات التقنية (جهاز عرض البيانات، السبورة الذكية، البرمجيات)	جهاز حاسوب مزود بالانترنت، سبورة ذكية
تجهيزات أخرى (تبعاً لطبيعة التخصص)	

ز. تقويم جودة المقرر:

مجالات التقويم	المقيمون	طرق التقييم
فاعلية التدريس	الطلاب – منسق المقرر – رئيس القسم – قيادات البرنامج	استطلاعات مباشرة، وملاحظة غيرمباشرة
فاعلية طرق تقييم الطلاب	المراجع النظير - منسق المقرر – رئيس القسم – قيادات البرنامج	مباشرة: عينة عشوائية من نماذج تقييم الطلاب وأعمالهم
مدى تحصيل مخرجات التعلم للمقرر	المراجع النظير - منسق المقرر – رئيس القسم – قيادات البرنامج	مباشرة: نتائج الطلاب في الاختبارات الدورية والنهائية

مجالات التقويم (مثل. فاعلية التدريس، فاعلة طرق تقييم الطلاب، مدى تحصيل مخرجات التعلم للمقرر، مصادر التعلم ... إلخ)
المقيمون (الطلبة، أعضاء هيئة التدريس، قيادات البرنامج، المراجع النظير، أخرى (يتم تحديدها)
طرق التقييم (مباشر وغير مباشر)

ح. اعتماد التوصيف

جهة الاعتماد	

رقم الجلسة	
تاريخ الجلسة	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA
T4 2020

توصيف المقرر الدراسي

اسم المقرر:	البحث والابتكار
رمز المقرر:	PSY 1101
البرنامج:	جميع طلبة جامعة أم القرى
القسم العلمي:	علم النفس
الكلية:	التربية
المؤسسة:	جامعة أم القرى

المحتويات

أ. التعريف بالمقرر الدراسي:

1. الساعات المعتمدة: ساعتان
2. نوع المقرر أ. متطلب جامعة [√] متطلب كلية [ ] متطلب قسم [ ] أخرى [ ] ب. إجباري [ ] اختياري [√]
3. السنة / المستوى الذي يقدم فيه المقرر : **جميع البرامج الدراسية**
4. المتطلبات السابقة لهذا المقرر (إن وجدت) **لا يوجد**
5. المتطلبات المتزامنة مع هذا المقرر (إن وجدت) **لا يوجد**

6. نمط الدراسة (اختر كل ما ينطبق)

م	نمط الدراسة	عدد الساعات التدريسية	النسبة
1	المحاضرات التقليدية		
2	التعليم المدمج		
3	التعليم الإلكتروني		
4	التعليم عن بعد	24	%100
5	أخرى		

7. ساعات الاتصال (على مستوى الفصل الدراسي)

م	النشاط	ساعات التعلم
1	محاضرات	14
2	معمل أو إستوديو	
3	دروس إضافية (حلقات البحث)	10
4	أخرى (تذكر)	
	الإجمالي	**24**

ب- هدف المقرر ومخرجاته التعليمية:

1. الوصف العام للمقرر: **يقدم المقرر معلومات نظرية وتطبيقية عن البحث العلمي، وتوظيف مهارات البحث العلمي في حل المشكلات بطرق ابتكارية ، وتوظيف التقنيات الحديثة في البحث العلمي، ودور البحث العلمي والابتكار في تعزيز التنمية المستدامة تلبية لتطلعات الوطن لجيل مبدع يقدر البحث والابتكار.**
2. الهدف الرئيس للمقرر **التميز في البحث والابتكار، ورفع مهارات البحث العلمي لدى الطلبة وتحفيزهم إلى إجراء البحوث وفقاً لمعايير الجودة البحثية.**

3. مخرجات التعلم للمقرر:

	مخرجات التعلم للمقرر	رمز مخرج التعلم المرتبط للبرنامج
1	المعرفة والفهم	
1.1	أن يحدد مفهوم المعرفة	ع
1.2	أن يعدد أهداف البحث العلمي	ع
1.3	أن يشرح خطوات الابتكار	ع
1.4	أن يستعرض استراتيجيات إبداعية لحل المشكلات	ع
1.5	أن يصف خصائص المبتكرين والمبدعين	ع
1.6	أن يشرح دور الابتكار في التنمية المستدامة	ع

2	المهارات	
2.1	أن يطبق معايير تقييم الأفكار الابتكارية	م
2.2	أن يميز بين البحث الكمي والبحث النوعي	م
2.3	أن يقترح عدد من استراتيجيات وأفكار إبداعية لحل المشكلات	م
2.4	أن يوظف مهارات البحث العلمي في حل المشكلات بطرق ابتكارية	م
2.5	أن يستخدم التقنيات الحديثة في البحث والابتكار	م
3	القيم	
3.1	يلتزم بالسلوك المسئول الذي يتوافق مع أخلاقيات البحث العلمي.	ق
3.2	التواصل مع الآخرين ويعمل بروح الفريق	ق
3.3	احترام الرأي والرأي الآخر من خلال تبادل الأفكار ووجهات النظر عند التفاعل مع الأخرين	ق

ج. موضوعات المقرر

م	قائمة الموضوعات	ساعات الاتصال
1	مصادر المعرفة (مفهومها أهدافها، أنواعها، أهميتها) الحاجة الى المعرفة	2
2	مقدمة عن البحث العلمي :مفهوم البحث العلمي وأهدافه، واهمية البحث العلمي ، وخصائصه، و اخلاقيات البحث العلمي	2
3	خطة البحث العلمي :تحديد الفكرة العامة للبحث ،,مصادر المشكلة ،و صياغة مشكلة البحث تحليل مشكلة البحث	2
4	أنواع البحث العلمي : البحث الكمي-البحث النوعي ،وصياغة الأسئلة البحثية ، الفروض البحثية	2
5	دور البحث العلمي في الابتكار : تأسيس بيئة بحثية وابتكارية	2
6	مقدمة عن الابتكار من حيث (المفهوم-أنواعه -خصائصه -مراحله)	2
7	خطة الابتكار: من اين يبدا الابتكار؟ كيف نحصـــل على الافكار؟ كيفية اختيار فكرة مبتكره؟ كيفية توليد الافكار الجديدة 0مستويات الابتكار (الابتكار التزايدي- الابتكار المفاجئ- الابتكار التحويلي) الخطوات الثلاث لعملية الابتكار (التصور- التنفيذ- التسويق) ، ومعايير تقيم الافكار المبتكرة	2
8	خصائص الشخصية المبتكرة ، العوامل المؤثرة على الابتكار (شخصية ، تنظيمية ، بيئية)	2
9	دوافع الابتكار، مستويات الابتكار (على مستوى الفرد، الجماعة، المنظمة، المجتمع) مصادر الابتكار ، طرق قياس الابتكار وتنميته	2
10	مخترعات وابتكارات بين القديم والحديث	2
11	استراتيجيات وأفكار إبداعية لحل المشكلات	2
12	تعزيز دور الابتكار من أجل التنمية المستدامة للمجتمع (المبادرات-التحديات)	2
	المجموع	24

د. التدريس والتقييم:

1. ربط مخرجات التعلم للمقرر مع كل من استراتيجيات التدريس وطرق التقييم

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
1.0	المعرفة والفهم		
1.1	يحدد مفهوم المعرفة	المحاضرة -العصف الذهني	عرض تقديمي يوضـــح تطور المعرفة
1.2	يعدد أهداف البحث العلمي	المحاضرة -العصف الذهني	خريطة ذهنية
1.3	يشرح خطوات الابتكار	المحاضرة -العصف الذهني حل المشكلات	مقـال علمي يوضـــح خطوات الابتكار
1.4	يســـتعرض اســـتراتيجيات إبداعية لحل المشكلات	المحاضرة العصف الذهني التعلم التعاوني	تـقـريـر جـمـاعـي يـحـدد الاســـتراتيجيـات والأفكـار الإبداعية التي تســـتخدم لحل المشكلات

الرمز	مخرجات التعلم	استراتيجيات التدريس	طرق التقييم
1.5	يصف خصائص المبتكرين والمبدعين	المحاضرة العصف الذهني التعلم التعاوني	عرض تقديمي
1.6	يشرح دور الابتكار في التنمية المستدامة	المحاضرة البحث والاستقصاء	ورقة علمية بحثية مصغرة
2.0	المهارات		
2.1	يطبق معايير تقييم الأفكار الابتكارية	المحاضرة العصف الذهني حل المشكلات	تقديم تقرير جماعي كيف تستطيع الحكم بان افكارك قابلة للتطبيق والتنفيذ؟ كيف تقوم بتقييم افكارك الابتكارية؟
2.2	يميز بين البحث الكمي والبحث النوعي	المحاضرة العصف الذهني البحث والاستقصاء	تقرير جماعي : عمل مقارنة بين البحث الكمي والبحث النوعي من حيث: المفهوم- المنهج-خصائص)
2.3	يقترح عدد من استراتيجيات وأفكار إبداعية لحل المشكلات	المحاضرة العصف الذهني التعلم التعاوني	تقرير جماعي يحدد الاستراتيجيات والأفكار الإبداعية التي تستخدم لحل المشكلات
24	يوظف مهارات البحث العلمي في حل المشكلات بطرق ابتكارية	المحاضرة البحث والاستقصاء	ورقة علمية بحثية مصغرة
2.5	يستخدم التقنيات الحديثة في البحث والابتكار	المحاضرة البحث والاستقصاء	عرض تقديمي
3.0	القيم		
3.1	يلتزم بالسلوك المسئول الذي يتوافق مع أخلاقيات البحث العلمي.	التعلم التعاوني	سلم التقدير
3.2	التواصل مع الآخرين ويعمل بروح الفريق	التعلم التعاوني	سلم التقدير
3.3	احترام الرأي والرأي الآخر من خلال تبادل الأفكار ووجهات النظر عند التفاعل مع الأخرين	التعلم التعاوني	سلم التقدير

2. أنشطة تقييم الطلبة

م	أنشطة التقييم	توقيت التقييم (بالأسبوع)	النسبة من إجمالي درجة التقييم
1	تكليفات وأنشطة مستمرة على مدار الفصل الدراسي	أسبوعياً	%30
2	الحضور والمشاركة	طول الفصل	%10
3	مشروع تخرج(مقطع فيديو، انفوجرافيك تفاعلي، عرض منتج ،000 إعداد خطة بحثية ،منتج ابتكاري)		%30
4	اختبار نهائي	أسبوع 12	%30
5		المجموع	%100

أنشطة التقييم (اختبار تحريري، شفهي، عرض تقديمي، مشروع جماعي، ورقة عمل الخ)

هـ ـ أنشطة الإرشاد الأكاديمي والدعم الطلابي:

- وجود ساعات مكتبية في جدول عضو هيئة تدريس تخصص لمقابلة الطلاب والتفاعل مع نقاشاتهم واستفساراتهم وتقديم الإرشاد الأكاديمي لهم.
- تزويد الطلاب بالبريد الإلكتروني ورقم الجوال ومواقع التواصل الاجتماعي لعضو هيئة التدريس للتواصل مع الطلاب في أي وقت يحتاجونه لمساعدتهم أكاديمياً.

و – مصادر التعلم والمرافق:

1. قائمة مصادر التعلم:

المرجع الرئيس للمقرر	بصمة جي ، سائر(2016) الابتكار الناجح، دار الكتب العلمية بصمة جي ، سائر(2016) مصادر الأفكار المبتكرة، دار الكتب العلمية عليان، ربحي مصطفي(2019) البحث العلمي أسسه. مناهجه وأساليبه وإجراءاته .بيت الأفكار الدولية
المراجع المساندة	موسى، رشاد علي ،والحطاب ،سهام أحمد(2004)الابتكار، دار الفكر العربي عبيدات،ذوقان ،عبدالحق،كايد وعدس،عبدالرحمن(2018)البحث العلمي،دار الفكر العربي
المصادر الإلكترونية	منصة ابتكر /https://ibtekr.org بوابة الابتكار الوطنية (فكرة) /https://fikra.sa منصة الابتكار المفتوح /https://openinnovation.sa محركات البحث العلمي /https://www.academicinfo.net /https://www.refseek.com /https://scholar.google.ca /https://www.sweetsearch.com
أخرى	

2. المرافق والتجهيزات المطلوبة:

العناصر	متطلبات المقرر
المرافق (القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ)	قاعات دراسية
التجهيزات التقنية (جهاز عرض البيانات، السبورة الذكية، البرمجيات)	جهاز عرض البيانات، السبورة الذكية
تجهيزات أخرى (تبعاً لطبيعة التخصص)	معمل حاسب مجهز بالأنترنت

ز. تقويم جودة المقرر:

مجالات التقويم	المقيمون	طرق التقييم
ـفاعلية التدريس، فاعلية مواد التدريب، توفر مصادر التعلم	- الطلاب - أعضاء هيئة التدريس - المراجع النظير - هيئة تقويم التعليم والتدريب	- استمارة تقويم المقرر والبرنامج - معايير هيئة تقويم التعليم والتدريب

مجالات التقويم	المقيمون	طرق التقييم
-تدقيق تصحيح عينة من بحوث الطلبة ومشاريعهم بواسطة أعضاء هيئة تدريس مستقلين بالقسم من ذوي التخصص.	- أعضاء هيئة التدريس	نماذج الاختبارات
-تبادل الزيارات والخبرات والاستشارات بين النظراء (الأقران) في تدريس المقرر بالأقسام والكليات بالجامعات السعودية.	- أعضاء هيئة التدريس - المراجع النظير	استمارة التقييم
-تحديث مصادر التعلم الخاصة بالمقرر للتأكد من مواكبتها للتطورات المستجدة في المجال باستمرار وفقاً للمعطيات الحديثة، مع المراجعة الدورية لنتائج تقرير المقرر والبرنامج.	- أعضاء هيئة التدريس	استمارة رضا المستفيدين (الطلاب ، أعضاء هيئة التدريس)
تطوير المقرر باستمرار بناء على آراء أعضاء هيئة التدريس والطلاب في الاستبانات التي يقومون بتعبئتها، مع تحليل الوضع الراهن SWOT Analysis نقاط القوة/ نقاط الضعف ، الفرص المتاحة /التهديدات المحتملة ، استناداً لمعايير NAQAAE لأسس التخطيط الاستراتيجي للاعتماد الوطني.	- أعضاء هيئة التدريس - الطلاب	استمارة تقويم المقرر والبرنامج

مجالات التقويم (مثل. فاعلية التدريس، فاعلة طرق تقييم الطلاب، مدى تحصيل مخرجات التعلم للمقرر، مصادر التعلم ... إلخ)
المقيمون (الطلبة، أعضاء هيئة التدريس، قيادات البرنامج، المراجع النظير، أخرى (يتم تحديدها)
طرق التقييم (مباشر وغير مباشر)

ح. اعتماد التوصيف

جهة الاعتماد	
رقم الجلسة	
تاريخ الجلسة	