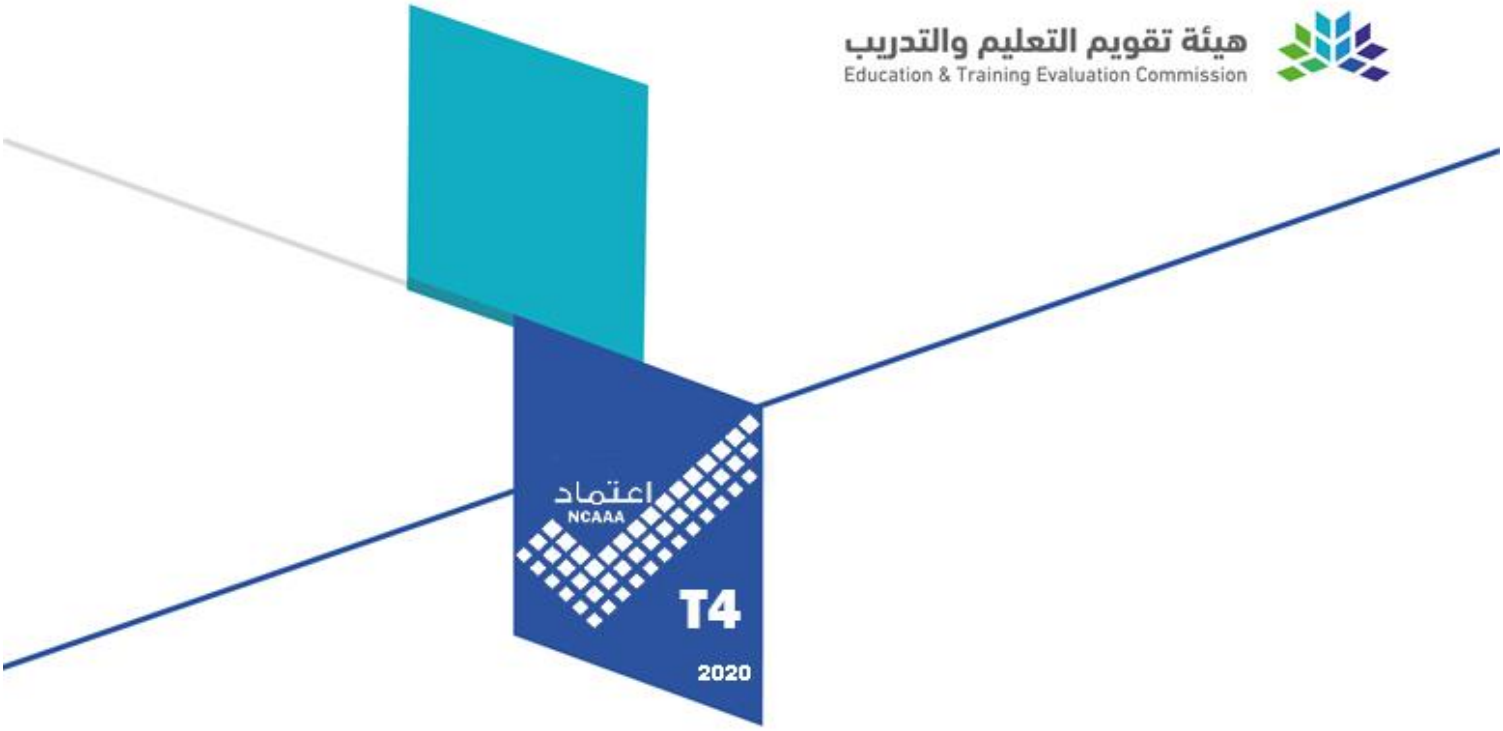
# توصيف مقررات
# برنامج الفيزياء

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 |

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## A. Course Identification

| |
|---|
| **1. Credit hours:** 4 |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☒ Others ☐<br>**b.** Required ☒ Elective ☐ |
| **3. Level/year at which this course is offered:** First level/First year |
| **4. Pre-requisites for this course** (if any)**:**<br>None |
| **5. Co-requisites for this course** (if any)**:**<br>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 | 36 |
| 2 | Laboratory/Studio | 0 |
| 3 | Tutorial | 0 |
| 4 | Others (Exam, Quizzes, Activities,…) | 6 |
| | 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. | K2 |
| 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 |
| 1.4 | Define the basic concepts and techniques of integration of polynomial, rational, and trigonometric functions. | K1 |
| **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 |
| 2.2 | Determine the limits of functions and their continuity at points or on intervals. | S2 |
| 2.3 | Calculate the derivative of various type of functions using the rules and techniques of differentiation. | S1 |
| 2.4 | Evaluate integrals of real functions using basic rules and techniques of integration. | S2 |
| **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 |
| 3.2 | Justify the choice of different steps in problem resolution procedure. | V1 |
| 3.3 | Solve problems using a range of formats and approaches in basic science. | V2 |
| 3.4 | Show the ability to work independently and within groups. | V2 |

## C. Course Content

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

| | | |
|---|---|---|
| | (i) Introduction to Limits<br>(ii) Theorems on limits<br>(iii) Limit at infinity and infinite limits<br>(iv) Continuity | |
| 4 | **Differentiation**<br>(i) Definition of Derivative (Using Limits)<br>(ii) Rules and Theorems for Finding Derivatives<br>(iii)Derivative of Trigonometric Function<br>(iv)Chain Rule<br>(v) Higher Order Derivatives | 10 |
| 5 | **Integration**<br>(i) Antiderivatives.<br>(ii) Fundamental Theorems of Calculus. | 4 |
| 6 | **Others**<br>Preprimaries, Quizzes, Activities … | 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 | 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 |
| 2.3 | Calculate the derivative of various type of functions using the rules and | Lecture/Individual or group work | Exams, quizes |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| | techniques of differentiation. | | |
| 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<br>• 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** | |

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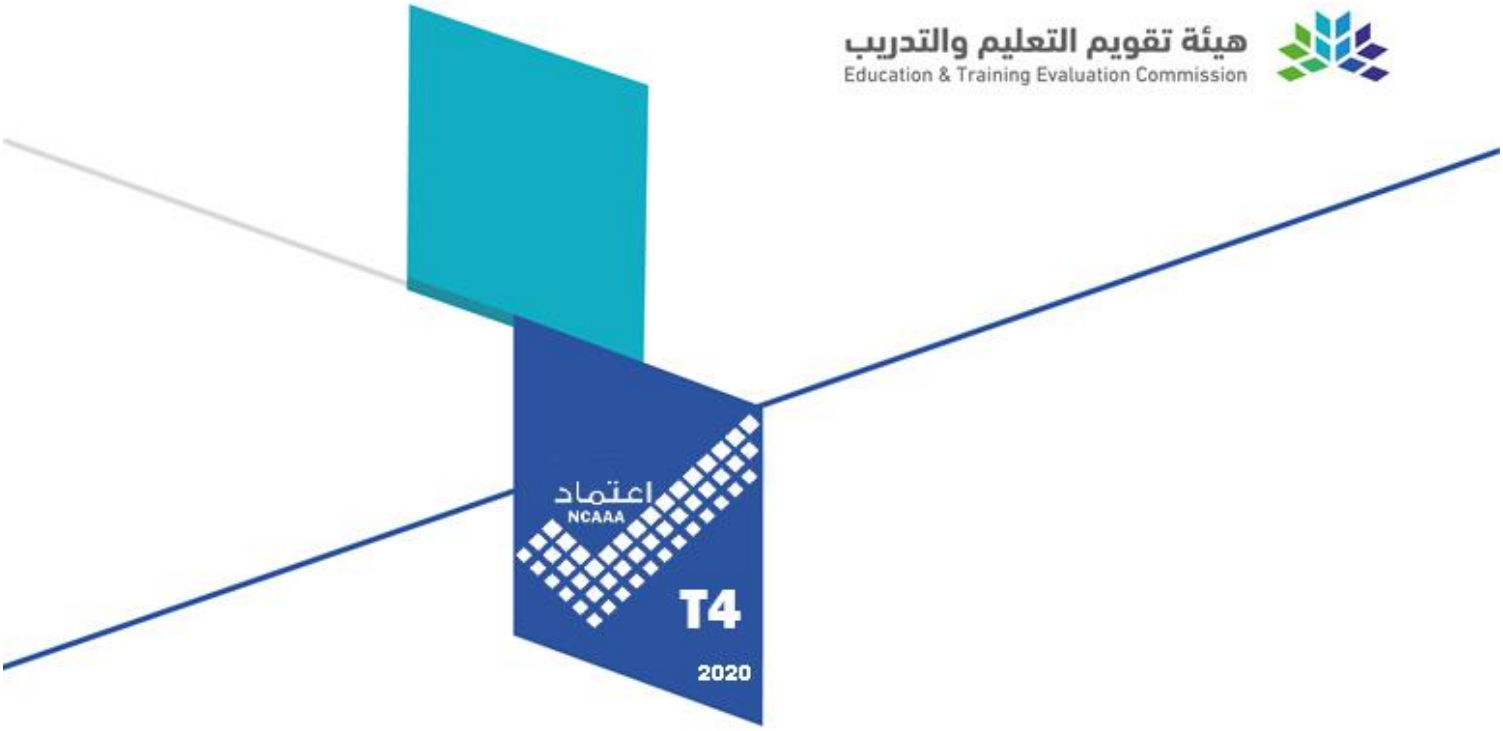


# Course Specifications

| | |
|---|---|
| **Course Title:** | **Linear Algebra (1)** |
| **Course Code:** | **MTH1211** |
| **Program:** | **BSc. in Mathematics** |
| **Department:** | **Mathematical science** |
| **College:** | **Applied science** |
| **Institution:** | **Umm Al-Qura University** |

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## A. Course Identification

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

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 | K1 |
| 1.2 | State Row reduction and echelon forms | K1 |
| 1.3 | Describe the different matrix operations | K1 |
| 1.4 | Memorize determinants and their properties | K1 |
| 1.5 | Outline vector and sub-vector spaces and their properties | K2 |
| 1.6 | Name bases and dimension of vector spaces | K2 |
| **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 | S1 |
| 2.2 | Determine whether a system of linear equations is consistent or inconsistent | S1 |
| 2.3 | Perform matrix operations and solve matrix equations | S1 |
| 2.4 | Calculate an eigenvalue and an eigenvector of a given matrix | S2 |
| 2.5 | Determine whether a given matrix is diagonalizable, symmetric | S2 |
| **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 | V2 |
| 3.2 | Communicate quantitative data verbally, graphically, symbolically and numerically | V2 |
| 3.3 | Integrate appropriately technology into mathematical processes | V2 |
| 3.4 | Generalize mathematical concepts in problem-solving through integration of new material and modeling | V2 |

## 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 | | 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 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 | %٢٠ |
| **4** | Final exam | End of semester | %٥٠ |

***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.<br>• 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.<br>• 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.) | 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 Eman Allugmani and Amani Alkatheri |
| **Reference No.** | |
| **Date** | |

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

# Course Specifications

| | |
|---|---|
| **Course Title:** | **General Physics 1** |
| **Course Code:** | **PHY1101** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**A. Course Identification** **3**

6. Mode of Instruction (mark all that apply) 3

**B. Course Objectives and Learning Outcomes** **3**

1. Course Description 3

2. Course Main Objective 3

3. Course Learning Outcomes 3

**C. Course Content** **4**

**D. Teaching and Assessment** **4**

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods 4

2. Assessment Tasks for Students 4

**E. Student Academic Counseling and Support** **5**

**F. Learning Resources and Facilities** **5**

1.Learning Resources 5

2. Facilities Required 5

**G. Course Quality Evaluation** **5**

**H. Specification Approval Data** **6**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4 (3+1)** |
| **2. Course type**<br>**a.** University ☐ College ☑ Department ☐ Others ☐<br>**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**<br>● Measuring Things<br>● The International System of Units<br>● Changing Units<br>● Length<br>● Significant Figures and Decimal Places<br>● Time<br>● Mass | 5 |
| 2 | **Motion Along a Straight Line**<br>● Position, Displacement, and Average Velocity<br>● Motion<br>● Position and Displacement<br>● Average Velocity and Average Speed<br>● Instantaneous Velocity and Speed<br>● Acceleration<br>● Constant Acceleration: A Special Case<br>● Another Look at Constant Acceleration<br>● Free-Fall Acceleration<br>● Graphical Integration in Motion Analysis | 5 |
| 3 | **Vectors**<br>● Vectors and Their Components<br>● Vectors and Scalars<br>● Adding Vectors Geometrically<br>● Components of Vectors | 5 |

| | | |
|---|---|---|
| | ● Unit Vectors Adding Vectors by Components<br>● Vectors and the Laws of Physics<br>● Multiplying Vectors | |
| 4 | **Motion in Two and Three Dimensions**<br>● Position and Displacement<br>● Position and Displacement<br>● Average Velocity and Instantaneous Velocity<br>● Average Acceleration and Instantaneous Acceleration<br>● Projectile Motion<br>● Uniform Circular Motion<br>● Relative Motion in One Dimension<br>● Relative Motion in Two Dimensions | **5** |
| 5 | **Force and Motion-I**<br>● Newtonian Mechanics<br>● Newton's First Law<br>● Force<br>● Mass<br>● Newton's Second Law<br>● Some Particular Forces<br>● Newton's Third Law<br>● Applying Newton's Laws | **5** |
| 6 | **Force and Motion-II**<br>● Friction<br>● Properties of Friction<br>● The Drag Force and Terminal Speed<br>● Uniform Circular Motion Forces | **5** |
| | **Practical Part:**<br>● Students will conduct various experiments in the practical part of the course. Each student will perform the experiment, collect data, extract result, and prepare a written report every week. | **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.<br>2. Discussing phenomena with illustrating pictures and diagrams.<br>3. Lecturing method:<br>● Board, Power point.<br>● Discussions<br>● Brain storming<br>● Start each chapter by general idea and the benefit of it.<br>4. Do some experimental in the Laboratory | 1. Solve some examples during the lecture.<br>2. Discussions during the lectures<br>3. Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam.<br>d) Practical exams. |
| 1.2 | Describe the concepts and physical laws related to the course using the mathematical formula. | | |
| 1.3 | | | |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| **2.0** | **Skills** | | |
| 2.1 | Apply physics laws to calculate physical quantities related to the course. | 1. Solve some problems in physics during lectures.<br>2. Following some proofs during lectures.<br>3. Encourage students to participate in solving problems. | 1. Solve some examples during the lecture.<br>2. Discussions during the lectures<br>3. Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam.<br>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.<br>● Organize the students as a small group in the lab. | ● Evaluate the scientific reports.<br>● Discussing the reports with each teamwork.<br>● 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** | Lab. Reports and 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** | Physics for Scientists & Engineers with Modern Physics 4th Edition by Douglas Giancoli, 4th Edition (2014). |
| **Electronic Materials** | 1. Physics is Beautiful \| Free, interactive physics lessons<br>2. Khan Academy Physics \| Physics videos<br>3. The Feynman Lectures on Physics<br>4. PhET Simulations \| Online physics simulations |

| | |
|---|---|
| **Other Learning Materials** | |

## 2. Facilities Required

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

## G. Course Quality Evaluation

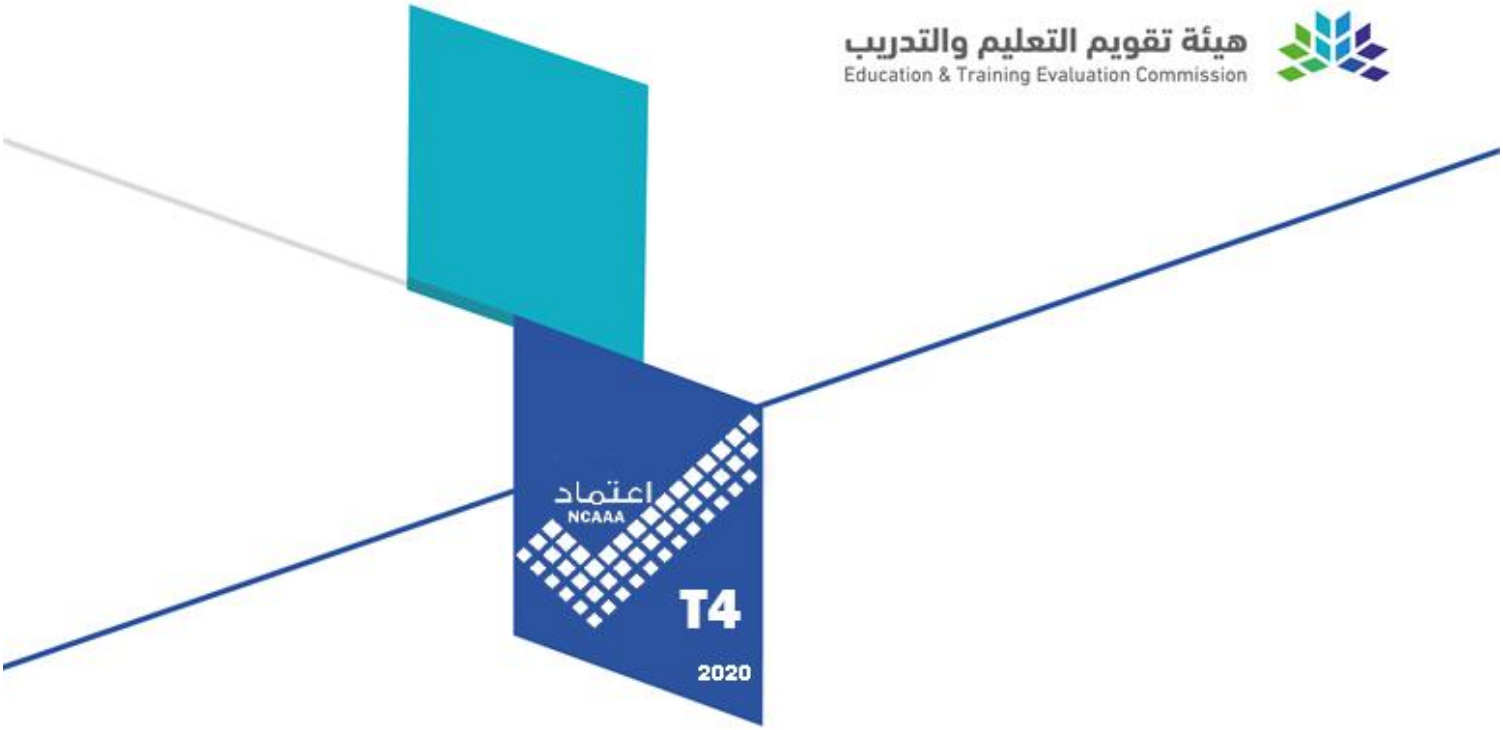
| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Effectiveness of teaching Strategies | Students | Questionnaire |
| Effectiveness of student assessment | Instructor | Exams |
| Extent of achievement of course learning outcomes | Instructor | Course report |
| Quality of 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:** | General Chemistry 1 |
| **Course Code:** | CHM1101 |
| **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 |

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6. Mode of Instruction (mark all that apply) ..... 3

**B. Course Objectives and Learning Outcomes** ..... **3**

1. Course Description ..... 3

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**D. Teaching and Assessment** ..... **5**

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods ..... 5

2. Assessment Tasks for Students ..... 6

**E. Student Academic Counseling and Support** ..... **6**

**F. Learning Resources and Facilities** ..... **6**

1.Learning Resources ..... 6

2. Facilities Required ..... 6

**G. Course Quality Evaluation** ..... **7**

**H. Specification Approval Data** ..... **7**

## A. Course Identification

| |
|---|
| **1. Credit hours:** |
| **2. Course type**<br>**a.** University ☐ College ■ Department ☐ Others ☐<br>**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<br>• Library visits<br>Web-based study | Quiz.<br>Exam.<br>Class discussion. |
| 1.2 | Write the electronic configuration of different elements | • Lectures<br>• Scientific discussion<br>Web-based study | Quiz.<br>Exam.<br>Class discussion. |
| 1.3 | Familiar with the atomic structure | • Lectures<br>• Scientific discussion<br>Web-based study | Quiz.<br>Exam.<br>Class discussion. |
| 1.4 | Describe the mass relationships in chemical reactions | • Lectures<br>• Library visits<br>• Web-based study | Quiz.<br>Exam.<br>Class discussion. |
| 1.5 | List the factors affecting equilibrium position and equilibrium concentration. | • Lectures<br>• Scientific discussion<br>• Web-based study | Quiz.<br>Exam.<br>Class discussion. |
| 1.6 | List the various types of chemical reaction | • Lectures<br>• Scientific discussion<br>• Web-based study | Quiz.<br>Exam.<br>Class discussion. |
| 1.7 | Recognize and know which elements in the Periodic Table | • Lectures<br>• Scientific discussion<br>• Web-based study | Quiz.<br>Exam.<br>Class discussion. |
| 1.8 | familiar with the terms hydrocarbons, organic compounds containing oxygen and nitrogen atoms | • Lectures<br>• Scientific discussion<br>• Web-based study | Quiz.<br>Exam.<br>Class discussion. |
| 2.0 | Skills | | |
| 2.1 | Predict molecular formulas using empirical formulas and molecular masses. | • Lectures<br>• Scientific discussion<br>Web-based study | Quiz.<br>Exam.<br>Class discussion. |
| 2.2 | Explain trends in the Periodic Table as they relate to Atomic Size, Ionization Energy and Electron Affinity. | • Lectures<br>• Scientific discussion<br>Web-based study | Quiz.<br>Exam.<br>Class discussion. |
| 2.3 | Calculate the concentration of a solution from the volume and the mass, or moles, of solute | • Lectures<br>• Scientific discussion<br>Web-based study | Quiz.<br>Exam.<br>Class discussion. |
| 2.4 | Calculate the pH of acids and bases | • Lectures<br>• Scientific discussion<br>Web-based study | Quiz.<br>Exam.<br>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<br>• 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**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | **Classrooms.**<br>**Providing hall of teaching aids including computers and projector.** |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | **Room equipped with computer and projector and TV** |
| **Other Resources**<br>(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | **------** |

## G. Course Quality Evaluation

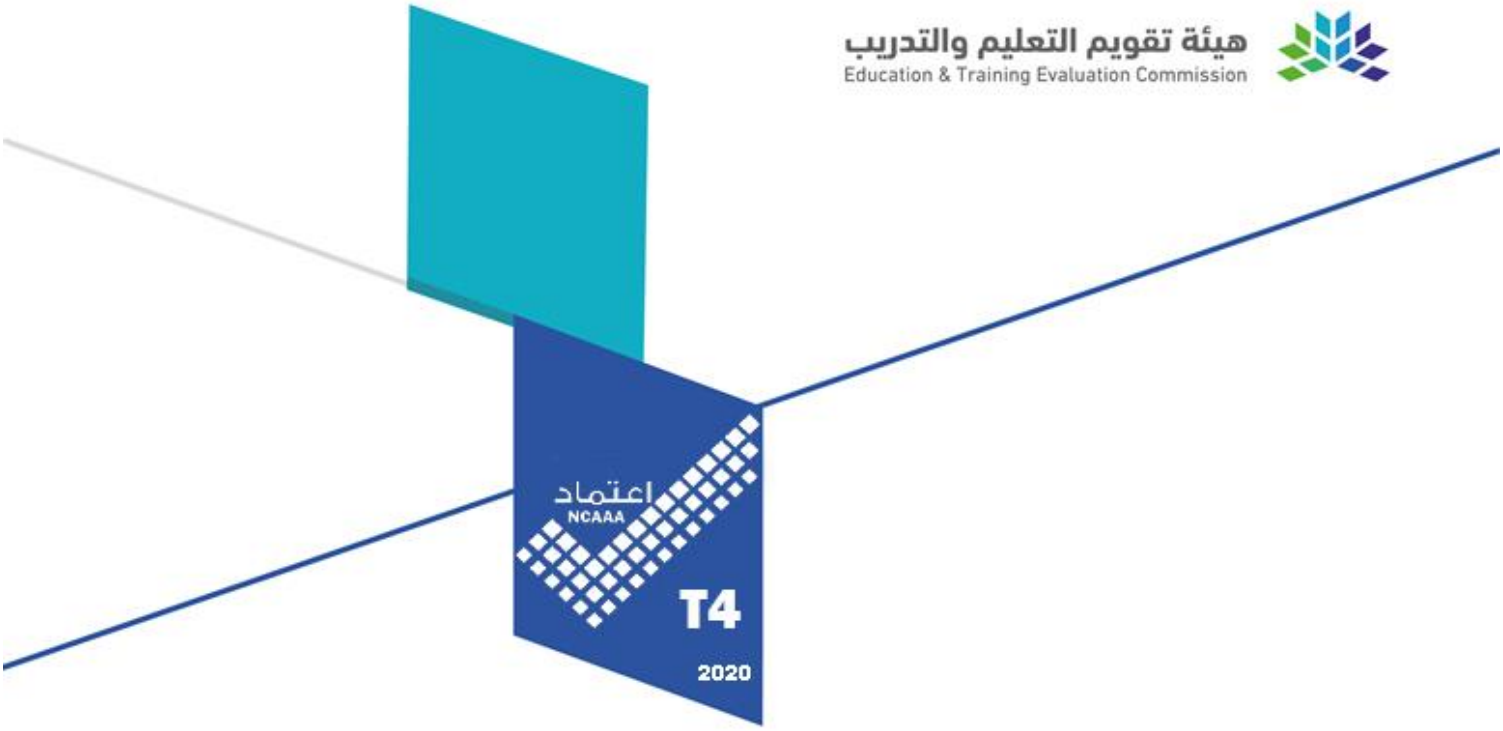
| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Effectiveness of teaching | **Students** | **Indirect (Online survey at the end of the semester (Program survey, Experience survey &course evaluation) .** |
| Effectiveness of teaching | **Faculty members** | **Direct (classroom 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**<br><br>**Indirect (feedback from faculty and students).** |
| Quality of learning resources | **Students** | **Direct (feedback from faculty).**<br><br>**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** |

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission




# Course Specifications

| | |
|---|---|
| **Course Title:** | Calculus |
| **Course Code:** | MTH1104 |
| **Program:** | Physics |
| **Department:** | Mathematical sciences |
| **College:** | Applied sciences |
| **Institution:** | Umm Al-Qura University |

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**A. Course Identification ..... 3**

6. Mode of Instruction (mark all that apply) ..... 3

**B. Course Objectives and Learning Outcomes ..... 3**

1. Course Description ..... 3

2. Course Main Objective ..... 3

3. Course Learning Outcomes ..... 4

**C. Course Content ..... 4**

**D. Teaching and Assessment ..... 4**

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**E. Student Academic Counseling and Support ..... 5**

**F. Learning Resources and Facilities ..... 5**

1.Learning Resources ..... 5

2. Facilities Required ..... 6

**G. Course Quality Evaluation ..... 6**

**H. Specification Approval Data ..... 6**

## A. Course Identification

| |
|---|
| **1. Credit hours:** 4 |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☐ Others ☐<br>**b.** Required ☐ Elective ☐ |
| **3. Level/year at which this course is offered:** Second level/First year |
| **4. Pre-requisites for this course** (if any)**:**<br>Introduction to Calculus |
| **5. Co-requisites for this course** (if any)**:**<br>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 (Exam, Quizzes, Activities,… ) | 0 |
| | Total | 40 |

## B. Course Objectives and Learning Outcomes

**1. Course Description**

This course provides an introduction to differential calculus and their application, as well as the definite integral and their applications.

**2. Course Main Objective**

After studying this course, the student will be able to:

- Find the inverse function and their derivatives.
- Calculate the derivative of various type of functions using some techniques of differentiation.
- Calculate integrals over infinite intervals
- Apply the definite integral in geometry and engineering

### 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 |
| 1.2 | Recall the relation between the derivative of a function and the derivative of its inverse | K1, K2 |
| 1.3 | Defined the principles of integral evaluation | K1, K2 |
| 1.4 | | |
| **2** | **Skills: by the end of this course, the student is expected to be able to** | |
| 2.1 | Calculate the derivative of various type of functions using some techniques of differentiation. | S1 |
| 2.2 | Calculate integrals over infinite intervals | S1 |
| 2.3 | Apply the definite integral in geometry and engineering | S2 |
| **3** | **Values: by the end of this course, the student is expected to be able to** | |
| 3.1 | Show the ability to work independently and within groups. | V2 |
| 3.2 | | |
| 3.3 | | |
| 3.4 | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | Implicit Differentiation and Related Rates | 4 |
| 2 | Differentials and Approximations | 2 |
| 3 | Inverse Functions and their Derivatives | 4 |
| 4 | Applications of the derivative | 10 |
| 5 | The Definite Integral | 10 |
| 6 | Applications of the Integral | 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 | List formulas and theorems of differentiation of some real valued functions. | Lecture and Tutorials | Exams, quizes |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| 1.2 | Recall the relation between the derivative of a function and the derivative of its inverse | Lecture and Tutorials | Exams, quizes |
| 1.3 | Defined the principles of integral evaluation | Lecture and Tutorials | Exams, quizes |
| 1.4 | | Lecture and Tutorials | Exams, quizes |
| **2.0** | **Skills** | | |
| 2.1 | Calculate the derivative of various type of functions using some techniques of differentiation. | Lecture/Individual or group work | Exams, quizes |
| 2.2 | Calculate integrals over infinite intervals | Lecture/Individual or group work | Exams, quizes |
| 2.3 | Apply the definite integral in geometry and engineering | Lecture/Individual or group work | Exams, quizes |
| **3.0** | **Values** | | |
| 3.1 | Show the ability to work independently and within groups. | Lecture/Individual or group work | Exams, quizes |
| 3.2 | | | |
| 3.3 | | | |
| 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** | • Calculus (9th Edition), Dale Varberg, Edwin Purcell and Steven Rigdon, Prentice Hall (2006). |
| **Essential References Materials** | • Thomas' Calculus (14th Edition), George B. Thomas<br>• 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:** | **General Physics 2** |
| **Course Code:** | **PHY1102** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Science** |
| **Institution:** | **Umm Al-Qura University** |

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**A. Course Identification** **3**

6. Mode of Instruction (mark all that apply) 3

**B. Course Objectives and Learning Outcomes** **3**

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3. Course Learning Outcomes 3

**C. Course Content** **4**

**D. Teaching and Assessment** **4**

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods 4

2. Assessment Tasks for Students 4

**E. Student Academic Counseling and Support** **5**

**F. Learning Resources and Facilities** **5**

1.Learning Resources 5

2. Facilities Required 5

**G. Course Quality Evaluation** **5**

**H. Specification Approval Data** **6**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered: Level 2nd / 1st year** |
| **4. Pre-requisites for this course** (if any)**: General Physics 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** | | |
| 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** | |
| | **Total** | 40 |

## B. Course Objectives and Learning Outcomes

**1. Course Description**

The course will cover the principle of mechanics, such as particle dynamics, system of particles, collisions, rotational kinematics, rotational dynamics, fluid mechanics, etc.

**2. Course Main Objective**

**After completing this course student should be able to:**

1. Define the concepts of the work and potential energy.
2. Define the concepts of the center of mass.
3. Define the concepts of motion of a circular path.
4. Define the concepts of torque and angular momentum.
5. Define the concepts of the gravitational.

6. Define the concepts of the fluid mechanics.

### 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Define the physical quantities related to the mechanics of the body, as well as fluid mechanics. | K1 |
| 1.2 | Describe the concepts and physical laws related to mechanics of the body as well as the fluid mechanics using the mathematical formula. | K2 |
| 1.3 | | |
| 2 | **Skills:** | |
| 2.1 | Apply physics laws to calculate physical quantities related to the mechanics of the body as well as the fluid mechanics. | S1 |
| 2.2 | Explain the procedures for scientific theoretical treatments. | 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 | **Kinetic Energy and Work**<br>● What is Energy?<br>● Kinetic Energy<br>● Work<br>● Work and Kinetic Energy<br>● Work Done by the Gravitational Force<br>● Work Done by a Spring Force<br>● Work Done by a General Variable Force<br>● Power | 5 |
| 2 | **Potential Energy and Conservation of Energy**<br>● Work and Potential Energy<br>● Path Independence of Conservative Forces<br>● Determining Potential Energy Values<br>● Conservation of Mechanical Energy<br>● Reading a Potential Energy Curve<br>● Work Done on a System by an External Force<br>● Conservation of Energy | 5 |
| 3 | **Center of Mass and Linear Momentum**<br>● The Center of Mass<br>● Newton's Second Law for a System of Particles<br>● Linear Momentum<br>● The Linear Momentum of a System of Particles<br>● Collision and Impulse<br>● Conservation of Linear Momentum<br>● Momentum and Kinetic Energy in Collisions<br>● Inelastic Collisions in One Dimension<br>● Elastic Collisions in One Dimension<br>● Collisions in Two Dimensions<br>● Systems with Varying Mass: A Rocket | 5 |

| | | |
|---|---|---|
| 4 | **Rotation**<br>● Rotational Variables<br>● Are Angular Quantities Vectors?<br>● Rotation with Constant Angular Acceleration<br>● Relating the Linear and Angular Variables<br>● Kinetic Energy of Rotation<br>● Calculating the Rotational Inertia<br>● Torque<br>● Newton's Second Law for Rotation<br>● Work and Rotational Kinetic Energy | **5** |
| 5 | **Rolling, Torque, and Angular Momentum**<br>● Rolling as Translation and Rotation Combined<br>● The Kinetic Energy of Rolling<br>● The Forces of Rolling<br>● The Yo-Yo<br>● Torque Revisited<br>● Angular Momentum<br>● Newton's Second Law in Angular Form<br>● The Angular Momentum of a System of Particles<br>● The Angular Momentum of a Rigid Body Rotating About a Fixed Axis<br>● Conservation of Angular Momentum<br>● Precession of a Gyroscope | **5** |
| 6 | **Equilibrium and Elasticity**<br>● Equilibrium<br>● The Requirements of Equilibrium<br>● The Center of Gravity<br>● Some Examples of Static Equilibrium<br>● Indeterminate Structures<br>● Elasticity | **5** |
| 7 | **Gravitation**<br>● Newton's Law of Gravitation<br>● Gravitation and the Principle of Superposition<br>● Gravitation Near Earth's Surface<br>● Gravitation Inside Earth<br>● Gravitational Potential Energy<br>● Planets and Satellites: Kepler's Laws<br>● Satellites: Orbits and Energy<br>● Einstein and Gravitation | **5** |
| 8 | **Fluids**<br>● What is a Fluid?<br>● Density and Pressure<br>● Fluids at Rest<br>● Measuring Pressure<br>● Pascal's Principle<br>● Archimedes' Principle<br>● Ideal Fluids in Motion<br>● The Equation of Continuity<br>● Bernoulli's Equation | **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 | Define the physical quantities related to the mechanics of the body. | 1. Demonstrating the basic principles through lectures.<br>2. Discussing phenomena with illustrating pictures and diagrams.<br>3. Lecturing method:<br>● Board, Power point.<br>● Discussions<br>● Brain storming<br>● Start each chapter by general idea and the benefit of it.<br>4. Do some experimental in the Laboratory | 1. Solve some examples during the lecture.<br>2. Discussions during the lectures<br>3. Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam.<br>d) Practical exams. |
| 1.2 | Describe the concepts and physical laws related to mechanics using the mathematical formula. | | |
| **2.0** | **Skills** | | |
| 2.1 | Apply physics laws to calculate physical quantities related to the mechanics of the body. | 1. Solve some problems in physics during lectures.<br>2. Following some proofs during lectures.<br>3. Encourage students to participate in solving problems. | 1. Solve some examples during the lecture.<br>2. Discussions during the lectures<br>3. Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam.<br>d) Practical exams. |
| 2.2 | Explain the procedures for scientific theoretical treatments. | | |
| **3.0** | **Values** | | |
| 3.1 | Work effectively responsibly in teamwork | ● Organize the students as a small group (teamwork).<br>● Give students tasks of duties as a small project. | ● Evaluate the scientific reports.<br>● Discussing the reports with each teamwork.<br>● 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 | 30 % |
| **2** | HomeWorks & Quizzes & reports | All weeks | 20 % |
| **3** | Final Exam | End of the semester | 50% |
| **4** | | | |
| | | | |

***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** | Physics for Scientists & Engineers with Modern Physics 4th Edition by Douglas Giancoli, 4th Edition (2014). |
| **Electronic Materials** | 1. Physics is Beautiful \| Free, interactive physics lessons<br>2. Khan Academy Physics \| Physics videos<br>3. The Feynman Lectures on Physics<br>4. PhET Simulations \| Online physics simulations |
| **Other Learning Materials** | |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | ● Classroom<br>● Library |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | ● Data show<br>● Black Bord |
| **Other Resources**<br>(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

اعتماد NCAAA T4 2020

# Course Specifications

| | |
|---|---|
| **Course Title:** | General Biology |
| **Course Code:** | BIO1101 |
| **Program:** | Faculty of Applied Science Requirement |
| **Department:** | Biology Department |
| **College:** | Applied Science |
| **Institution:** | Umm Al-Qura University |

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## 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**<br>• The Chemical Context of Life<br>• Water and Life<br>• Carbon and the Molecular Diversity of Life<br>• The Structure and Function of Large Biological Molecules | 3 |
| 2 | **The Cell**<br>• A Tour of the Cell<br>• Membrane Structure and Function<br>• An Introduction to Metabolism<br>• Cellular Respiration and Fermentation<br>• Photosynthesis | 3 |

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

| | | |
|---|---|---|
| | • Community Ecology<br>• Ecosystems and Restoration Ecology<br>• 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<br>• Questions and Hypotheses Exercise<br>• Designing Experiments to Test Hypotheses Exercise<br>• Designing an Experiment Exercise<br>• Presenting and Analyzing Results Exercise<br>• Interpreting and Communicating Results | **3** |
| 3 | Microscopes and Cells Laboratory<br>• The Compound Light Microscope Exercise<br>• Basic Microscope Techniques Exercise<br>• The Stereoscopic Microscope Exercise<br>• The Organization of Cells | **3** |
| 4 | Diffusion and Osmosis Laboratory<br>• Diffusion of Molecules Exercise<br>• Osmotic Activity in Cells Exercise<br>• Investigating Osmolarity of Plant Cells | **3** |
| 5 | Cellular Respiration and Fermentation Laboratory<br>• Alcoholic Fermentation Exercise<br>• Cellular Respiration Exercise<br>• Designing and Performing Your Open-Inquiry Investigation | **3** |
| 6 | Photosynthesis Laboratory<br>• The Wavelengths of Light for Photosynthesis Exercise<br>• Pigments in Photosynthesis Exercise<br>• Separation and Identification of Plant Pigments by Paper Chromatography Exercise<br>• Determining the Absorption Spectrum for Leaf Pigments | **3** |
| 7 | Mitosis and Meiosis Laboratory<br>• Modeling the Cell Cycle and Mitosis in an Animal Cell Exercise<br>• Observing Mitosis and Cytokinesis in Plant Cells Exercise<br>• Observing Chromosomes, Mitosis, and Cytokinesis in Animal Cells Exercise<br>• Modeling Meiosis Exercise | **3** |

| | | |
|---|---|---|
| | • Meiosis in Sordaria fimicola: A Study of Crossing | |
| 8 | Bacteriology Laboratory<br>• Investigating Characteristics of Bacteria Exercise<br>• Ecological Succession of Bacteria in Milk Exercise<br>• Bacteria in the Environment Exercise<br>• Controlling the Growth of Bacteria | **3** |
| 9 | Animal Development Laboratory<br>• Development in Echinoderms: Sea Urchin and Sea Star Exercise<br>• Development in an Amphibian Exercise<br>• Development in the Zebraflsh Exercise<br>• Development in a Bird: The Chicken | **3** |
| 10 | Plant Growth Laboratory<br>• Factors Influencing Seed Germination Exercise<br>• Plant Growth Regulators: Auxin Exercise<br>• 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<br>Lab work | Quiz.<br>Final and mid-term exam.<br>Assignments and activities |
| K2 | Understanding the cellular processes of living organisms. | Lectures<br>Lab work | Quiz.<br>Final and mid-term exam.<br>Assignments and activities |
| K3 | Identify the unifying themes and key concepts of different organisms. | Lectures<br>Lab work | Quiz.<br>Final and mid-term exam.<br>Assignments and activities |
| K4 | Describe the anatomy, function, genetics and evolution of different types of organisms. | Lectures<br>Lab work | Quiz.<br>Final and mid-term exam.<br>Assignments and activities |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| K5 | Demonstrate factual knowledge of contemporary natural science. | Lectures<br>Research activity.<br>Web based study | Quiz.<br>Final and mid-term exam.<br>Assignments and activities |
| **2.0** | **Skills** | | |
| S1 | The student will apply contemporary scientific models to describe the natural world. | Lectures<br>Lab work | Quiz.<br>Final and mid-term exam.<br>Assignments and activities |
| S2 | To understand and apply the scientific method. | Lectures<br>Lab work<br>Research activity | Quiz.<br>Final and mid-term exam.<br>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<br>Lab work<br>Research activity | Quiz.<br>Final and mid-term exam.<br>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<br>Research activity | Quiz.<br>Final and mid-term exam.<br>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<br>Lab work<br>Research activity | Quiz.<br>Final and mid-term exam.<br>Assignments and activities |
| V2 | A commitment to continuous learning and the capacity to maintain intellectual curiosity throughout life. | Lectures<br>Lab work<br>Research activity | Quiz.<br>Final and mid-term exam.<br>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<br>**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<br>2. https://www.edx.org |
| **Other Learning Materials** | 1. Handouts and Lecture notes<br>2. Microsoft office package.<br>3. Multi- media associated with the textbook and the relevant websites. |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | 1. Lecture room suitable for 40 students.<br>2. Lecture room equipped with Data show.<br>3. Biology laboratory. |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | 1. Computers or internet connection.<br>2. Active Board.<br>3. Data show is required in every room. |
| **Other Resources**<br>(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

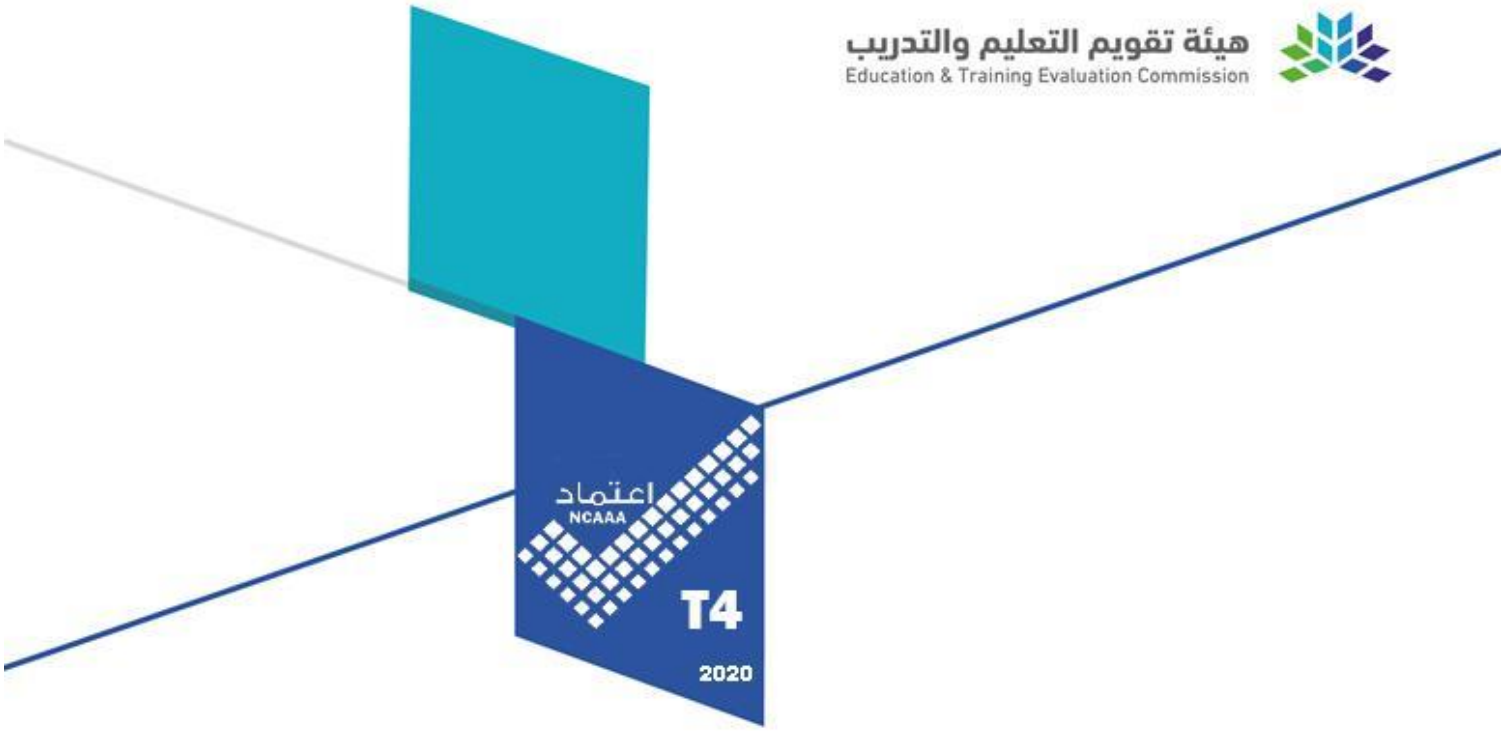
| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Observations and the assistance of colleagues. | Faculty | Indirect |
| Effectiveness of teaching and assessment | Program leader, curriculum committee; external reviewers | Direct |
| Extent of achievement of CLO's | Peer 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:** | Theoretical Methods in Physics (1) |
| **Course Code:** | **PHY1201** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**D. Teaching and Assessment** **4**

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**E. Student Academic Counseling and Support** **5**

**F. Learning Resources and Facilities** **5**

1.Learning Resources 6

2. Facilities Required 6

**G. Course Quality Evaluation** **7**

**H. Specification Approval Data** **7**

## A. Course Identification

| | |
|---|---|
| **1. Credit hours:** | **4 hrs** |
| **2. Course type** | |
| **a.** | University ☐ College ☐ Department ☑ Others ☐ |
| **b.** | Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered:** | **3Level /1st year** |
| **4. Pre-requisites for this course** (if any)**: General Physics (2)** | |
| **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) Exams/ Quizzes | - |
| | **Total** | 40 |

## B. Course Objectives and Learning Outcomes

**1. Course Description**

The course provides a direct preparation for an advanced study in theoretical physics and is also, an interesting element in the education of an experimental physicist. The physical principles behind the mathematical models are stressed so that insight and problem solving ability becomes primary. This course will cover the basic mathematical tools used in physical science: Power Series, Linear Algebra, Partial Differentiation, Vector Analysis. All topics in these series of courses are designed and presented in a way suitable for physics students specifically. Such courses rely fundamentally on applying all the mentioned mathematical tools in solving some complicated physics problems.

**2. Course Main Objective**

The course is designed to supply students for a variety of mathematical methods that are needed for advanced undergraduate and beginning graduate study in physical science and to develop a solid background for those who will continue into the mathematics of advanced theoretical physics.

### 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Recognize the meaning of infinite series & its convergence. | K1(I) |
| 1.2 | | K1(I) |
| 1.3 | Recognize the properties of various types of infinite series such as; Geometric Series, Alternating Series and Power Series. | K1(I), K2(I) |
| 1.4 | | K1(I), K2(I) |
| 1.5 | Express some of the algebra operations between linear transformations | K1(I), K2(I) |
| | Explain matrix representation of a linear transformation. | |
| | Find concepts of eigenvalues and eigenvectors of a matrix. | |
| 1.6 | Evaluate partial derivatives, including higher order derivatives and simple cases of the chain rule, and recognize the various notations used for partial derivatives. | K1(I), K2(I) |
| 1.7 | Define vector fields (gradient, divergence, Curl) | K1(I) |
| | Express and prove Green's, Stokes's, and Divergence Theorems | |
| | | |
| **2** | **Skills :** | |
| 2.1 | Apply mathematical operations on series, matrices and determinants to solve physics problems. | S1(I) |
| 2.2 | | S1(I) |
| 2.3 | Demonstrate the rules of partial derivatives of a given function. | S1(I) |
| 2.4 | | S1(I), S2(I) |
| 2.5 | Construct the gradient vector for multivariable functions | S1(I), S2(I) |
| | Explain geometrical and physical concepts of the directional derivatives,gradient, divergence, and Curl. | |
| 2.6 | Apply Green's, Divergence and Stokes' Theorems to simplify some complicated integrals in physics problems. | S2(I) |
| **3** | **Values:** | |
| 3.1 | Participate effectively in multidisciplinary and/or interdisciplinary teams. | V2(I) |
| 3.2 | | V1(I), V2(I) |
| 3.3 | | V1(I) |
| 3.4 | | V1(I) |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Infinite series, Power series:** The Geometric Series, Convergent and Divergent Series, Testing Series for Convergence, Alternating Series, Conditionally Convergent Series, Useful Facts About Series, Power Series & Interval of Convergence, Theorems About Power Series, Expanding Functions in Power Series, Techniques for Obtaining Power Series Expansions, Accuracy of Series Approximations. | 8 |
| 2 | **Linear Algebra:** | 8 |

| | | |
|---|---|---|
| | Matrices & Determinants, Cramer's Rule, Vectors, Lines and Planes, Matrix Operations, Linear Combinations, Linear Functions, Linear Operators, Special Matrices and Formulas, Linear Vector Spaces, Diagonalizing Matrices, Eigenvalues and Eigenvectors, Applications of Diagonalization. | |
| 3 | **Partial Differentiation:** Total differentials- Approximating using differentials, chain rule Implicit differentiation, Application to Maximum and Minimum problems, Lagrange Multipliers, Change of Variables, Differentiation of Integrals. | 12 |
| 4 | **Vector Analysis:** Triple (Scalar-Vector) products, Differentiation of Vectors, Scalar & vector Fields, Directional Derivative & Vector operators (Del, Gradient, Divergence, Curl, and Laplace's operators), Line Integrals, Multiple integration (surface and volume integrals), Green's Theorem in the Plane, The Divergence and the Divergence Theorem, The Curl and Stokes' Theorem. | 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 | Recognize what is meant by infinite series & its convergence. | 1. Lectures.<br>2. Discussions<br>3. Slides and computer simulation software may be used by the teachers to clarify concepts.<br>4. Problems solving<br>5. Students may be asked to solve some problems on computer using | 1- Homework assignments.<br>2- Group Project assignment.<br>3- Question – answer session in class.<br>4- Exams: quizzes, Mid-term, and final exams |
| 1.2 | Knowing convergence/divergence of some basis series. | | |
| 1.3 | Identify various types of infinite series such as; Geometric Series, Alternating Series and Power Series. | | |
| 1.4 | Expanding a given function in a power series and determine its interval of convergence. | | |
| 1.5 | Identify the different types of matrices and differentiate between them and their determinants. | | |
| 1.6 | Evaluate partial derivatives, including higher order derivatives and simple cases of the chain rule, and recognize the various notations used for partial derivatives. | | |
| 1.7 | Be familiar with vector operators such as Del, Gradient, Divergence, Curl, etc. | | |
| **2.0** | **Skills** | | |
| 2.1 | Apply the appropriate test to determine whether a given infinite series is convergent or divergent. | 1. Lectures.<br>2. Discussions.<br>3. Problems solving. | **1-** Homework assignments.<br>**2-** Group Project assignment. |
| 2.2 | Be able to Diagonalize a given matrix and calculate their eigenvalues and eigenvectors. | | |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| 2.3 | Apply partial derivatives to find the maximum and minimum of a given function. | 4. Encourage the student to look for the information in different references.<br>5. Ask the student to attend lectures for practice solving problem.<br>6. Define duties for each chapter | **3-** Question – answer session in class.<br>**4-** Exams: quizzes, Midterm, and final exams. |
| 2.4 | Calculate dot products and cross products and interpret them geometrically. | | |
| 2.5 | Construct the gradient vector for multivariable functions and determine the derivative in a given direction. | | |
| 2.6 | Apply Green's, Divergence and Stokes' Theorems to simplify some complicated integrals. | | |
| **3.0** | **Values** | | |
| 3.1 | Participate effectively in multidisciplinary and/or interdisciplinary teams | **1.** Groupe assignments<br>**2.** Clarify deadlines for delivery of assignments, reports, and exams | **1.** Evaluate the efforts of each student in preparing the report.<br>**2.** Evaluate the work in teams.<br>Evaluation of students' presentations. |
| 3.2 | Accepting different ideas and respecting other opinions. | | |
| 3.3 | Manage a project (modelling or simulation) with due attention to time and resource management | | |
| 3.4 | Take responsibility and take the course instructions seriously. | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Exercises and HomeWorks | All weeks | 10% |
| **2** | Participation in activities and quizzes. | All weeks | 10% |
| **3** | Midterm exam | $6^{th}$ week | 30% |
| **4** | Final exam | End of the term | 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:**

4 Hours per week during office hours, in the instructor's office or by appointment.

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | Mary L. Boas, Mathematical methods in the Physical sciences, Third edition, John Wiley and Sons (2006). ISBN-13: 978-0471198260 |

| | |
|---|---|
| **Essential References Materials** | **1.** Mathematical Methods for Physicists: A Comprehensive Guide 7th edition, by George B. Arfken, Hans J. Weber, Frank E. Harris, Academic Press is an imprint of Elsevier (2013), ISBN-13: 978-0-12-384654-9.<br>**2.** Mathematical Methods for Physics and Engineering, by K. F. Riley, M. P. Hobson, and S. J. Bence, Cambridge University Press; (2006), ISBN-13: 978-0521679718. |
| **Electronic Materials** | |
| **Other Learning Materials** | |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | Lecture room<br>Labs |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | data show |
| **Other Resources**<br>(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 |
|---|---|---|
| Student Feedback on Effectiveness of Teaching | Students | Direct |
| Evaluation of Teaching | Department | Indirect |
| Improvement of Teaching | Program leaders | Direct |
| Quality of learning resources | Faculty | Direct |
| Extent of achievement of course learning outcomes | Program leaders | 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** | Dr Atif Ismail, Dr. Walid Belhadj and Prof. Khaled Abdel-Waged |
| **Reference No.** | |
| **Date** | |

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Education & Training Evaluation Commission

# Course Specifications

| | |
|---|---|
| **Course Title:** | **General Physics 3** |
| **Course Code:** | **PHY1103** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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1.Learning Resources 5

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**H. Specification Approval Data** **6**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4 (3+1)** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered: Level 3rd / 1st year** |
| **4. Pre-requisites for this course** (if any)**: General Physics 2** |
| **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 principle of general physics, such as, oscillations, wave mechanics, temperature, and heat and first law of thermodynamics, kinetic theory of gas, and image.

**2. Course Main Objective**

**After completing this course student should be able to:**

1. Describe the oscillation and wave motion.
2. Define the concepts of oscillations
3. Differentiate between the motion in one dimension and circular motion and vibration.
4. Define the concepts of the wave motions.

5. Define the concepts the temperature, Heat, and first law of thermodynamics, kinetic theory of gas.
6. Define the concepts of image.

### 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Define the physical quantities related to the course. | K1 |
| 1.2 | Describe the concepts and physical laws related to the course using the mathematical formula. | K2 |
| 1.3 | | |
| **2** | **Skills:** | |
| 2.1 | Apply physics laws to calculate physical quantities related to the course. | 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 | **Oscillations**<br>● Simple Harmonic Motion<br>● The Force Law for Simple Harmonic Motion<br>● Energy in Simple Harmonic Motion<br>● An Angular Simple Harmonic Oscillator<br>● Pendulums<br>● Simple Harmonic Motion and Uniform Circular Motion<br>● Damped Simple Harmonic Motion<br>● Forced Oscillations and Resonance | 5 |
| 2 | **Waves-I**<br>● Types of Waves<br>● Transverse and Longitudinal Waves<br>● Wavelength and Frequency<br>● The Speed of a Traveling Wave<br>● Wave Speed on a Stretched String<br>● Energy and Power of a Wave Traveling Along a String<br>● The Wave Equation<br>● The Principle of Superposition for Waves<br>● Interference of Waves<br>● Phasors<br>● Standing Waves<br>● Standing Waves and Resonance | 5 |
| 3 | **Waves-II**<br>● Sound Waves<br>● The Speed of Sound<br>● Traveling Sound Waves<br>● Interference | 5 |

| | | |
|---|---|---|
| | ● Intensity and Sound Level<br>● Sources of Musical Sound<br>● Beats<br>● The Doppler Effect<br>Supersonic Speeds, Shock Waves | |
| 4 | **Temperature, Heat, and First Law of Thermodynamics**<br>● Temperature<br>● The Zeroth Law of Thermodynamics<br>● Measuring Temperature<br>● The Celsius and Fahrenheit Scales<br>● Thermal Expansion<br>● Temperature and Heat<br>● The Absorption of Heat by Solids and Liquids<br>● A Closer Look at Heat and Work<br>● The First Law of Thermodynamics<br>● Some Special Cases of First Law of Thermodynamics<br>● Heat Transfer Mechanisms<br>● Systems with Varying Mass: a Rocket | **5** |
| 5 | **The Kinetic Theory of Gases**<br>● Avogadro's Number<br>● Ideal Gases<br>● Pressure, Temperature, and *rms* Speed<br>● Translational Kinetic Energy<br>● Mean Free Path<br>● The Distribution of Molecular Speeds<br>● The Molar Specific Heats of an Ideal Gas<br>● Degrees of Freedom and Molar Specific Heats<br>● The Adiabatic Expansion of an Ideal Gas | **5** |
| 6 | **Images**<br>● Two Types of Image<br>● Plane Mirrors<br>● Spherical Mirrors<br>● Images from Spherical Mirrors<br>● Spherical Refracting Surfaces<br>● Thin Lenses<br>● Optical Instruments | **5** |
| | **Practical Part:**<br>● Students will conduct various experiments in the practical part of the course. Each student will perform the experiment, collect data, extract result, and prepare a written report every week. | **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. Solve some examples during the lecture. |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| 1.2 | Describe the concepts and physical laws related to the course using the mathematical formula. | 1. Demonstrating the basic principles through lectures.<br>2. Discussing phenomena with illustrating pictures and diagrams.<br>3. Lecturing method:<br>● Board, Power point.<br>● Discussions<br>● Brain storming<br>● Start each chapter by general idea and the benefit of it. | 2. Discussions during the lectures<br>3. Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam. |
| 1.3 | | | |
| **2.0** | **Skills** | | |
| 2.1 | Apply physics laws to calculate physical quantities related to the course. | 1. Solve some problems in physics during lectures.<br>2. Following some proofs during lectures.<br>3. Encourage students to participate in solving problems. | 1. Solve some examples during the lecture.<br>2. Discussions during the lectures<br>3. Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam |
| 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.<br>● Organize the students as a small group in the lab. | ● Evaluate the scientific reports.<br>● Discussing the reports with each teamwork.<br>● 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** | Lab. Reports and 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** | Physics for Scientists & Engineers with Modern Physics 4th Edition by Douglas Giancoli, 4th Edition (2014). |
| **Electronic Materials** | 1. Physics is Beautiful \| Free, interactive physics lessons<br>2. Khan Academy Physics \| Physics videos<br>3. The Feynman Lectures on Physics<br>4. PhET Simulations \| Online physics simulations |
| **Other Learning Materials** | |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | ● Classroom<br>● Library |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | ● Data show<br>● Black Bord |
| **Other Resources**<br>(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** | |

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Education & Training Evaluation Commission

# Course Specifications

| | |
|---|---|
| **Course Title:** | **Electricity and Magnetism 1** |
| **Course Code:** | **PHY2301** |
| **Program:** | **BSc** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**F. Learning Resources and Facilities** **5**

1.Learning Resources 5

2. Facilities Required 5

**G. Course Quality Evaluation** **5**

**H. Specification Approval Data** **6**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4hrs** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ■ Others ☐<br>**b.** Required ■ Elective ☐ |
| **3. Level/year at which this course is offered: Level 4/ 2nd years** |
| **4. Pre-requisites for this course** (if any)**:** General physics 2 |
| **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** | 4 | 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 Hours |
| 2 | **Laboratory/Studio** | |
| 3 | **Tutorial** | |
| 4 | **Others** (specify) Exams & quizzes | |
| | **Total** | 40 Hours |

## B. Course Objectives and Learning Outcomes

**1. Course Description**

This course will provide a conceptual background in physics sufficient to enable students to take courses that are more advanced in related fields. It covers the following: Electric charge, electric fields, superposition, Gauss' Law, surface integrals, electric flux, the electric potential, simple circuits, Ohm's Law, and capacitors.

## 2. Course Main Objective

1. Provide and define the fundamental properties of the electric charge, solve technical problems associated with the electrostatic force (Coulomb force),
2. Identify that at every point in the space surrounding a charged particle, the particle sets up an electric field, which is a vector quantity and thus has both magnitude and direction.
3. Identify how an electric field can be used to explain how a charged particle can exert an electrostatic force on a second charged particle even though there is no contact between the particles.
4. Explain how a small positive test charge is used (in principle) to measure the electric field at any given point.
5. Define electric capacitance and solve technical problems associated with capacitors of various symmetries, capacitors in series and parallel combination, the microscopic effect of dielectric materials on capacitance and stored energy.
6. Define electric current, current density, and solve technical problems involving DC networks of resistors, batteries, and capacitors, Ohm's Law, Kirchhoff's laws, and RC charging and decay circuits.
7. Calculate the potential difference between any two points in a circuit.
8. Distinguish a real battery from an ideal battery and, in a circuit diagram, replace a real battery with an ideal battery and an explicitly shown resistance.
9. Calculate the net rate of energy transfer in a real battery for current in the direction of the emf and in the opposite direction.

## 3. Course Learning Outcomes

| CLOs | | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Define fundamental concepts of electric charge, electric current, and electric field | K1-I |
| 1.2 | Extract electric potential from electric field, and vice versa | K1-I |
| 1.3 | | K1-I |
| 1.4 | Investigate fundamentals of linear electric circuit components and how their operation is governed by the fundamental laws of electricity. | K2-I |
| **2** | **Skills :** | |
| 2.1 | Use physical laws and principles to calculate the electric field and the potential difference. | S1-P |
| 2.2 | analyze electric circuit | S1-P |
| 2.3 | | S2-I |
| 2.4 | | S2-P |
| 2.5 | | S2-I |
| **3** | **Values:** | |
| 3.1 | | V1-I |
| 3.2 | Collaborate with the others to resolve problems. | V2-I |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|

| | | |
|---|---|---|
| 1 | **Coulomb's Law**<br>Electric Charge, Conductors and Insulators, Coulomb's Law, Charge is quantized, Charge is conserved. | 6 |
| 2 | **Electric Fields**<br>The Electric Field, Electric field lines, Electric Field Due to a Charged particle, Electric Dipole, The Electric Field Due to an Electric Dipole, Electric Field Due to a line of charge, The Electric Field Due to a Charged Disk, A Point Charge in an Electric Field, A Dipole in an Electric Field, | 6 |
| 3 | **Gauss' Law**<br>Flux of an Electric Field, Gauss' Law, Gauss' Law and Coulomb's Law, A Charged Isolated Conductor, Applying Gauss' Law: Cylindrical Symmetry, Applying Gauss' Law: Planar Symmetry, Applying Gauss' Law: spherical Symmetry. | 6 |
| 4 | **Electric Potential**<br>Electric Potential, Electric Potential Energy, Equipotential surfaces, Calculating the potential from the field, Potential Due to a Point Charge, Potential Due to a group of Point Charges, Potential Due to an Electric Dipole, Potential Due to a Continuous Charge Distribution, Calculating the field from the potential, Electric Potential Energy of a System of Point Charges, Potential of a Charged Isolated Conductor. | 6 |
| 5 | **Capacitance**<br>Capacitors, Capacitance, Calculating the Capacitance, Capacitors in Parallel and in Series, Energy Stored in an Electric Field, Capacitor with a Dielectric. Dielectrics and Gauss' Law. | 4 |
| 6 | **Current and Resistance**<br>Electric Currents, Current density, Resistance and Resistivity, Ohm's Law, Power in Electric Circuits. Semiconductors, Superconductors. | 6 |
| 7 | **Circuits**<br>Single-Loop circuits, "Pumping" Charges, Work, Energy, and Emf, Calculating the Current in a Single-Loop Circuit, Other Single-Loop Circuits, Potential Difference Between Two Points, Multiloop Circuits (resistors in parallel and in series), The Ammeter and the Voltmeter, RC Circuits, Charging and Discharging a Capacitor. Sample problems. | 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 | Recognize fundamental concepts of electric charge, electric current, and electric field. | 1. Demonstrating the basic information and principles | 1- Mid- term |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| 1.2 | Extract electric potential from electric field, and vice versa | through lectures and the achieved applications<br>2. Discussing phenomena with illustrating pictures and diagrams<br>3. Lecturing method:<br>4. Tutorials<br>5. Revisit concepts<br>6. Discussions<br>7. Start each chapter by general idea and the benefit of it;<br>8.Show the best ways to deal with problem;<br>9. Build a strategy to solve problem. | theoretical exam<br>2- Short quizzes.<br>3- Final theoretical exam |
| 1.3 | Explain how charges and currents respond to electric field and also how charges and current generate electric field. | | |
| 1.4 | Investigate practical fundamentals of linear electric circuit components and how their operation is governed by the fundamental laws of electricity. | | |
| **2.0** | **Skills** | | |
| 2.1 | How to use physical laws and principles to calculate the electric field and the potential difference. | 1. Preparing main outlines for teaching.<br>2. Following some proofs<br>3. Define duties for each chapter.<br>4. Homework assignments<br>5. Encourage the student to look for the information in different references. | 1. Exams, short quizzes.<br>2. Asking about physical laws previously taught.<br>3. Discussions of how to simplify or analyze some phenomena. |
| 2.2 | How to simplify problems and analyze circuit | | |
| 2.3 | Analyse and solve technical problems associated with capacitors of various symmetries, | | |
| 2.4 | Calculate the net rate of energy transfer in a ideal and real batterys. | | |
| 2.5 | Represent the physical problems mathematically. | | |
| **3.0** | **Values** | | |
| 3.1 | Relate theoretical scientific concepts to experimental results, Think in solving problems, Search on the internet, | · Active learning<br>· Small group discussion | · Evaluate the work in team |
| 3.2 | Collaborate with the others to resolve problems. | | |

## 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Exercises & Home works | All weeks | 10 % |
| **2** | Quizzes | All weeks | 10 % |
| **3** | Midterm's exam | 8th week | 30 % |
| **4** | Final Exam (theoretical) | End of the term | 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:**<br>Each student will supervise by academic adviser in physics department and the time table for academic advice were given to the student each semester. |

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | Fundamentals of Physics, by David Halliday, Robert Resnick, Jearl Walker, Wiley; 10th Edition, Extended Edition: 978-1-119-46013-8 |
| **Essential References Materials** | |
| **Electronic Materials** | The website of the course. |
| **Other Learning Materials** | |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | Classrooms and library. |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | |
| **Other Resources**<br>(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 |
|---|---|---|
| 1. Following up the progress of students in the course. | Instructor | Homework & quiz |
| 2. Evaluating the progress of student | Instructor | Questionnaires. |
| 3. Evaluating the instructor | Student | Questionnaires. |
| 4. Revision of Exam paper | Another staff member | Standers of the exam papers |

**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:** | **Modern physics 1** |
| **Course Code:** | **PHY2401** |
| **Program:** | **BSc** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**E. Student Academic Counseling and Support** **5**

**F. Learning Resources and Facilities** **5**

1.Learning Resources 5

2. Facilities Required 5

**G. Course Quality Evaluation** **5**

**H. Specification Approval Data** **6**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4hrs** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered: Level 4/ 2nd years** |
| **4. Pre-requisites for this course** (if any)**:** General physics 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** | 40 Hours | 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 Hours |
| 2 | **Laboratory/Studio** | |
| 3 | **Tutorial** | |
| 4 | **Others** (specify) | |
| | **Total** | 40 Hours |

## B. Course Objectives and Learning Outcomes

**1. Course Description**

The course will cover the principles of Modern physics, such as Relativity, Particle Properties of Waves, Wave Properties of Particles and Atomic Structure.
This

**2. Course Main Objective**

1. Define the main properties of modern physics
2. Understand that all motion is relative
3. Explain how Energy and Momentum fit together in relativity
4. Understand that coupled electric and magnetic oscillations that move with the speed of light and exhibit typical wave behavior
5. Explain the origin of Blackbody Radiation by the quantum theory of light.
6. Understand how Energy and Momentum fit together in relativity
7. Show that the energies of electrons liberated by light depend on the frequency of incident light.
8. Write a general formula for waves.
9. Explain that a photon is emitted when an electron jumps from one energy level to a lower level.
10. Understand how atoms absorb and emit energy.

**3. Course Learning Outcomes**

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Define relativity. | K1-I |
| 1.2 | Ėxplain the wave particle duality . | K2-I |
| 1.3 | Describe the atomic structure**.** | K2-I |
| 1.4 | | |
| **2** | **Skills :** | |
| 2.1 | Estimate relativistic quantities | S1-P |
| 2.2 | Explain atomic radiation and its interaction with matter | S2-P |
| 2.3 | | |
| | | |
| | | |
| | | |
| **3** | **Values:** | |
| 3.1 | Collaborate with the others to resolve problems. | V1-I |
| 3.2 | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Relativity**<br>Special Relativity, Time Dilation, Doppler Effect, Length Contraction, Twin Paradox, Electricity and Magnetism, Relativistic Momentum, Mass and Energy, Energy and Momentum and General Relativity. | 10 |
| 2 | **Particle Properties of Waves** | 10 |

| | | |
|---|---|---|
| | Electromagnetic Waves, Blackbody Radiation, The photoelectric effect, X-Rays, X-Ray Diffraction, Compton Effect, Pair Production and Photons and Gravity. | |
| 3 | **Wave Properties of Particles**<br>De Broglie waves, Describing a Wave, Phase and Group Velocities, Particle Diffraction, Particle in a Box, Uncertainty Principle I, Uncertainty Principle II and Applying the Uncertainty Principle. | 10 |
| 4 | **Atomic Structure**<br>The Nuclear Atom, Electron Orbits, Atomic Spectra, The Bohr Atom, Energy Levels and Spectra, Correspondence Principle, Nuclear Motion, Atomic Excitation and The Laser | 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 relativity. | - Demonstrating the basic principles through lectures.<br>- Discussing phenomena with illustrating pictures and diagrams<br>- Discussions | 1-Solve some examples during the lecture.<br>2-Exams:<br>a) Quizzes<br>b) Mid- term exam<br>c) Final Exam<br>d) Home work. |
| 1.2 | Describe the particle properties of waves. | | |
| 1.3 | Describe the wave properties of particles. | | |
| 1.4 | Describe the atomic structure. | | |
| **2.0** | **Skills** | | |
| 2.1 | Apply physical principles on physical phenomena. | - Preparing main outlines for teaching<br>- Define duties for each chapter<br>- Ask the student to attend lectures for practice solving problem | 1. Midterm's exam.<br>2.Writing reports on selected parts of the course<br>4. Discussions on how to simplify or analyze some phenomena. |
| 2.2 | Derive the physical laws and formulas related to the laws of modern physics | | |
| 2.3 | Analyse the quantitative results. | | |
| **3.0** | **Values** | | |
| 3.1 | Show responsibility for self-learning to be aware of recent developments in modern physics. | - Enhance educational skills.<br>- Develop their interest in modern physics.<br>- Encourage the student to attend lectures regularly<br>- Give students tasks of duties | 1-Evaluate the efforts of each student in preparing the report on selected parts of the course.<br>2-Evaluate the work in a team.. |
| 3.2 | Collaborate with the others to resolve problems. | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Homework and Participation in class | All weeks | 10 % |

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 2 | Quizzes | $2^{th}$-$10^{th}$ week | 10 % |
| 3 | Midterm exam | $5^{th}$-$6^{th}$ week | 30 % |
| 4 | Final exam | End of the term | 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 advisers in physics department and the time table for academic advice were given to the student each semester.

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | Arthur Beiser, "Concepts of Modern Physics", $6^{th}$ Edition, McGraw-Hili Primls, (2003). |
| **Essential References Materials** | J. Bernstein, Paul Fishbane and Stephen Gasiorowicz, Modern Physics, (2000, Hardcover). |
| **Electronic Materials** | The website of the course |
| **Other Learning Materials** | |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation** (Classrooms, laboratories, demonstration rooms/labs, etc.) | Classrooms and library. |
| **Technology 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) | |

## G. Course Quality Evaluation

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| 1. Following up the progress of students in the course. | Instructor | Homework & quiz |
| 2. Evaluating the progress of student | Instructor | Questionnaires. |

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| 3. Evaluating the instructor | Student | Questionnaires. |
| 4. Revision of Exam paper | Another staff member | Standards of the exam papers |

**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** | 8/3/2022 |

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA T4 2020

# Course Specifications

| | |
|---|---|
| **Course Title:** | **Theoretical Methods in Physics (2)** |
| **Course Code:** | **PHY2202** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**C. Course Content** **4**

**D. Teaching and Assessment** **4**

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**F. Learning Resources and Facilities** **5**

1.Learning Resources 6

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**G. Course Quality Evaluation** **7**

**H. Specification Approval Data** **7**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4 hrs** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered: 4/2nd year** |
| **4. Pre-requisites for this course** (if any)**: Theoretical Methods in Physics (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** | | |
| 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) Exams/ Quizzes | - |
| | **Total** | 40 |

## B. Course Objectives and Learning Outcomes

**1. Course Description**

This course is intended to introduce to Fourier series and Fourier Transforms as well as ordinary differential equations with their various physics applications. Topics cover the basic of Fourier series and Fourier Transforms and how to apply them to expand a function. In addition, the course includes methods to solve differential equations (various orders),, an introduction to systems of differential equations, the Laplace transform, and the Green functions. Applications of first-order linear differential equations and second-order linear differential equations with constant coefficients will be also studied.

**2. Course Main Objective**

This course is designed to supply students for a variety of mathematical methods that need for advanced undergraduate and beginning graduate study in physical science and to develop a solid background for those who will continue into the mathematics of advanced theoretical

| |
|---|
| physics |

### 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and understanding:** | |
| 1.1 | | K1(I) |
| 1.2 | | K1(I), K2(I) |
| 1.3 | Apply Fourier series and Fourier transform to related physics applications. | K1(I), K2(I) |
| 1.4 | Recognize several types of first and second ordinary differential equations and the appropriate methods to solve them. | K1(I), K2(I) |
| 1.5 | | |
| **2** | **Skills:** | |
| 2.1 | Explain the principles and properties of the discrete Fourier series and Fourier transform together with their applications. | S2(I) |
| 2.2 | | S2(I) |
| 2.3 | Solve ordinary differential equations using standard methods like separation of variables, auxiliary equation, integral transforms etc. | S1(I) |
| 2.4 | Apply Laplace transforms to solve ordinary differential equations. | S1(I) |
| **3** | **Values:** | |
| 3.1 | Participate effectively in multidisciplinary and/or interdisciplinary teams. | V2(I) |
| 3.2 | | V1(I), V2(I) |
| 3.3 | | V1(I) |
| 3.4 | | V1(I) |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Fourier series and transforms:** Periodic Functions, Average Value of a Function, Fourier Coefficients, Dirichlet Conditions, Complex Form of Fourier Series, Even and Odd Functions, Applications of Fourier Series, Parseval's Theorem, Fourier Transforms. | 12 |
| 2 | **First order ordinary differential equations:** Separable equations, linear 1st order equations, Bernoulli equation, Exact equations & integrating factors, Homogeneous equations, Change of variables. | 8 |
| 3 | **Second order ordinary differential equations:** Linear homogeneous equations, undamped & damped oscillator, Linear inhomogeneous equations, finding particular solutions, Forced vibrations, Resonance, General ordinary differential equations, Fourier series in Finding particular solutions. | 12 |
| 4 | **Solution of Differential Equations by Laplace Transforms:** The Laplace Transform, Convolution, The Dirac Delta Function, Introduction to Green Functions. | 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 | Be familiar with the concepts of Fourier series, Fourier transform as well as Laplace transforms. | 1. Lectures.<br>2. Discussions<br>3. Slides and computer simulation software may be used by the teachers to clarify concepts.<br>4. Problems solving<br>5. Students may be asked to solve some problems on computer using MATLAB language. | 1- Homework assignments.<br>2- Group Project assignment.<br>3- Question – answer session in class.<br>4- Exams: quizzes, Mid-term, and final exams |
| 1.2 | Recognize how to expand a function in a Fourier series, and under what conditions such an expansion is valid. | | |
| 1.3 | Recognize and taste the physical meanings Fourier series, Fourier transform and the related applications. | | |
| 1.4 | Recognize several types of first and second ordinary differential equations and the appropriate methods to solve them. | | |
| **2.0** | **Skills** | | |
| 2.1 | Explain the principles and properties of the discrete Fourier series and Fourier transform together with their applications. | 1. Lectures.<br>2. Discussions.<br>3. Problems solving.<br>4. Encourage the student to look for the information in different references.<br>5. Ask the student to attend lectures for practice solving problem.<br>6. Define duties for each chapter | **1-** Homework assignments.<br>**2-** Group Project assignment.<br>**3-** Question – answer session in class.<br>**4-** Exams: quizzes, Midterm, and final exams. |
| 2.2 | Justify the necessity of using Fourier series and Fourier transform in signal processing. | | |
| 2.3 | Solve ordinary differential equations using standard methods like separation of variables, auxiliary equation, integral transforms etc. | | |
| 1.4 | Apply Laplace transforms to solve ordinary differential equations. | | |
| **3.0** | **Values** | | |
| 3.1 | Participate effectively in multidisciplinary and/or interdisciplinary teams | **1.** Groupe assignments<br>**2.** Clarify deadlines for delivery of assignments, reports, and exams | **1.** Evaluate the efforts of each student in preparing the report.<br>**2.** Evaluate the work in teams.<br>Evaluation of students' presentations. |
| 3.2 | Accepting different ideas and respecting other opinions. | | |
| 3.3 | Manage a project (modelling or simulation) with due attention to time and resource management | | |
| 3.4 | Take responsibility and take the course instructions seriously. | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 1 | Exercises and HomeWorks | All weeks | 10% |
| 2 | Participation in activities and quizzes. | All weeks | 10% |
| 3 | Midterm exam | 6th week | 30% |
| 4 | Final exam | End of the term | 50% |
| | | | |

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

***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:**

Students are supervised by academic advisers in physics Department and the timetables for academic advice were given to the student each semester (8hrs per week).

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | Mary L. Boas, Mathematical methods in the Physical sciences, Third edition, John Wiley & Sons (2006). ISBN-13: 978-0471198260 |
| **Essential References Materials** | **1.** Mathematical Methods for Physicists: A Comprehensive Guide 7th edition, by George B. Arfken, Hans J. Weber, Frank E. Harris, Academic Press is an imprint of Elsevier (2013), ISBN: 978-0-12-384654-9.<br>**2.** Mathematical Methods for Physics and Engineering, by K. F. Riley, M. P. Hobson and S. J. Bence, Cambridge University Press; (2006), ISBN-13: 978-0521679718. |
| **Electronic Materials** | |
| **Other Learning Materials** | MATLAB |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation** (Classrooms, laboratories, demonstration rooms/labs, e). | Lecture room<br>Labs |
| **Technology Resources** (AV, data show, Smart Board, software, etc.) | data show, software |
| **Other Resources** | None |

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

## G. Course Quality Evaluation

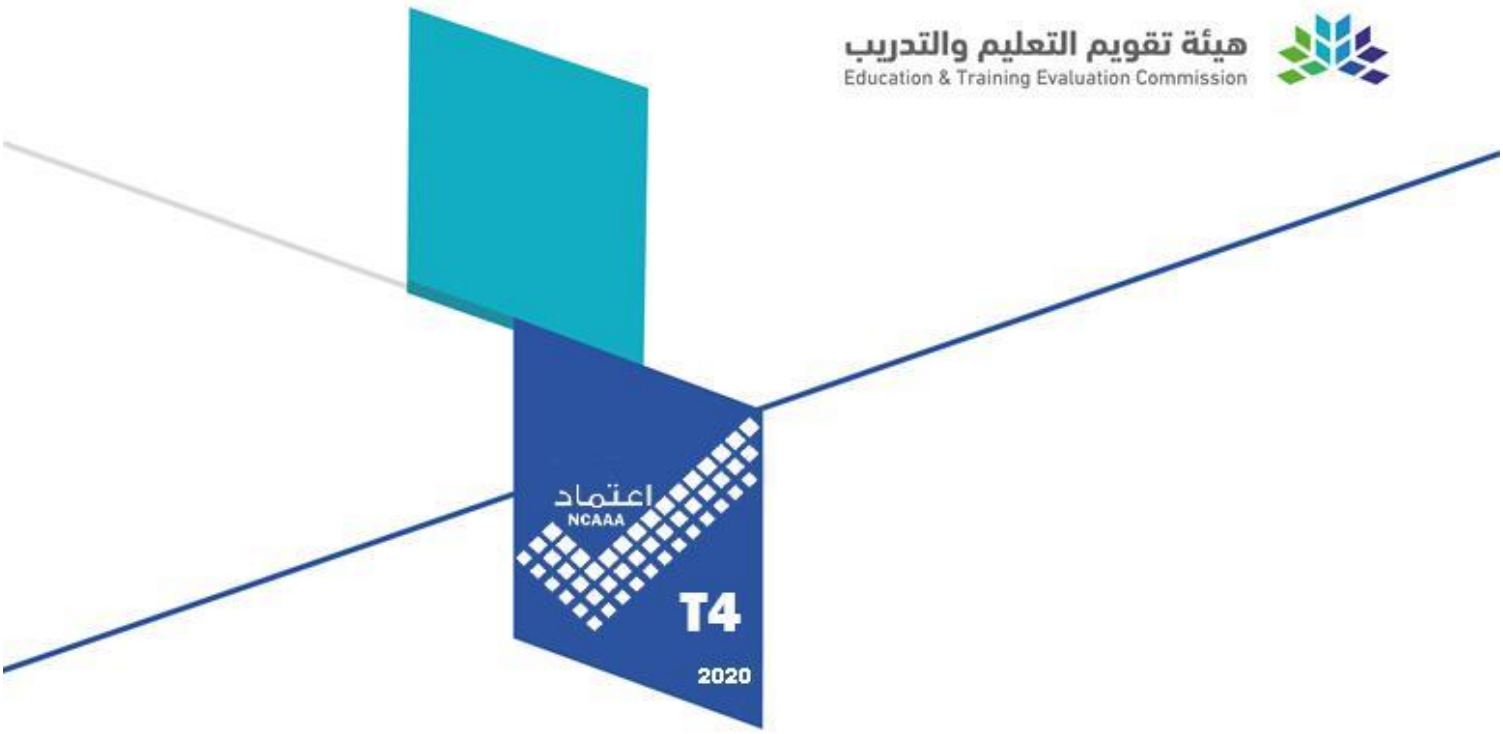
| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Student Feedback on Effectiveness of Teaching | Students | Direct |
| Evaluation of Teaching | Department | Indirect |
| Improvement of Teaching | Program leaders | Direct |
| Quality of learning resources | Faculty | Direct |
| Extent of achievement of course learning outcomes | Program leaders | 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** | Dr Atif Ismail, Dr. Walid Belhadj and Prof. Khaled Abdel-Waged |
| **Reference No.** | |
| **Date** | |

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission




# Course Specifications

| | |
|---|---|
| **Course Title:** | **Classical Mechanics 1** |
| **Course Code:** | **PHY2501** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**D. Teaching and Assessment** **5**

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**F. Learning Resources and Facilities** **6**

1.Learning Resources 6

2. Facilities Required 6

**G. Course Quality Evaluation** **7**

**H. Specification Approval Data** **7**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered: Level 4 /2nd year** |
| **4. Pre-requisites for this course** (if any)**: General Physics (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** | 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**

The course covers the vector algebra and vector differentiation, as well as Newton's laws of motion and the rectilinear motion of a single particle. The course, also, covers the simple harmonic motion, the damped and forced harmonic oscillator. Finally, the course covers the general motion of a particle in three dimensions.

**2. Course Main Objective**

The student will be able to

- Describe the rectilinear motion of a single particle using vector algebra.
- Describe the damped and forced harmonic motion mathematically.
- Calculate the terminal velocity of a falling body in resisting medium.

- Calculate the resonant frequency and the quality factor of a resonant system.
- Determine the velocity vector of a projectile in a uniform gravitational field.
- Derive the physical formulas related to the constrained motion of a particle.

### 3. Course Learning Outcomes

| CLOs | | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Define the physical quantities related to the motion of a single particle. | K1 |
| 1.2 | Describe Newton's laws mathematically. | K1 |
| **2** | **Skills:** | |
| 2.1 | Solve problems related to the motion of a particle using vector algebra. | S1 |
| 2.2 | Explain the laws and formulas related to the motion of a particle. | S2 |
| **3** | **Values:** | |
| 3.1 | Work effectively and responsibly in teamwork. | V2 |
| | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Fundamental Concepts Vectors**<br>- Revision of vectors<br>- Triple products<br>- Derivative of a vector.<br>- Position vector of a particle velocity and acceleration in rectangular coordinates.<br>- Velocity and acceleration in polar coordinates.<br>- Velocity and acceleration in cylindrical and spherical coordinates. | 10 |
| 2 | **Newtonian Mechanics, Rectilinear Motion of a Particle**<br>- Newton's law of motion.<br>- Rectilinear Motion: uniform Acceleration under a constant force.<br>- Position-dependent forces.<br>- The Concepts of kinetic and potential energy.<br>- Velocity-dependent forces.<br>- Fluid resistance and terminal velocity. | 12 |
| 3 | **Oscillations**<br>- Linear Resorting Force: harmonic motion.<br>- Energy considerations in harmonic motion.<br>- Damped harmonic motion.<br>- Forced harmonic motion: resonance. | 8 |
| 4 | **General Motion of a Particle in Three Dimensions**<br>- The potential energy function in three-dimensional motion: The del operator.<br>- Forces of the separable type.<br>- The harmonic oscillator in two and three dimensions.<br>- Constrained motion of a particle. | 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 motion of a single particle. | 1. Demonstrating the basic principles through lectures.<br>2. Discussing phenomena with illustrating pictures and diagrams.<br>3. Lecturing method: Board, Power point.<br>4. Discussions<br>5. Brain storming<br>Start each chapter by general idea and the benefit of it. | - Solve some examples<br>- Discussions during the lectures<br>Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam. |
| 1.2 | Describe Newton's laws mathematically. | | |
| **2.0** | **Skills** | | |
| 2.1 | Solve problems related to the motion of a particle using vector algebra. | 1. Preparing main outlines for teaching.<br>2. Following some proofs.<br>3. Define duties for each chapter | 1. Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam<br>2. Homework's. |
| 2.2 | Explain the laws and formulas related to the motion of a particle. | | |
| **3.0** | **Values** | | |
| 3.1 | Work effectively and responsibly in teamwork. | - Organize the students in small groups (teamwork).<br>- Give students tasks as a small project. | - Evaluate the scientific reports.<br>- Discussing the reports with each teamwork.<br>- Evaluate the efforts of each student in preparing the report. |
| | | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Midterm Exam | 8th | 30% |
| **2** | Homework's & Quizzes & Reports | All weeks | 20 % |

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 3 | 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 an academic adviser in Physics Department and the time table for academic advice were given to the student each semester. (4 hours per week)

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | Analytical Mechanics by G. R. Fowles and G. L. Cassiday (2005), 7th edition. |
| **Essential References Materials** | |
| **Electronic Materials** | |
| **Other Learning Materials** | • Classical Mechanics by John R. Taylor (2005).<br>• Classical Dynamics of Particles and Systems by S. Thornton, and J. Marion (2004), 5th edition. |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation** (Classrooms, laboratories, demonstration rooms/labs, etc.) | - Classroom |
| **Technology Resources** (AV, data show, Smart Board, software, etc.) | - Black Board<br>- Data show |
| **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 |

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| 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:** | **Electricity and Magnetism 2** |
| **Course Code:** | **PHY2302** |
| **Program:** | **BSc** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**A. Course Identification** **3**

6. Mode of Instruction (mark all that apply) 3

**B. Course Objectives and Learning Outcomes** **3**

1. Course Description 3

2. Course Main Objective 3

3. Course Learning Outcomes 3

**C. Course Content** **4**

**D. Teaching and Assessment** **4**

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods 4

2. Assessment Tasks for Students 4

**E. Student Academic Counseling and Support** **5**

**F. Learning Resources and Facilities** **5**

1.Learning Resources 5

2. Facilities Required 5

**G. Course Quality Evaluation** **5**

**H. Specification Approval Data** **6**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4hrs** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ■ Others ☐<br>**b.** Required ■ Elective ☐ |
| **3. Level/year at which this course is offered: Level 5/ 2nd years** |
| **4. Pre-requisites for this course** (if any)**:** Electricity and Magnetism 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** | 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 Hours |
| 2 | **Laboratory/Studio** | 30 Hours |
| 3 | **Tutorial** | |
| 4 | **Others** (specify) | |
| | **Total** | 60 Hours |

## B. Course Objectives and Learning Outcomes

**1. Course Description**

This course will provide a conceptual and experimental background in physics sufficient to enable students to take courses that are more advanced in related fields. It covers the following: Magnetic Fields, Magnetic Fields Due to Currents, Induction and Inductance, Maxwell's Equations; Magnetism of Matter and Electromagnetic Waves.

## 2. Course Main Objective

1- Define the magnetic field and magnetic flux, solve technical problems associated with the effect of static, non-uniform and uniform magnetic fields on moving charges and current-carrying wires, loops and the magnetic dipole.
2- Calculate the magnitude and direction of the magnetic field for symmetric current distributions using the Law of Biot-Savart and Ampere's Law, and state the limitations of Ampere's Law.
3- State Faraday's Law of Induction with Lenz's Law and use these equations to solve technical problems associated with induction.
4- Calculate inductance according to the fundamental definition, solve technical problems associated with LR circuits and coils, and calculate the stored energy in magnetic fields
5- Identify that the simplest magnetic structure is a magnetic dipole.
6- Identify that the net magnetic flux through a Gaussian surface (which is a closed surface) is zero.
7- List Maxwell's equations and the purpose of each.
8- Identify field declination and field inclination
9- Explain the classical loop model for an orbiting electron and the forces on such a loop in a nonuniform magnetic field.
10- Distinguish diamagnetism, paramagnetism, and ferromagnetism.
11- For a diamagnetic sample placed in an external magnetic field, identify that the field produces a magnetic dipole moment in the sample, and identify the relative orientations of that moment and the field.
12- For a diamagnetic sample in a nonuniform magnetic field, describe the force on the sample and the resulting motion.
13- For a paramagnetic sample placed in an external magnetic field, identify the relative orientations of the field and the sample's magnetic dipole moment.
14- For a paramagnetic sample at a given temperature and in a given magnetic field, compare the energy associated with the dipole orientations and the thermal motion.
15- Identify that ferromagnetism is due to a quantum mechanical interaction called exchange coupling.
16- Identify magnetic domains.
17- In the electromagnetic spectrum, identify the relative wavelengths (longer or shorter) of AM radio, FM radio, television, infrared light, visible light, ultraviolet light, x rays, and gamma rays.
18- Identify that electromagnetic waves do not require a medium and can travel through vacuum.

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

## 3. Course Learning Outcomes

| CLOs | | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Recognize the fundamental concepts of magnetic field | K1-I |
| 1.2 | | K2-P |
| 1.3 | Recognize the relationship between the electric field and the magnetic field | K2-P |

| CLOs | | Aligned PLOs |
|---|---|---|
| 1.4 | Identify the magnitude of the magnetic field set up by a electric currents | K2-I |
| **2** | **Skills :** | |
| 2.1 | Define the magnetic field and magnetic flux | S1-I |
| 2.2 | Solve technical problems related to electric and magnetic fields. | S1-I |
| 2.3 | | S2-I |
| 2.4 | List Maxwell's equations and the purpose of each. | S2-P |
| 2.5 | | S2-I |
| **3** | **Values:** | |
| 3.1 | | V1-I |
| 3.2 | Collaborate with the others to resolve problems. | V2-I |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Magnetic Fields**<br>The source of a Magnetic Field The Definition of the Magnetic Field, Crossed Fields: Discovery of the Electron, Crossed Fields: The Hall Effect, A Circulating Charged Particle, Cyclotrons and Synchrotrons, Magnetic Force on a Current-Carrying Wire, Torque on a Current Loop, The Magnetic Dipole Moment. | 6 |
| 2 | **Magnetic Fields Due to Currents**<br>Calculating the Magnetic Field Due to a Current, Magnetic Field Due to a Current in a Long Straight Wire, Magnetic Field Due to a Current in a Circular Arc of Wire, Force Between Two Parallel Currents, Ampere's Law, Magnetic Field Outside a Long Straight Wire with Current , Magnetic Field Inside a Long Straight Wire with Current , Solenoids and Toroids, A Current-Carrying Coil as a Magnetic Dipole. | 6 |
| 3 | **Induction and Inductance**<br>Faraday's Law of Induction, Lenz's Law. Induction and Energy Transfers, Induced Electric Fields, Inductors and Inductance, Self-Induction, RL Circuits, Energy Stored in a Magnetic Field, Energy Density of a Magnetic Field, Mutual Induction, | 6 |
| 4 | **Maxwell's Equations; Magnetism of Matter**<br>Gauss' Law for Magnetic Fields, Induced Magnetic Fields, Displacement Current, Maxwell's Equations, Magnets, Magnetism and Electrons, Magnetic Materials, Diamagnetism, Paramagnetism, Ferromagnetism, | 6 |
| 5 | **Electromagnetic Waves**<br>Maxwell's Rainbow, The Traveling Electromagnetic Wave, Qualitatively, The Traveling Electromagnetic Wave, Quantitatively, Energy Transport and the | 6 |

| | | |
|---|---|---|
| | Poynting Vector, Radiation Pressure, Polarization, Reflection and Refraction, Total Internal Reflection, Polarization by Reflection, | |
| 6 | **Practical Part:**<br>Students will conduct various experiments in the practical part of the course. Each student will perform the experiment, collect data, extract result, and prepare a written report every week. | 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 | Recognize most fundamental concepts of magnetic field | 1. Demonstrating the basic information and principles through lectures and the achieved applications<br>2. Discussing phenomena with illustrating pictures and diagrams<br>3. Lecturing method:<br>a. Power point<br>b. e-learning<br>4. Tutorials<br>5. Revisit concepts<br>6. Discussions<br>7. Start each chapter by general idea and the benefit of it;<br>8. Build a strategy to solve problem | ·Mid– term theoretical exam<br>·Final practical exam<br>·Final theoretical exam |
| 1.2 | Apply the sinusoidal equations for the electric and magnetic components of an EM wave, written as functions of position and time | | |
| 1.3 | Apply the relationship between the electric field magnitude E, the magnetic field magnitude B, and the speed of light c. | | |
| 1.4 | Identify the magnitude of the magnetic field set up by a current-length element at a point in line with the direction of that element. | | |
| **2.0** | **Skills** | | |
| 2.1 | Define the magnetic field and magnetic flux, solve technical problems associated with the effect of static, non-uniform and uniform magnetic fields. | 1. Preparing main outlines for teaching<br>2. Following some proofs<br>3. Define duties for each chapter<br>4. Homework assignments<br>5. Encourage the student to look for the information in different references<br>6. Ask the student to attend lectures for practice solving problem. | 1. Midterm's exam. Exams, short quizzes.<br>2. Asking about physical laws previously taught.<br>3. Discussions of how to simplify or analyze some phenomena. |
| 2.2 | Identify magnetic domains. | | |
| 2.3 | Distinguish diamagnetism, paramagnetism, and ferromagnetism. | | |
| 2.4 | List Maxwell's equations and the purpose of each. | | |
| 2.5 | Explain that electromagnetic waves do not require a medium and can travel through vacuum. | | |
| **3.0** | **Values** | | |
| 3.1 | Write a report, Search on the internet, Collect the material of the course. | · Lab work | |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| 3.2 | Collaborate with the others to resolve problems. | · Active learning<br>· Small group discussion | · Evaluate the efforts of each student in preparing the report.<br>· Evaluate the scientific values of reports.<br>· Evaluate the work in team<br>· Evaluation of the role of each student in lab group. |

**2. Assessment Tasks for Students**

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 1 | Exercises & Home works | All weeks | 10 % |
| 2 | Midterm's exam (theoretical) | 8th week | 20 % |
| 3 | Lab. Reports and Exam | 11th week | 20 % |
| 4 | Final Exam (theoretical) | End of the term | 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 supervise by academic adviser in physics department and the time table for academic advice were given to the student each semester. (4hrs per week)

## F. Learning Resources and Facilities

**1.Learning Resources**

| | |
|---|---|
| **Required Textbooks** | Fundamentals of Physics, by David Halliday, Robert Resnick, Jearl Walker, Wiley; 10th Edition, Extended Edition: 978-1-119-46013-8 |

| | |
|---|---|
| **Essential References Materials** | |
| **Electronic Materials** | The website of the course |
| **Other Learning Materials** | Lab manual. |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation** (Classrooms, laboratories, demonstration rooms/labs, etc.) | Classrooms, equipped laboratories and library. |
| **Technology 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) | |

## G. Course Quality Evaluation

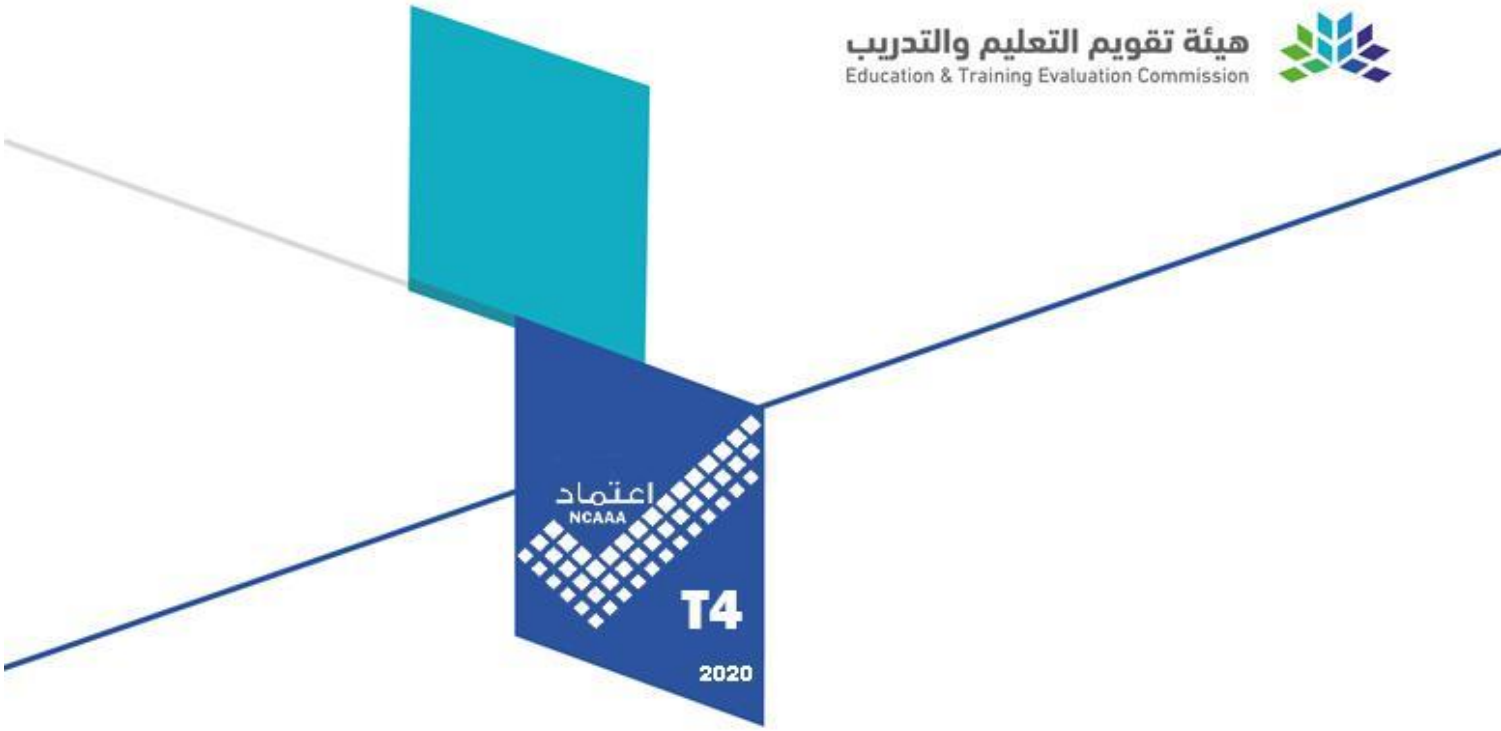
| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| 1. Following up the progress of students in the course. | Instructor | Homework & quiz |
| 2. Evaluating the progress of student | Instructor | Questionnaires. |
| 3. Evaluating the instructor | Student | Questionnaires. |
| 4. Revision of Exam paper | Another staff member | Standers of the exam papers |

**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:** | **Theoretical Methods in Physics (3)** |
| **Course Code:** | **PHY2203** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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1.Learning Resources 6

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**G. Course Quality Evaluation** **6**

**H. Specification Approval Data** **7**

## A. Course Identification

| | |
|---|---|
| **1. Credit hours:** | **4 hrs** |
| **2. Course type** | |
| **a.** | University ☐ College ☐ Department ☑ Others ☐ |
| **b.** | Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered:** | **5/2nd year** |
| **4. Pre-requisites for this course** (if any)**: Theoretical Methods in Physics (2)** | |
| **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) Exams/ Quizzes | - |
| | **Total** | 40 |

## B. Course Objectives and Learning Outcomes

**1. Course Description**

This course introduces students to some special functions which arise often in physical applications. These include Gamma Function, Beta Function, Error Function, Elliptic integrals functions, Series Solutions of Differential Equations, Legendre Equation and Polynomials, Associated Legendre Functions, Bessel Functions, Hermite Function, Laguerre Functions.

**2. Course Main Objective**

This course is designed to supply students for a variety of Special functions that are needed to evaluate some complex integrals as well as functions that are typically found as solutions of differential equations using power series methods.

**3. Course Learning Outcomes**

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |

| CLOs | | Aligned PLOs |
|---|---|---|
| 1.1 | Recognize basic expressions of special functions such as Gamma and Beta functions and how to evaluate them | K1(I), K2(I) |
| 1.2 | Apply power series methodology in solving differential equations. | K1(I), K2(I) |
| 1.3 | | K1(I), K2(I) |
| 1.4 | | K1(I) |
| 1.5 | Compare orthogonal polynomials such as Legendre, Bessel, Hermite, and Laguerre Functions. | K1(I) |
| **2** | **Skills:** | |
| 2.1 | Explain the use the gamma function, beta function and error function to evaluate different types of integral calculus problems. | S1(I), S2(I) |
| 2.2 | Explain the usefulness of classical orthogonal polynomial functions in solving some Sturm-Liouville boundary value problem. | S1(I), S2(I) |
| 2.3 | Solving linear differential equations by power series method. | S1(I), S2(I) |
| 2.4 | | S2(I) |
| **3** | **Values:** | |
| 3.1 | Participate effectively in multidisciplinary and/or interdisciplinary teams. | V2(I) |
| 3.2 | | V1(I), V2(I) |
| 3.3 | | V1(I) |
| 3.4 | | V1(I) |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Special functions:** Factorial function, Definition of Gamma function, Recursion relation, Properties of Gamma function, Beta Function, Beta function vs Gamma function, Error function, Stirling's formula, Elliptic integrals, and functions. | 10 |
| 2 | **Series Solutions of Differential Equations and Legendre functions:** Introduction to Series method for solving linear ordinary differential equations, Legendre's Equation, Rodrigues' Formula, Generating Function for Legendre Polynomials, Orthogonality and Normalization of the Legendre Polynomials, Legendre Series, Associated, Legendre Functions. | 12 |
| 3 | **Bessel Functions:** Bessel's Equation, Second Solution of Bessel's Equation, Graphs and Zeros of Bessel Functions, Recursion Relations, Other Kinds of Bessel Functions, Orthogonality of Bessel Functions, Approximate Formulas for Bessel Functions. | 10 |
| 4 | **Hermite and Laguerre Functions:** Ladder operators, Hermite functions, Hermite polynomials, Laguerre functions, Laguerre polynomials, Associated Laguerre polynomials. | 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 basic expressions of Gamma and Beta functions and how to evaluate them for integer and non-integer values. | 1. Lectures.<br>2. Discussions<br>3. Slides and computer simulation software may be used by the teachers to clarify concepts.<br>4. Problems solving<br>5. Students may be asked to solve some problems on computer using MATLAB language. | 1- Homework assignments.<br>2- Group Project assignment.<br>3- Question – answer session in class.<br>4- Exams: quizzes, Mid-term, and final exams |
| 1.2 | Recognize the power series methodology in solving differential equations, and how to check the correctness of the result. | | |
| 1.3 | Describe various methods of studying asymptotic behaviors of functions. | | |
| 1.4 | Recognize various forms of Elliptic integrals and related functions which may arise in applied problems. | | |
| 1.5 | Be familiar with classical orthogonal polynomials such as Legendre, Bessel, Hermite, and Laguerre Functions. | | |
| **2.0** | **Skills** | | |
| 2.1 | Explain the use the gamma function, beta function and error function to evaluate different types of integral calculus problems. | 1. Lectures.<br>2. Discussions.<br>3. Problems solving.<br>4. Encourage the student to look for the information in different references.<br>5. Ask the student to attend lectures for practice solving problem.<br>6. Define duties for each chapter | **1-** Homework assignments.<br>**2-** Group Project assignment.<br>**3-** Question – answer session in class.<br>**4-** Exams: quizzes, Midterm, and final exams. |
| 2.2 | Explain the usefulness of classical orthogonal polynomial functions in solving some Sturm-Liouville boundary value problem. | | |
| 2.3 | Solving linear differential equations by power series method. | | |
| 2.4 | Classify different types of ordinary differential equations and justify the appropriate solutions. | | |
| **3.0** | **Values** | | |
| 3.1 | Participate effectively in multidisciplinary and/or interdisciplinary teams. | **1.** Groupe assignments<br>**2.** Clarify deadlines for delivery of assignments, reports, and exams | **1.** Evaluate the efforts of each student in preparing the report.<br>**2.** Evaluate the work in teams.<br>Evaluation of students' presentations. |
| 3.2 | Accepting different ideas and respecting other opinions. | | |
| 3.3 | Manage a project (modelling or simulation) with due attention to time and resource management. | | |
| 3.4 | Take responsibility and take the course instructions seriously. | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 1 | Exercises and HomeWorks | All weeks | 10% |
| 2 | Participation in activities and quizzes. | All weeks | 10% |
| 3 | Midterm exam | 6th week | 30% |
| 4 | Final exam | End of the term | 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 :**

Students are supervised by academic advisers in physics Department and the timetables for academic advice were given to the student each semester (8hrs per week).

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | Mary L. Boas, Mathematical methods in the Physical sciences, Third edition, John Wiley & Sons (2006). ISBN-13: 978-0471198260 |
| **Essential References Materials** | **1.** Mathematical Methods for Physicists: A Comprehensive Guide 7th edition, by George B. Arfken, Hans J. Weber, Frank E. Harris, Academic Press is an imprint of Elsevier (2013), ISBN: 978-0-12-384654-9.<br>**2.** Mathematical Methods for Physics and Engineering, by K. F. Riley, M. P. Hobson and S. J. Bence, Cambridge University Press; (2006), ISBN-13: 978-0521679718. |
| **Electronic Materials** | |
| **Other Learning Materials** | MATLAB |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | Lecture room<br>Labs |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc). | data show, software |
| **Other Resources** | None |

| 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 |
|---|---|---|
| Student Feedback on Effectiveness of Teaching | Students | Direct |
| Evaluation of Teaching | Department | Indirect |
| Improvement of Teaching | Program leaders | Direct |
| Quality of learning resources | Faculty | Direct |
| Extent of achievement of course learning outcomes | Program leaders | 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** | Dr Atif Ismail, Dr. Walid Belhadj and Prof. Khaled Abdel-Waged |
| **Reference No.** | |
| **Date** | |

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA T4 2020

# Course Specifications

| | |
|---|---|
| **Course Title:** | **Modern physics 2** |
| **Course Code:** | **PHY2402** |
| **Program:** | **BSc** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**D. Teaching and Assessment** **4**

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**E. Student Academic Counseling and Support** **5**

**F. Learning Resources and Facilities** **5**

1.Learning Resources 5

2. Facilities Required 5

**G. Course Quality Evaluation** **5**

**H. Specification Approval Data** **6**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4hrs** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered: Level 5/2nd year** |
| **4. Pre-requisites for this course** (if any)**:** Modern physics 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** | 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** (specify) | |
| | **Total** | 60 |

## B. Course Objectives and Learning Outcomes

**1. Course Description**

The course will cover the principle of Modern physics, such as basic concepts of Quantum Mechanics, Quantum Theory of the Hydrogen Atom, Many-Electron Atoms and Molecules.

**2. Course Main Objective**

1. Explain that classical mechanics is an approximation of quantum mechanics.
2. Understand how to extract information from a wave function.
3. Explain How boundary conditions and normalization determine wave functions.
4. Understand the quantization of energy and of angular-momentum magnitude and direction.
5. Explain how atoms interact with a magnetic field.
6. Understand the different set of quantum numbers for each electron in an atom.
7. Show how an atom's electron structure determines its chemical behavior.
8. Explain that both magnitude and direction are quantized.
9. Understand the mechanism of the covalent bond.
10. Show that a molecule may have many different modes of vibration.
11. Explain how fluorescence and phosphorescence occur.

### 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Explain the electronic spectra of Molecules | K1-I |
| 1.2 | Describe the Electron Spin, the exclusion Principle, the Spin-Orbit Coupling and X-Ray Spectra. | K2-I |
| 1.3 | | K1-I |
| 1.4 | | K2-I |
| **2** | **Skills :** | |
| 2.1 | Solve Schrodinger equation for various cases | S1-P |
| 2.2 | Relate the atomic structure to bonding in molecules | S2-P |
| 2.3 | | |
| | | |
| | | |
| | | |
| **3** | **Values:** | |
| 3.1 | Show responsibility for self-learning to be aware with recent developments in modern physics. | V1-I |
| 3.2 | Collaborate with the others to resolve problems. | V2-I |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Quantum Mechanics**<br>Quantum Mechanics, The Wave Equation, Schrodinger's Equation, Linearity and Superposition, Expectation Values, Operators, Schrodinger's Equation: Steady-State Form, Particle in a Box, Finite Potential Well, Tunnel Effect, Harmonic Oscillator. | 10 |
| | | |
| 2 | **Many-Electron Atoms**<br>Electron Spin, Exclusion Principle, Functions, Periodic Table, Atomic Structures, Explaining the Periodic Table, Spin-Orbit Coupling, Total Angular Momentum and X-Ray Spectra. | 10 |
| 3 | **Molecules**<br>The Molecular Bond, Electron Sharing, The $H_2^+$ Molecular Ion, The Hydrogen Molecule, Complex Molecules, Rotational Energy Levels, Vibrational Energy Levels, and Electronic Spectra of Molecules. | 10 |
| 4 | **Practical Part:**<br>Students will conduct various experiments in the practical part of the course. Each student will perform the experiment, collect data, extract result, and prepare a written report every week. | 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 Quantum Theory of the Hydrogen Atom. | - Demonstrating the basic principles through lectures.<br>- Discussing phenomena<br>- Lecturing method: Board, Power point<br>- Discussions | a) Quizzes<br>b) Mid- term exam<br>c) Final Exam<br>d) Final practical exam<br>e) Discussions during the lectures.<br>f) Home work. |
| 1.2 | Describe the Electron Spin, Exclusion Principle, Spin-Orbit Coupling and X-Ray Spectra | | |
| 1.3 | Define Hydrogen and Complex Molecules | | |
| 1.4 | Explain the electronic spectra of Molecules. | | |
| **2.0** | **Skills** | | |
| 2.1 | Apply physical principles on physical phenomena. | - Define duties for each chapter,<br>- Encourage the student to look for the information in different references<br>-Ask the student to attend lectures for practice solving problem | 1. Midterm's exam. Exams, short quizzes, practical exam<br>2.Asking about physical laws previously taught<br>3. Discussions of how to simplify or analyze some phenomena in solids. |
| 2.2 | Derive the physical laws and formulas related to the laws of modern physics | | |
| 2.3 | Analyse the quantitative results. | | |
| **3.0** | **Values** | | |
| 3.1 | Show responsibility for self-learning to be aware of recent developments in modern physics. | • Enhance educational skills.<br>• Develop their interest in modern physics.<br>• Encourage the student to attend lectures regularly. | • Evaluate the efforts of each student in preparing the report.<br>• Evaluate the work in team |
| 3.2 | Collaborate with the others to resolve problems. | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Quizzes & Homework | All weeks | 10 % |
| **2** | Lab. Reports and Exam | End of the term | 20% |
| **3** | Midterm exam | $5^{th}$-$6^{th}$ week | 20 % |
| **4** | Final exam | End of the term | 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:**<br>Each student will be supervised by an academic adviser in the physics department and the time table for academic advice will be given to the student each semester. |

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | Arthur Beiser, "Concepts of Modern Physics", 6th Edition, McGraw-Hili Primls, (2003). |
| **Essential References Materials** | J. Bernstein, Paul Fishbane and Stephen Gasiorowicz, Modern Physics, (2000, Hardcover). |
| **Electronic Materials** | The website of the course. |
| **Other Learning Materials** | |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | Classrooms, laboratories . |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | |
| **Other Resources**<br>(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 |
|---|---|---|
| 1. Following up the progress of students in the course. | Instructor | Homework & quiz |
| 2. Evaluating the progress of student | Instructor | Questionnaires. |
| 3. Evaluating the instructor | Student | Questionnaires. |
| 4. Revision of Exam paper | Another staff member | Standers of the exam papers |

**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** | 8/3/2022 |

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

# Course Specifications

| | |
|---|---|
| **Course Title:** | **Classical Mechanics 2** |
| **Course Code:** | **PHY2502** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**D. Teaching and Assessment** **5**

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**E. Student Academic Counseling and Support** **6**

**F. Learning Resources and Facilities** **6**

1.Learning Resources 6

2. Facilities Required 6

**G. Course Quality Evaluation** **6**

**H. Specification Approval Data** **7**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered: Level 5th /2nd year** |
| **4. Pre-requisites for this course** (if any)**: Classical Mechanics 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** | | |
| 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**

The course covers the study of noninertial reference systems, as well as the central forces and celestial mechanics. The motion of a system of many particles is also covered in the course.

**2. Course Main Objective**

The student will be able to

- Calculate the center of mass, angular momentum, and kinetic energy of a system of particles.
- Describe the Kepler's laws of planetary motion using mathematics.
- Describe the motion of two interacting bodies using mathematics.
- Calculate the energy equation of the orbit and the periodic time of orbital motion.
- Derive the formulas related to the motion of particle in rotating coordinate systems.

- Derive the formulas related to the motion of particle in a central field.

### 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Define the physical quantities related to the motion of the particle in a rotating system. | K1 |
| 1.2 | Describe the Kepler's laws of planetary motion using mathematics. | K1 |
| **2** | **Skills :** | |
| 2.1 | Solve the problems related to the motion of particle in a central field using mathematics. | S1 |
| 2.2 | Explain the laws and formulas related to the system of particles. | S2 |
| **3** | **Values:** | |
| 3.1 | Work effectively and responsibly in teamwork. | V2 |
| | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Noninertial Reference Systems**<br>• Accelerated coordinate systems and inertial forces.<br>• Rotating coordinate systems.<br>• Dynamics of a particle in a rotating coordinate system.<br>• Effects of earth's rotation.<br>• The Foucault pendulum. | 12 |
| 2 | **Gravitation and Central Forces**<br>• Introduction.<br>• Gravitational force between a uniform sphere and a particle.<br>• Kepler's laws of planetary motion.<br>• Kepler's second law: equal areas.<br>• Kepler's first law: The law of ellipses.<br>• Kepler's third law: The harmonic law.<br>• Potential energy in a gravitational field: gravitational potential.<br>• Potential energy in a general central field.<br>• Energy equation of an orbit in a central field.<br>• Orbital energies in an inverse-square field. | 16 |
| 3 | **Dynamics of Systems of Particles**<br>• Introduction.<br>• Center of mass and linear momentum of a system.<br>• Angular momentum and kinetic energy of a system.<br>• Motion of two interacting bodies: the reduced mass.<br>• Collisions.<br>• Oblique collisions and scattering: comparison of laboratory and center of mass coordinates.<br>• Motion of a body with variable mass: rocket motion. | 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 | Define the physical quantities related to the motion of the particle in rotating system. | 1. Demonstrating the basic principles through lectures.<br>2. Discussing phenomena with illustrating pictures and diagrams.<br>3. Lecturing method: Board, Power point.<br>4. Discussions<br>5. Brain storming<br>Start each chapter by general idea and the benefit of it. | - Solve some examples<br>- Discussions during the lectures<br>Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam. |
| 1.2 | Describe the Kepler's laws of planetary motion using mathematics. | | |
| **2.0** | **Skills** | | |
| 2.1 | Solve the problems related to the motion of particle in a central field using mathematics. | 1. Preparing main outlines for teaching.<br>2. Following some proofs.<br>3. Define duties for each chapter | 1. Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam<br>2. Homework. |
| 2.2 | Explain the laws and formulas related to the system of particles. | | |
| **3.0** | **Values** | | |
| 3.1 | Work effectively and responsibly in teamwork. | ● Organize the students in small groups (teamwork).<br>● Give students tasks as a small project. | ● Evaluate the scientific reports.<br>● Discussing the reports with each teamwork.<br>● Evaluate the efforts of each student in preparing the report. |
| | | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Midterm Exam | 8th | 30% |
| **2** | Homework's & Quizzes & Reports | All weeks | 20 % |
| **3** | 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 :**<br><br>Each student will be supervised by an academic adviser in physics Department and the time table for academic advice were given to the student each semester. (4 hours per week) |
|---|

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | Analytical Mechanics by G. R. Fowles and G. L. Cassiday (2005), 7th edition. |
| **Essential References Materials** | |
| **Electronic Materials** | |
| **Other Learning Materials** | • Classical Mechanics by John R. Taylor (2005).<br>• Classical Dynamics of Particles and Systems by S. Thornton, and J. Marion (2004), 5th edition. |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | - Classroom |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | - Black Board<br>- Data show |
| **Other Resources**<br>(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:** | **Electricity and Magnetism 3** |
| **Course Code:** | **PHY2303** |
| **Program:** | **BSc** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**F. Learning Resources and Facilities** **5**

1.Learning Resources 5

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**G. Course Quality Evaluation** **5**

**H. Specification Approval Data** **6**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4hrs** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ■ Others ☐<br>**b.** Required ■ Elective ☐ |
| **3. Level/year at which this course is offered: Level 6/ 2nd years** |
| **4. Pre-requisites for this course** (if any)**:** Electricity and Magnetism 2 |
| **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 Hours |
| 2 | **Laboratory/Studio** | 30 Hours |
| 3 | **Tutorial** | |
| 4 | **Others** (specify) | |
| | **Total** | 60 Hours |

## B. Course Objectives and Learning Outcomes

**1. Course Description**

The course will cover the principle of an alternating current (AC), such as basic concepts, components in AC circuit, RC, RL and RLC circuits, types of filters, resonance and electric power.

**2. Course Main Objective**

1. Define the main properties of an alternating current
2. Use the complex number
3. Understand the principle of basic components in AC circuit
4. Understand the concept of the electric power
5. Understand the theory of RC, RL, RLC circuits
6. Understand different types of filters (Low pass filter, High pass filter…)
7. Understand the theory of the resonant circuit.
8. Calculate the Power Factor

### 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Define the main properties of an alternating current | K1-I |
| 1.2 | | K1-P |
| 1.3 | Analyze the equations of R-C, R-L and R-C-L circuits and calculating the impedance, power factor, root-mean- square values of current and voltage. | K1-P |
| 1.4 | | K2-P |
| **2** | **Skills :** | |
| 2.1 | Solve ac circuit problems using complex number . | S1-P |
| 2.2 | | S1-P |
| 2.3 | | S2-I |
| 2.4 | Analyse the different types AC circuit. | S2-I |
| 2.5 | | S2-P |
| **3** | **Values:** | |
| 3.1 | | V1-I |
| 3.2 | Collaborate with the others to resolve problems. | V2-I |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Principles of alternating current**<br>AC waveforms, frequency, Angular frequency, Period, Instantaneous value of the voltage, Maximum or peak value of the voltage, Peak to peak value of the voltage, Initial phase, Root-Mean- Square (RMS) Values of Current and Voltage. | 2 |
| 2 | **Complex number**<br>Introduction, Vectors and AC waveforms, Simple vector addition, Complex vector addition, Polar, rectangular and Exponential Form notation, Complex number arithmetic. | 2 |
| 3 | **Reactance and Impedance - Inductive**<br>AC resistor circuits, AC inductor circuits, Series resistor-inductor circuits, Parallel resistor-inductor circuits. | 5 |
| 4 | **Reactance and Impedance - Capacitive**<br>AC resistor circuits, AC capacitor circuits, Series resistor-capacitor circuits, Parallel resistor-capacitor circuits. | 5 |
| 5 | **Reactance and Impedance – RLC**<br>Review of R, X, and Z , Series R, L, and C, Parallel R, L, and C, Series-parallel R, L, and C, Susceptance and Admittance. | 5 |
| 6 | **Resonance**<br>An electric pendulum, Simple parallel resonance, Simple series resonance, Applications of resonance, Resonance in series-parallel circuits, Q and bandwidth of a resonant circuit . | 5 |
| 7 | **Filters**<br>What is a filter?, Low-pass filters, High-pass filters, Band-pass filters, Band-stop filters, Resonant filters. | 3 |
| 8 | **Power Factor** | 3 |

| | | |
|---|---|---|
| | Power in resistive and reactive AC circuits, True, Reactive, and Apparent power, Calculating power factor, Practical power factor correction | |
| | **Practical Part:**<br>Students will conduct various experiments in the practical part of the course. Each student will perform the experiment, collect data, extract result, and prepare a written report every week. | 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 main properties of an alternating current | 1. Demonstrating the basic information and principles through lectures and the achieved applications<br>2. Discussing phenomena with illustrating pictures and diagrams<br>3. Lecturing method:<br>a. Power point<br>b. e-learning<br>4. Tutorials<br>5. Revisit concepts<br>6. Discussions<br>7. Start each chapter by general idea and the benefit of it;<br>8. Build a strategy to solve problem | 1-Mid term theoretical exams<br>2-Final practical exam<br>3-Final theoretical exam |
| 1.2 | Apply the complex number to describe voltage or current. | | |
| 1.3 | Analyze the equations of R-C, R-L and R-C-L circuits and calculating the impedance, power factor, root-mean-square values of current and voltage. | | |
| 1.4 | Apply mathematical formulation to describe the physical principle or phenomena | | |
| **2.0** | **Skills** | | |
| 2.1 | Solve ac circuit problems using complex number . | 1. Preparing main outlines for teaching<br>2. Following some proofs<br>3. Define duties for each chapter<br>4. Homework assignments<br>5. Encourage the student to look for the information in different references | 1. Midterm's exam. Exams, short quizzes<br>2. Asking about physical laws previously taught<br>3.Discussions of how to simplify or analyze some phenomena. |
| 2.2 | Calculate Reactance and Impedance. | | |
| 2.3 | Analyse the concept of the electric power. | | |
| 2.4 | Analyse the different types of filters and the resonant circuit. | | |
| 2.5 | Calculate the Power Factor. | | |
| **3.0** | **Values** | | |
| 3.1 | Write a report, Search on the internet, Collect the material of the course. | ·Lab work<br>· Active learning<br>· Small group discussion | · Evaluate the efforts of each student in |
| 3.2 | Collaborate with the others to resolve problems | | |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| | | | preparing the report.<br>· Evaluate the scientific values of reports.<br>· Evaluate the work in team<br>· Evaluation of the role of each student in lab group . |

**2. Assessment Tasks for Students**

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 1 | Exercises & Home works | All weeks | 10 % |
| 2 | Midterm's exam. | 8th week | 20 % |
| 3 | Lab. Reports and Exam | 11th week | 20 % |
| 4 | Final Exam (theoretical) | End of the term | 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 supervise by academic adviser in physics department and the time table for academic advice were given to the student each semester.

## F. Learning Resources and Facilities

**1.Learning Resources**

| | |
|---|---|
| **Required Textbooks** | Lessons In Electric Circuits, Volume II – AC. By Tony R. Kuphaldt.6 th Edition, 2007 |
| **Essential References Materials** | Fundamentals of Physics, by David Halliday, Robert Resnick and Jearl Walker, Wiley; 10th Edition, Extended Edition: 978-1-119-46013-8 |
| **Electronic Materials** | The website of the course |

| | |
|---|---|
| **Other Learning Materials** | Lab manual. |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation** (Classrooms, laboratories, demonstration rooms/labs, etc.) | Classrooms, equipped laboratories and library. |
| **Technology 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) | |

## G. Course Quality Evaluation

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| 1. Following up the progress of students in the course. | Instructor | Homework & quiz |
| 2. Evaluating the progress of student | Instructor | Questionnaires. |
| 3. Evaluating the instructor | Student | Questionnaires. |
| 4. Revision of Exam paper | Another staff member | Standers of the exam papers |

**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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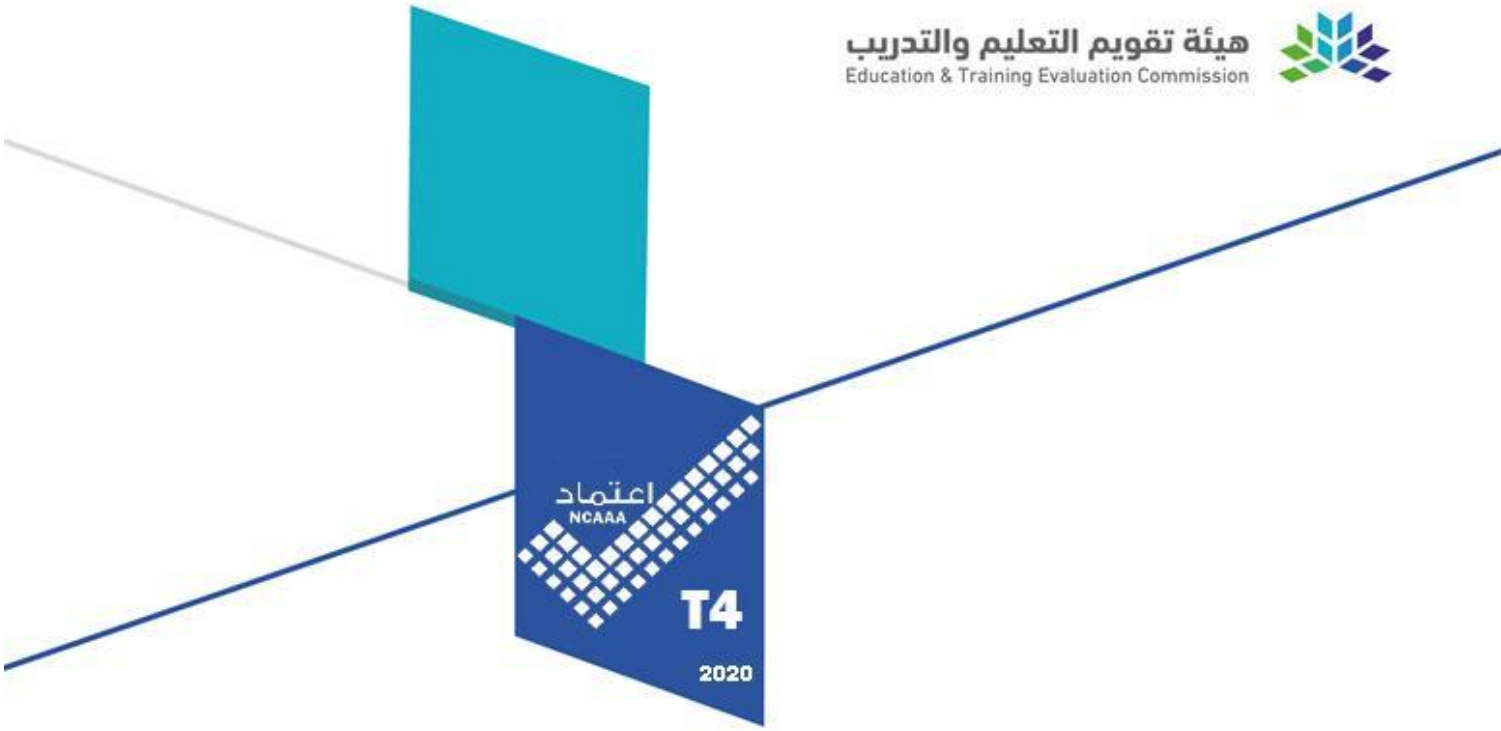
Education & Training Evaluation Commission




# Course Specifications

| | |
|---|---|
| **Course Title:** | **Theoretical Methods in Physics (4)** |
| **Course Code:** | **PHY2204** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**A. Course Identification** **3**

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**C. Course Content** **4**

**D. Teaching and Assessment** **4**

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**E. Student Academic Counseling and Support** **5**

**F. Learning Resources and Facilities** **5**

1.Learning Resources 6

2. Facilities Required 6

**G. Course Quality Evaluation** **6**

**H. Specification Approval Data** **7**

## A. Course Identification

| |
|---|
| **1. Credit hours:** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered: 6/2nd year** |
| **4. Pre-requisites for this course** (if any)**: Theoretical Methods in Physics (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** | 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) Exams/ Quizzes | - |
| | **Total** | 40 |

## B. Course Objectives and Learning Outcomes

**1. Course Description**

This course is a study of concepts and techniques for solving the partial differential equations (PDE) and functions of complex variables and their uses to simplify calculating complex integrals in physics. The course includes the following topics: boundary value solutions for First- and second Order PDEs, analytic functions and Cauchy-Riemann conditions, Line Integrals, Cauchy's Integral Theorem, Taylor and Laurent Series, Singularities, Residue Theorem, Analytic functions, Conformal mappings, Lagrange and Euler Equations for Calculus of Variations.

**2. Course Main Objective**

This course is intended to supply students with a variety of techniques for solving physics problems using partial differential equations and calculating integrals involving complex variable functions as well as Calculus f variations.

### 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Recognize various types of partial differential equations and their applications in physics. | K1(I) |
| 1.2 | | K2(I) |
| 1.3 | Verify analyticity and differentiability for complex variable functions and be familiar with the Cauchy-Riemann equations of analytic functions. | K1(I), K2(I) |
| 1.4 | Calculate Taylor or Laurent series for complex variable functions and verify convergence or divergence of such series. | K1(I), K2(I) |
| 1.5 | Use the Euler-Lagrange equation or its first integral to find differential equations for stationary paths. | K2(I) |
| **2** | **Skills :** | |
| 2.1 | Apply technique of separation of variables to solve PDEs and analyze the behavior of solutions in terms of eigen function expansions. | S1(I), S2(I) |
| 2.2 | | S2(I) |
| 2.3 | Evaluate integrals along a path in the complex plane using Cauchy's residue Theorem. | S1(I) |
| 2.4 | | S1(I), S2(I) |
| 2.5 | | S1(I), S2(I) |
| 2.6 | Solve differential equations for stationary paths, subject to boundary conditions. | S1(I) |
| **3** | **Values:** | |
| 3.1 | Participate effectively in multidisciplinary and/or interdisciplinary teams. | V2(I) |
| 3.2 | | V1(I), V2(I) |
| 3.3 | | V1(I) |
| 3.4 | | V1(I) |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Partial Differential Equations:**<br>First-Order Equations, Second-Order Equations, Separation of Variables, Laplace's Equation, Steady-State Temperature in a Rectangular Plate, Diffusion or Heat Flow Equation and the Schrödinger Equation, Steady-state Temperature in a Cylinder, The Wave Equation, Vibrating String, Vibration of a Circular Membrane, Steady-state Temperature in a Sphere, Poisson's Equation, Integral Transform Solutions of Partial Differential Equations. | 10 |
| 2 | **Functions of a complex variable:**<br>Complex numbers and their algebraic properties, exponential forms and arguments, roots of complex numbers, regions in the complex plane, Analytic functions, mappings, limits, continuity, derivatives, differentiation rules, Cauchy-Riemann equation, harmonic functions, integrals of complex valued functions, contour integrals, Cauchy-integral formula, Laurent series. | 10 |

| | | |
|---|---|---|
| 3 | **Calculus of Residues:**<br>Singularities, Residues and poles, Cauchy Residue Theorem, Methods of Finding Residues, Evaluation of Definite Integrals, Residues at Infinity, Conformal Mapping and Applications. | 10 |
| 4 | **Calculus of variations:**<br>Euler Equation, Applications of Euler Equation, Brachistochrone Problem and Cycloids, Several Dependent Variables and Lagrange's Equations, Isoperimetric Problems, Physical variational principles, Variational Notation. | 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 | Recognize various types of partial differential equations and derive heat and wave equations in 2D and 3D. | 1. Lectures.<br>2. Discussions<br>3. Slides and computer simulation software may be used by the teachers to clarify concepts.<br>4. Problems solving<br>5. Students may be asked to solve some problems on computer using MATLAB language. | 1- Homework assignments.<br>2- Group Project assignment.<br>3- Question – answer session in class.<br>4- Exams: quizzes, Mid-term, and final exams |
| 1.2 | Explaining of the correlation of solutions of PDEs on the conditions at the boundary of the spatial domain and initial conditions at time zero. | | |
| 1.3 | Verify analyticity and differentiability for complex variable functions and be familiar with the Cauchy-Riemann equations of analytic functions. | | |
| 1.4 | Calculate Taylor or Laurent series for complex variable functions and verify convergence or divergence of such series. | | |
| 1.5 | Use the Euler-Lagrange equation or its first integral to find differential equations for stationary paths. | | |
| **2.0** | **Skills** | | |
| 2.1 | Apply technique of separation of variables to solve PDEs and analyze the behavior of solutions in terms of eigen function expansions. | 1. Lectures.<br>2. Discussions.<br>3. Problems solving.<br>4. Encourage the student to look for the information in different references.<br>5. Ask the student to attend lectures for practice solving problem. | **1-** Homework assignments.<br>**2-** Group Project assignment.<br>**3-** Question – answer session in class.<br>**4-** Exams: quizzes, Midterm, and final exams. |
| 2.2 | Discuss the form of the solutions of PDEs based on the boundary and initial conditions. | | |
| 2.3 | Evaluate integrals along a path in the complex plane using Cauchy's residue Theorem. | | |
| 2.4 | Classification of singularities and poles of complex variable functions, calculus of residues and its applications in the evaluation of integrals. | | |
| 2.5 | Apply the formula that determines stationary paths of a functional to deduce the | | |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| | differential equations for stationary paths in simple cases. | 6. Define duties for each chapter | |
| 2.6 | Solve differential equations for stationary paths, subject to boundary conditions, in straightforward cases. | | |
| **3.0** | **Values** | | |
| 3.1 | Participate effectively in multidisciplinary and/or interdisciplinary teams. | **1.** Groupe assignments<br>**2.** Clarify deadlines for delivery of assignments, reports, and exams | **1.** Evaluate the efforts of each student in preparing the report.<br>**2.** Evaluate the work in teams.<br>Evaluation of students' presentations. |
| 3.2 | Accepting different ideas and respecting other opinions. | | |
| 3.3 | Manage a project (modelling or simulation) with due attention to time and resource management. | | |
| 3.4 | Take responsibility and take the course instructions seriously. | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Exercises and HomeWorks | All weeks | 10% |
| **2** | Participation in activities and quizzes. | All weeks | 10% |
| **3** | Midterm exam | $6^{th}$ week | 30% |
| **4** | Final exam | End of the term | 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 :**

Students are supervised by academic advisers in physics Department and the timetables for academic advice were given to the student each semester (8hrs per week).

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | Mary L. Boas, Mathematical methods in the Physical sciences, Third edition, John Wiley & Sons (2006). ISBN-13: 978-0471198260 |
| **Essential References Materials** | **1.** Mathematical Methods for Physicists: A Comprehensive Guide 7th edition, by George B. Arfken, Hans J. Weber, Frank E. Harris, Academic Press is an imprint of Elsevier (2013), ISBN: 978-0-12-384654-9.<br>**2.** Mathematical Methods for Physics and Engineering, by K. F. Riley, M. P. Hobson and S. J. Bence, Cambridge University Press; (2006), ISBN-13: 978-0521679718. |

| | |
|---|---|
| **Electronic Materials** | |
| **Other Learning Materials** | MATLAB |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc). | Lecture room<br>Labs |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | data show, software |
| **Other Resources**<br>(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 |
|---|---|---|
| Student Feedback on Effectiveness of Teaching | Students | Direct |
| Evaluation of Teaching | Department | Indirect |
| Improvement of Teaching | Program leaders | Direct |
| Quality of learning resources | Faculty | Direct |
| Extent of achievement of course learning outcomes | Program leaders | 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** | Dr Atif Ismail, Dr. Walid Belhadj and Prof. Khaled Abdel-Waged |
| **Reference No.** | |
| **Date** | |

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

# Course Specifications

| | |
|---|---|
| **Course Title:** | **Classical Mechanics 3** |
| **Course Code:** | **PHY2503** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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1.Learning Resources 6

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**G. Course Quality Evaluation** **6**

**H. Specification Approval Data** **7**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered: Level 6th / 2nd year** |
| **4. Pre-requisites for this course** (if any)**: Classical Mechanics 2** |
| **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 covers the study of the mechanics of rigid bodies in plane motion, in three dimensions, and their applications. Moreover, the course covers the Lagrangian mechanics as well as a discussion of Hamilton's equations and their applications in solving some mechanical problems.

**2. Course Main Objective**

The student will be able to

- Calculate the center of mass of a rigid body.
- Calculate the moment of inertia of a rigid body that rotated about a fixed axis.
- Describe the theorems of static equilibrium of rigid body.
- Describe Euler's equation of motion of a rigid body.
- Solve mechanical problems using Lagrangian and Hamiltonian formalisms.

### 3. Course Learning Outcomes

| CLOs | | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Define the physical quantities related to the rotation of a rigid body about a fixed axis. | K1 |
| 1.2 | Describe the motion of a rigid body using mathematics. | K1 |
| **2** | **Skills :** | |
| 2.1 | Solve problems related to the rotation of a rigid body about a fixed axis using mathematical methods. | S1 |
| 2.2 | Explain the formulas related to Lagrange's equations. | S2 |
| **3** | **Values:** | |
| 3.1 | Work effectively and responsibly in teamwork. | V2 |
| | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Mechanics of Rigid Bodies, Planar Motion**<br>• Center of mass of a rigid body.<br>• Some theorems of static equilibrium of rigid body.<br>• Rotation of a rigid body about a fixed axis (moment of inertia).<br>• Calculation of the moment of inertia.<br>• The physical pendulum.<br>• General theorem concerning angular momentum.<br>• Laminar motion of rigid body.<br>• Body rolling down in inclined plane. | 14 |
| 2 | **Motion of Rigid Bodies in Three Dimensions**<br>• Angular momentum of a rigid body, Products of inertia.<br>• Use of matrices in rigid body dynamics (the inertia tensor).<br>• Determination of principle axes.<br>• Rotational kinetic energy of a rigid body.<br>• Moment of inertia of a rigid body about an arbitrary axis, the momental ellipsoid.<br>• Euler's equation of motion of a rigid body.<br>• Free rotation of a rigid body under no forces. Geometric description of the motion.<br>• Free rotation of a rigid body with an axis of symmetry. Analytical treatment. | 14 |
| 3 | **Lagrangian Mechanics**<br>• Generalized coordinates.<br>• Generalized forces.<br>• Lagrange's equations.<br>• Some Applications of Lagrange's equations.<br>• Generalized moments ignorable coordinate.<br>• Lagrange's equations for impulsive forces.<br>• Hamilton's variational principle.<br>• The Hamiltonian function (Hamiltonian equation).<br>• Lagrange's equations of motion with constraints. | 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 | Define the physical quantities related to the rotation of a rigid body about a fixed axis. | 1. Demonstrating the basic principles through lectures.<br>2. Discussing phenomena with illustrating pictures and diagrams.<br>3. Lecturing method: Board, Power point.<br>4. Discussions<br>5. Brain storming<br>Start each chapter by general idea and the benefit of it. | - Solve some examples<br>- Discussions during the lectures<br>Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam. |
| 1.2 | Describe the motion of a rigid body using mathematics. | | |
| **2.0** | **Skills** | | |
| 2.1 | Solve problems related to the rotation of a rigid body about a fixed axis using mathematical methods. | 1. Preparing main outlines for teaching.<br>2. Following some proofs.<br>3. Define duties for each chapter | 1. Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam<br><br>2. Homework's. |
| 2.2 | Explain the formulas related to Lagrange's equations. | | |
| **3.0** | **Values** | | |
| 3.1 | Work effectively and responsibly in teamwork. | ● Organize the students in a small groups (teamwork).<br>● Give students tasks of duties as a small project. | ● Evaluate the scientific reports.<br>● Discussing the reports with each teamwork.<br>● Evaluate the efforts of each student in preparing the report. |
| | | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Midterm Exam | 8th | 30% |
| **2** | Homework's & Quizzes & Reports | All weeks | 20 % |
| **3** | 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:**<br><br>Each student will be supervised by academic adviser in physics department and timetable for academic advice were given to the student each semester. (4hrs per week) |

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | Analytical Mechanics by G. R. Fowles and G. L. Cassiday (2005), 7th edition. |
| **Essential References Materials** | |
| **Electronic Materials** | |
| **Other Learning Materials** | • Classical Mechanics by John R. Taylor (2005).<br>• Classical Dynamics of Particles and Systems by S. Thornton, and J. Marion (2004), 5th edition. |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | - Classroom |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | - Black Board<br>- Data show |
| **Other Resources**<br>(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | |

## G. Course Quality Evaluation

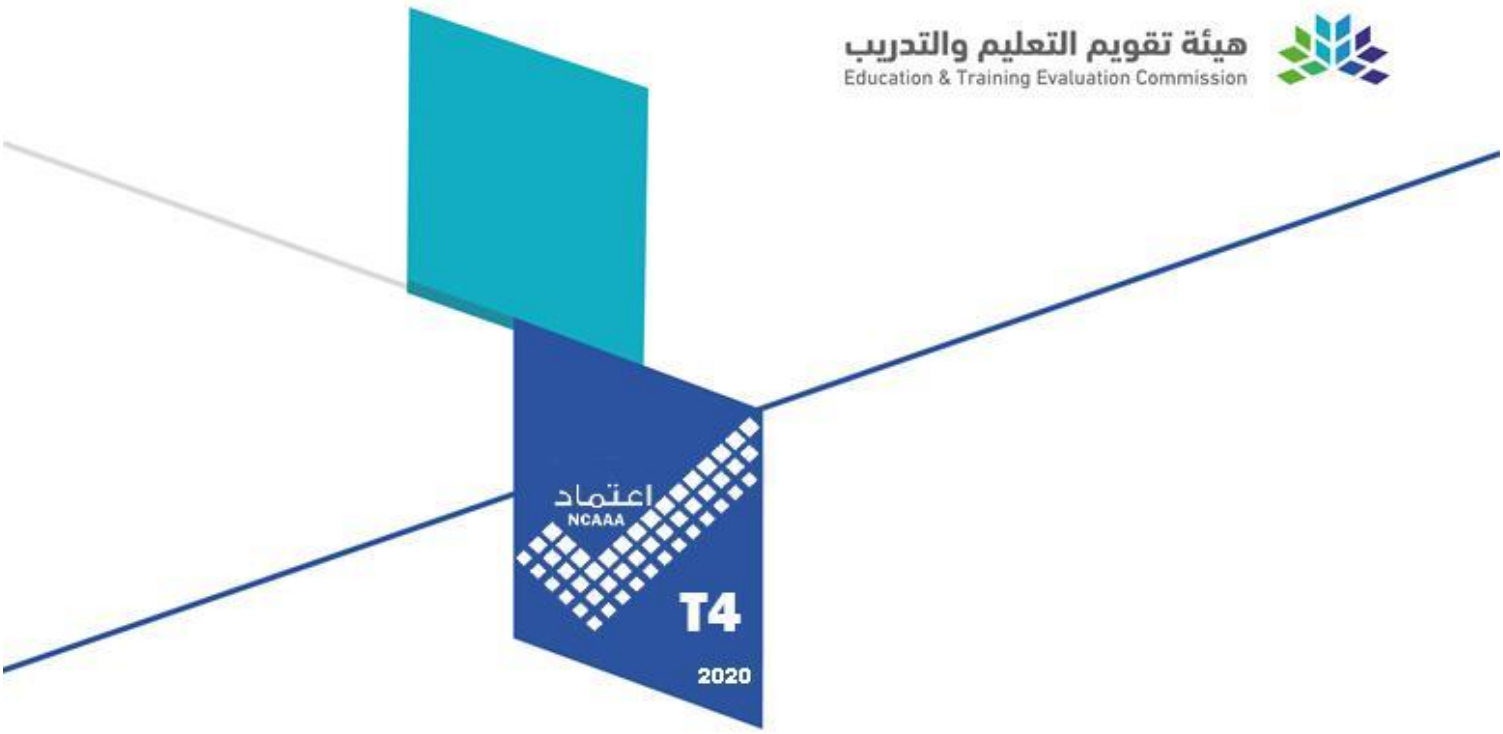
| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Effectiveness of teaching Strategies | Students | Questionnaire |
| Effectiveness of student assessment | Instructor | Exams |
| Extent of achievement of course learning outcomes | Instructor | Course report |
| Quality of 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:** | **Thermodynamics** |
| **Course Code:** | **PHY2504** |
| **Program:** | **B.Sc. Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied sciences** |
| **Institution:** | **Umm AL-Qura University** |

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**C. Course Content** **4**

**D. Teaching and Assessment** **4**

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**E. Student Academic Counseling and Support** **5**

**F. Learning Resources and Facilities** **5**

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**G. Course Quality Evaluation** **5**

**H. Specification Approval Data** **6**

**A. Course Identification**

| |
|---|
| **1. Credit hours:4** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered: 6th/2nd year** |
| **4. Pre-requisites for this course** (if any)**: General physics (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** | 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 provides the basic concepts in heat transfer and thermodynamics including basic definitions and laws relating to them and their applications. In this course students will study thermal properties of matter, kinetic theory of gasses, thermodynamic properties and processes, of zeroth, irst, second and third laws of thermodynamics, and thermodynamic potentials.

**2. Course Main Objective: in this course student will be able to**

1. state the first law of thermodynamic and define heat, work, thermal efficiency
2. Identify and describe energy exchange processes (in terms of various forms of energy, heat and work.
3. Explain the differences between different processes in thermodynamics.
4. Apply ideal cycle's analysis to simple heat engine cycles to estimate thermal efficiency and work as a function of pressures and temperatures at various points in the cycles.
5. define deduce thermodynamics potentials, internal energy U, enthalpy (H), free energy of Gibbs (G) and Helmholtz free energy (A), Maxwell relations and their the application, TdS equations, Clausius Clapeyron equation

## 3. Course Learning Outcomes

| CLOs | | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Define basic information and principles in heat and thermodynamics. | K1 |
| 1.2 | Memorize the zeroth, first, second and third laws of thermodynamics and their relationships and applications. | K2 |
| **2** | **Skills :** | |
| 2.1 | Solve problems using suitable laws to calculate some parameters like entropy and its implications on thermodynamical variables. | S1 |
| 2.2 | Explain Maxwell, TdS equations for thermodynamic and some Cycles and their efficiencies. | S2 |
| **3** | **Values:** | |
| 3.1 | Collaborate and contribute responsibly and effectively in teamwork by introducing presentation in some subjects of materials. | V2 |

**C. Course Content**

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Thermal properties of matter:** Temperature and Heat, Temperature scales, Type of thermometer, Zeroth law of Thermodynamic, Thermal transfers, thermal expansion. | 8 |
| 2 | **Thermodynamics properties:** equation of ideal gas, kinetic theory, Vander Waal equation for real gas, Deduction of the critical constant of a real gas of Vander Waal, Virial equation of state, Reduced equation of state, Adiabatic compressibility, P-V-T relationship of real gases, Phase diagram | 6 |
| 3 | **First law of thermodynamics, Heat and Energy**: The types of systems and the processing in thermodynamics, The definition of heat capacity, specific heat capacity, latent heat, apply the first law of thermodynamics to evaluate the temperature, work, the internal energy and energy conversion, enthalpy, the relationship between specific heat for gas, the work done in adiabatic process. | 9 |
| 4 | **Second law of thermodynamics:** heat engines, refrigerators, and heat pumps, reversible processes, statements of Kelvin - Planck and Clausius. Carnot machine and its efficiency, the principles of the Carnot cycle, and efficiency of Otto cycle and diesel fuel and gasoline | 9 |
| 5 | **Entropy and third law of thermodynamics:** the concept of entropy, entropy in the reversible processes, the third law of thermodynamics | 4 |
| 6 | **Thermodynamics potentials**: thermodynamics potentials, internal energy U, enthalpy (H), free energy of Gibbs (G) and Helmholtz free energy (A), Maxwell relations and their the application, TdS equations, Clausius Clapeyron equation | 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 | Define basic information and principles in heat and thermodynamics. | 1. Demonstrating the basic information and principles through lectures.<br>2. Lecturing method: Board- Power point.<br>3. Discussions<br>4. Brain storming.<br>5. Start each chapter by general idea. | 1. Solving examples in lectures.<br>2. Discussion during lecture.<br>3. Quizzes.<br>4. Mid-terms.<br>5. Final exams.<br>6. Homework. |
| 1.2 | Describe the first, second and third laws of thermodynamics and their relationships and applications. | 1. Demonstrating the basic information and principles through lectures.<br>2. Lecturing method: Board, Power point.<br>3. Discussions<br>4. Brain storming. | 1. Quizzes.<br>2. Mid-term.<br>3. Final exam.<br>4. Homework. |
| **2.0** | **Skills** | | |
| 2.1 | Solve problems using suitable laws to calculate some parameters like entropy and its implications on thermodynamical Variables. | 1. Following some proofs.<br>2. Define duties for each chapter.<br>3. Homework<br>4. Encourage the student to look for the information in different references | 1. Quizzes.<br>2. Mid-terms.<br>3. Final exams.<br>4. Homework. |
| 2.2 | Explain Maxwell, TdS equations for thermodynamic and some Cycles and their efficiencies. | 1.Encourage the student to look for the information in different references<br>2.Group discussions | 1. Quizzes.<br>2. Mid-terms.<br>3. Final exams.<br>4. Homework.<br>5. |
| **3.0** | **Values** | | |
| 3.1 | Collaborate and contribute responsibly and effectively in teamwork by introducing presentation in some subjects of materials. | 1.Team work projects<br>2. Solving problems | Presentations |

## 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 1 | Midterm | 6th week | 30 % |
| 2 | Home works, quizzes, activities | During the semester | 20 % |
| 3 | Final Exam | End of the semester | 50% |
| 4 | | | |
| 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 :**
4 office hours per week for support and advice students.

**F. Learning Resources and Facilities**

## 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | **Heat and Thermodynamics**, M.W Zemansky, R.H.Dittman 7th edition, McGraw-Hill, (1997). |
| **Essential References Materials** | **Heat and Thermodynamics,** J.K Roberts, A. R .Miller (1960). |
| **Electronic Materials** | |
| **Other Learning Materials** | **Heat and Thermodynamics,** Brij Lal**,** N. Subrahmanyam (2001) |

## 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation** (Classrooms) | • good ventilation and lighting room suitable for number of students<br>• board |
| **Technology Resources** (AV, data show, Smart Board, software, etc.) | • data show<br>• laptop |
| **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 |
|---|---|---|
| Teaching Strategies | Students | Questionnaire |
| Student assessment | Instructor | Exams |
| 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** | **Physics department** |
| **Reference No.** | |
| **Date** | **17/3/2022** |

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA T4 2020

# Course Specifications

| | |
|---|---|
| **Course Title:** | **Quantum Mechanics (1)** |
| **Course Code:** | **PHY3506** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**C. Course Content** **4**

**D. Teaching and Assessment** **5**

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods 5

2. Assessment Tasks for Students 5

**E. Student Academic Counseling and Support** **6**

**F. Learning Resources and Facilities** **6**

1.Learning Resources 6

2. Facilities Required 6

**G. Course Quality Evaluation** **7**

**H. Specification Approval Data** **7**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4 hrs** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered: 7/3rd year** |
| **4. Pre-requisites for this course** (if any)**: Classical Mechanics (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** | 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) Exams/ Quizzes | - |
| | **Total** | 40 |

## B. Course Objectives and Learning Outcomes

**1. Course Description**

This course is intended to introduce concepts in quantum mechanics such that the behavior of the physical universe can be understood from a fundamental point of view. It provides a foundation for further study of quantum mechanics.
Content will include: The wavefunction and Schrodinger equation, operators, eigenfunctions, compatible observables, infinite well in one and three dimensions, degeneracy; Fourier methods and momentum space; Hermiticity; scalar products of wave functions, completeness relations, matrix mechanics; harmonic oscillator in one and three dimensions.

**2. Course Main Objective**

The main objective of this course is to provide the students with basic theoretical concepts and formalism of quantum mechanics for solving relevant physical problems. This includes the wave mechanics developed by Schrödinger and others and some aspects of the matrix formalism first developed by Heisenberg.

### 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Describe quantum mechanical systems by wave functions. | K1(I), K2(I) |
| 1.2 | | |
| 1.3 | Recall the time-dependent and time-independent Schrödinger equation for simple potentials like for instance the Infinite Square Well and harmonic oscillator. | K1(I), K2(I) |
| 1.4 | Explain the concept of uncertainty in quantum physics. | K2(I) |
| 1.5 | Recognize the concept of eigenvalues, eigenfunctions, energy levels, bound and scattering states. | K1(I), K2(I) |
| 1.6 | Recognize the spin and angular momentum states as well as the angular momentum addition rules. | K1(I) |
| **2** | **Skills :** | |
| 2.1 | Solve the Schrödinger equation for potential in one dimension, | S1(I), S2(I) |
| 2.2 | Apply operators to it to obtain information about a particle's physical properties such as position, momentum, and energy. | S1(I) |
| 2.3 | | S1(I) |
| 2.4 | describe the role of degeneracy in the occurrence of electron shell structure in atoms. | S1(I), S2(I) |
| 2.5 | Combine spin and angular momenta. | S1(I) |
| 2.6 | | S2(I) |
| **3** | **Values:** | |
| 3.1 | Participate effectively in multidisciplinary and/or interdisciplinary teams. | V2(I) |
| 3.2 | | |
| 3.3 | | |
| 3.4 | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Wave Functions in Quantum Mechanics:** Schrödinger equation, Statistical interpretation of the wavefunction, Normalization, Square-integrable wavefunction, expectation value, Momentum vs. Position space, Heisenberg uncertainty principle, the postulates of quantum mechanics | 8 |
| 2 | **One-Dimensional Problems:** Stationary States, Bound States & Scattering States, The Infinite Square Well, The Harmonic Oscillator, The Free Particle, The Delta Function Potential, The Finite Square Well. | 12 |
| 3 | **Formalism of Quantum Mechanics:** The Hilbert Space, Dimension and Basis of Vector Space, Square-Integrable Functions, Dirac notation, Operators, Observables, Eigenvalues and Eigenvectors, Discrete & Continuous Spectra, Matrix Representation of Kets, Bras, and Operators, momentum space wave function, Generalized Uncertainty Principle. | 10 |
| 4 | **Three-Dimensional Problems:** 3D Problems in Cartesian Coordinates, 3D Problems in Spherical Coordinates, | 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 | Describe quantum mechanical system by a wave function. | 1. Lectures.<br>2. Discussions<br>3. Slides and computer simulation software may be used to clarify concepts.<br>4. Problems solving<br>5. Students may be asked to solve some problems using the MATLAB language. | 1- Homework assignments.<br>2- Group Project assignment.<br>3- Question – answer session in class.<br>4- Exams: quizzes, Mid-term, and final exam |
| 1.2 | Recognize the meaning of the expectation value of any physical quantity. | | |
| 1.3 | Be familiar with the time-dependent and time-independent Schrödinger equation for simple potentials like the Infinite Square Well and harmonic oscillator. | | |
| 1.4 | Know the concept of uncertainty in quantum physics. | | |
| 1.5 | Recognize the concept of eigenvalues, eigenfunctions, energy levels, bound and unbounded states. | | |
| 1.6 | Recognize the spin and angular momentum states. | | |
| **2.0** | **Skills** | | |
| 2.1 | Solve the Schrodinger equation for some basic, physically important types of potential in one dimension, and estimate the shape of the wave function based on the shape of the potential. | 1. Lectures.<br>2. Discussions.<br>3. Problem solving.<br>4. Encourage the student to look for the information in different references.<br>5.<br>6. Define duties for each chapter | **1-** Homework assignments.<br>**2-** Group Project assignment.<br>**3-** Question – answer session in class.<br>**4-** Exams: quizzes, Midterm and final exams. |
| 2.2 | Apply operators to it to obtain information about a particle's physical properties such as position, momentum and energy. | | |
| 2.3 | Use the commutation relations of operators to determine whether two physical properties can be simultaneously measured. | | |
| 2.4 | Apply the separation of variables technique to solve problems in more than one dimension and to describe the role of degeneracy in the occurrence of electron shell structure in atoms. | | |
| | | | |
| 2.6 | knowledge about fundamental quantum mechanical processes in nature. | | |
| **3.0** | **Values** | | |
| 3.1 | Participate effectively in multidisciplinary and/or interdisciplinary teams | **1.** Group assignments<br>**2.** Clarify deadlines of assignments, reports, and exams. | **1.** Evaluate the efforts of each student in preparing the report. |
| 3.2 | Accepting different ideas and respecting other opinions. | | |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| 3.3 | Manage a project (modelling or simulation) with due attention to time and resource management | | **2.** Evaluate the work in teams. Evaluation of student's presentations. |
| 3.4 | Take responsibility and take the course instructions seriously. | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Exercises and Homwork | All weeks | 10% |
| **2** | Participation in activities and quizzes. | All weeks | 10% |
| **3** | Midterm exam | 6th week | 30% |
| **4** | Final exam | End of the term | 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:**

Students are supervised by academic advisers in the physics Department and the timetables for academic advice were given to the student each semester. (8hrs per week).

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | Introduction to Quantum Mechanics 2nd Edition, by David J. Griffiths, Pearson Education Limited (2014). |
| **Essential References Materials** | **1.** Quantum Mechanics: Concepts and Applications 2nd Edition, by Noureddine Zettili, John Wiley & Sons, Ltd, (2009). **2.** Quantum Physics, 3rd Edition, by Stephen Gasiorowicz, John Wiley & Sons, Inc, (2003). |
| **Electronic Materials** | https://ocw.mit.edu/courses/physics/8-04-quantum-physics-i-spring-2013/lecture-videos/ |
| **Other Learning Materials** | |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation** (Classrooms, laboratories, demonstration rooms/labs, etc.) | Classroom |
| **Technology Resources** | data show, software |

| 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

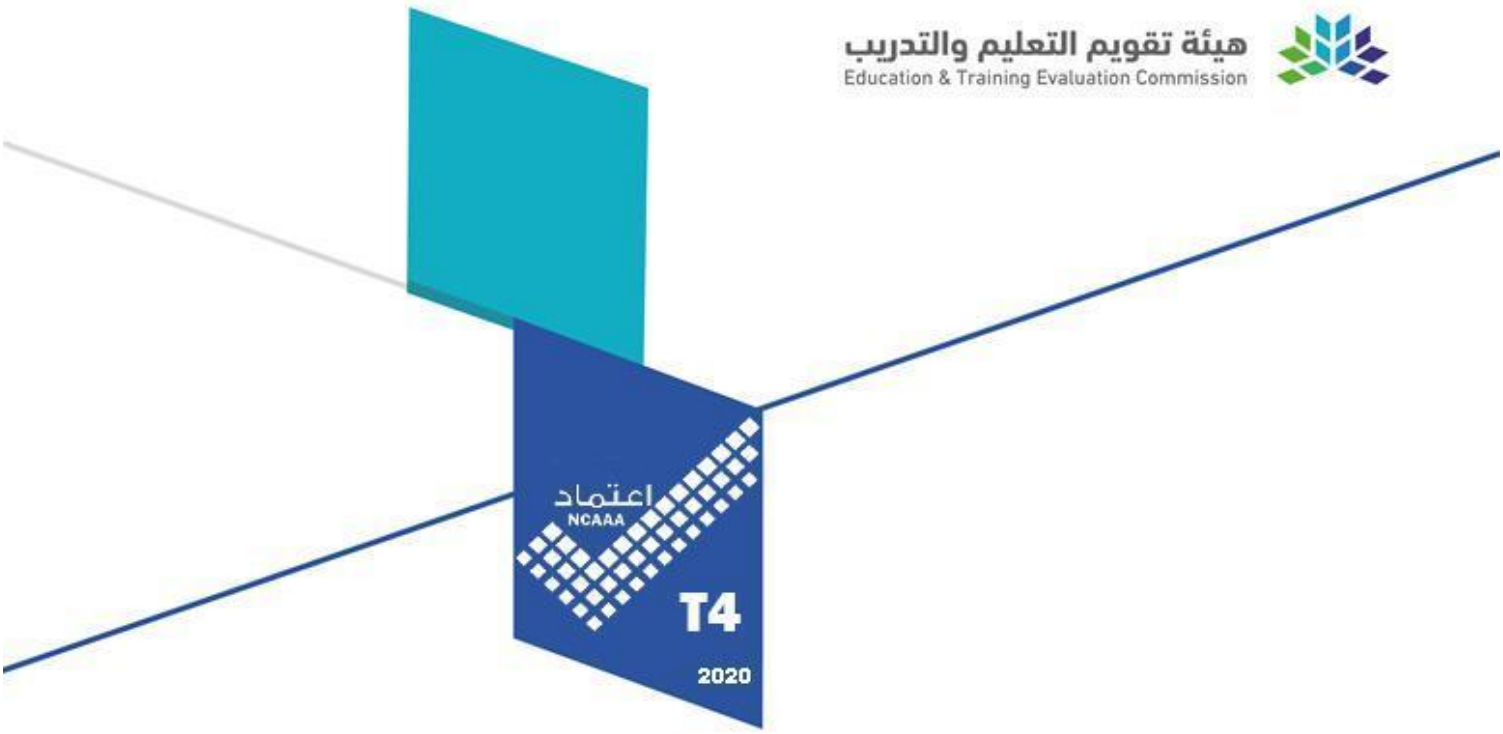
| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Student Feedback on Effectiveness of Teaching | Students | Direct |
| Evaluation of Teaching | Department | Indirect |
| Improvement of Teaching | Program leaders | Direct |
| Quality of learning resources | Faculty | Direct |
| Extent of achievement of course learning outcomes | Program leaders | 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** | Dr Atif Ismail, Dr. Walid Belhadj and Prof. Khaled Abdel-Waged |
| **Reference No.** | |
| **Date** | |

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission




# Course Specifications

| | |
|---|---|
| **Course Title:** | **Electromagnetism 1** |
| **Course Code:** | **PHY3304** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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6. Mode of Instruction (mark all that apply) 3

**B. Course Objectives and Learning Outcomes** **3**

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**C. Course Content** **4**

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**F. Learning Resources and Facilities** **6**

1.Learning Resources 6

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**G. Course Quality Evaluation** **7**

**H. Specification Approval Data** **7**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered: Level 7th / 3rd year** |
| **4. Pre-requisites for this course** (if any)**: Electricity and Magnetism (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** | 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 deals primarily with a vector analysis-based description of static electric field, electric flux, and electric potential for a distribution of charges, and application of Gauss's law. Also, the course covers the methods of solving electrostatic problems such as Laplace equation, and electrostatic images. The course will cover the problems of calculating the electric fields and electric potential inside and outside the dielectric materials as well as the molecular field, and electrostatic energy.

### 2. Course Main Objective

The student will be able to

- Use vector analysis for solving electrostatic problems and expression of electric fields, electric flux, and electric potential for charge distribution.
- Solve the electrostatic problems using Laplace's equation and electrostatic images.
- Calculate the electrostatic fields and electrostatic potential outside and inside the dielectric materials.

- Calculate the molecular field of a dielectric.
- Calculate the electrostatic energy.

### 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Define the physical quantities related to the static electricity. | K1 |
| 1.2 | Describe the concepts and laws related to the static electricity using vector analysis. | K1 |
| **2** | **Skills :** | |
| 2.1 | Solve problems related to the static electricity using vector analysis. | S1 |
| 2.2 | Explain the physical formulas related to the static electricity. | S2 |
| **3** | **Values:** | |
| 3.1 | Work effectively and responsibly in teamwork. | V2 |
| | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Review on Vector Analysis**<br>• Vector formulas.<br>• Vector operations.<br>• The line integral.<br>• The surface integral.<br>• The divergence theorem.<br>• Stokes' theorem.<br>• Cartesian, spherical, and cylindrical Coordinates. | 5 |
| 2 | **Electrostatics**<br>• Electric charge.<br>• Coulomb's law.<br>• The electric field.<br>• Electrostatic potential.<br>• Conductors & insulators.<br>• Gauss's law.<br>• The electric dipole. | 14 |
| 3 | **Solution of electrostatic problems**<br>• Poisson's equation.<br>• Laplace's equation.<br>• Laplaces's equation in one independent variable.<br>• Laplace's equation in spherical coordinates (harmonic zone).<br>• Conducting sphere in uniform.<br>• Electrostatic images. | 6 |
| 4 | **The Electrostatic Field in Dielectric Media** | 5 |

| | | |
|---|---|---|
| | • Polarization.<br>• Field outside of a dielectric medium.<br>• The electric field inside a dielectric.<br>• The electric displacement.<br>• Electric susceptibility and dielectric Constant.<br>• Point charge in a dielectric field.<br>• Boundary conditions on the field vector.<br>• Boundary value problem involving dielectrics. | |
| 5 | **Microscopic Theory of Dielectrics**<br>• Molecular field in a dielectric.<br>• Induced dipoles.<br>• Polar molecules. The Langevin-Debye formula.<br>• Permanent polarization. Ferroelectricity. | 5 |
| 6 | **Electrostatic Energy**<br>• Potential energy of a group of point charges.<br>• Energy density of an electrostatic field.<br>• Energy of a system of charged conductors.<br>• Capacitors. | 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 | Define the physical quantities related to the static electricity. | 1. Demonstrating the basic principles through lectures.<br>2. Discussing phenomena with illustrating pictures and diagrams.<br>3. Lecturing method: Board, Power point.<br>4. Discussions<br>5. Brain storming<br>Start each chapter by general idea and the benefit of it. | - Solve some examples<br>- Discussions during the lectures<br>Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam. |
| 1.2 | Describe the concepts and laws related to the static electricity using vector analysis. | | |
| **2.0** | **Skills** | | |
| 2.1 | Solve problems related to the static electricity using vector analysis. | 1. Preparing main outlines for teaching. | 1. Exams:<br>a) Quizzes.<br>b) Midterm exams. |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| 2.2 | Explain the physical formulas related to the static electricity. | 2. Following some proofs.<br>3. Define duties for each chapter | c) Final exam<br><br>2. Homework's. |
| **3.0** | **Values** | | |
| 3.1 | Work effectively and responsibly in teamwork. | ● Organize the students in a small groups (teamwork).<br>● Give students tasks of duties as a small project. | ● Evaluate the scientific reports.<br>● Discussing the reports with each teamwork.<br>● Evaluate the efforts of each student in preparing the report. |
| | | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Midterm Exam | 8th | 30% |
| **2** | Homework's & Quizzes& Reports | All weeks | 20 % |
| **3** | 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** | Foundations of Electromagnetic Theory by John R. Reitz, and Frederick J. Milford (1960). |
| **Essential References Materials** | |
| **Electronic Materials** | |
| **Other Learning Materials** | • Introduction to Electrodynamics by David J. Griffiths, 4th edition.<br>• Modern Electrodynamics by Andrew Zangwill, (2013).<br>• Electromagnetic Fields by Roald K. Wangsness, 2nd edition. |

## 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | - Classroom |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | - Black Board<br>- Data show |
| **Other Resources**<br>(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:** | **Statistical Thermodynamics** |
| **Course Code:** | **PHY3505** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied sciences** |
| **Institution:** | **Umm AL-Qura University** |

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**A. Course Identification** **3**

6. Mode of Instruction (mark all that apply) 3

**B. Course Objectives and Learning Outcomes** **3**

1. Course Description 3

2. Course Main Objective 3

3. Course Learning Outcomes 3

**C. Course Content** **4**

**D. Teaching and Assessment** **4**

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods 4

2. Assessment Tasks for Students 4

**E. Student Academic Counseling and Support** **5**

**F. Learning Resources and Facilities** **5**

1.Learning Resources 5

2. Facilities Required 5

**G. Course Quality Evaluation** **5**

**H. Specification Approval Data** **6**

## A. Course Identification

| |
|---|
| **1. Credit hours:4** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered: 7th /3rd year** |
| **4. Pre-requisites for this course** (if any)**:** Heat and Thermodynamics |
| **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

The course will give the new mathematical treatment based on the concept of the probability and statistical mechanics to measure microscopic properties of the system to calculate the dependence of the macroscopic properties of a system on thermodynamic variables.

## 2. Course Main Objective

In this course student will be able to

1. realize the difference between macroscopic and microscopic thermodynamic- energy levels and energy states - distinguishable and indistinguishable particles.
2. define the concept of the thermodynamic probability and how to deal with some physical applications through this concept.
3. differentiate between Bose- Einstein, Fermi-Dirac and Maxwell Boltzmann statistics
4. compare between Bose- Einstein, Fermi-Dirac and Maxwell Boltzmann distribution functions and their uses
5. define the concept of the partition function and redefine the thermodynamic quantities in terms of the partition function.
6. apply the statistics on gases and the quantum statistics on some physical systems.

## 3. Course Learning Outcomes

| CLOs | | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Define basic principles in statistical thermodynamics. | K1 |
| 1.2 | Describe the mathematical form for Bose-Einstein, Fermi-Dirac, Maxwell-Boltzmann distributions and the conditions of applying each one. | K2 |
| **2** | **Skills :** | |
| 2.1 | Solve problems using suitable statistical methods to calculate some thermo-dynamical properties in terms of partition function. | S1 |
| 2.2 | Explain the difference of statistical distributions (Maxwell-Boltzmann, Fermi-Dirac, and Bose-Einstein) and apply them appropriately. | S2 |
| **3** | **Values:** | |
| 3.1 | Collaborate and contribute responsibly and effectively in teamwork by introducing presentation in some subjects of course. | V2 |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Statistical thermodynamics**<br>1.1 Introduction<br>1.2 Energy States and energy levels<br>1.3 Macro states and microstates<br>1.4 Thermodynamic probability<br>1.5 The Bose-Einstein statistics<br>1.6 The Fermi-Dirac statistics<br>1.7 The Maxwell Boltzmann statistics<br>1.8 The statistical interpretation of entropy<br>1.9 The Bose-Einstein distribution function<br>1.10 The Fermi-Dirac distribution functions<br>1.11 The classical distribution function<br>1.12 comparison of distribution functions for indistinguishable particles<br>1.13 The Maxwell-Boltzmann distribution function<br>1.14 The partition function<br>1.15 Thermodynamic properties of a system | 13 |
| 2 | **Applications of statistics to gases**<br>2.1 The monatomic ideal gas,<br>2.2 The distribution of molecular velocities<br>2.3 Experimental verification of the Maxwell-Boltzmann speed distribution-Molecular beams<br>2.4 Ideal gas in a gravitational field<br>2.5 The principle of equipartition of energy<br>2.6 The quantized linear oscillator<br>2.7 specific heat capacity of a diatomic gas. | 13 |
| 3 | **Applications of quantum statistics to other systems :**<br>3.1 The Einstein theory of the specific heat capacity of a solid<br>3.2 The Debye theory of the specific heat capacity of a solid<br>3.3 Black body radiation,<br>3.4 Para-magnetism<br>3.5 Negative temperatures<br>3.6 The electron gas. | 14 |
| **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 | Define basic principles in statistical thermodynamics. | 1. Demonstrating the basic information and principles through lectures.<br>2. Lecturing method:<br>Board- Power point.<br>3. Discussions<br>4. Brain storming.<br>5. Start each chapter by general idea. | 1. Solving examples in lectures.<br>2. Discussion during lecture.<br>3. Quizzes.<br>4. Mid-term.<br>5. Final exam.<br>6. Homework. |
| 1.2 | Describe the mathematical form for (Bose-Einstein, Fermi-Dirac, Maxwell-Boltzmann) statistics and distributions function and the conditions of applying each one. | 1. Demonstrating the basic information and principles through lectures.<br>2. Lecturing method:<br>Board, Power point.<br>3. Discussions<br>4. Brain storming. | 1. Quizzes.<br>2. Mid-terms.<br>3. Final exams.<br>4. Homework. |
| **2.0** | **Skills** | | |
| 2.1 | Solve problems using suitable statistics to calculate some thermo-dynamical properties in terms of partition function. | 1. Following some proofs.<br>2. Define duties for each chapter.<br>3. Homework<br>4. Encourage the student to look for the information in different references. | 1. Quizzes.<br>2. Mid-term.<br>3. Final exam.<br>4. Homework. |
| 2.2 | Explain the difference of statistical distributions (Maxwell-Boltzmann, Fermi-Dirac, and Bose-Einstein) and apply them appropriately. | 1.Encourage the student to look for the information in different references<br>2.Group discussions | 1. Quizzes.<br>2. Mid-term.<br>3. Final exams.<br>4. Homework. |
| **3.0** | **Values** | | |
| 3.1 | Collaborate and contribute responsibly and effectively in teamwork by introducing presentation in some subjects of course. | 1.Team work projects<br>2. Solving problems | Presentations |

## 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 1 | Midterm | 7th week | 30 % |
| 2 | Home works, quizzes, activities | During the semester | 20 % |
| 3 | Final Exam | End of the semester | 50% |
| 4 | | | |
| 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 :**
4 office hours per week for support and advice students

# F. Learning Resources and Facilities

## 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | **Thermodynamics, Kinetic theory, and statistical thermodynamics**, F.W. Sears and G.L. Salinger (1975). |
| **Essential References Materials** | **Introduction to statistical physics**, k. Huang (2001). |
| **Electronic Materials** | |
| **Other Learning Materials** | **Fundamentals of Statistical and Thermal Physics**, R. Reif (2008) |

## 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation** (Classrooms) | • good ventilation and lighting room suitable for number of students<br>• board |
| **Technology Resources** (AV, data show, Smart Board, software, etc.) | • data show<br>• laptop |
| **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 |
|---|---|---|
| Teaching Strategies | Students | Questionnaire |
| Student assessment | Instructor | Exams |
| 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** | **Physics department** |
| **Reference No.** | |
| **Date** | **17/3/2022** |

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA T4 2020

# Course Specifications

| | |
|---|---|
| **Course Title:** | **Nuclear Physics 1** |
| **Course Code:** | **PHY3601** |
| **Program:** | **BSc. Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm AL-Qura University** |

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6. Mode of Instruction (mark all that apply) 3

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1. Course Description 3

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**C. Course Content** **4**

**D. Teaching and Assessment** **5**

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods 5

2. Assessment Tasks for Students 6

**E. Student Academic Counseling and Support** **6**

**F. Learning Resources and Facilities** **6**

1.Learning Resources 6

2. Facilities Required 7

**G. Course Quality Evaluation** **7**

**H. Specification Approval Data** **8**

## A. Course Identification

| |
|---|
| **1. Credit hours:** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department √ Others ☐<br>**b.** Required √ Elective ☐ |
| **3. Level/year at which this course is offered:** Level 7 /3st Year |
| **4. Pre-requisites for this course** (if any)**:**<br>**Modern Physics (2)** |
| **5. Co-requisites for this course** (if any)**:**<br>**Not applicable (N. A)** |

**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 (**Class Quizzes and Homework solving, Class Test Exams, oral discussion, student oral presentation) | 40 |
| 2 | **Laboratory/Studio** | |
| 3 | **Tutorial** | |
| 4 | **Others** (specify) | |
| | **Total** | 40 |

## B. Course Objectives and Learning Outcomes

| |
|---|
| 1. **Course Description**<br>The course will cover the principles of nuclear physics and will provide a conceptual and background in nuclear physics sufficient to enable students to understand and use the knowledge concerned with nuclear properties, nuclear models, and radioactivity. |
| **2. Course Main Objective**<br>To provide the technical background needed to proper understanding of nuclear properties, nuclear models, and radioactivity. |

### 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge:**<br>On successful completion of this course it is expected that students will be able to: | |
| 1.1 | Demonstrate the fundamentals and basic concepts in nuclear physics in nuclear structure and properties, nuclear models, nuclear decay and radioactivity. | K1(I)<br>K2(I) |
| **2** | **Skills:**<br>On successful completion of this course it is expected that students will be able to: | |
| 2.1 | To know how to assess, evaluate, or calculate the following: nuclear density, binding energy, proton and neutron configuration as well as spin and parity, and radioactive decay calculations. | S1(I) |
| 2.2 | Effectively communicates physics concepts, processes, and results, both orally and in writing related to nuclear physics | S2(I) |
| **3** | **Values:**<br>On successful completion of this course it is expected that students will be able to: | |
| 3.1 | Works responsibly and effectively within the work team to practice and interact with the principles and concepts of nuclear physics | V1(I)<br>V2(I) |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Nuclear Properties:**<br>- Definitions & Nuclear radius<br>- Nuclear Mass<br>- Nuclear Isomères. | 4 |
| 2 | **Liquid Drop Model**<br>Nuclear Mass-Binding Energy -<br>Sem-emperical Formula -<br>Separation energies of P-n- | 4 |
| 4 | **Radioactivity**<br>- The Radioactive Decay Law<br>Production and Decay of Radioactivité-<br>Half- life and rate of decay -<br>- Series decay<br>- Radioactive series | 8 |

| | | |
|---|---|---|
| 3 | **Nuclear Shell Model**<br>Single Particle model -<br>Magic Numbers-<br>Energy Levels -<br>Spin, Angular Momentum, Parity and symmetry. -<br>Excited rootes nuclear magnetic moments- | 6 |
| 4 | **Alpha Transitions**<br>Why Alpha Decay Occurs-<br>Basic Alpha Decay processes-<br>Alpha Decay systematics-<br>-Theory of Alpha Emission<br>-Angular Momentum and Parity in Alpha Decay | 6 |
| 5 | **Beta Transitions**-<br>Energy Release in Beta Decay-<br>Fermi Theory of Beta Decay-<br>Angular Momentum and Parity Sélection -<br>-Comparative Half-Lives and Forbidden Decays | 6 |
| 6 | **Gamma Transitions**<br>Energetics of Gamma Decay-<br>Classical Electromagnetic Radiation-<br>Transition to Quantum Mechanics -<br>Angular Momentum and Parity Sélection Rules -<br>Internal Conversion -<br>- Lifetimes for Gamma Emission | 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 | Demonstrate the fundamentals and basic concepts in nuclear physics in nuclear structure and properties, nuclear models, nuclear decay and radioactivity. | 1.Lecture method: Board and PowerPoint.<br>2.Begin the lecture with a brief idea of the topic.<br>3.Demonstrate the basic principles.<br>4.Discussing phenomena with illustrating pictures and diagrams. | • Midterm exam.<br>• Final exam.<br>• Homework.<br>• Oral Questions. |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| | | 5.Solve problem<br>6.Brain storming | |
| **2.0** | **Skills** | | |
| 2.1 | To know how to assess, evaluate, or calculate the following: nuclear density, binding energy, proton and neutron configuration as well as spin and parity, and radioactive decay calculations. | 1. Lecture method: Board and PowerPoint.<br>2. Interactive group work<br>3. Demonstrate the basic principles.<br>4. Discussing phenomena with illustrating pictures and diagrams.<br>5. Solve problem<br>6. Brain storming | • Midterm exam.<br>• Final exam.<br>• Homework.<br>• Oral Questions.<br>• Group output |
| 2.2 | Effectively communicates physics concepts, processes, and results, both orally and in writing related to nuclear physics | | |
| **3.0** | **Values** | | |
| 3.1 | Works responsibly and effectively within the work team to practice and interact with the principles and concepts of nuclear physics | 1.Give students tasks of duties as a teamwork.<br>2.Asking the teamwork to write scientific reports or project.<br>3.Asking the teamwork to demonstrate the results of the scientific reports or project.<br>4. Interactive Drills | Evaluate:<br>• the scientific reports,<br>• the teamwork,<br>• the efforts of each student in preparing the report.<br>• Drill Assessment |

**2. Assessment Tasks for Students**

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 2 | Term Works | All weeks | 20% |
| 3 | Mid-term exam | 5th week | 30% |
| 4 | Final exam | End of the term | 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 :**

**4 office hours per week**

## F. Learning Resources and Facilities

**1.Learning Resources**

| | |
|---|---|
| **Required Textbooks** | 1. Krane,K.S., "Introductory Nuclear Physics", John Wiley and Sons Inc., India, 2008.<br>2. Richard Dunlap, An Introduction to the Physics of Nuclei and Particles |

| | |
|---|---|
| **Essential References Materials** | 1. Walter D. Loveland, David J. Morrissey, Glenn T. Seaborg. Modern Nuclear Chemistry. 2nd Ed. 2006 by John Wiley & Sons, Inc.<br>2. Nuclear and Particle Physics B. R. Martin. 2006. John Wiley & Sons, Ltd. ISBN: 0-470-01999-9 |
| **Electronic Materials** | https://world-nuclear.org/<br>http://www.lnhb.fr/nuclear-data/nuclear-data-table/<br>https://www.nrc.gov/reading-rm/basic-ref/students/for-educators.html |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | • Lecture room for 40 students, with data show.<br>• Library |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | • (AV, data show, Smart Board, software, etc.)<br>• data show + Board |
| **Other Resources**<br>(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | (NO) |

## G. Course Quality Evaluation

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Effectiveness of Teaching | • Students<br>• Classroom Observation<br>• Professional Development Unit<br>External Reviewers such as the ASIIN Accreditation Agency | • Student Surveys<br>Formal Classroom Observation |
| Effectiveness of Assessment | • Curriculum and Test Development Unit<br>• Curriculum Committee<br>• Assessment Committee<br>External Reviewers such as the ASIIN Accreditation Agency | • Item Analysis Data<br>• Teacher Feedback<br>• Student Feedback<br>Course Reports |
| Extent of Achievement of Course Learning Outcomes | • Quality Assurance Unit<br>Curriculum and Test Development Unit | • Item Analysis Data<br>• Course Reports<br>Annual Program Review |

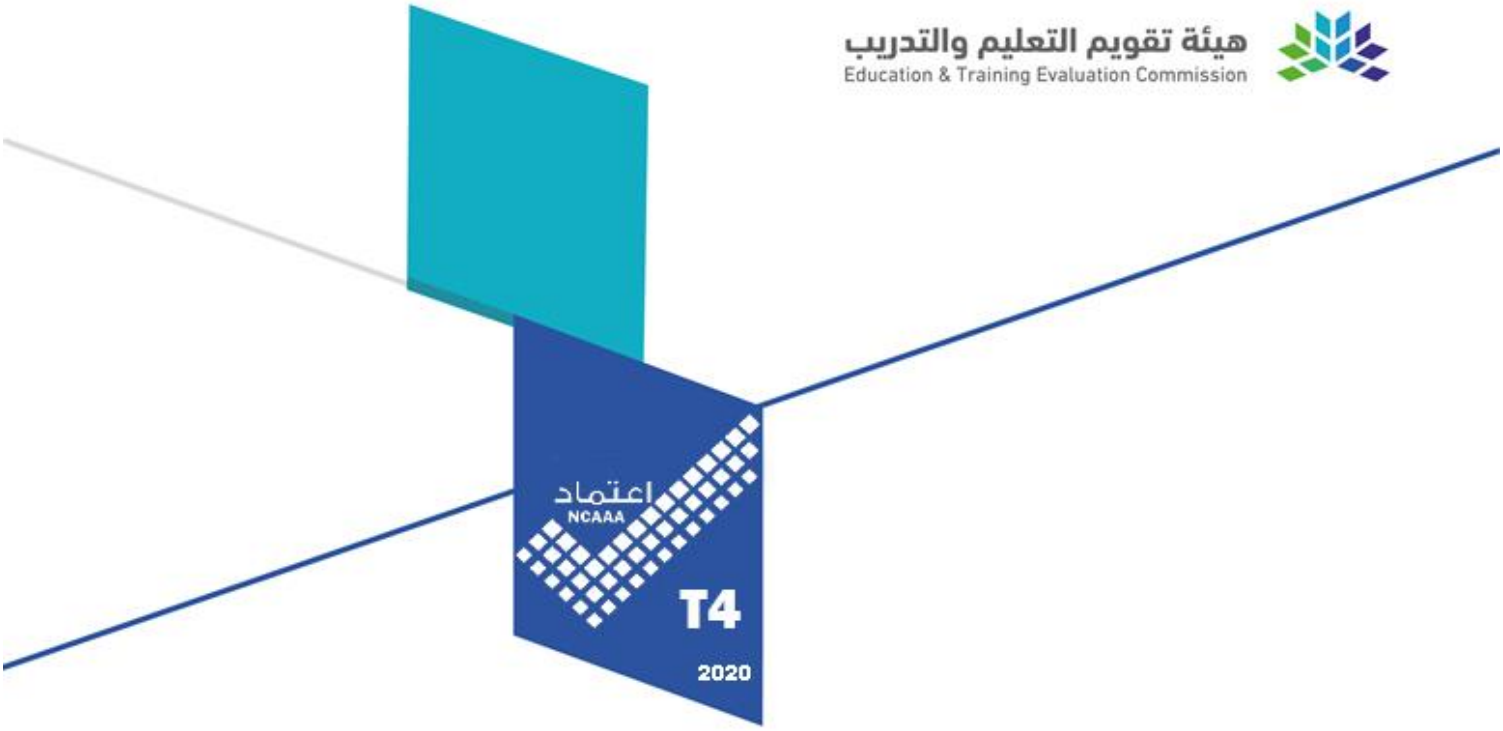
**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
**Assessment Methods** (Direct, Indirect)

## H. Specification Approval Data

| | |
|---|---|
| **Council / Committee** | |

| | |
|---|---|
| **Reference No.** | |
| **Date** | |

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission




# Course Specifications

| | |
|---|---|
| **Course Title:** | **Electromagnetism 2** |
| **Course Code:** | **PHY3305** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**B. Course Objectives and Learning Outcomes ..... 3**

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2. Course Main Objective ..... 3

3. Course Learning Outcomes ..... 4

**C. Course Content ..... 4**

**D. Teaching and Assessment ..... 5**

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods ..... 5

2. Assessment Tasks for Students ..... 6

**E. Student Academic Counseling and Support ..... 7**

**F. Learning Resources and Facilities ..... 7**

1.Learning Resources ..... 7

2. Facilities Required ..... 7

**G. Course Quality Evaluation ..... 7**

**H. Specification Approval Data ..... 8**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered: Level 8th /3rd year** |
| **4. Pre-requisites for this course** (if any)**: Electromagnetism 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** | | |
| 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 extension of Electromagnetism 1. The course deals primarily with a vector analysis-based description of magnetic field, magnetic flux, and magnetic potential, and application of Gauss's law as well as the magnetic induction for a steady current circuit. The course will cover also, the magnetic properties of the materials, and the molecular field and the classification of the magnetic materials. The course will deal with magnetic energy of the magnetic materials.

**2. Course Main Objective**

The student will be able to

- Calculate the magnetic fields due to electric current using Biot-Savart law.
- Apply Lorentz law to calculate the force acting on a wire carrying electric current placed in a magnetic field.

- Calculate the magnetic field using Ampere's law.
- Calculate the self-inductance and mutual inductance.
- Calculate the magnetic field due to a magnetized object.
- Calculate the magnetic energy stored within the electric circuits.
- Calculate the density of magnetic energy.

### 3. Course Learning Outcomes

| CLOs | | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Define the physical quantities related to the electromagnetism. | K1 |
| 1.2 | Describe the concepts related to the electromagnetism using the mathematical formula. | K1 |
| **2** | **Skills :** | |
| 2.1 | Solve physics problems related to the electromagnetism using Biot-Savart law. | S1 |
| 2.2 | Explain the physical formulas related to the electromagnetic problems. | S2 |
| **3** | **Values:** | |
| 3.1 | Work effectively and responsibly in teamwork. | V2 |
| | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Electric Current**<br>• Current density & equation of continuity.<br>• Ohm's law.<br>• Steady currents in continuous media.<br>Microscopic theory of conduction. | 4 |
| 2 | **The Magnetic Field of Steady Current**<br>• Induction to magnetic field.<br>• Lorentz force law and its applications.<br>• Biot-Savart Law and its applications.<br>• Ampere's Law.<br>• Application of Ampere's law.<br>• Divergence and curl of magnetic field.<br>• The magnetic vector potential.<br>• The magnetic scalar potential.<br>The Magnetic flux. | 12 |
| 3 | **The Electromagnetic Induction**<br>• Self-inductance.<br>• Mutual inductance.<br>• The Neumann formula.<br>• Inductances in series and parallel. | 6 |
| 4 | **Magnetic Properties of Matter**<br>• The origin of magnetism in the matter. | 6 |

| | | |
|---|---|---|
| | • Magnetic moment of the atom.<br>• Magnetization.<br>• Magnetic current density.<br>• Surface current density.<br>• Magnetic intensity.<br>• Calculation of magnetic field of a magnetized object.<br>• Magnetic susceptibility, Magnetic Permeability, and Hysteresis loop.<br>• Classification of magnetic materials (diamagnetic materials, paramagnetic materials, and ferromagnetic materials).<br>• Boundary condition of magnetic field.<br>• Electric circuits containing magnetic media.<br>• Magnetic circuits. | |
| 5 | **Microscopic Theory of The Magnetic Properties of Matter**<br>• Molecular field inside matter.<br>• Origin of diamagnetism.<br>• Origin of paramagnetism.<br>• Theory of ferromagnetism.<br>• Ferromagnetic domains.<br>• Ferrites. | 6 |
| 6 | **Magnetic Energy**<br>• Magnetic energy of a solid circuit.<br>• Magnetic energy of coupled circuits.<br>• Energy density in magnetic field.<br>• Force and torques on rigid circuits. | 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 physical quantities related to the electromagnetism. | 1. Demonstrating the basic principles through lectures.<br>2. Discussing phenomena with illustrating pictures and diagrams.<br>3. Lecturing method: Board, Power point.<br>4. Discussions<br>5. Brain storming<br>Start each chapter by general idea and the benefit of it. | - Solve some examples<br>- Discussions during the lectures<br>Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam. |
| 1.2 | Describe the concepts related to the electromagnetism using the mathematical formula. | | |
| **2.0** | **Skills** | | |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| 2.1 | Solve physics problems related to the electromagnetism using Biot-Savart law. | 1. Preparing main outlines for teaching.<br>2. Following some proofs.<br>3. Define duties for each chapter<br>4. Encourage student to look up for information in different references. | 1. Exams (Midterm, final)<br>2. Asking about physical laws previously taught<br>3. Writing reports on selected parts of the course.<br>4. Discussions of how to simplify or analyze some phenomena |
| 2.2 | Explain the physical formulas related to the electromagnetic problems. | | |
| **3.0** | **Values** | | |
| 3.1 | Work effectively and responsibly in teamwork. | • Organize the students in a small groups (teamwork).<br>• Give students tasks of duties as a small project. | • Evaluate the scientific reports.<br>• Discussing the reports with each teamwork.<br>• Evaluate the efforts of each student in preparing the report. |
| | | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Midterm Exam | 8th | 30% |
| **2** | Homework's & Quizzes & Reports | All weeks | 20 % |
| **3** | 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 supervise by academic adviser in physics department and timetable for academic advice were given to the student each semester. (4 hrs per week)

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | Foundations of Electromagnetic Theory by John R. Reitz, and Frederick J. Milford (1960). |

| | |
|---|---|
| **Essential References Materials** | |
| **Electronic Materials** | |
| **Other Learning Materials** | • Introduction to Electrodynamics by David J. Griffiths, 4th edition.<br>• Modern Electrodynamics by Andrew Zangwill, (2013).<br>• Electromagnetic Fields by Roald K. Wangsness, 2nd edition. |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | - Classroom |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | - Black Board<br>- Data show |
| **Other Resources**<br>(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

اعتماد NCAAA T4 2020

# Course Specifications

| | |
|---|---|
| **Course Title:** | **Quantum Mechanics (2)** |
| **Course Code:** | **PHY3507** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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6. Mode of Instruction (mark all that apply) 3

**B. Course Objectives and Learning Outcomes** **3**

1. Course Description 3

2. Course Main Objective 3

3. Course Learning Outcomes 3

**C. Course Content** **4**

**D. Teaching and Assessment** **4**

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods 4

2. Assessment Tasks for Students 4

**E. Student Academic Counseling and Support** **5**

**F. Learning Resources and Facilities** **5**

1.Learning Resources 6

2. Facilities Required 6

**G. Course Quality Evaluation** **7**

**H. Specification Approval Data** **7**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4 hrs** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered: 8/3rd Year** |
| **4. Pre-requisites for this course** (if any)**: Quantum Mechanics (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** | | |
| 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) Exams/ Quizzes | - |
| | **Total** | 40 |

## B. Course Objectives and Learning Outcomes

| |
|---|
| **1. Course Description**<br><br>This course builds upon quantum mechanics (1) in the previous level, and specifically introduces a variety of theoretical developments, including the theory of angular momentum, spin, Time –Independent perturbation theory, variational principle, and identical particles. |
| **2. Course Main Objective**<br>This course together with quantum mechanics (1) and quantum mechanics (3) offer a systematic introduction and fundamental background to non-relativistic quantum mechanics. |

### 3. Course Learning Outcomes

| CLOs | | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and understanding** | |
| 1.1 | Describe spin and orbital angular momentum operators, angular momentum states, as well as the angular momentum addition rules. | K1(I) |
| 1.2 | Identify symmetric or asymmetric wave functions. | K2(I) |
| 1.3 | Differentiate between Fermions and Bosons. | K1(I) |
| 1.4 | Describe approximate methods for solving the Schrödinger equation (the variational method, Stationary perturbation theory). | K1(I), K2(I) |
| **2** | **Skills:** | |
| 2.1 | Combine spin and orbital angular momenta. | S1(I) |
| 2.2 | Solve the Schrödinger equation for interacting many particles systems. | S1(I), S2(I) |
| 2.3 | Apply the variational method and time-independent perturbation theory to solve simple problems. | S1(I), S2(I) |
| | | |
| **3** | **Values:** | |
| 3.1 | Participate effectively in multidisciplinary and/or interdisciplinary teams. | V2(I) |
| 3.2 | | V1(I), V2(I) |
| 3.3 | | V1(I) |
| 3.4 | | V1(I) |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | Central Potential, Hydrogen Atom, Orbital Angular Momentum, Spin Angular Momentum, Eigenfunctions of Orbital Angular Momentum. | 8 |
| 2 | **Addition of Angular Momenta:** Rotations in Classical Physics, Rotations in Quantum Mechanics, Infinitesimal Rotations, Finite Rotations properties of the Rotation Operator, Euler Rotations, Representation of the Rotation Operator, Rotation Matrices and the Spherical Harmonics, General Formalism of Angular Momentum (Total Angular Momentum), Addition of Angular Momenta, Calculation of the Clebsch–Gordan Coefficients, Coupling of Orbital and Spin Angular Momenta. | 10 |
| 3 | **Time evolution of a quantum system:** Time dependent Schrödinger equation, The Schrödinger and Heisenberg pictures, Interaction Picture, | 12 |
| 4 | **Interaction of electron with electromagnetic field:** coupling of electron to vector potential, the normal Zeeman effect, electron motion in a uniform magnetic field, | 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 | Be familiar with spin and orbital angular momentum operators, angular momentum states, as well as the angular momentum addition rules. | 1. Lectures.<br>2. Discussions<br>3. Slides and computer simulation software may be used to clarify concepts.<br>4. Problems solving<br>5. Students may be asked to solve some problems using MATLAB language | 1- Homework assignments.<br>2- Group Project assignment.<br>3- Question – answer session in class.<br>4- Exams: quizzes, Mid-term, and final exams |
| 1.2 | Description of a system of identical particles by appropriate symmetric or asymmetric wave functions. | | |
| 1.3 | Differentiate between Fermions and Bosons. | | |
| 1.4 | Describe approximate methods for solving the Schrödinger equation (the variational method, Stationary perturbation theory). | | |
| **2.0** | **Skills** | | |
| 2.1 | Combine spin and orbital angular momenta. | 1. Lectures.<br>2. Discussions.<br>3. Problem solving.<br>4. Encourage the student to look for the information in different references.<br>5.<br>6. Define duties for each chapter | **1-** Homework assignments.<br>**2-** Group Project assignment.<br>**3-** Question – answer session in class.<br>**4-** Exams: quizzes, Midterm and final exams. |
| 2.2 | knowing how to deal with the Schrödinger equation for interacting many particles systems. | | |
| 2.3 | Apply the variational method and time-independent perturbation theory to solve simple problems. | | |
| **3.0** | **Values** | | |
| 3.1 | Participate effectively in multidisciplinary and/or interdisciplinary teams | **1.** Groupe assignments<br>**2.** Clarify deadlines for delivery of assignments, reports, and exams. | **1.** Evaluate the efforts of each student in preparing the report.<br>**2.** Evaluate the work in teams. Evaluation of student's presentations. |
| 3.2 | Accepting different ideas and respecting other opinions. | | |
| 3.3 | Manage a project (modelling or simulation) with due attention to time and resource management | | |
| 3.4 | Take responsibility and take the course instructions seriously. | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Exercises and HomeWorks | All weeks | 10% |
| **2** | Participation in activities | All weeks | 10% |
| **3** | Mid-term exam | 5th week | 30% |
| **4** | Final exam | End of the term | 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:**<br><br>Students are supervised by academic advisers in the physics Department and the timetables for academic advice were given to the student each semester. (8hrs per week). |
|---|

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | Introduction to Quantum Mechanics 2nd Edition,<br>by David J. Griffiths, Pearson Education Limited (2014). |
| **Essential References Materials** | **1.** Quantum Mechanics: Concepts and Applications 2nd Edition, by Noureddine Zettili, John Wiley & Sons, Ltd, (2009).<br>**2.** Quantum Physics, 3rd Edition, by Stephen Gasiorowicz, John Wiley & Sons, Inc, (2003). |
| **Electronic Materials** | https://ocw.mit.edu/courses/physics/8-04-quantum-physics-i-spring-2013/lecture-videos/ |
| **Other Learning Materials** | |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | Lecture room<br>Labs |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | data show |
| **Other Resources**<br>(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 |
|---|---|---|
| Student Feedback on Effectiveness of Teaching | Students | Direct |
| Evaluation of Teaching | Department | Indirect |
| Improvement of Teaching | Program leaders | Direct |
| Quality of learning resources | Faculty | Direct |
| Extent of achievement of course learning outcomes | Program leaders | Direct |

| 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** | Dr Atif Ismail, Dr Walid Belhadj and Prof. Khaled Abdel-Waged |
| **Reference No.** | |
| **Date** | |

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

# Course Specifications

| | |
|---|---|
| **Course Title:** | **Optics (1)** |
| **Course Code:** | **PHY3403** |
| **Program:** | **B.Sc. Degree in Physics** |
| **Department:** | **Physics** |
| **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)**: General Physics** (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** | 40 | 100% |
| 2 | **Blended** | | |
| 3 | **E-learning** | | |
| 4 | **Distance learning** | | |
| 5 | **Other** | | |

**7. Contact Hours** (based on the 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 covers aberrations of lenses and design and functionality of optical instruments. It then gives an introduction to vibrations, wave optics and superposition of waves.

**2. Course Main Objective**

The course revises the basics of geometrical optics (reflection and refraction, as well as image formation in the case of mirrors and lenses). It also covers aberrations in lenses. Then the course gives a scientific description of some optical instrumentation used in real life. Introduction to wave optics is then given by teaching vibrations and wave laws as well as mathematical treatment to addition and superposition of waves to be used in the advanced Optics course.

### 3. Course Learning Outcomes

| CLOs | | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.2 | Define the concepts of waves, and superposition of waves. | K1 (P) |
| 1.3 | Describe physical laws governing the mirrors and lenses and their applications and aberrations. | K2 (P) |
| **2** | **Skills :** | |
| 2.1 | Solve geometrical optics problems and use the optics laws in optical instruments | S1 (P) |
| 2.2 | Explain the scientific laws governing wave addition, subtraction, and superposition. | S2 (I) |
| **3** | **Values:** | |
| 3.1 | Collaborate and contribute responsibly and effectively in teamwork | V2 (P) |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **General Revision on Mirrors and Lenses**<br>● Plane Surfaces and Prisms<br>● Spherical Surfaces<br>● Thin Lenses<br>● Thick Lenses<br>● Spherical Mirrors | 6 |
| 2 | **Lens Aberrations**<br>● Spherical Aberration of a Single Surface<br>● Spherical Aberration of a Thin Lens<br>● Coma<br>● Astigmatism<br>● Curvature of Field<br>● Distortion<br>● Chromatic Aberration | 6 |
| 3 | **Optical Instruments**<br>● The Human Eye<br>● Cameras and Photographic Objectives<br>● Meniscus Lenses<br>● Symmetrical Lenses<br>● Magnifiers<br>● Microscopes<br>● Astronomical Telescopes | 6 |
| 4 | **Vibrations and Waves**<br>● Simple Harmonic Motion<br>● Vibrating Spring<br>● Transverse Waves<br>● Phase Angles<br>● Amplitude and Intensity<br>● Frequency and Wavelength | 6 |
| 5 | **Superposition of Waves**<br>● Addition of Simple Harmonic Motions along the Same Line | 6 |

| | | |
|---|---|---|
| | • Vector Addition of Amplitudes<br>• Superposition of Two Wave Trains of the Same Frequency<br>• Complex Waves<br>• Fourier Analysis<br>• Group Velocity<br>• Addition of Simple Harmonic Motions at Right Angles | |
| 6 | **Interference of Two Beams of Light**<br>• Huygens' Principle<br>• Young's Experiment<br>• Interference Fringes from a Double Source<br>• Intensity Distribution in the Fringe System<br>• Fresnel's Biprism<br>• Coherent Sources<br>• Division of Amplitude. Michelson Interferometer<br>• Circular Fringes | 5 |
| 7 | **Interference Involving Multiple Reflections**<br>• Reflection from a Plane-Parallel Film<br>• Fringes of Equal Inclination<br>• Interference in the Transmitted Light<br>• Newton's Rings<br>• Fabry-Perot Interferometer<br>• Brewster's Fringes<br>• Other Interference Spectroscopes | 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 | Define the concepts of waves, and superposition of waves. | Demonstrating the basic information and principles through lectures and discussions. | Homework and Mid and final exams. |
| 1.2 | Describe the physical laws governing mirrors and lenses and their applications and aberrations. | | |
| **2.0** | **Skills** | | |
| 2.1 | Solve geometrical optics problems and use the optics laws in optical instruments | Lecturing, discussion, and problem-solving. | Homework and Mid and final exams |
| 2.2 | Explain the scientific laws governing wave addition, subtraction, and superposition. | | |
| **3.0** | **Values** | | |
| 3.1 | Collaborate and contribute responsibly and effectively in teamwork | presentations and discussion groups | Presentations and seminars |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Mid-Term Exam | 11 | 30% |
| **3** | Homework, Quizzes, and report | Through term | 20% |
| **4** | Final Exam | End of the term | 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 :**<br>Consultation and/or academic advice will be available during the teaching staff office hours |

## F. Learning Resources and Facilities

### 1. Learning Resources

| | |
|---|---|
| **Required Textbooks** | 1. Francis A. Jenkins and Harvey E. White, "Fundamentals of Optics", 4th Edition, McGraw-Hili Primls, (2001). |
| **Essential References Materials** | |
| **Electronic Materials** | |
| **Other Learning Materials** | |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | Classroom |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | data show |
| **Other Resources**<br>(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 | Questionnaires |
| achievement of course learning outcomes | Program Leader | 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:** | **Nuclear Physics 2** |
| **Course Code:** | **PHY3602** |
| **Program:** | **BSc. Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm AL-Qura University** |

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**F. Learning Resources and Facilities** **7**

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**G. Course Quality Evaluation** **7**

**H. Specification Approval Data** **8**

## A. Course Identification

| |
|---|
| **1. Credit hours:** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department √ Others ☐<br>**b.** Required √ Elective ☐ |
| **3. Level/year at which this course is offered:** Level 8 /3st Year |
| **4. Pre-requisites for this course** (if any)**:**<br>Nuclear Physics (1) |
| **5. Co-requisites for this course** (if any)**:**<br>Not applicable (N. A) |

**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 (specify) | |
| | Total | 60 |

## B. Course Objectives and Learning Outcomes

| |
|---|
| **1. Course Description**<br>The course will cover the principles and basics of the advanced subjects in nuclear physics in nuclear reactions, neutron physics, nuclear fission, nuclear fusion, elementary particles. |
| **2. Course Main Objective**<br>To provide the scientific and technical background needed to proper understanding of the advanced subjects in nuclear physics mentioned in the course description |

**3. Course Learning Outcomes**

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge:** | |

| CLOs | | Aligned PLOs |
|---|---|---|
| 1.1 | Demonstrate the fundamentals and basic concepts of advanced subjects in nuclear physics in nuclear reactions, neutron physics, nuclear fission, nuclear fusion, elementary particles. During the lab work, the student will explore nuclear physics knowledge. | K1(P)<br>K2(P) |
| **2** | **Skills:** | |
| 2.1 | To know how to assess, evaluate, or calculate the following: reaction energetics, reaction cross section, fission yield and fission, as well as practicing nuclear physics knowledge in the lab. | S1(P) |
| 2.2 | Effectively communicates physics concepts, processes, and results, both orally and in writing related to nuclear physics | S2(P) |
| **3** | **Values:** | |
| 3.1 | Works responsibly and effectively within the work team to practice and interact with the principles and concepts of nuclear physics | V1(P)<br>V2(P) |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **NUCLEAR REACTIONS:**<br>Types of Reactions and Conservation Laws<br>Energetics of Nuclear Reactions<br>lsospin<br>Reaction Cross Sections<br>Experimental Techniques<br>Coulomb Scattering<br>Nuclear Scattering<br>Scattering and Reaction Cross Sections<br>The Optical Model<br>Compound-Nucleus Reactions<br>Direct Reactions<br>Resonance Reactions<br>Heavy-Ion Reactions | 6 |
| 2 | **NEUTRON PHYSICS**<br>Neutron Sources<br>Absorption and Moderation of Neutrons<br>Neutron Detectors<br>Neutron Reactions and Cross Sections<br>Neutron Capture<br>Interference and Diffraction with Neutrons | 6 |

| | | |
|---|---|---|
| 3 | **NUCLEAR FISSION**<br>Basic Fission Process<br>Characteristics of Fission<br>Energy in Fission<br>Fission and Nuclear Structure<br>Controlled Fission Reactions<br>Fission Yield and Fission Products<br>A Natural Fission Reaction | 10 |
| 4 | **NUCLEAR FUSION**<br>Basic Fusion Processes<br>Characteristics of Fusion<br>Solar Fusion<br>Applications of Nuclear Fusion | 4 |
| 5 | **ELEMENTARY PARTICLES**<br>Leptons<br>Lepton multiplets and lepton numbers<br>Neutrinos<br>Neutrino mixing and oscillations<br>Universal lepton interactions<br>Quarks<br>Quark generations and quark numbers<br>Hadrons<br>Flavour independence and charge multiplets<br>Quark model spectroscopy<br>Hadron masses and magnetic moments | 4 |
| | **Practical Part:**<br>Students will conduct various experiments in the practical part of the course. Each student will perform the experiment, collect data, extract result, and prepare a written report every week. | 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 | Demonstrate the fundamentals and basic concepts of advanced subjects in nuclear physics in nuclear reactions, neutron physics, nuclear fission, nuclear fusion, elementary particles. During the lab | 1.Lecture method: Board and PowerPoint.<br>2.Begin the lecture with a brief idea of the topic.<br>3.Demonstrate the basic principles.<br>4.Discussing phenomena with illustrating pictures and diagrams. | • Midterm exams.<br>• Final exam.<br>• Homework.<br>• Oral Questions. |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| | work, the student will explore nuclear physics knowledge.. | 5.Solve problem<br>6.Brain storming | |
| **2.0** | **Skills** | | |
| 2.1 | To know how to assess, evaluate, or calculate the following: reaction energetics, reaction cross section, fission yield and fission, as well as practicing nuclear physics knowledge in the lab. | 1.Lecture method: Board and PowerPoint.<br>2.Interactive group work<br>3.Demonstrate the basic principles.<br>4.Discussing phenomena with illustrating pictures and diagrams.<br>5.Solve problem<br>6.Brain storming | • Midterm exams.<br>• Final exam.<br>• Homework.<br>•Oral Questions.<br>• Group output |
| 2.2 | Effectively communicates physics concepts, processes, and results, both orally and in writing related to nuclear physics | | |
| **3.0** | **Values** | | |
| 3.1 | Works responsibly and effectively within the work team to practice and interact with the principles and concepts of nuclear physics | 1.Give students tasks of duties as a teamwork.<br>2.Asking the teamwork to write scientific reports or project.<br>3.Asking the teamwork to demonstrate the results of the scientific reports or project.<br>4. Interactive Drills | Evaluate:<br>•the scientific reports,<br>•the teamwork,<br>•the efforts of each student in preparing the report.<br>•Drill Assessment |

**2. Assessment Tasks for Students**

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Assignments, Quizzes and Homework | **Weekly** | **10 %** |
| **2** | Class Test Exam (Mid Tests) | **5** | **20 %** |
| **3** | Lab. Reports and Exam | **Weekly** | **20 %** |
| **5** | Final Exam | **End of the term** | **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 :**

**4 office hours per week**

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | 1. Krane,K.S., ”Introductory Nuclear Physics”, John Wiley and Sons Inc., India 2008.<br>2. Walter D. Loveland, David J. Morrissey, Glenn T. Seaborg. Modern Nuclear Chemistry. 2nd Ed. 2006 by John Wiley & Sons, Inc.<br>Nuclear and Particle Physics B. R. Martin<br>2006 John Wiley & Sons, Ltd. ISBN: 0-470-01999-9 |
| **Essential References Materials** | Richard Dunlap, An Introduction to the Physics of Nuclei and Particles |
| **Electronic Materials** | https://world-nuclear.org/<br>http://www.lnhb.fr/nuclear-data/nuclear-data-table/<br>https://www.nrc.gov/reading-rm/basic-ref/students/for-educators.html<br>https://www.wins.org/ |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | • Lecture room for 40 students, with data show.<br>• Library |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | • (AV, data show, Smart Board, software, etc.)<br>• data show + Board |
| **Other Resources**<br>(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | (NO) |

## G. Course Quality Evaluation

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Effectiveness of Teaching | • Students<br>• Classroom Observation<br>• Professional Development Unit<br>External Reviewers such as the ASIIN Accreditation Agency | • Student Surveys<br>Formal Classroom Observation |
| Effectiveness of Assessment | • Curriculum and Test Development Unit<br>• Curriculum Committee<br>• Assessment Committee<br>External Reviewers such as the ASIIN Accreditation Agency | • Item Analysis Data<br>• Teacher Feedback<br>• Student Feedback<br>Course Reports |

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Extent of Achievement of Course Learning Outcomes | • Quality Assurance Unit<br>Curriculum and Test Development Unit | • Item Analysis Data<br>• Course Reports<br>Annual Program Review |

**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

# Field Experience Specifications

| | |
|---|---|
| **Course Title:** | **Co-op Training in Physics** |
| **Course Code:** | **PHY4803** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Science** |
| **Institution:** | **Umm Al-Qura University** |

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**G. Training Quality Evaluation** **8**

**E. Specification Approval Data** **8**

## A. Field Experience Identification

| |
|---|
| **1. Credit hours: 8 hours** |
| **2. Level/year at which this course is offered: level 9/3rd year** |
| **3. Dates and time allocation of field experience activities.**<br>● Number of weeks: (10) week<br>● Number of days: (50) day<br>● Number of hours: (300) hour |
| **4. Prerequisites to join field experience** (if any)**: Approval from the Department** |

## B. Learning Outcomes, and Training and Assessment Methods

### 1. Field Experience Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | List the stages of the field training | K1 |
| 1.2 | Describe each stage using mathematics | K2 |
| 1.3 | | |
| 1... | | |
| **2** | **Skills:** | |
| 2.1 | Apply Physics law to calculate the physical quantity | S1 |
| 2.2 | Explain the scientific theoretical and empirical procedures in physics | S2 |
| 2.3 | | |
| **3** | **Values:** | |
| 3.1 | Apply standards of integrity and ethics in all tasks | V1 |
| 3.2 | Collaborate and contribute responsibly and effectively in teamwork | V2 |
| 3.3 | | |
| 3... | | |

### 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 | List the stages of the field training | Training in the field | Progress report, Final presentation |
| 1.2 | Describe each stage using mathematics | Training in the field | |
| … | | | |
| **2.0** | Skills | | |
| 2.1 | Apply Physics law to calculate the physical quantity | Training in the field | Final report, The faculty advisor's evaluation, Evaluation of field-experience committee |
| 2.2 | Explain the scientific theoretical and empirical procedures in physics | Training in the field | |
| … | | | |
| **3.0** | Values | | |
| 3.1 | Apply standards of integrity and ethics in all tasks | Training in the field | Progress report, Final report, |

| Code | Learning Outcomes | Training Methods/Activities | Assessment Methods |
|---|---|---|---|
| 3.2 | Collaborate and contribute responsibly and effectively in teamwork | Training in the field | Final presentation<br>The faculty advisor's evaluation,<br>Evaluation of field-experience committee |
| … | | | |

## 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% |
| | Total | | 100% |

***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.<br>Preparing the plan or a proposal of work.<br>Dependability and reliability, ability for self-learning and search for information.<br>Maintaining effective relationships with co-workers.<br>Writing a weekly report on his progress.<br>Quality of work output.<br>Final report.<br>Final Presentation and/or poster presentation. |
| 2 | **Field Supervisor** | Attendance and punctuality at the field location.<br>Preparing the plan or a proposal of work.<br>Dependability and reliability, ability for self-learning and search for information.<br>Maintaining effective relationships with co-workers.<br>Writing a weekly report on his progress.<br>Quality of work output.<br>Final report.<br>Final Presentation and/or poster presentation. |
| 3 | **Others** (Field Experience committee) | Final report.<br>Final Presentation and/or poster presentation. |

## C. Field Experience Administration

### 1. Field Experience Locations

#### a. Field Experience Locations Requirements

| Suggested Field Experience Locations | General Requirements* | Special Requirements** |
|---|---|---|
| Saudi Standards and Metrology Organization in Jeddah | **Agreement of the Department council** | Acceptance from Field experience locations. |
| King Abdulaziz University – Nanotechnology center | | |
| Modern Technology Laboratories Corporation Laboratory | | |
| Saudi Aramco | | |
| The Central Laboratory of the Faculty of Science at any university | | |
| The Central Laboratory of the Faculty of Science at UQU | | |
| Water desalination company | | |
| Saudi Electricity Company | | |
| Factories or companies related to the field. | | |
| Radiation centers | | |
| Research Lab within the department | | |
| Hospitals | | |

*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. After 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. Then the students apply to choose one of the displayed field experiences.
3. Finally, 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** | appointed by the department | |

#### 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 16 weeks (1 day a week, and 5 hours a day) during normal semester, and 8 weeks (2 days a week, and 5 hours a day) during summer semester in the experience field location.
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 the Physics 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 Field Experience Committee (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** | | ✓ | | | ✓ |
| **Adjusting attendance and leave** | | ✓ | | | ✓ |
| **Assessment of learning outcomes** | ✓ | ✓ | ✓ | ✓ | ✓ |

| Activity | Department or College | Teaching Staff | Student | Training Organization | Field Supervisor |
|---|---|---|---|---|---|
| **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 analyzes 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 |
|---|---|---|
| The expulsion of trainee without compelling reasons | Sign Memorandum of Understanding (MoU) with the Field experience institute for providing training to the students. | Select Field experience institute with an agreement in advance. |
| Injury to the trainee during Field training | Insure for any physical injury suffered by the trainee during the training period. | Select Field experience institute with an agreement in advance. |
| Claim for financial reimbursements from the college against any expenditure for the | Contract an agreement with the Field experience institute. | Select Field experience institute with an agreement in advance. |

| | | |
|---|---|---|
| completion of training program. | | |
| | | |

## G. Training Quality Evaluation

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Effectiveness of Training of trainee. | Student<br>Faculty supervisor<br>Field supervisor<br>Field experience committee | Questionnaire.<br>Reports. |
| Faculty supervision | Student<br>Faculty supervisor<br>Field supervisor<br>Field experience committee | Questionnaire.<br>Reports. |
| Field supervision | Student<br>Faculty supervisor<br>Field supervisor<br>Field experience committee | Questionnaire.<br>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** | |

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

# Course Specifications

| | |
|---|---|
| **Course Title:** | **Quantum Mechanics (3)** |
| **Course Code:** | **PHY4508** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**F. Learning Resources and Facilities** **5**

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**G. Course Quality Evaluation** **7**

**H. Specification Approval Data** **7**

## A. Course Identification

| | |
|---|---|
| **1. Credit hours:** | **4 hrs** |
| **2. Course type** | |
| **a.** | University ☐ College ☐ Department ☑ Others ☐ |
| **b.** | Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered:** | **10 Level /4th Year** |
| **4. Pre-requisites for this course** (if any)**: Quantum Mechanics (2)** | |
| **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) Exams/ Quizzes | - |
| | **Total** | 40 |

## B. Course Objectives and Learning Outcomes

**1. Course Description**

This course builds upon quantum mechanics (1) and quantum mechanics (2) in the previous levels, and it covers a variety of interesting theoretical developments, including the WKB approximation, Time–dependent perturbation theory, Adiabatic Approximation and scattering theory.

**2. Course Main Objective**

This course together with quantum mechanics (1) and quantum mechanics (2) offer a systematic introduction and fundamental background to non-relativistic quantum mechanics.

**3. Course Learning Outcomes**

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and understanding** | |
| 1.1 | Describe the approximate solutions to the time independent Schrödinger equation by the WKB approximation. | K1(I), K2(I) |

| CLOs | | Aligned PLOs |
|---|---|---|
| 1.2 | Differentiate between Stationary and time-dependent perturbations. | K1(I) |
| 1.3 | Recognize the adiabatic criteria for the evolution of a given quantum mechanical system. | K1(I) |
| 1.4 | Differentiate between Elastic and Inelastic Scattering processes. | K1(I) |
| **2** | **Skills:** | |
| 2.1 | Connect classical and quantum equations of motion, using either the WKB approximation or a path-integral approach. | S1(I), S2(I) |
| 2.2 | Justify the necessary conditions to apply the Adiabatic Approximation for a given quantum mechanical system. | S2(I) |
| 2.3 | Apply the time-dependent perturbation theory on a given system to calculate a transition amplitude. | S1(I), S2(I) |
| 2.4 | Compute a cross section in terms of an amplitude using partial wave analysis. | S1(I) |
| 2.5 | | |
| **3** | **Values:** | |
| 3.1 | Participate effectively in multidisciplinary and/or interdisciplinary teams. | V2(I) |
| 3.2 | | V1(I), V2(I) |
| 3.3 | | V1(I) |
| 3.4 | | V1(I) |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Time –Independent Perturbation Theory:** Non-Degenerate perturbation theory (First and Second Order Corrections), Degenerate perturbation theory, The fine structure of hydrogen, Zeeman Effect, Hyperfine Splitting. | 12 |
| 2 | **Time-Dependent Perturbation Theory:** Pictures of Quantum Mechanics (Schrödinger, Heisenberg, and Interaction Pictures), Two-level systems, Time-Dependent Perturbation Theory, Transition Probability, Constant Perturbation, Harmonic Perturbation, Interaction of Atoms with Radiation, Transition Rates for Absorption and Emission of Radiation, Transition Rates within the Dipole Approximation, Electric Dipole Selection Rules, Spontaneous Emission. | 12 |
| 3 | **The variational principle:** Methodology of the variational principle, accuracy, Ground state energy vs ground state wavefunctions, the trial wave function, One-dimensional harmonic oscillator, Delta-function potential, Helium Atom, Hydrogen molecule ion. | 8 |
| 1 | **The Wentzel–Kramers–Brillouin (WBK) Approximation Method:** General Formalism, Bound States for Potential Wells with No Rigid Walls, Bound States for Potential Wells with One Rigid Wall, Bound States for Potential Wells with Two Rigid Walls, Tunneling through a Potential Barrier. | 8 |
| 4 | | 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 | Describe the approximate solutions to the time independent Schrodinger equation by the WKB approximation. | 1. Lectures.<br>2. Discussions<br>3. Slides and computer simulation software may be used by the teachers to clarify concepts.<br>4. Problems solving<br>5. Students may be asked to solve some problems using MATLAB language | 1- Homework assignments.<br>2- Group Project assignment.<br>3- Question –answer session in class.<br>4- Exams: quizzes, Mid-term, and final exams |
| 1.2 | Differentiate between Stationary and time-dependent perturbations. | | |
| 1.3 | Recognize the adiabatic criteria for the evolution of a given quantum mechanical system. | | |
| 1.4 | Differentiate between Elastic and Inelastic Scattering processes. | | |
| **2.0** | **Skills** | | |
| 2.1 | Connecting classical and quantum equations of motion, using either the WKB approximation or a path-integral approach. | 1. Lectures.<br>2. Discussions.<br>3. Problem solving.<br>4. Encourage the student to look for the information in different references.<br><br>5. Define duties for each chapter | **1-** Homework assignments.<br>**2-** Group Project assignment.<br>**3-** Question –answer session in class.<br>**4-** Exams: quizzes, Midterm and final exams. |
| 2.2 | Justify the necessary conditions to apply the Adiabatic Approximation for a given quantum mechanical system. | | |
| 2.3 | Apply the time-dependent perturbation theory on a given system to calculate a transition amplitude. | | |
| 2.4 | Compute a cross section in terms of an amplitude using partial wave analysis. | | |
| **3.0** | **Values** | | |
| 3.1 | Participate effectively in multidisciplinary and/or interdisciplinary teams | **1.** Groupe assignments<br>**2.** Clarify deadlines for delivery of assignments, reports, and exams. | **1.** Evaluate the efforts of each student in preparing the report.<br>**2.** Evaluate the work in teams.<br>Evaluation of student's presentations. |
| 3.2 | Accepting different ideas and respecting other opinions. | | |
| 3.3 | Manage a project (modelling or simulation) with due attention to time and resource management | | |
| 3.4 | Take responsibility and take the course instructions seriously. | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 1 | Exercises and HomeWorks | All weeks | 10% |
| 2 | Participation in activities | All weeks | 10% |
| 3 | Mid-term exam | 6th week | 30% |
| 4 | Final exam | End of the term | 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:**

Students are supervised by academic advisers in the physics Department and the timetables for academic advice were given to the student each semester. (8hrs per week).

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | Introduction to Quantum Mechanics 2nd Edition, by David J. Griffiths, Pearson Education Limited (2014). |
| **Essential References Materials** | **1.** Quantum Mechanics: Concepts and Applications 2nd Edition, by Noureddine Zettili, John Wiley & Sons, Ltd, (2009). **2.** Quantum Physics, 3rd Edition, by Stephen Gasiorowicz, John Wiley & Sons, Inc, (2003). |
| **Electronic Materials** | https://ocw.mit.edu/courses/physics/8-04-quantum-physics-i-spring-2013/lecture-videos/ |
| **Other Learning Materials** | |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation** (Classrooms, laboratories, demonstration rooms/labs, etc.). | Lecture room<br>Labs |
| **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 |
|---|---|---|
| Student Feedback on Effectiveness of Teaching | Students | Direct |
| Evaluation of Teaching | Department | Indirect |
| Improvement of Teaching | Program leaders | Direct |
| Quality of learning resources | Faculty | Direct |
| Extent of achievement of course learning outcomes | Program leaders | 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** | Dr. Atif Ismail, Dr Walid Belhadj and Prof. Khaled Abdel-Waged |
| **Reference No.** | |
| **Date** | |

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

# Course Specifications

| | |
|---|---|
| **Course Title:** | **Optics (2)** |
| **Course Code:** | **PHY4404** |
| **Program:** | **B.Sc. Degree in Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**C. Course Content** **4**

**D. Teaching and Assessment** **4**

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods 4

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**E. Student Academic Counseling and Support** **5**

**F. Learning Resources and Facilities** **5**

1.Learning Resources 5

2. Facilities Required 5

**G. Course Quality Evaluation** **5**

**H. Specification Approval Data** **6**

## 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 / Year 4** |
| **4. Pre-requisites for this course** (if any)**:** | Optics (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 | 80% |
| 2 | **Laboratory** | 30 | 20% |
| 3 | **E-learning** | | |
| 4 | **Distance learning** | | |
| 5 | **Other** | | |

**7. Contact Hours** (based on academic semester)

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

## B. Course Objectives and Learning Outcomes

**1. Course Description**

This course treats light as waves. It interprets optical phenomena like interference, diffraction, and polarization in terms of wave-optics.

**2. Course Main Objective**

The course undertakes optics from the point of view of waves. It interprets phenomena like interference, diffraction, and polarization in terms of wave behavior. The course introduces and explains interference (single and double), diffraction (Fresnel and Fraunhofer) as well as polarization and relation to the matter.

The mathematical treatment related to these phenomena is described and derived.

### 3. Course Learning Outcomes

| | CLOs | Aligned-PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.2 | Define the concepts of interference, diffraction, and polarization in terms of waves optics | K1 (M) |
| 1.3 | Describe physical laws governing wave-optics phenomena | K2 (M) |
| **2** | **Skills :** | |
| 2.1 | Solve interference and diffraction problems | S1 (P) |
| 2.2 | Explain the scientific theoretical procedures governing light behavior in terms of wave optics. | S2 (P) |
| **3** | **Values:** | |
| 3.1 | Collaborate and contribute responsibly and effectively in teamwork | V2 (P) |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Fraunhofer Diffraction**<br>● Fresnel and Fraunhofer Diffraction<br>● Diffraction by a Single Slit<br>● Rectangular Aperture<br>● Circular Aperture<br>● The Double Slit | 5 |
| 2 | **The Diffraction Grating**<br>● Effect of Increasing the Number of Slits<br>● Intensity Distribution from an Ideal Grating<br>● Principal Maxima<br>● Minima and Secondary Maxima<br>● Formation of Spectra by a Grating<br>● Dispersion<br>● Resolving Power | 5 |
| 3 | **Fresnel Diffraction**<br>● Fresnel's Half-Period Zones<br>● Diffraction by a Circular Aperture<br>● Diffraction by a Circular Obstacle<br>● Fresnel's Integrals<br>● The Straight Edge<br>● Rectilinear Propagation of Light<br>● SingleSlit | 5 |
| 4 | **The Polarization of Light**<br>● Polarization by Reflection<br>● Polarizing Angle and Brewster's Law<br>● Law of Malus<br>● Polarization by Dichroic Crystals<br>● Double Refraction<br>● Optic Axis<br>● Nicol Prism<br>● Polarization by Scattering | 5 |
| 5 | **Introduction to Laser**<br>● Spontaneous, Absorption and Stimulated Emission | 10 |

| | | |
|---|---|---|
| | • Properties of Laser Beams<br>• Types of Lasers<br>• Energy Levels, Radiative and Nonradiative Transitions<br>• Optical Resonators<br>• Pumping Processes<br>• Continuous Wave Laser Behavior | |
| 6 | **Practical Part:**<br>• Students will conduct various experiments in the practical part of the course. Each student will perform the experiment, collect data, extract result, and prepare a written report every week. | 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 concepts of interference, diffraction, and polarization in terms of waves optics | Demonstrating the basic information and principles through lectures and discussions. | Homework and Mid and final exams. |
| 1.2 | Describe physical laws governing wave-optics phenomena | | |
| **2.0** | **Skills** | | |
| 2.1 | Solve interference and diffraction problems | Lecturing, discussion, and problem-solving. | Homework and Mid and final exams |
| 2.2 | Explain the scientific theoretical procedures governing light behavior in terms of wave optics. | | |
| **3.0** | **Values** | | |
| 3.1 | Collaborate and contribute responsibly and effectively in teamwork | presentations and discussion groups | Presentations and seminars |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Mid-Term Exam | 11 | 20% |
| **3** | Homework and Quizzes | During term | 10% |
| **4** | Lab. Reports and Exam | During term | 20% |
| **5** | Final Exam | End of the term | 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 :**
Consultation and/or academic advice will be available during the teaching staff office hours

## F. Learning Resources and Facilities

### 1. Learning Resources

| | |
|---|---|
| **Required Textbooks** | 1. Francis A. Jenkins and Harvey E. White, "Fundamentals of Optics", 4th Edition, McGraw-Hili Primls, (2001). |

| | |
|---|---|
| | 2. Orazio Svelto and David C. Hanna, "Principles of Lasers", 5th Edition, Springer, (2010). |
| **Essential References Materials** | |
| **Electronic Materials** | |
| **Other Learning Materials** | |

## 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation** (Classrooms, laboratories, demonstration rooms/labs, etc.) | 1. Classroom<br>2. Optics Laboratory |
| **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) | |

## G. Course Quality Evaluation

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Effectiveness of Teaching | Students | Questionnaires |
| Achievement of course learning outcomes | Program Leader | 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

اعتماد NCAAA T4 2020

# Course Specifications

| | |
|---|---|
| **Course Title:** | **Solid State Physics 1** |
| **Course Code:** | **PHY4701** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**G. Course Quality Evaluation** **7**

**H. Specification Approval Data** **7**

## 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 10th / 4th year** |
| **4. Pre-requisites for this course** (if any)**:** | **Quantum Mechanics 2** |
| **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 intended to introduce the physics of the solid state. It begins by investigating crystal structure, reciprocal lattice vector and the Brillouin zone. The interference pattern obtained from X-Ray diffraction by crystals is also, covered to identify the lattice structure of the solid state. Then followed by crystal binding and elastic constants. Next, this course covers crystal vibrations, followed by thermal properties of solids.

**2. Course Main Objective**

At the end of this course, the student will be able to

- Defined the Miller indices of the direction and the planes within the crystals
- Differentiate between the different types of the crystals structure.
- Differentiate between the different types of bonds in solids.
- Defined the thermal properties of solids

### 3. Course Learning Outcomes

| CLOs | | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Recognize the atomic structure and the different types of interatomic bonds. | K1 |
| 1.2 | Recognize how diffraction of X-Rays on solid matter can be used to obtain lattice structure. | K2 |
| 1.3 | Recognize the concept density of states in one, two and three dimensions. | |
| **2** | **Skills :** | |
| 2.1 | Differentiate between different Lattice types and explain the concepts of reciprocal lattice and crystal diffraction. | S1 |
| 2.2 | Explain mechanical, electrical and thermal properties of solids and explain their origin. | S2 |
| 2.3 | Evaluation of the approximations needed to build models to understand the solid state. | |
| **3** | **Values:** | |
| 3.1 | Work effectively and responsibly in teamwork. | V2 |
| | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Crystal Structure**<br>• Periodic Array of Atoms.<br>• Fundamental Types of Lattices.<br>• Index Systems for Crystal Planes<br>• Simple Crystal Structure<br>• Direct Imagining of Atomic Structure<br>• Nonideal Crystal Structures | 8 |
| 2 | **Wave Diffraction and the Reciprocal Lattice**<br>• Diffraction of Waves by Crystals.<br>• Scattered Wave Amplitude.<br>• Brillouin Zones<br>• Fourier Analysis of the Basis. | 8 |
| 3 | **Crystal Binding and Elastic Constants**<br>• Crystal of Inert Gases.<br>• Ionic Crystals.<br>• Covalent Crystals.<br>• Metals.<br>• Hydrogen Bonds.<br>• Atomic Radii.<br>• Analysis of Elastic Strains.<br>• Elastic Compliance and Stiffness Constants<br>• Elastic Waves in Cubic Crystals. | 6 |
| 4 | **Phonons I. Crystal Vibrations**<br>• Vibrations of Crystals with Monatomic Basis.<br>• Two Atoms per Primitive Basis | 6 |

| | | |
|---|---|---|
| | • Quantization of Elastic Waves.<br>• Phonon Momentum.<br>• Inelastic Scattering by Phonons. | |
| 5 | **Phonons II. Termal Properties**<br>• Phonon Heat Capacity<br>• Anharamonic Crystal Interactions.<br>• Thermal Conductivity. | 6 |
| 6 | **Free Electron Fermi Gas**<br>• Energy Level in One Dimension<br>• Effect of Temperature on the Fermi Dirac Distribution.<br>• Free Electron Gas in Three Dimensions.<br>• Heat Capacity of the Electron Gas.<br>• Electrical Conductivity and Ohm's Law.<br>• Motion in Magnetic Field<br>• Hall Effect<br>• Thermal Conductivity of Metals. | 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 | Recognize the atomic structure and the different types of interatomic bonds. | 1. Demonstrating the basic principles through lectures.<br>2. Discussing phenomena with illustrating pictures and diagrams.<br>3. Lecturing method: Board, Power point.<br>4. Discussions<br>5. Brain storming<br>6. Start each chapter by general idea and the benefit of it. | - Solve some examples<br>- Discussions during the lectures<br>- Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam. |
| 1.2 | Recognize how diffraction of X-Rays on solid matter can be used to obtain lattice structure. | | |
| | Recognize the concept density of states in one, two and three dimensions. | | |
| **2.0** | **Skills** | | |
| 2.1 | Differentiate between different Lattice types and explain the concepts of reciprocal lattice and crystal diffraction. | 1. Preparing main outlines for teaching.<br>2. Following some proofs.<br>3. Define duties for each chapter | 1. Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam<br>2. Homework. |
| 2.2 | Explain mechanical, electrical and thermal properties of solids and explain their origin. | | |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| | Evaluation of the approximations needed to build models to understand the solid state. | | |
| **3.0** | **Values** | | |
| 3.1 | Work effectively and responsibly in teamwork. | • Organize the students in a small groups (teamwork).<br>• Give students tasks of duties as a small project. | • Evaluate the scientific reports.<br>• Discussing the reports with each teamwork.<br>• Evaluate the efforts of each student in preparing the report. |
| | | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Midterm Exam | 7th | 30% |
| **2** | Homework's & Quizzes& Reports | All weeks | 20 % |
| **3** | 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** | • Introduction to Solid State Physics, 8th Edition, by Charles Kittel, John Wiley, (2005). |
| **Essential References Materials** | • Solid State Physics, by R. K. Puri & V. K. Babbar 3rd Edition, Ram Nagar, New Delhi : S. Chand, (2008).<br>• Materials Science and Engineering An Introduction 8th edition, by D. William, Jr. Callister and David G. Rethwisch, John Wiley and Sons, Inc. (2010).<br>• Solid-State Physics: An Introduction to Principles of Materials Science Fourth Edition, by Harald Ibach & Hans Luth, Springer-Verlag Berlin Heidelberg, (2009). |
| **Electronic Materials** | |

| | |
|---|---|
| **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.) | - Black Board<br>- Data show |
| **Other Resources** (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | |

## G. Course Quality Evaluation

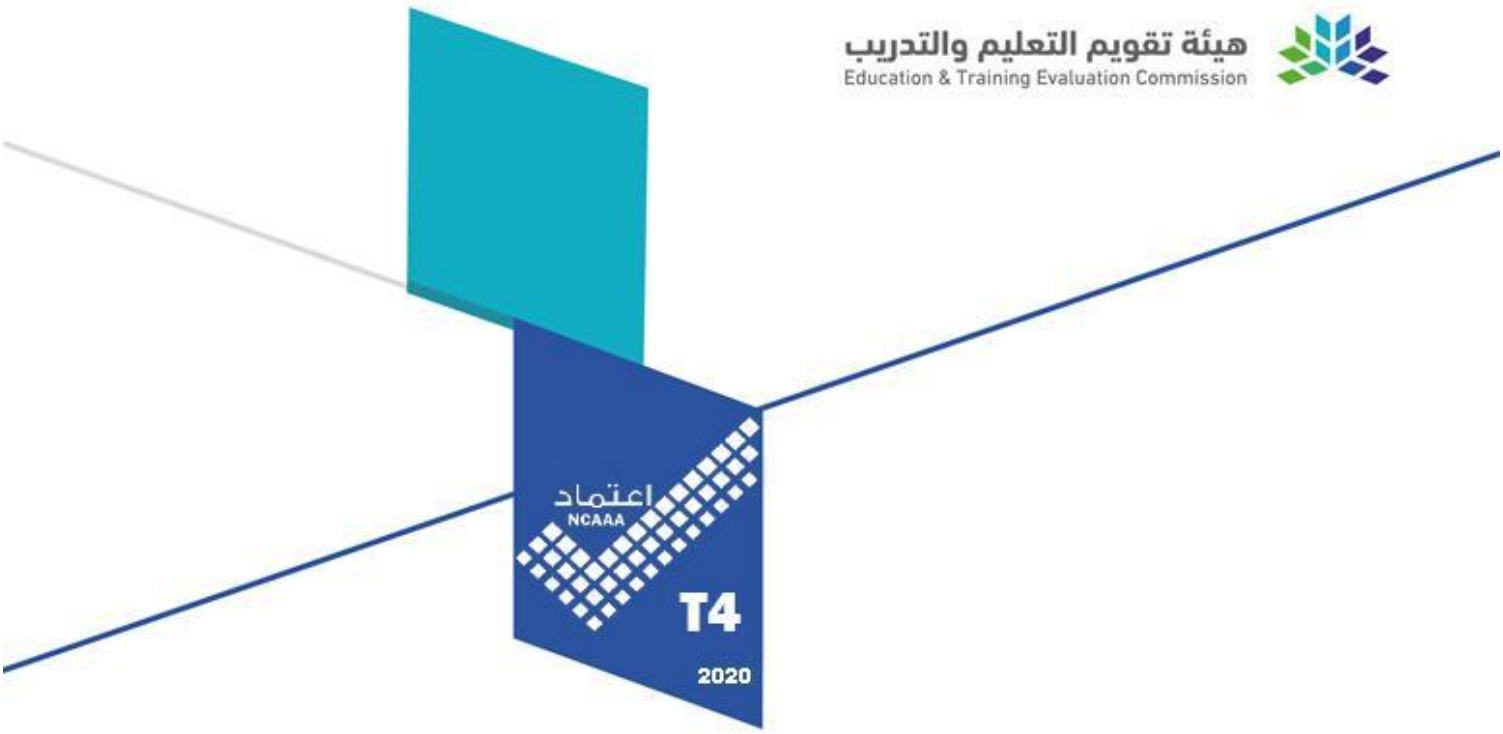
| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Effectiveness of teaching Strategies | Students | Questionnaire |
| Effectiveness of student assessment | Instructor | Exams |
| Extent of achievement of course learning outcomes | Instructor | Course report |
| Quality of 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:** | **Electromagnetism 3** |
| **Course Code:** | **PHY4306** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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## A. Course Identification

| |
|---|
| **1. Credit hours: 3** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered: Level 10th /4th year** |
| **4. Pre-requisites for this course** (if any)**: Electromagnetism 2** |
| **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 is extension of Electromagnetism 1 and 2. The course contains Maxwell's equations and their applications, electromagnetic waves, propagation of the electromagnetic wave in different media.

**2. Course Main Objective**

The student will be able to

- Apply Maxwell's equations for solving electromagnetic problems.

**3. Course Learning Outcomes**

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |

| CLOs | | Aligned PLOs |
|---|---|---|
| 1.1 | Define the physical quantities related to the electromagnetic waves. | K1 |
| 1.2 | Describe the concepts related to the electromagnetic waves using the mathematical formula. | K1 |
| **2** | **Skills :** | |
| 2.1 | Apply Maxwell's equations to solve physics problems related to the electromagnetic waves. | S1 |
| 2.2 | Explain the physical formulas related to the electromagnetic waves. | S2 |
| **3** | **Values:** | |
| 3.1 | Work effectively and responsibly in teamwork. | V2 |
| | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Maxwell's Equation's and Electromagnetic Waves**<br>• The generalization of Ampere's law, Displacement Current.<br>• Maxwell's equations.<br>• Electromagnetic energy.<br>• The wave equation.<br>• Plane monochromatic waves in nonconducting media.<br>• Plane monochromatic waves in conducting media.<br>• The spherical wave.<br>• The wave equation with sources. | 10 |
| 2 | **Application of Maxwell's Equation's**<br>• Boundary conditions.<br>• Refraction and reflection at the boundary of two non-conducting media. Normal incidence.<br>• Reflection and refraction at boundary between two conducting media.<br>• The reflection at a conducting pane (Normal incidence).<br>• Propagation between parallel conducting plates<br>• Waveguides<br>• Cavity resonators<br>• Radiation from an oscillating dipole<br>• Radiation from a half-wave antenna | 10 |
| 3 | **Electrodynamics**<br>• The Lienard-Wiechert potentials.<br>• The field of a uniformly moving point charge<br>• Radiation from an accelerated point charge<br>• Radiation fields for small velocities | 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 | Define the physical quantities related to the electromagnetic waves. | 1. Demonstrating the basic principles through lectures.<br>2. Discussing phenomena with illustrating pictures and diagrams.<br>3. Lecturing method: Board, Power point.<br>4. Discussions<br>5. Brain storming<br>Start each chapter by general idea and the benefit of it. | - Solve some examples<br>- Discussions during the lectures<br>Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam. |
| 1.2 | Describe the concepts related to the electromagnetic waves using the mathematical formula. | | |
| **2.0** | **Skills** | | |
| 2.1 | Apply Maxwell's equation to solve physics problems related to the electromagnetic waves. | 1. Preparing main outlines for teaching.<br>2. Following some proofs.<br>3. Define duties for each chapter<br>4. Encourage student to look up for information in different references. | 1. Exams (Midterm, final)<br>2. Asking about physical laws previously taught<br>3. Writing reports on selected parts of the course.<br>4. Discussions of how to simplify or analyze some phenomena |
| 2.2 | Explain the physical formulas related to the electromagnetic waves. | | |
| **3.0** | **Values** | | |
| 3.1 | Work effectively and responsibly in teamwork. | ● Organize the students in a small groups (teamwork).<br>● Give students tasks of duties as a small project. | ● Evaluate the scientific reports.<br>● Discussing the reports with each teamwork.<br>● Evaluate the efforts of each student in preparing the report. |
| | | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Midterm Exam | 8th | 30% |
| **2** | Homework's & Quizzes & Reports | All weeks | 20 % |

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 3 | 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 supervise by academic adviser in physics department and timetable for academic advice were given to the student each semester. (4 hrs per week)

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | Foundations of Electromagnetic Theory by John R. Reitz, and Frederick J. Milford (1960). |
| **Essential References Materials** | |
| **Electronic Materials** | |
| **Other Learning Materials** | • Introduction to Electrodynamics by David J. Griffiths, 4th edition.<br>• Modern Electrodynamics by Andrew Zangwill, (2013).<br>• Electromagnetic Fields by Roald K. Wangsness, 2nd edition. |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation** (Classrooms, laboratories, demonstration rooms/labs, etc.) | - Classroom |
| **Technology Resources** (AV, data show, Smart Board, software, etc.) | - Black Board<br>- Data show |
| **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

اعتماد NCAAA T4 2020

# Course Specifications

| | |
|---|---|
| **Course Title:** | **Semiconductor Physics** |
| **Course Code:** | **PHY4703** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**A. Course Identification** **3**

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**C. Course Content** **4**

**D. Teaching and Assessment** **5**

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**G. Course Quality Evaluation** **6**

**H. Specification Approval Data** **6**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered: 4th Year / Level 11** |
| **4. Pre-requisites for this course** (if any)**:**<br>**Solid State Physics 1 + Co-requisite: Solid State Physics 2** |
| **5. Co-requisites for this course** (if any)**: Solid state physics 2** |

**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** (specify) | **-** |
| | **Total** | **60** |

## B. Course Objectives and Learning Outcomes

**1. Course Description**

This course offers the fundamentals knowledge on semiconductor physics, it covers the introductory quantum theory of solids and then moves on to the semiconductor material physics, considers the physics of the semiconductor in thermal equilibrium, treats the transport phenomena of the charge carriers in a semiconductor, and the nonequilibrium excess carrier characteristics and treats the electrostatics of the basic pn junction.

**2. Course Main Objective**

1-Understanding the fundamentals of the theory of semiconductor physics
2-This course help students to understand the physics of the semiconductor in equilibrium and non equilibrium state and carrier transport phenomena.
3- The course offers an understanding the basic phenomena in semiconductor devices as pn junction.

### 3. Course Learning Outcomes

| CLOs | | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Define the nature and state of semiconductor materials | K1(I) |
| 1.2 | Describe the electrical mechanism in semiconductor materials. | K2(I) |
| **2** | **Skills :** | |
| 2.1 | Solve the problems using electrical theory of solid state | S1(I) |
| 2.2 | Analyze the transport phenomena in semiconductor device | S2(I) |
| **3** | **Values:** | |
| 3.1 | working and contribute responsibly and effectively in group | V2(P) |
| | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Introduction to the Quantum Theory of Solids**<br>● Allowed and Forbidden Energy Bands<br>● Electrical Conduction in Solids<br>● Extension to Three Dimensions<br>● Density of States Function<br>● Statistical Mechanics | **6** |
| 2 | **The Semiconductor in Equilibrium**<br>● Charge Carriers in Semiconductors<br>● Dopant Atoms and Energy Levels<br>● The Extrinsic Semiconductor<br>● Statistics of Donors and Acceptors<br>● Charge Neutrality<br>● Position of Fermi Energy Level | **8** |
| 3 | **Carrier Transport Phenomena**<br>● Carrier Drift<br>● Carrier Diffusion<br>● Graded Impurity Distribution<br>● The Hall Effect | **8** |
| 4 | **The pn Junction**<br>● Basic Structure of the pn Junction<br>● Zero Applied Bias<br>● Reverse Applied Bias<br>● Junction Breakdown<br>● Nonuniformly Doped Junctions<br>● Ideal current-voltage relationship for pn junction | **8** |
| 5 | **Practical Part:**<br>● Students will conduct various experiments in the practical part of the course. Each student will perform the experiment, collect data, extract result, and prepare a written report every week. | **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 nature and state of semiconductor materials | 1- Describe the basic principles through lectures.<br>2. Discussing phenomena of different examples with illustrating pictures and diagrams<br>3. Using Board, Power point | a) Home work<br>b) Exams<br>c) Discussions and Quizzes |
| 1.2 | Describe the electrical mechanisms in semiconductor materials. | | |
| **2.0** | **Skills** | | |
| 2.1 | Solve the problems using electrical theory of solid state | Discussing phenomena of different examples with illustrating pictures and diagrams<br>2. clarify the steps to solve a problem<br>3. Using Board, Power point | a) Home work<br>c) exams<br>d) Discussions and Quizzes |
| 2.2 | Present the transport phenomena in semiconductor device | | |
| **3.0** | **Values** | | |
| 3.1 | working and contribute responsibly and effectively in group | 1.Small group discussion.<br><br>2. encourage students to prepare research reports in groups | a. Evaluate the efforts of each student in preparing the report.<br>b. Evaluation of students presentations |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Quizzes & Home works | Every week | 5% |
| **2** | Exercises, Participation, In-Class Problem Solving | Every week | 5% |
| **3** | Midterm Exams | $6^{th}$ ,$10^{th}$ week | 20% |
| **4** | Lab. Reports and Exam | Every week | 20% |

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 5 | Final exam | 12th week | 50% |
| 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 student will be supervised by academic adviser in physics Department and academic support time table is given to the student. (O.H. 3hrs a week)

## F. Learning Resources and Facilities

### 1. Learning Resources

| | |
|---|---|
| **Required Textbooks** | **Semiconductor Physics and Devices**<br>*Basic Principles,* **Fourth Edition**<br>**Donald A. Neamen,** *University of New Mexico* |
| **Essential References Materials** | 1. Introduction to Solid State Physics. C. Kittel / 8th edition (2005).<br>2. Solid State Physics, by R. K. Puri & V. K. Babbar 3rd Edition (2008). |
| **Electronic Materials** | |
| **Other Learning Materials** | |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | Lecture room for 30 students<br>Laboratory for Semiconductors there is a special course for laboratory related to Semiconductors |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | Data show |
| **Other Resources**<br>(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | Library |

## G. Course Quality Evaluation

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Questionaries | teachers | Open discussion in the class room at the end of the lectures |
| | | |

**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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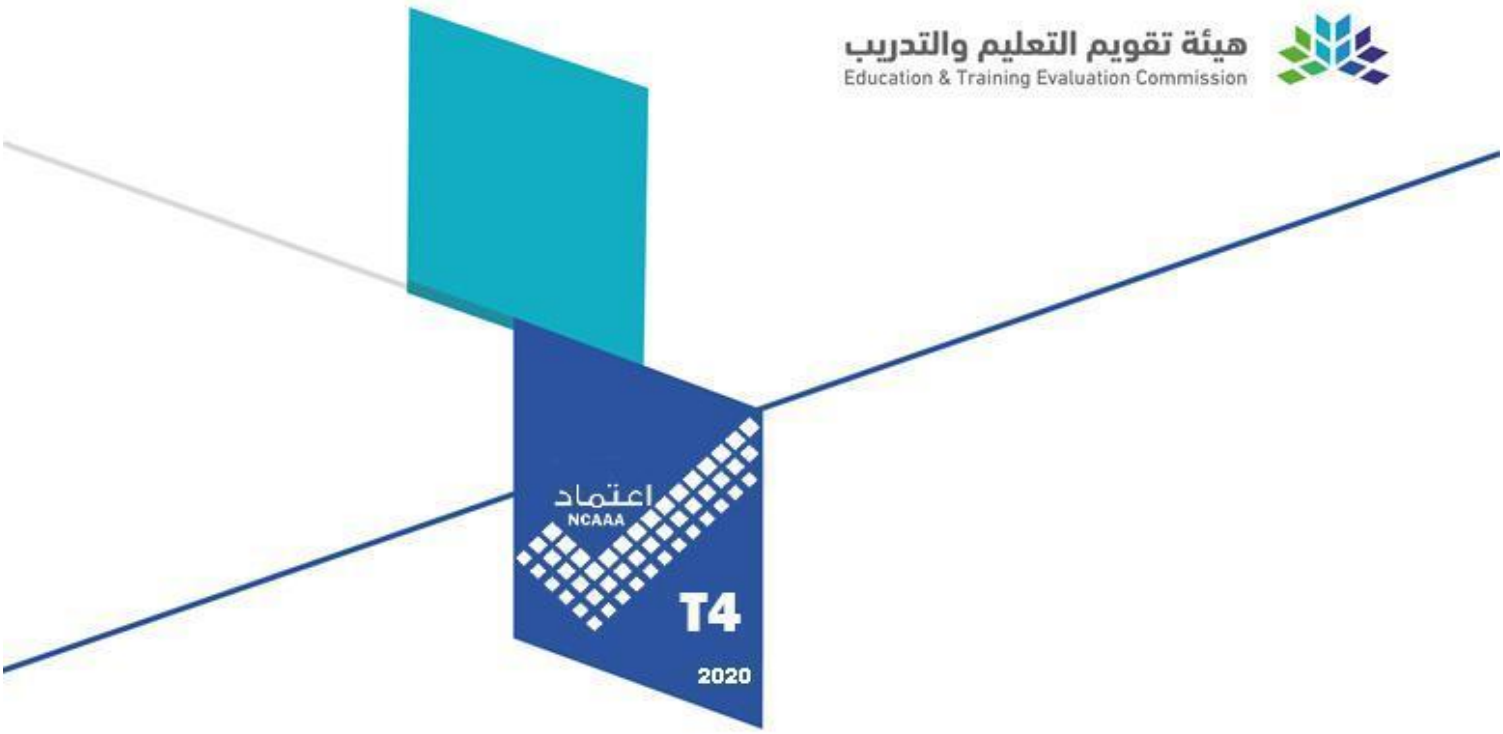
Education & Training Evaluation Commission




# Course Specifications

| | |
|---|---|
| **Course Title:** | **Solid State Physics 2** |
| **Course Code:** | **PHY4702** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Science** |
| **Institution:** | **Umm Al-Qura University** |

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**A. Course Identification** **3**

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**B. Course Objectives and Learning Outcomes** **3**

1. Course Description 3

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**C. Course Content** **4**

**D. Teaching and Assessment** **5**

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods 5

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**E. Student Academic Counseling and Support** **6**

**F. Learning Resources and Facilities** **6**

1.Learning Resources 6

2. Facilities Required 7

**G. Course Quality Evaluation** **7**

**H. Specification Approval Data** **7**

## A. Course Identification

| |
|---|
| **1. Credit hours:** 4 |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered:** Level 11th / 4rd year |
| **4. Pre-requisites for this course** (if any)**:**<br>**Solid State Physics 1 + Co-requisite: Semiconductor Physics** |
| **5. Co-requisites for this course** (if any)**: Semiconductor Physics** |

**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 covers the magnetic properties of solids, dielectric properties of solids, superconducting properties of the solids, optical properties of solids.

**2. Course Main Objective**

At the end of this course, the student will be able to

- Define the magnetic properties of the solids.
- Differentiate between the different types of the magnetic materials.
- Define the dielectric properties of the solids.
- Differentiate between the different types of dielectric materials.
- Differentiate between the different types of superconducting materials.

### 3. Course Learning Outcomes

| CLOs | | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Define the physical quantities related to magnetic, dielectric, and superconducting properties of solids. | K1 |
| 1.2 | Describe the physical quantities and physical laws related to magnetic, dielectric, and superconducting properties using mathematical formula. | K2 |
| **2** | **Skills :** | |
| 2.1 | Solve some problems related to solid state using suitable laws of physics | S1 |
| 2.2 | Explain the physical phenomena related to the magnetic, dielectric, and superconducting properties of solids. | S2 |
| **3** | **Values:** | |
| 3.1 | Work effectively and responsibly in teamwork. | V2 |
| | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Fermi Surface and Metals**<br>• Construction of Fermi Surfaces.<br>• Electron Orbits, Hole Orbits, and Open Orbits.<br>• Calculation of Energy Bands | 6 |
| 2 | **Superconductivity**<br>• Experimental Survey.<br>• Theoretical Survey.<br>• High Temperature Superconductors | 6 |
| 3 | **Diamagnetism and Paramagnetism**<br>• Langevin Diamagnetism Equations<br>• Quantum Theory of Diamagnetism of Mononuclear Systems.<br>• Paramagnetism.<br>• Quantum Theory of Paramagnetism.<br>• Paramagnetic Susceptibility of Conduction Electrons. | 6 |
| 4 | **Ferromagnetism and Antiferromagnetism**<br>• Ferromagnetic Order.<br>• Magnons<br>• Neutron Magnetic Scattering.<br>• Ferrimagnetic Order.<br>• Antiferromagnetic Order.<br>• Ferromagnetic Domains.<br>• Single Domain Particles. | 6 |
| 5 | **Plasmons, Polaritons, and Polarons**<br>• Dielectric Function of Electron Gas.<br>• Plasmons.<br>• Electrostatic Screening. | 6 |

| | | |
|---|---|---|
| | • Polaritons<br>• Electron-Electron Interaction.<br>• Electron-Phonon Interaction.<br>• Polarons. | |
| 6 | **Optical process and Excitons**<br>• Optical Reflectance.<br>• Excitons<br>• Raman Effect in Crystals<br>• Energy Loss of Fast Particles in a Solid | 5 |
| 7 | **Dielectric and Ferroelectrics**<br>• Macroscopic Electric Field.<br>• Local Electric Field at an Atom.<br>• Dielectric Constant and Polarizability<br>• Structural Phase Transitions.<br>• Ferroelectric Crystals.<br>• Displacive Transitions. | 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 | Define the physical quantities related to magnetic, dielectric, and superconducting properties of solids. | 1. Demonstrating the basic principles through lectures.<br>2. Discussing phenomena with illustrating pictures and diagrams.<br>3. Lecturing method: Board, Power point.<br>4. Discussions<br>5. Brain storming<br>6. Start each chapter by general idea and the benefit of it. | - Solve some examples<br>- Discussions during the lectures<br>- Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam. |
| 1.2 | Describe the physical quantities and physical laws related to magnetic, dielectric, and superconducting properties using mathematical formula. | | |
| **2.0** | **Skills** | | |
| 2.1 | Solve some problems related to solid state using suitable laws of physics | 1. Preparing main outlines for teaching.<br>2. Following some proofs.<br>3. Define duties for each chapter | 1. Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam<br>d) Practical exam.<br>2. Homework. |
| 2.2 | Explain the physical phenomena related to the magnetic, dielectric, and superconducting properties of solids. | | |
| **3.0** | **Values** | | |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| 3.1 | Work effectively and responsibly in teamwork. | • Organize the students in a small groups (teamwork).<br>• Give students tasks of duties as a small project. | • Evaluate the scientific reports.<br>• Discussing the reports with each teamwork.<br>• Evaluate the efforts of each student in preparing the report. |
| | | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Midterm Exam | 8th | 20% |
| **2** | Practical Part | | 20% |
| **3** | Homework's & Quizzes | All weeks | 10 % |
| **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** | • Introduction to Solid State Physics, 8th Edition, by Charles Kittel, John Wiley, (2005). |
| **Essential References Materials** | • Solid State Physics, by R. K. Puri & V. K. Babbar 3rd Edition, Ram Nagar, New Delhi: S. Chand, (2008).<br>• Materials Science and Engineering An Introduction 8th edition, by D. William, Jr. Callister and David G. Rethwisch, John Wiley and Sons, Inc. (2010).<br>• Solid-State Physics: An Introduction to Principles of Materials Science Fourth Edition, by Harald Ibach & Hans Luth, Springer-Verlag Berlin Heidelberg, (2009). |
| **Electronic Materials** | |
| **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.) | - Black Board<br>- Data show |
| **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:** | **Radiation Physics** |
| **Course Code:** | **PHY4603** |
| **Program:** | **B.Sc** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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## A. Course Identification

| |
|---|
| **1. Credit hours:** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered:**<br>Level 9 / 3th Year |
| **4. Pre-requisites for this course** (if any)**:**<br>Nuclear Physics 2 |
| **5. Co-requisites for this course** (if any)**:**<br>No |

**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** | 0 |
| 3 | **Tutorial** | 0 |
| 4 | **Others** (specify) | 0 |
| | **Total** | 30 |

## B. Course Objectives and Learning Outcomes

| |
|---|
| **1. Course Description**<br>The course will cover the principles of radiation physics and will provide a conceptual and scientific background in radiation physics sufficient to enable students to make proper assessment of radiation hazards on human and in the environment. |
| **2. Course Main Objective**<br>To provide the technical background needed to proper understanding of radioactivity and radioactive materials, quantitative risk assessment for radiation hazards on human and in the environment. |

### 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Describe facts, principle and concepts of radiation Physics | K1 (M) |
| 1.2 | Define principal Radiation Quantities and Units | K1(M)<br>K2(M) |
| **2** | **Skills :** | |
| 2.1 | Compute the internal and external radiation doses. | S1(M) |
| 2.2 | Explain radiation detectors and radiation dosimeters. | S2 (M) |
| **3** | **Values:** | |
| 3.1 | Apply the radiation protection measures to protect people and environment which is a moral value in the society. | V1 (M) |
| 3.2 | Work effectively in groups and exercise leadership when appropriate. | V2 (M) |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Radioactivity and Radiation**<br>1. Definitions<br>2. Radiation sources<br>3. Radioactivity calculations<br>4. Radiation Types<br>5. Natural Radioactivity | 4 |
| 2 | **Interaction of Radiation with matter**<br>1. Interaction of heavy charged particles with matter<br>2. Interaction of beta particles with matter<br>Interaction of gamma and x-ray with matter 3.<br>4. Interaction of neutrons with matter | 6 |
| 3 | **Radiation Quantities and Units**<br>1. Radioactivity<br>Radiation flux density 2.<br>Exposure. 3.<br>Absorbed dose. 4.<br>Equivalent dose 5.<br>6. Effective dose | 4 |
| 4 | **Biological Effects of radiation**<br>1. Interaction of the ionizing radiation with living tissue and cell.<br>2. The deterministic and stochastic effects.<br>3. The late effects.<br>4. The hereditary effects | 5 |

| | | |
|---|---|---|
| 5 | **Radiation Detection and measurements**<br>1. Radiation Detectors<br>2. Particle-Counting Instruments<br>3. Dose-Measuring Instruments<br>4. Neutron Measurements<br>5. Calibration<br>6. Counting Statistics. | 4 |
| 6 | **Radiation dosimetry**<br>1. Dose calculations<br>2. Internal Dosimetry<br>3. External Dosimetry<br>4. Neutron Dosimetry.<br>5. Radiation hazard assessment | 4 |
| 7 | **Radiation Safety**<br>1. Basic principles<br>2. Basic practices<br>3. Dose Limits<br>4. Legal requirements | 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 | Describe facts, principle and concepts of radiation Physics | 1- Demonstrating the basic principles through lectures.<br>2. Discussing phenomena with illustrating pictures and diagrams<br>3. Lecturing method: Board, Power point<br>4. Discussions<br>5. Brain storming<br>6. Start each chapter by general idea and the benefit of it. | Quizzes (E-learning)<br>Mid- term exam<br>Final exam<br>Oral exams<br>Discussions during the lectures.<br>Homework.<br>Writing scientific Reports.<br>Group Work |
| 1.2 | Define principal Radiation Quantities and Units | | |
| **2.0** | **Skills** | | |
| 2.1 | Compute the internal and external radiation doses. | 1. Perform mathematical analysis of radiation laws and proofs | Quizzes (E-learning)<br>Mid- term exam<br>Final exam |
| 2.2 | Explain radiation detectors and radiation dosimeters. | | |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| 2.3 | Use of scientific terms in oral and written communication. | 2.Perform Radiation detection and measurements<br>3.practicing problem solving<br>4.practicing scientific writing and speaking | Oral exams<br>Discussions during the lectures.<br>Homework.<br>Writing scientific Reports.<br>Group Work |
| **3.0** | **Values** | | |
| 3.1 | Apply the radiation protection measures to protect people and environment which is a moral value in the society. | Group Work<br>Practical Ethical Assignment | Scientific reports.<br>Evaluation of group work<br>Evaluation of the ethical assignment<br>Evaluation of students presentations |
| 3.2 | Work effectively in groups and exercise leadership when appropriate. | | |
| … | | | |

**2. Assessment Tasks for Students**

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 2 | Term works | All weeks | 20% |
| 3 | Mid-term exam | 5th week | 30% |
| 4 | Final exam | 12th 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 :**

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

## F. Learning Resources and Facilities

**1.Learning Resources**

| | |
|---|---|
| **Required Textbooks** | Introduction to Health Physics. Herman Cember. 2009. The McGraw-Hill Companies, Inc<br>James E. Turner. Atoms, radiation, and radiation protection: Wiley-VCH 3rd ed; 2007 |
| **Essential References Materials** | "Radiation Physics for Medical Physicist", E. B. Podgorsak, Ed. Springer. 2006 |

| | |
|---|---|
| | Fundamentals of ionizing radiation dosimetry. Pedro Andreo, Davis T.Burns, Alan E. Nahum, Jan Seuntjens, and Frank H. Attix.: Wiley-VCH; 2017. |
| **Electronic Materials** | http://www.lnhb.fr/nuclear-data/nuclear-data-table/<br>https://www.nrc.gov/reading-rm/basic-ref/students/for-educators.html |

**2. Facilities Required**

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | There are enough classrooms provided with a good accommodation, including good air condition, good Data show, suitable white board<br>There are enough laboratories for experimental physics, provided with air conditions, good data show, and experimental equipment. |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | In each class room and laboratories, there is a data show, and board. |
| **Other Resources**<br>(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | NON<br>. |

## G. Course Quality Evaluation

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| · Course evaluation by student | Instructor | Direct oral communication |
| · Students– faculty meetings | Group of students | communication |
| · Peer consultation on teaching<br>· Departmental council discussions<br>· Discussions within the group of faculty teaching the course | Instructor | Oral test and quizzes |
| · Providing samples of all kinds of assessments in the departmental course portfolio of each course<br>· Assigning group of faculty members teaching the same course to grade the same questions for various students. | Instructor | Exams |
| The course material and learning outcomes are periodically reviewed and the changes to be taken are approved in the departmental and higher councils. | Instructor + The head of department | Course report |

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| · The head of department and faculty take the responsibility of implementing the proposed changes in the course materials. | | |

**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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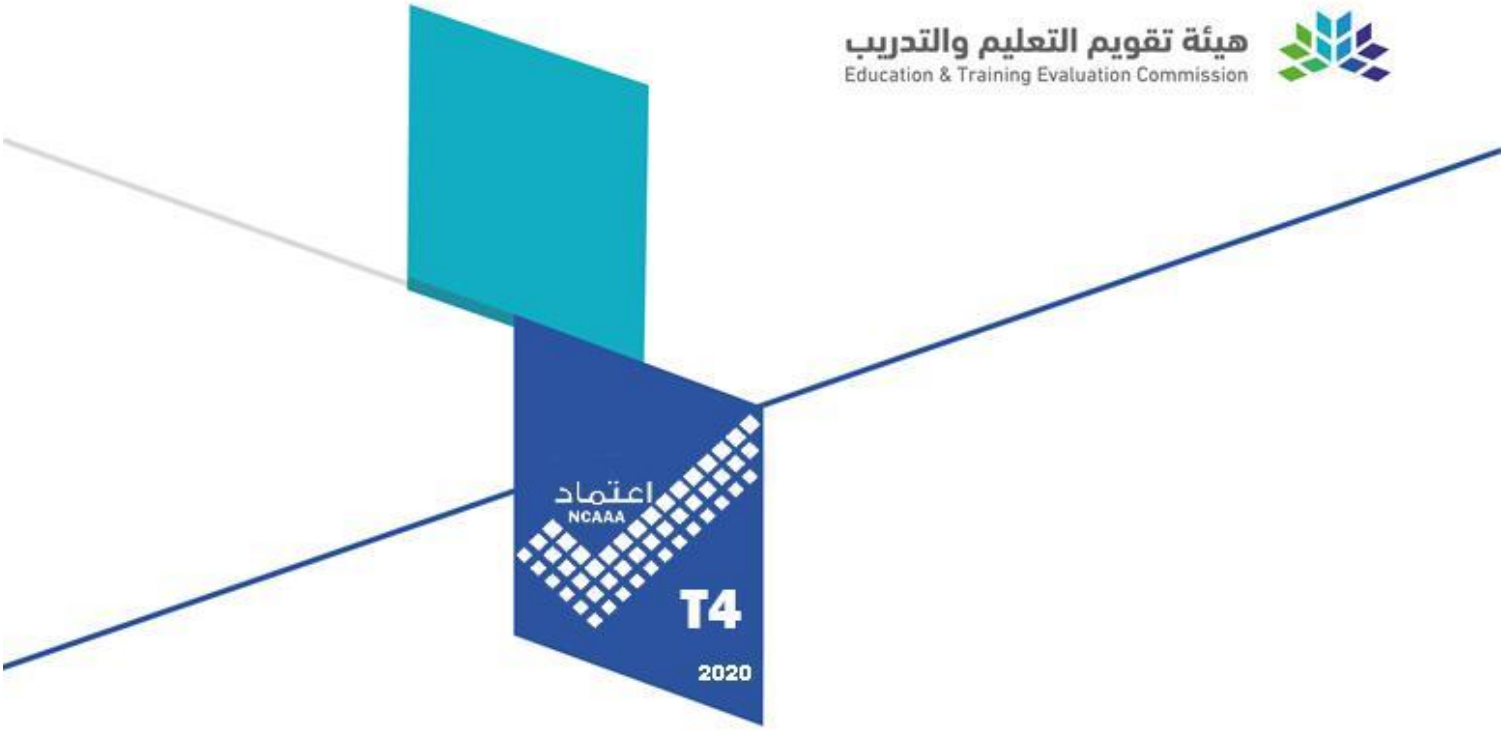
Education & Training Evaluation Commission




# Course Specifications

| | |
|---|---|
| **Course Title:** | **Graduation Project** |
| **Course Code:** | **PHY4802** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**C. Course Content** **4**

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**E. Student Academic Counseling and Support** **5**

**F. Learning Resources and Facilities** **5**

1.Learning Resources 5

2. Facilities Required 5

**G. Course Quality Evaluation** **5**

**H. Specification Approval Data** **6**

## A. Course Identification

| |
|---|
| **1. Credit hours: 3 hrs** |
| **2. Course type**<br>**a.** University [√] College [√] Department [√] Others [ ]<br>**b.** Required [√] Elective [ ] |
| **3. Level/year at which this course is offered: 12 Level /4th year** |
| **4. Pre-requisites for this course** (if any)**: Agreement of the Department council** |
| **5. Co-requisites for this course** (if any)**:** |

**6. Mode of Instruction** (mark all that apply)

| Percentage | Contact Hours | Mode of Instruction | No |
|---|---|---|---|
| - | - | **Traditional classroom** | **1** |
| - | - | **Blended** | **2** |
| - | - | **E-learning** | **3** |
| - | - | **Distance learning** | **4** |
| 100% | 30 | **Other** | **5** |

**7. Contact Hours** (based on academic semester)

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

## B. Course Objectives and Learning Outcomes

**1. Course Description**

Preparatory studies of the literature and data collection for the graduation project in a particular area of concentration and under the supervision of one of the faculty members. The course covers directed readings in the literature of physics, introduction to research methods, seminar discussions dealing with special physics topics of current interest. Planning, design, construction and management of physics project. Writing a technical report.

**2. Course Main Objective**

The main aim of this course is to prepare students for the practical tasks of the work place after graduation. This includes building his/her ability to perform a complete project.

Upon completion of this course, the student should be able to:

- Structure a working schedule for the project.
-Present Clear aim and objectives of the graduation project.
- Show a deep knowledge within the chosen field of physics.

- Search and in a critical way interpret and compile relevant scientific literature.
- In a creative way delimit a scientific problem, plan a scientific study, choose appropriate methods, carry out the study, interpret and evaluate the results and, if applicable, generate falsifiable a hypotheses to explain the observations all within given time frames.
-Present the literature review with relation to the selected topic.
-Write a technical report.
-Defend the technical report in front of a committee and be able to answer questions asked by the committee members.

## 3. Course Learning Outcomes

| CLOs | | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Description of research process. | K1 |
| 1.2 | Writing a scientific report | K1 |
| 1.3 | | K1 |
| 1.4 | | |
| 1.5 | | |
| **2** | **Skills :** | |
| 2.1 | Writing a scientific report. | S1 |
| 2.2 | Collecting and analyzing data | S2 |
| 2.3 | | S2 |
| 2.4 | | S2 |
| 2.5 | | S3 |
| **3** | **Values:** | |
| 3.1 | Work independently. | V1 |
| 3.2 | Cooperating effectively with coworkers and colleagues | V2 |
| 3.3 | | V3 |
| 3... | | |

## C. Course Content (Not applicable)

| Contact Hours | List of Topics | No |
|---|---|---|
| | | 1 |
| | | 2 |
| | | 3 |
| | | 4 |
| | | 5 |
| | | 6 |
| | | 7 |
| | | ... |
| | **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 | Description of research process. | • Each student will do his project under the supervision of a staff member.<br>• At the end of the project, student should write a scientific report.<br>• The student should give an oral presentation at the end of the semester. | • Writing a report.<br>• Oral presentation |
| 1.2 | Writing a scientific report | | |
| 1.3 | | | |
| **2.0** | **Skills** | | |
| 2.1 | Writing a scientific report. | reparing main outlines for teaching | 1- Writing a report<br>2- Oral presentation |
| 2.2 | Collecting and analyzing data | | |
| 2.3 | | | |
| 2.4 | | | |
| 2.5 | | | |
| **3.0** | **Values** | | |
| 3.1 | Work independently. | 1- Search through the internet and use the library.<br>2- Lab work.<br>3- Case Study.<br>4- Small group discussion.<br>5- Enhance educational skills.<br>6- Develop their interest in Science through :( lab work, field trips, visits to scientific and research.<br>7- Encourage the student to attend lectures regularly<br>Give students tasks of duties | • Evaluate the efforts of each student in preparing the report.<br>• Evaluate the scientific values of reports.<br>• Evaluate the work in team<br>• Evaluation of the role of each student in lab group assignment<br>• Evaluation of students presentations |
| 3.2 | Cooperating effectively with coworkers and colleagues | | |
| 3.3 | | | |

### 2. Assessment Tasks for Students

| Percentage of Total Assessment Score | Week Due | Assessment task* | # |
|---|---|---|---|
| 10% | continuous | Scientific activities | 1 |
| 10% | continuous | Collection of Data | 2 |

| Percentage of Total Assessment Score | Week Due | Assessment task* | # |
|---|---|---|---|
| 20% | continuous | Doing a research | 3 |
| 50% | W 9 | Writing report | 4 |
| 10% | W10 | Final oral presentation | 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 student will supervise by academic adviser in physics Department and the time table for academic advice were given to the student each semester.

## F. Learning Resources and Facilities

### 1.Learning Resources (Not applicable)

| | |
|---|---|
| **Required Textbooks** | |
| **Essential References Materials** | |
| **Electronic Materials** | |
| **Other Learning Materials** | |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation** (Classrooms, laboratories, demonstration rooms/labs, etc.) | • Classroom<br>• Library<br>• Laboratory |
| **Technology Resources** (AV, data show, Smart Board, software, etc.). | data show, software |
| **Other Resources** (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list.) | • Computer room<br>• Scientific calculator. |

## G. Course Quality Evaluation

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| 1. Questionnaries | another staff member | Revision of student report by another staff member. |
| 2. Open discussion at the end of the lectures | Instructor | Analysis the grades of students. |
| | | |
| | | |
| | | |
| | | |
| | | |

**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** | Atif Ismail |
| **Reference No.** | |
| **Date** | |

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Education & Training Evaluation Commission

# Course Specifications

| | |
|---|---|
| **Course Title:** | **Electronics** |
| **Course Code:** | **PHY4704** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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1.Learning Resources 10

2. Facilities Required 10

**G. Course Quality Evaluation** **10**

**H. Specification Approval Data** **10**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered: 4th Year / Level 12** |
| **4. Pre-requisites for this course** (if any)**:** Semiconductor Physics |
| **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** (specify) | |
| | **Total** | 60 |

## B. Course Objectives and Learning Outcomes

**1. Course Description**

This course offers the fundamentals knowledge on electronics; it covers an introduction on conduction mechanisms in semiconductors, devices as pn junction (diode) and some applications of diode in electrical circuits. Treats the characteristics, application of Bipolar junction transistors and the Field effect transistors. Presents the Operational amplifiers and its applications.

**2. Course Main Objective**

1-Understanding the properties of electronic devices as diode or transistors.
2-This course help students to understand electrical circuit analysis.
3- The course introduces basic principles of amplification of weak electrical signals.

### 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Determine the characteristics of diodes and transistors | K1(I) |
| 1.2 | Describe the electrical mechanism in electronic device. | K2(I) |
| **2** | **Skills :** | |
| 2.1 | Solve the problems using electrical circuit analysis | S2(I) |
| 2.2 | Explain the signal treatment in electronic device | S1(I) |
| **3** | **Values:** | |
| 3.1 | Collaborate and contribute responsibly and effectively in teamwork | V2(P) |
| | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Semiconductor Basics**<br>● Revision of the fundamental concepts of semiconductors electric properties and pn junction structure | **3** |
| 2 | **Diode Applications**<br>● Half- Wave Rectifiers, Full-Wave Rectifiers<br>● Power Supply Filters and Regulators<br>● Diode Limiting and Clamping Circuits | **3** |
| 3 | **Specials diodes**<br>● Zener Diodes, Zener diode applications, Varactor Diodes<br>● Optical Diodes | **3** |
| 4 | **Bipolar Transistors (BjTs)**<br>● Transistor Structure, Basic Transistor Operation<br>● Transistor Characteristics and parameters<br>● The Transistor as an Amplifier, the Transistor as a Switch | **3** |
| 5 | **Transistor Bias Circuits**<br>● The DC Operating Point, Voltage-Divider Bias<br>● Other Bias Methods | **3** |
| 6 | **BjT Amplifiers**<br>● Amplifier Operation, transistor AC Equivalent Circuits<br>● The Common-Emitter, Collector , Base Amplifier<br>● The Differential Amplifier | **3** |
| 7 | **Field Effect Transistor (FETs)**<br>● The JFET, Characteristics , Parameters and Biasing<br>● MOSFET Characteristics and parameters, FET Amplifiers | **3** |
| 8 | **Power Amplifiers**<br>● Class A Power Amplifiers<br>● Class B and Class AB Push-Pull Amplifiers<br>● Class C Amplifiers | **3** |
| 9 | **Amplifier Frequency Response**<br>● Basic Concepts, Low-Frequency and high-Frequency Amplifier Response , total Amplifier Frequency Response<br>● Frequency Response of Multistage Amplifiers | **3** |

| | | |
|---|---|---|
| 10 | **Operational Amplifiers**<br>● Introduction to Operational Amplifiers, Op-Amp Input Modes and Parameters<br>● Some Typical op-amp Circuits, Negative Feedback | **3** |
| 11 | **Practical Part:**<br>● Students will conduct various experiments in the practical part of the course. Each student will perform the experiment, collect data, extract result, and prepare a written report every week. | **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 characteristic of diode and transistor | 1- Describe the basic principles through lectures.<br>2. Discussing phenomena of different examples with illustrating pictures and diagrams<br>3. Using Board, Power point | a) Home work<br>b) Exams<br>c) Discussions and Quizzes |
| 1.2 | Describe the electrical mechanism in electronic device. | | |
| **2.0** | **Skills** | | |
| 2.1 | Solve the problems using electrical circuit analysis | Discussing phenomena of different examples with illustrating pictures and diagrams<br>2. clarify the steps to solve a problem<br>3. Using Board, Power point | a) Home work<br>b) Exams<br>c) Discussions and Quizzes |
| 2.2 | Explain the signal treatment in electronic device | | |
| **3.0** | **Values** | | |
| 3.1 | Collaborate and contribute responsibly and effectively in teamwork | 1. encourage students to prepare research reports in groups<br>2. Small group discussion. | a. Evaluate the efforts of each student in preparing the report.<br>b. Evaluation of students presentations |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Quizzes & Home works | Every week | 5% |
| **2** | Exercises, Participation, In-Class Problem Solving | Every week | 5% |
| **3** | Midterm Exams | 6th week | 20% |
| **4** | Lab. Reports and Exam | Every week | 20% |

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 5 | Final exam | End of the term | 50% |
| 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 student will be supervised by academic adviser in physics Department and academic support time table is given to the student. (O.H. 3hrs a week)

## F. Learning Resources and Facilities

### 1. Learning Resources

| | |
|---|---|
| **Required Textbooks** | ELECTRONIC DEVICES, Ninth Edition, Thomas L. Floyd |
| **Essential References Materials** | The Art of Electronics, by Paul Horowitz, and Winfield Hill 3rd Edition (2015) |
| **Electronic Materials** | 1. Physics is Beautiful \| Free, interactive physics lessons<br>2. Khan Academy Physics \| Physics videos<br>3. The Feynman Lectures on Physics<br>4. PhET Simulations \| Online physics simulations |
| **Other Learning Materials** | |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation** (Classrooms, laboratories, demonstration rooms/labs, etc.) | Lecture room for 30 students<br>Laboratory for electronics, there is a special course for laboratory related to electronics |
| **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) | Library |

## G. Course Quality Evaluation

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Questionnaires' | teachers | Open discussion in the class room at the end of the lectures |
| | | |

**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:** | **Computational Physics** |
| **Course Code:** | **PHY4205** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**F. Learning Resources and Facilities** **5**

1.Learning Resources 5

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**G. Course Quality Evaluation** **5**

**H. Specification Approval Data** **6**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4 hrs** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☑ Elective ☐ |
| **3. Level/year at which this course is offered: 12/4th year** |
| **4. Pre-requisites for this course** (if any)**: Theoretical Methods in Physics (4)** |
| **5. Co-requisites for this course** (if any)**:** |

**6. Mode of Instruction** (mark all that apply)

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

**7. Contact Hours** (based on academic semester)

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

## B. Course Objectives and Learning Outcomes

### 1. Course Description

Computational Physics is designed to cover techniques used in modeling physical systems numerically and analyzing data. It is designed to help students gain experience with programming languages. The course will also demonstrate the processes of these programming languages. Note however that this is not a course in computer programming! Instead, this course is designed to use computer programming to solve scientific problems in physics. One of the most common programming languages used in science (such as FORTRAN, C++, or Python, may be MATLAB or equivalent software) will be chosen by the instructor. Computational techniques will be used to numerically solve systems of linear equations, ordinary differential equations (ODE), and orbit problems with numerical methods. In addition, the students also will be introduced to data fitting techniques.

Computational Physics is a problem-solving course, that is, the measure of a student's progress is demonstrated by the ability to solve numerical problems in physics using computer programming methods. Upon completion of this course, the student will possess the basic knowledge of numerical modeling and data analysis that may be required for graduate study or in a position at a technical corporation.

Besides learning how to solve numerical problems with a computer, the student also will gain experience writing manuscripts in a scientific journal style using the mark-up language LATEX.

### 2. Course Main Objective

The use of computers for computation and simulation is an integral part of the physics discipline. Moreover, computational physics has become as important as theoretical and experimental physics. Students will learn basic skills in programming in the context of solving physics problems. It is assumed that the student has no computer programming experience, and only modest understanding of physics at an elementary level. Through a variety of projects, the students are to obtain a deeper understanding of physical principles they already learned by solving physics problems and implementing computer simulations. This project-oriented, active learning approach allows students to work more comfortably at their own pace, where the student is engaged in solving problems in exploratory mode to gain better physical insight, similar to what is done in the context of research. In short, the objective of this class is to introduce the student to how computers are used in physics, and for the student to develop the basic skills that will be immediately useful in future classes, and in your career as your skills develop further.

### 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Demonstrate knowledge in essential methods and techniques for numerical computation in physics | K1 (I,p) |
| 1.2 | Apply programming language and relevant packages to solve simple physical problems | K2 (p) |
| 1.3 | Employ appropriate numerical methods for solving ordinary differential equations that commonly arise in physics, also for modeling various physical systems | K2 (p) |
| 1... | | |
| **2** | **Skills :** | |
| 2.1 | Model and analyze physical systems . | S1(p) |

| CLOs | | Aligned PLOs |
|---|---|---|
| 2.2 | Integrate programming with experimental data. | S2(p) |
| 2.3 | | |
| 2... | | |
| **3** | **Values:** | |
| 3.1 | Manage a project (modeling or simulation) with due attention to time and resource management | V1(p) |
| 3.2 | Participate effectively in multidisciplinary and/or interdisciplinary teams | V2(p) |
| 3.3 | | |
| 3... | | |

## C. Course Content

| Contact Hours | List of Topics | No |
|---|---|---|
| 12 | **Instructor could choose any one of the following programming Language: Python, CPP, Fortran, or (MATLAB or equivalent software).**<br><br>**Programming:**<br>How to compile, run, and build the chosen programming software script or code files on different operating systems (Windows and Linux, and may be MacOS).<br>Variables and arrays. Displaying output data, data files, scalar and array operations, built in functions, Conditional Statement: IF, IF Else and Nested IF Else, loops. | |
| 12 | **Linear Algebra:**<br>Solving a linear system, Gaussian elimination . Finding eigenvalues and eigenvectors. Matrix (LU and QR) factorizations and examples. | 2 |
| 9 | **Graphics and data analysis:**<br>Plotting + regression and curve fitting. | 3 |
| 9 | **Numerical integration and differentiations:**<br>Integration, differentiations, solving first order and second order Linear equation. | 4 |
| 3 | **Modelling and Simulation:** Harmonic motion example using a variety of numerical approaches. | 5 |
| 3 | **Modelling and Simulation:**<br>Quantum Mechanics: Schrodinger Equation. | 6 |
| 3 | **Modelling and Simulation:**<br>The planetary motion | 7 |
| 9 | **LATEX:**<br>Writing mathematical equations using LaTeX. | 8 |
| 60 | **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 | Demonstrate knowledge in essential methods and techniques for numerical computation in physics | Lecture | Written exam and Homework reports |
| 1.2 | Apply Python, CPP, or Fortran programming language and relevant packages to solve simple physical problems | Lecture Discussion | Written exam |
| 1.3 | Employ appropriate numerical methods for solving ordinary differential equations that commonly arise in physics, also for modeling various physical systems | | |
| **2.0** | **Skills** | | |
| 2.1 | model and analyze physical systems | Lectures | Written exam and Homework reports |
| 2.2 | work with experimental and field data. | Groups discussion | Written exam; and summarizing research papers |
| 2.3 | | | |
| **3.0** | **Values** | | |
| 3.1 | Manage a project (modelling or simulation) with due attention to time and resource management | Groupe assignments Clarify deadlines for delivery of assignments, reports and exams | Evaluate the efforts of each student in preparing the report. Evaluate the work in teams. Evaluation of students presentations. |
| 3.2 | Participate effectively in multidisciplinary and/or interdisciplinary teams | | |
| 3.3 | | | |

### 2. Assessment Tasks for Students

| Percentage of Total Assessment Score | Week Due | Assessment task* | # |
|---|---|---|---|
| 10% | continuous | Assignments, Interaction during lectures, and others | **1** |
| 20% | 7 | Midterm exam | **2** |
| 20% | 12 | Lab Exam | **3** |
| 50% | 13 | Final exam | **4** |
| | | | **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 :**

4 Hours per week during office hours, in the instructor's office or by appointment.

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | -Computational Modeling and Visualization of Physical Systems with Python, Jay Wang (2016) Wiley-VCH. ISBN: 978-1-119-17918-4 |
| **Essential References Materials** | -Numerical Recipes in Fortran 90, William H. Press, Saul A. Teukolsky, William T. Vetterling, Brian P. Flannery, Michael Metcalf, Cambridge University Press; 2 edition (September 28, 1996)<br>-Object oriented programming in C++, Robert Lafore, fourth edition, Pearson and Sam Publishing (2001), ISBN 0-672-32308-7.<br>-MATLAB, "An introduction with Applications", fourth edition, Amos Gilat, John Wiley and Sons, INC, 2011, ISBN-13 978-0-470-76785-6. |
| **Electronic Materials** | https://www.tug.org/twg/mactex/tutorials/ltxprimer-1.0.pdf<br><br>https://www.programiz.com/python-programming<br><br>https://www.programiz.com/cpp-programming<br><br>https://web.chem.ox.ac.uk/fortran/fortran1.html |
| **Other Learning Materials** | MATLAB |

### 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | Lecture room,<br>Computer room,<br>Library. |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | data show |
| **Other Resources**<br>(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | MATLAB, OCTAVE, LaTeX, C++, FORTRAN, AND PYTHON |

## G. Course Quality Evaluation

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Student Feedback on Effectiveness of Teaching | Students | Direct |
| Evaluation of Teaching | Department | Indirect |
| Improvement of Teaching | Program leaders | Direct |
| Quality of learning resources | Faculty | Direct |

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Extent of achievement of course learning outcomes | Program leaders | 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** | Atif Ismail |
| **Reference No.** | |
| **Date** | |

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

# Course Specifications

| | |
|---|---|
| **Course Title:** | **Research Skills in Physics** |
| **Course Code:** | **PHY4801** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Science** |
| **Institution:** | **Umm Al-Qura University** |

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**D. Teaching and Assessment** **5**

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**E. Student Academic Counseling and Support** **6**

**F. Learning Resources and Facilities** **6**

1.Learning Resources 6

2. Facilities Required 7

**G. Course Quality Evaluation** **7**

**H. Specification Approval Data** **7**

## 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 12th / 4rd year** |
| **4. Pre-requisites for this course** (if any)**:** | **Department Approval** |
| **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** | 20 | 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** | |
| 4 | **Others** (specify) | |
| | **Total** | 20 |

## B. Course Objectives and Learning Outcomes

**1. Course Description**

This course covers the basis of research methods in physics, such as, definition and objectives of research, types of research, various steps in research process, data collection, types of theses, and ethics in research.

**2. Course Main Objective**

At the end of this course, the student will be able to

- Define the scientific research.
- Differentiate between the different types of scientific research.
- List the various steps in research process.
- Differentiate between the different types of theses.
- Communicates scientific research orally and in writing.

### 3. Course Learning Outcomes

| CLOs | | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Define the basic concepts of scientific research, type of research, various steps in research process, type of thesis, and ethics in research. | K1 |
| 1.2 | List the various steps in research process. | K1 |
| **2** | **Skills :** | |
| 2.1 | Apply Physics law to solve some problems using suitable research methods. | S1 |
| 2.2 | Demonstrate knowledge of basic research orally and in writing | S2 |
| **3** | **Values:** | |
| 3.1 | Apply standards of integrity and ethics in all tasks | V1 |
| 3.2 | Collaborate and contribute responsibly and effectively in teamwork | V2 |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | Introduction to Research Methodology | 2 |
| 2 | Definition and objectives of Research | 2 |
| 3 | Types of research | 2 |
| 4 | Various Steps in Research Process | 2 |
| 5 | Developing a research question - Choice of a problem | 2 |
| 6 | Data collections | 2 |
| 7 | Types of theses | 2 |
| 8 | Academic Writing | 2 |
| 9 | Ethics in research | 2 |
| 10 | How to give an oral presentation | 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 | Define the basic concepts of scientific research, type of research, various steps in research process, type of thesis, and Ethics in research. | 1. Demonstrating the basic principles through lectures.<br>2. Discussing phenomena with illustrating pictures and diagrams.<br>3. Lecturing method: Board, Power point.<br>4. Discussions<br>5. Brain storming | - Discussions during the lectures<br>-<br>- Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam. |
| 1.2 | List the various steps in research process. | | |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| **2.0** | **Skills** | | |
| 2.1 | Apply Physics law to solve some problems using suitable research methods. | 1. Preparing main outlines for teaching.<br>2.Define duties for each chapter | 1. Exams:<br>a) Quizzes.<br>b) Midterm exams.<br>c) Final exam<br>2. Homework. |
| 2.2 | Demonstrate knowledge of basic research orally and in writing | | |
| **3.0** | **Values** | | |
| 3.1 | Apply standards of integrity and ethics in all tasks | • Organize the students in a small groups (teamwork).<br>• Give students tasks of duties as a small project. | • Evaluate the scientific reports.<br>• Discussing the reports with each teamwork.<br>• Evaluate the efforts of each student in preparing the report. |
| | Collaborate and contribute responsibly and effectively in teamwork | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Midterm Exam | 8th | 30% |
| **2** | Homework's & Quizzes | All weeks | 20 % |
| **3** | Final Exam | End of the semester | 50% |
| **4** | | | |
| | | | |

***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** | • C. George Thomas, "Research Methodology and Scientific Writing", 2nd Edition, Springer (2021) |
| **Essential References Materials** | • |
| **Electronic Materials** | |

| | |
|---|---|
| **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.) | - Black Board<br>- Data show |
| **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 |

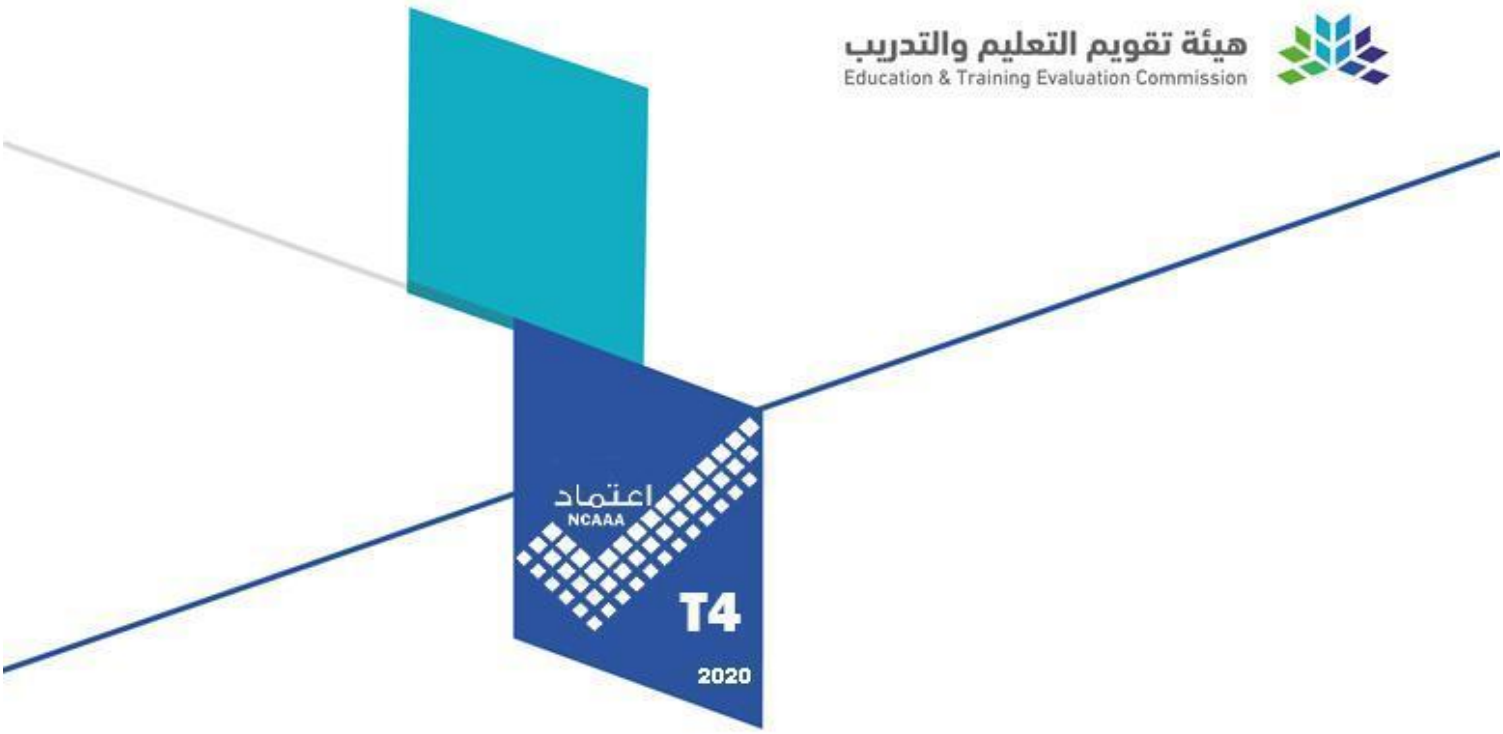
**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
**Assessment Methods** (Direct, Indirect)

## H. Specification Approval Data

| | |
|---|---|
| **Council / Committee** | |
| **Reference No.** | |
| **Date** | |

# توصيف المقررات الاختيارية
# برنامج الفيزياء

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission




# Course Specifications

| | |
|---|---|
| **Course Title:** | **Introduction to Astrophysics** |
| **Course Code:** | **PHY4509** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**C. Course Content** **4**

**D. Teaching and Assessment** **4**

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2. Assessment Tasks for Students 4

**E. Student Academic Counseling and Support** **5**

**F. Learning Resources and Facilities** **5**

1.Learning Resources 5

2. Facilities Required 5

**G. Course Quality Evaluation** **5**

**H. Specification Approval Data** **6**

## A. Course Identification

| |
|---|
| **1. Credit hours: 3** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☒ Others ☐<br>**b.** Required ☐ Elective ☒ |
| **3. Level/year at which this course is offered: 4th year** |
| **4. Pre-requisites for this course** (if any)**: Department approval** |
| **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** | 3 hrs per week |
| 2 | **Laboratory/Studio** | |
| 3 | **Tutorial** | |
| 4 | **Others** (specify) | |
| | **Total** | 30 hrs |

## B. Course Objectives and Learning Outcomes

| |
|---|
| **1. Course description** |
| **2. Course Main Objective**<br>The course provides a general introduction to the fundamental concepts of astrophysics to physics students at advanced undergraduate or beginning graduate level. |

**3. Course Learning Outcomes**

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Describe the components of the universe. | K1(I) K2(I) |
| 1.2 | Summarize the overall properties of the Sun and the processes that occur within it. | K1(I) K2(I) |

| CLOs | | Aligned PLOs |
|---|---|---|
| 1.3 | Demonstrate an understanding of light and how the information contained in light can be deciphered by astronomers | K1(I) |
| 1.4 | Interpret physical properties of stars and galaxies | K2(I) |
| **2** | **Skills :** | |
| 2.1 | Present the properties, classification system, and life cycle of stars including objects like white dwarfs, red giants, super-novas, pulsars, neutron stars, and black holes. | S1(I) S2(I) |
| 2.2 | Understand qualitatively some of the physical laws that lead to these phenomena. | S2(I) |
| 2.3 | Estimate the stellar temperature , the color index and color excess. | S1(I) S2(I) |
| 2.4 | Understand the interstellar medium absorption and air masses on stellar spectra. | S1(I) S2(I) |
| **3** | **Values:** | |
| 3.1 | Apply standards of integrity and ethics in all tasks | V1(I) |
| 3.2 | Collaborate and contribute responsibly and effectively in teamwork | V2(I) |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **1- Orbital Mechanics**<br>1.1 Kepler's First Law<br>1.2 Kepler's Second Law<br>1.3 Kepler's Third Law | 3 |
| 2 | **2- Interaction of Radiation and Matter**<br>2.1 Atomic Structure<br>2.2 Atomic Processes<br>2.3 Emission and Absorption Spectra<br>2.4 The Equation of Radiative Transfer | 3 |
| 3 | **3- Astronomical Detection of Light**<br>3.1 The Telescope as a Camera<br>3.2 Refracting and Reflecting Telescopes<br>3.3 Astronomical Instruments and Detectors<br>3.4 Observations and Photon Counting<br>3.5 Observations at Other Wavelengths<br>3.6 Modern Telescopes | 6 |
| 4 | **4- Overview of the Solar System**<br>4.1 Two Types of Planets<br>4.2 Physical Properties of Planets<br>4.3 Formation of the Solar System | 3 |
| 5 | **5- The Planets**<br>5.1 Terrestrial Planets: Mercury, Venus, and Mars | 3 |

| | | |
|---|---|---|
| | 5.2 Jovian Planets: Jupiter and Saturn, Satellites of Jupiter and Saturn, Uranus and Neptune | |
| 6 | **6- Properties of Stars**<br>6.1 Distances to stars<br>6.2 Brightness of stars<br>6.3 Mass of stars | 3 |
| 7 | **7- Formation and Evolution of Stars**<br>7.1 Star Formation<br>7.2 Evolution of Sun-like Stars<br>7.3 Pulsating Variable Stars | 3 |
| 8 | **8- Galaxies**<br>8.1 Galaxy Classification<br>8.2 Galaxy Spectra<br>8.3 Supermassive Black Holes in Galaxies<br>8.4 Distances to Galaxies<br>8.5 The Hubble Law | 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 | Describe the components of the universe. | 1- Demonstrating the basic principles through lectures.<br>2. Discussing phenomena with illustrating pictures and diagrams<br>3. Lecturing method: Board, Power point<br>4. Discussions<br>5. Revise each previous chapter before starting the next chapter. | Solve some examples during the lecture.<br>Exams:<br>a) Quizzes (E-learning)<br>b) Short exams (mid-term exams)<br>c) Final exam<br>d) Discussions during the lectures.<br>e) Homework. |
| 1.2 | Summarize the overall properties of the Sun and the processes that occur within it. | | |
| 1.3 | Demonstrate an understanding of light and how the information contained in light can be deciphered by astronomers | | |
| 1.4 | Interpret physical properties of stars and galaxies | | |
| **2.0** | **Skills** | | |
| 2.1 | Present the properties, classification system, and life cycle of stars. | 1.Preparing main outlines for teaching<br>2.Following some proofs<br>3.Define duties for each chapter<br>4.Encourage the student to look for the information in different references | 1.Midterm's exam. Exams, short quizzes<br>2.Asking about physical laws previously taught<br>3.Writing reports on selected parts of the course<br>4. Discussions of how to simplify or analyze some phenomena in solids. |
| 2.2 | Understand qualitatively some of the physical laws that lead to these phenomena. | | |
| 2.3 | Estimate the stellar temperature , the color index and color excess. | | |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| | | 5.Ask the student to attend lectures for practice solving problem | |
| 2.4 | Understand the interstellar medium absorption and air masses on stellar spectra. | | |
| **3.0** | **Values** | | |
| 3.1 | Apply standards of integrity and ethics in all tasks | • Search through the internet and use the library.<br>• Small group discussion.<br>• Enhance educational skills.<br>• Develop their interest in Science through :( field trips, visits to scientific and research labs).<br>• Encourage the student to attend lectures regularly<br>• Give students tasks of duties | • Evaluate the efforts of each student in preparing the report.<br>• Evaluate the work in team<br>• Evaluation of students presentations |
| 3.2 | Collaborate and contribute responsibly and effectively in teamwork | | |

## 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 1 | Exercises, Participation, In-Class Problem Solving | All weeks | 10 % |
| 2 | Quizzes & Homework | $2^{th}$ -$10^{th}$ week | 10 % |
| 3 | Midterm exam | $5^{th}$ - $6^{th}$ week | 30 % |
| 4 | Final exam | $12^{th}$ week | 50 % |
| 5 | | | |

***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 an academic adviser in the physics Department. The timetable for academic advice is given to students at each level. (O.H. 3 hrs a week)

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | Ryden, B., & Peterson, B. M. (2020). Foundations of astrophysics. Cambridge University Press. |
| **Essential References Materials** | Essential astrophysics Kenneth R. Lang . Springer 2013<br><br>Astrophysics for Physicists Arnab Rai Choudhuri Cambridge University Press 2010 |
| **Electronic Materials** | |
| **Other Learning Materials** | An Introduction to Modern Astrophysics Bradly W Carrol Cambridge university press 2017 |

### 2. Facilities Required

This course is based upon Ryden & Peterson "Foundations of astrophysics". It includes,

- Lecture Notes aligned with the lecture videos
- Problem Sets (no solutions)
- Problem Solving Help Videos providing step-by-step solutions to sample problems
- Exams with Solutions

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | There are enough classrooms provided with a good accommodation |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | In each classroom, there is a data show, and board. |
| **Other Resources**<br>(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 |
|---|---|---|
| 1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching | Teaching staff teams | Questionaries'<br>Open discussion in the class room at the end of the lectures |
| 2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department | Teaching staff teams | Revision of student answer paper by another staff member.<br>Analysis the grades of students. |

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| 3. Processes for Improvement of Teaching | Teaching staff teams | Preparing the course as PPT. Using scientific movies. Periodical revision of course content. |
| 4. Processes for Verifying Standards of Student Achievement (eg. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in another institution) | Teaching staff and program leaders | After the agreement of Department and Faculty administrations |
| | | |
| | | |
| | | |

**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:** | **Introduction to medical physics** |
| **Course Code:** | **PHY4605** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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1.Learning Resources 5

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**H. Specification Approval Data** **6**

## A. Course Identification

| |
|---|
| **1. Credit hours: 3** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☐ Elective ☑ |
| **3. Level/year at which this course is offered: Year 4** |
| **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** | 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** | 0 |
| 3 | **Tutorial** | 0 |
| 4 | **Others** (specify) | 0 |
| | **Total** | 30 |

## B. Course Objectives and Learning Outcomes

| |
|---|
| **1. Course Description**<br>The course will cover some of the principles of medical physics. Students will learn how to relate several physics phenomena to the human body, and apply the laws of those phenomena to understand and analyze the physiological processes in the body. |
| **2. Course Main Objective**<br>-The aim is to provide students with knowledge and understanding fundamentals of medical physics;<br>1- To explain the motions of the living bodies .<br>2- Define elasticity and strength of materials.<br>3- Acquire basics of fluids, the motion of fluids and body fluid flow.<br>4- Discuss the fundamentals of heat and life, kinetic theory and thermodynamics.<br>5- Describe different types of waves, sound, electricity, electrical technology.<br>6-Identify forces on bones and muscles, electrodynamics of nerve impulses. |

### 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Recognize facts, principle and concepts of elementary medical Physics | K3 |
| 1.2 | Describe the physical laws of human body equilibrium | K2 |
| 1.3 | | |
| 1... | | |
| **2** | **Skills :** | |
| 2.1 | Apply the laws of medical physics. | S2 |
| 2.2 | Solve problems in Physics by using suitable mathematical principles | S1 |
| 2.3 | Relate physics laws to human body | S3 |
| 2... | Express the medical physics phenomena mathematically. | S1 |
| **3** | **Values:** | |
| 3.1 | Work effectively in groups | V1 |
| 3.2 | | |
| 3.3 | | |
| 3... | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | ❖ **Static force**<br>1 Equilibrium and Stability<br>2 Equilibrium Considerations for the Human Body<br>3 Stability of the Human Body under the Action of an External Force<br>4 Skeletal Muscles<br>5 Levers<br>6 The Elbow<br>7 Friction Standing at an Incline | 3 |
| 2 | ❖ **Elasticity and Strength of Materials**<br>1 Longitudinal Stretch and Compression<br>2 A Spring<br>3 Bone Fracture: Energy Considerations<br>4 Impulsive Forces<br>5 Fracture Due to a Fall: Impulsive Force Considerations<br>6 Airbags: Inflating Collision Protection Devices<br>7-Whiplash Injury<br>8 Falling from Great Height<br>9 Osteoarthritis and Exercise. | 3 |
| 3 | ❖ **The Motion of Fluids**<br>1 Bernoulli's Equation<br>2 Viscosity and Poiseuille's Law<br>3 Turbulent Flow<br>4 Circulation of the Blood<br>5 Blood Pressure<br>6 Control of Blood Flow<br>7 Energetics of Blood Flow<br>8 Turbulence in the Blood | 3 |

| | | |
|---|---|---|
| | 9 Arteriosclerosis and Blood Flow<br>10 Power Produced by the Heart<br>11 Measurement of Blood Pressure | |
| 4 | ❖ **Heat and Life**<br>1 Energy Requirements of People<br>2 Energy from Food<br>3 Regulation of Body Temperature<br>4 Control of Skin Temperature<br>5 Convection<br>6 Radiation<br>7 Radiative Heating by the Sun<br>8 Evaporation<br>9 Resistance to Cold<br>10 Heat and Soil | 3 |
| 5 | ❖ **Wavs and Sound**<br>1 Properties of Sound<br>2 Some Properties of Waves (Reflection, Refraction, Interference, Diffraction)<br>3 Hearing and the Ear (Performance, Frequency and Intensity and Loudness)<br>4 Bats and Echoes<br>5 Sounds Produced by Animals<br>6 Acoustic Traps<br>7 Clinical Uses of Sound<br>8 Ultrasonic Waves | 3 |
| 6 | ❖ **Electricity**<br>1 The Nervous System<br>2 The Neuron<br>3 Electrical Potentials in the Axon<br>4 Action Potential<br>5 Propagation of the Action Potential<br>6 Synaptic Transmission<br>7 Action Potentials in Muscles<br>.8 Surface Potentials<br>9 Electricity in the Bone | 3 |
| 7 | ❖ **Optics**<br>1 Vision.<br>2 Nature of Light<br>3 Structure of the Eye<br>4 Accommodation<br>5 Eye and the Camera<br>6 Lens System of the Eye<br>7 Reduced Eye<br>.8 Retina<br>9 Resolving Power of the Eye.<br>10 Threshold of Vision<br>11 Vision and the Nervous System.<br>12 Defects in Vision.<br>13 Lens for Myopia.<br>14 Lens for Presbyopia and Hyperopia<br>15 Fiber Optics | 3 |
| 8 | ❖ **Atomic Physics**<br>1 The Atom<br>2 Spectroscopy<br>3 Quantum Mechanics | 3 |

| | | |
|---|---|---|
| | 4 Electron Microscope<br>5 X-rays<br>6 X-ray Computerized Tomography<br>7 Lasers & Lasers applications in medicine | |
| 9 | ❖ **Nuclear Physics**<br>1 The Nucleus<br>2 Magnetic Resonance Imaging<br>3 Radiation Therapy<br>4 Food Preservation by Radiation<br>5 Isotopic Tracers<br>6 Laws of Physics and Life | 3 |
| 10 | **Nanotechnology in Biology and Medicine**<br>1 Nanostructures<br>2 Nanotechnology<br>3 Some Properties of Nanostructures<br>4 Medical Applications of Nanotechnology<br>5 Concerns Over Use of Nanoparticles in Consumer Products | 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 facts, principle and concepts of elementary medical Physics | 1- Demonstrating the basic principles through lectures. | Recognize facts, principle and concepts of elementary medical Physics |
| 1.2 | Describe concepts, Procedures of some experiments in medical physics | 1. Demonstrating the basic principle of the experiment.<br>2. Show the best ways to perform the experiments<br>3. Show the best ways to demonstrate the results.<br>4. Show the best way to write the reports about the experiment.<br>5. Discussion with the student about the results. | Home work.<br>Writing scientific Reports.<br>Doing team research or team project.<br>Doing team work to perform some experiments<br>Discussions during the class. |
| … | | | |
| **2.0** | **Skills** | | |
| 2.1 | Apply the laws of medical physics. | 1. Preparing main outlines for teaching<br>2.Following some proofs<br>3.Define duties for each chapter<br>4.Encourage the student to look for the information in different references<br>5.Ask the student to attend lectures for practice solving problem | 1. Midterm's exam. Exams, short quizzes<br>2.Asking about physical laws previously taught<br>3.Writing reports on selected parts of the course<br>4.Discussions of how to simplify or analyze some phenomena |
| 2.2 | Solve problems in Physics by using suitable mathematical principles | | |
| … | Analyse and interpret quantitative results | | |
| | Express the medical physical phenomena mathematically. | | |
| **3.0** | **Values** | | |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| 3.1 | Communicate effectively in oral and written form | ● Homework<br>● Preparing a report on some topics related to the course depending on web sites. | ● Evaluation of presentations<br>● Evaluation of reports<br>● Practical exam<br>● Homework.<br>Final exams. |
| 3.2 | Collect and classify the material for a course | | |
| … | Use basic medical physics terminology in English | | |
| | Acquire the skills to use the internet communicates tools. | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 1 | Mid-Term Exam | 6 | 30% |
| 2 | Homework and Quizzes | Through term | 20% |
| 3 | Final Exam | 13 | 50% |
| 4 | Mid-Term Exam | 6 | 30% |

***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 :**

Different arrangements made by teaching staff to support student consultations:

- Office hours: 8h per a week for each academic member.
- Academic guidance: an academic member has a number of students to guide them throughout degree journey.

## F. Learning Resources and Facilities

### 1. Learning Resources

| | |
|---|---|
| **Required Textbooks** | 1-Paul Davidovits "Physics in Biology and Medicine" 5th edd. Elsevier 2019. ISBN 978-0-12-813716-1<br><br>2-Russell K. Hobbie & Bradley J. Roth "Intermediate Physics for Medicine and Biology" 5th edd. 2015 Springer Science ISBN 978-3-319-12681-4. |
| **Essential References Materials** | 1-John R. Cameron & James G. Skofronick "Medical physics" Willy John 1988<br><br>2-Raymond A. Serway - John W. Jewett "Physics for Scientists and Engineers" 2004.<br><br>Physics, 4th edition, By: Halliday, Resnick, and Krane, Wiley (1992) |

| | |
|---|---|
| **Electronic Materials** | http://www.jmp.org.in/ Journal of Medical Physics<br>http :// www.springer.com<br>http:// www.sciencedirect.com<br>http:// www.gigabedia .org |
| **Other Learning Materials** | |

## 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation** (Classrooms, laboratories, demonstration rooms/labs, etc.) | A classroom with movable tables and chairs conducive to group discussion and teamwork. |
| **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) | |

## G. Course Quality Evaluation

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Effectiveness of teaching | Peer Reviewer | Direct |
| Effectiveness of assessment | Students | Indirect |
| Extent of achievement of course learning outcomes | Peer Reviewer | Direct |
| Quality of learning resources | Program Leaders& 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** | |

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Education & Training Evaluation Commission

# Course Specifications

| | |
|---|---|
| **Course Title:** | **Fluid Physics** |
| **Course Code:** | **PHY4510** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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6. Mode of Instruction (mark all that apply) 3

**B. Course Objectives and Learning Outcomes** **3**

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**C. Course Content** **4**

**D. Teaching and Assessment** **4**

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**E. Student Academic Counseling and Support** **5**

**F. Learning Resources and Facilities** **5**

1. Learning Resources 5

2. Facilities Required 5

**G. Course Quality Evaluation** **5**

**H. Specification Approval Data** **6**

## 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:** | **Year 4** |
| **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** | 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 gives physical and mathematical treatment towards the study of fluid behavior under different physical conditions like the increase in pressure, temperature, and velocity. It describes the different approaches to treating the fluid problems and describes the fluid properties in terms of its flow, compressibility, viscosity, etc.

**2. Course Main Objective**

By the end of this course, the student will able to

1- Discuss the physical properties of a fluid in terms of viscosity, thermal conductivity, and mass diffusivity.

2- Differentiate between the different types of fluid flow.

3- Use Lagrangian and Eulerian viewpoints and the continuity equation for writing the equations of the flow.

4- Discusses the analysis of the Navier-Stokes equations and their applications.

.

### 3. Course Learning Outcomes

| CLOs | | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Differentiate between the different types of Fluids | K1 (P) |
| 1.2 | Describe the physics of the fluid in terms of motion flow, compressibility, and viscosity. | K2 (P) |
| **2** | **Skills :** | |
| 2.1 | Solve Fluid flow problems and interpret the experimental results. | S1 (P) |
| 2.2 | Apply the physical conditions of the fluids in terms of transport and continuity equations. | S2 (P) |
| **3** | **Values:** | |
| 3.1 | The ability to deliver, orally or in writing, the different physics concepts and processes in an effective manner. | V2 (P) |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Fundamental Concepts**<br>● The characteristics of fluids<br>● Notation, dimensions, units and related matters<br>● Properties of fluids<br>● The perfect gas: equation of state<br>● Compressibility; Viscosity; Surface tension<br>● Basic characteristics of fluids in motion<br>● Classification and description of fluid flow | 6 |
| 2 | **Fluid Statics**<br>● Variation of pressure with position in a fluid<br>● The measurement of pressure<br>● First and second moments of area<br>● Buoyancy<br>● The stability of bodies in fluids<br>● Equilibrium of moving fluids | 8 |
| 3 | **The Principles Governing Fluids in Motion**<br>● Acceleration of a fluid particle<br>● The continuity equation<br>● Bernoulli's equation<br>● General energy equation for steady flow of any fluid<br>● Pressure variation perpendicular to streamlines<br>● Simple applications of Bernoulli's equation<br>● The momentum equation for steady flow | 8 |
| 4 | **Flow Between Solid Boundaries and Losses**<br>● Steady laminar flow between parallel planes and circular pipes<br>● the Hagen–Poiseuille law<br>● The measurement of viscosity<br>● Variation of friction factor<br>● The Flow of an Inviscid Fluid<br>● Compressible Flow of Gasses<br>● Unsteady Flow | 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 | Differentiate between the different types of Fluids | Demonstrating the basic information and principles through lectures and discussions. | Homework and periodic and final exams. |
| 1.2 | Describe the physics of the fluid in terms of motion flow, compressibility, and viscosity. | | |
| **2.0** | **Skills** | | |
| 2.1 | Solve Fluid flow problems and interpret the experimental results. | Lecturing, discussion, and problem-solving. | Homework and periodic and final exams |
| 2.2 | Apply the physical conditions of the fluids in terms of transport and continuity equations. | | |
| **3.0** | **Values** | | |
| 3.1 | The ability to deliver, orally or in writing, the different physics concepts and processes in an effective manner. | Presentations and discussion groups | Quizzes and seminars |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Mid-Term Exam | 11 | 30% |
| **3** | Homework and Quizzes | Through term | 20% |
| **4** | Final Exam | at the end of the term | 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 :**
Consultation and/or academic advice will be available during the teaching staff office hours

## F. Learning Resources and Facilities

### 1. Learning Resources

| | |
|---|---|
| **Required Textbooks** | Mechanics of Fluids, 8th ed.<br>Bernard Massey |
| **Essential References Materials** | Fluid Mechanics, 7th ed.<br>Frank M White<br>McGraw-Hill Series |
| **Electronic Materials** | |
| **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.) | data show |
| **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 | Questionnaires |
| Achievement of course learning outcomes | Program Leader | 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** | |

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Education & Training Evaluation Commission

# Course Specifications

| | |
|---|---|
| **Course Title:** | **Renewable Energy** |
| **Course Code:** | **PHY4705** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**C. Course Content** **5**

**D. Teaching and Assessment** **6**

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**E. Student Academic Counseling and Support** **7**

**F. Learning Resources and Facilities** **7**

1.Learning Resources 7

2. Facilities Required 7

**G. Course Quality Evaluation** **8**

**H. Specification Approval Data** **8**

## A. Course Identification

| |
|---|
| **1. Credit hours:** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☑ Others ☐<br>**b.** Required ☐ Elective ☑ |
| **3. Level/year at which this course is offered: 4th 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** | 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**

The main purpose of this course is to introduce students to the main renewable energy resources. Advantages, disadvantages and current challenges of these energy resources are covered in this course.

## 2. Course Main Objective

This course discusses the world's present needs of energy and future demands, as well as the limitations and issues of natural resources. This course gives an overview of the main scientific principles and technologies related to harnessing and conversion of the renewable energy resources, including solar, wind, hydroelectric, geothermal. Also, energy storge technology is covered in this course.

When students successfully complete this course, they will be to:

- Identify the effects that conventional energy systems based on fossil fuels have over the environment and the society.
- Understand the fundamental physical principles underlying energy processes.
- Describe the various renewable energy sources and the possible conversion paths to a useful form of energy.
- Understand concepts of Solar energy
- Understand concepts of Wind energy
- Understand concepts of Hydroelectric energy
- Understand concepts of Geothermal energy
- Compare different renewable energy technologies and choose the most appropriate based on local conditions.
- Identify and compare the types of energy storage

## 3. Course Learning Outcomes

| CLOs | | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Discuss the advantages and disadvantages of conventional and renewable energy. | K1(M) |
| 1.2 | Demonstrate the fundamentals and principles of renewable energies and its application. | K1(M) |
| 1.3 | Differentiate between different types of renewable energies. | K1(M) |
| 1.4 | | K1(M) |
| | | |
| **2** | **Skills :** | |
| 2.1 | Solve physical problems in the field of renewable energy. | S1(M) |
| | | |
| | | |
| | | |
| **3** | **Values:** | |
| | | |
| | | |
| | | |
| | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | Course Introduction (Energy Sources and Environmental Effects)<br>A brief history of energy consumption:<br>Global energy needs<br>Fossil Fuels<br>The role of fossil fuel consumption in climate change<br>The greenhouse effect and climate change | 3 |
| 2 | Basic physics of energy:<br>Non-renewable and renewable sources of energy<br>Laws of Thermodynamics<br>Energy Efficiency<br>Units of Energy | 3 |
| 3 | Solar energy<br>Insolation<br>Solar Collectors<br>solar radiation Measurement<br>Solar Thermal Energy<br>photovoltaic materials<br>photovoltaic principles<br>power output and conversion efficiency<br>From Cells to Module to Arrays | 6 |
| 4 | Wind energy<br>Basic physics of wind power<br>Types of Wind Turbines<br>Power in the Wind<br>Average Power in the Wind<br>Environmental Impacts of Wind Turbines | 6 |
| 5 | Hydropower<br>Hydropower resources<br>Hydropower technologies<br>Environmental impact of hydro power sources. | 3 |
| 6 | Geothermal energy<br>Geothermal Resources<br>Geothermal Technologies | 3 |
| 7 | Other form of renewable energy<br>Wave Energy<br>Tidal Energy<br>Energy from Currents<br>Hydrogen fuel | 3 |
| 8 | Energy storage<br>Energy Storage types<br>Performance Criteria for Energy Storage | 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 | Discuss the advantage and disadvantage of conventional and renewable energy. | 1. Lecture method: Board and PowerPoint.<br>2. Begin the lecture with a brief idea of the topic.<br>3. Demonstrate the basic principles.<br>4. Discussing phenomena with illustrating pictures and diagrams.<br>5. Solve problem<br>6. Brain storming | a) Midterm exams.<br>b) Final exam.<br>c) Homework.<br>d) Oral Questions. |
| 1.2 | Demonstrate the fundamentals and principles of renewable energies and its application. | | |
| 1.3 | Differentiate between different types of renewable energies. | | |
| 1.4 | Define and explain solar, wind, hydroelectric, and geothermal energies. | | |
| | | | |
| | | | |
| **2.0** | **Skills** | | |
| 2.1 | Solve physical problems in the field of renewable energy. | 1. Lecture method: Board and PowerPoint.<br>2. Begin the lecture with a brief idea of the topic.<br>3. Demonstrate the basic principles.<br>4. Discussing phenomena with illustrating pictures and diagrams.<br>5. Solve problem<br>6. Brain storming | a) Midterm exams.<br>b) Final exam.<br>c) Homework.<br>d) Oral Questions. |
| | | | |
| | | | |
| **3.0** | **Values** | | |
| | | | |
| | | | |
| | | | |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Assignments: Problem sets are given during the semester | | 10% |
| **2** | Quizzes | | 10% |
| **3** | Midterm Exam | | 30% |
| **4** | Final exam | | 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 :** |

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | 1. Fundamentals of Renewable Energy Processes, by Da Rosa, Aldo Vieira and Ordonez, Juan Carlos. Publisher : Academic Press; 4th edition (April 2, 2021)<br>2. Physics of energy sources, by King, George C. Publisher : Wiley; 1st edition (June 12, 2017) |
| **Essential References Materials** | 1. Introduction to Renewable Energy (Energy and the Environment) by Vaughn C. Nelson and Kenneth L. Starcher. Publisher : CRC Press; 2nd edition (November 23, 2015)<br>2. Renewable Energy Resources by John Twidell. Publisher: Routledge; 4th edition (November 24, 2021)<br>3. Renewable and Efficient Electric Power Systems by Gilbert M. Masters. Publisher : Wiley-IEEE Press; 2nd edition (June 24, 2013) |
| **Electronic Materials** | https://www.energy.gov/eere/education/education-resources |
| **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 |
| **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 |

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| 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:** | **Nuclear Technology** |
| **Course Code:** | **PHY4604** |
| **Program:** | **B.Sc** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**D. Teaching and Assessment** **5**

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2. Assessment Tasks for Students 6

**E. Student Academic Counseling and Support** **6**

**F. Learning Resources and Facilities** **6**

1.Learning Resources 6

2. Facilities Required 7

**G. Course Quality Evaluation** **7**

**H. Specification Approval Data** **7**

## A. Course Identification

| |
|---|
| **1. Credit hours: 3** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☒ Others ☐<br>**b.** Required ☐ Elective ☒ |
| **3. Level/year at which this course is offered: 10** |
| **4. Pre-requisites for this course** (if any)**:**<br>**Nuclear 2** |
| **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**

The course will cover the principles and basics of fission chain reactions and its application in nuclear power reactors and the unique aspects of nuclear energy as clean and sustainable source of energy, as well as theory and function of commercial nuclear power reactors. Topics related to nuclear power generation like nuclear waste, nuclear safety, nuclear proliferation, and nuclear security are covered in this course. Acceleration of charged particles and its application in nuclear field are also presented in this course.

**2. Course Main Objective**

To provide the scientific and technical background needed to proper understanding of applications of nuclear fission and related aspects in the field of nuclear power production.

### 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Demonstrate the fundamentals and basic concepts of fission chain reaction and its application in nuclear reactors and nuclear power generation, and the related issues like nuclear waste, nuclear safety, nuclear security, and nuclear proliferation. | K1(M)<br>K2(M) |
| **2** | **Skills :** | |
| 2.1 | To know how to assess, evaluate, or calculate the following: power generated in nuclear reactor, environmental impact of nuclear reactor, and nuclear waste. | S1(M) |
| 2.2 | Effectively communicates physics concepts, processes, and results, both orally and in writing related nuclear technology | S2(M) |
| **3** | **Values:** | |
| 3.1 | Works responsibly and effectively within the work team to practice and interact with the environmental consequences, and safety and security cultures related to nuclear power production. | V1(M)<br>V2(M) |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Chain Reactions and Nuclear Reactors**<br>Criticality and the Multiplication Factor<br>Thermalization of Neutrons<br>Reactor Kinetics<br>Conversion Ratio and Production of Plutonium in Thermal Reactors<br>Control Materials and Poisons | 4 |
| 2 | **Nuclear Reactor**<br>Structure of Nuclear Reactors<br>Reactor Types<br>The Natural Reactor at Oklo | 6 |
| 3 | **Nuclear Fuel Cycle**<br>Characteristics of the Nuclear Fuel Cycle<br>Front End of the Fuel Cycle<br>Fuel Utilization<br>Back End of Fuel Cycle<br>Uranium Resources | 6 |
| 4 | **Nuclear Waste management**<br>Categories of Nuclear Waste<br>Treatment and Conditioning<br>Storage and Disposal<br>Responsibilities to Future Generations | 4 |
| 5 | Safety, Security and Safeguard in Nuclear Energy<br>General Considerations in Reactor Safety<br>Reactor Safety Standards<br>Nuclear Reactor Accidents | 6 |

| | | |
|---|---|---|
| | Terrorist Threats<br>Nuclear Security: Physical protection and Security Measures<br>Nuclear Safeguard and Nuclear Proliferation<br>Environmental Impact of Nuclear Energy | |
| 6 | **Accelerators**<br>Ion Sources<br>Electrostatic Machines<br>Linear Accelerators<br>Cyclotrons, Synchrotrons, and Rings<br>Charged Particle Beam Transport and Analysis<br>Radioactive Ion Beams | 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 | Demonstrate the fundamentals and basic concepts of fission chain reaction and its application in nuclear reactors and nuclear power generation, and the related issues like nuclear waste, nuclear safety, nuclear security, and nuclear proliferation. . | 1.Lecture method: Board and PowerPoint.<br>2.Begin the lecture with a brief idea of the topic.<br>3.Demonstrate the basic principles.<br>4.Discussing phenomena with illustrating pictures and diagrams.<br>5.Solve problem<br>6.Brain storming | • Midterm exams.<br>• Final exam.<br>• Homework.<br>• Oral Questions. |
| **2.0** | **Skills** | | |
| 2.1 | To know how to assess, evaluate, or calculate the following: power generated in nuclear reactor, environmental impact of nuclear reactor, and nuclear waste. | 1. Lecture method: Board and PowerPoint.<br>2. Interactive group work<br>3. Demonstrate the basic principles.<br>4. Discussing phenomena with illustrating pictures and diagrams.<br>5. Solve problem<br>6. Brain storming | • Midterm exams.<br>• Final exam.<br>• Homework.<br>• Oral Questions.<br>•Group output |
| 2.2 | Effectively communicates physics concepts, processes, and results, both orally and in writing related nuclear technology | | |
| **3.0** | **Values** | | |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| 3.1 | Works responsibly and effectively within the work team to practice and interact with the environmental consequences, and safety and security cultures related to nuclear power production. | 1.Give students tasks of duties as a teamwork.<br>2.Asking the teamwork to write scientific reports or project.<br>3.Asking the teamwork to demonstrate the results of the scientific reports or project.<br>4. Interactive Drills | Evaluate:<br>• the scientific reports,<br>• the teamwork,<br>• the efforts of each student in preparing the report.<br>• Drill Assessment |

**2. Assessment Tasks for Students**

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 2 | Term Works | All weeks | 20% |
| 3 | Mid-term exam | 5th week | 30% |
| 4 | Final exam | End of the term | 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 : 3 hours per week**

## F. Learning Resources and Facilities

**1.Learning Resources**

| | |
|---|---|
| **Required Textbooks** | 1. Nuclear energy: principles, practices, and prospects / David Bodansky. —2nd ed. 2004 Springer-Verlag New York, LLC.<br>2. Walter D. Loveland, David J. Morrissey Glenn T. Seaborg. Modern Nuclear Chemistry. 2nd Ed. 2006 by John Wiley & Sons, Inc. |
| **Essential References Materials** | 1. Handbook of Nuclear Engineering: Vol. 1: Nuclear Engineering Fundamentals; Vol. 2: Reactor<br>2.Eisenbud,M. and Gesell,M., ”Enviromental Radioactivity”,4th edition, Academic Press, London, 1997. |
| **Electronic Materials** | https://world-nuclear.org/<br>http://www.lnhb.fr/nuclear-data/nuclear-data-table/<br>https://www.nrc.gov/reading-rm/basic-ref/students/for-educators.html<br>https://www.wins.org/ |

## 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation** (Classrooms, laboratories, demonstration rooms/labs, etc.) | ● Classroom<br>● Laboratory<br>● Library |
| **Technology Resources** (AV, data show, Smart Board, software, etc.) | ● Data show<br>● Black Bord |
| **Other Resources** (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | (NO) |

## G. Course Quality Evaluation

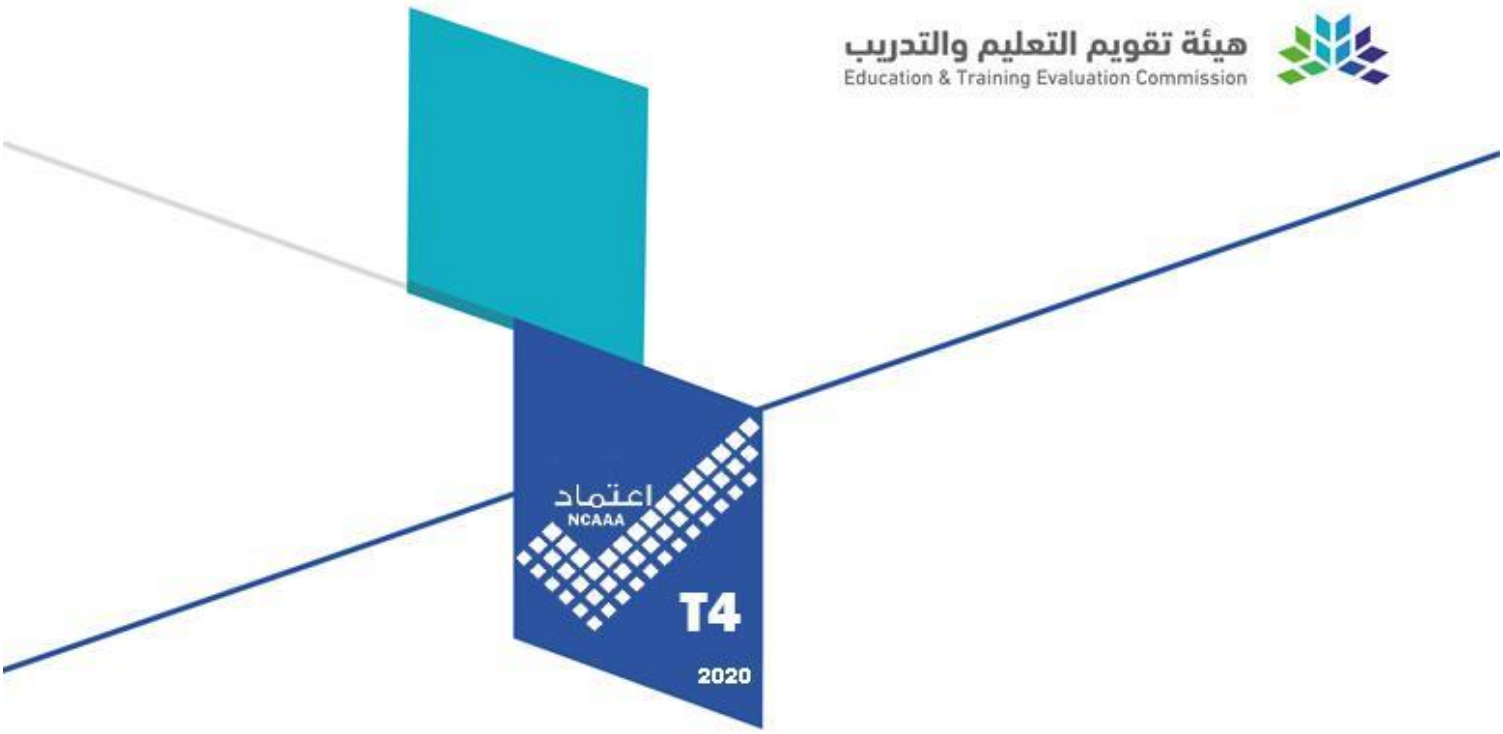
| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Effectiveness of teaching and assessment | Students | Questionnaire |
| Effectiveness of Student evaluation | Instructor | Exams |
| Extent of achieving course learning outcomes | Instructor | Course report |
| Quality of learning 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:** | **Special Theory of Relativity** |
| **Course Code:** | **PHY4405** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Sciences** |
| **Institution:** | **Umm Al-Qura University** |

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**A. Course Identification** **3**

6. Mode of Instruction (mark all that apply) 3

**B. Course Objectives and Learning Outcomes** **3**

1. Course Description 3

2. Course Main Objective 3

3. Course Learning Outcomes 3

**C. Course Content** **4**

**D. Teaching and Assessment** **4**

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods 4

2. Assessment Tasks for Students 4

**E. Student Academic Counseling and Support** **5**

**F. Learning Resources and Facilities** **5**

1.Learning Resources 5

2. Facilities Required 5

**G. Course Quality Evaluation** **5**

**H. Specification Approval Data** **6**

## A. Course Identification

| |
|---|
| **1. Credit hours: 3** |
| **2. Course type**<br>**a.** University ☐ College ☐ Department ☒ Others ☐<br>**b.** Required ☐ Elective ☒ |
| **3. Level/year at which this course is offered: 4th 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** | 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 will introduce you to the concepts of special theory of relativity including, but not limited to, length contraction, time dilation, the Lorentz transformation, relativistic kinematics, Doppler shifts, and even so-called “paradoxes.”

**2. Course Main Objective**

The objective of the course is to study the fundamental concept of special theory of relativity and its applications.

**3. Course Learning Outcomes**

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Demonstrate knowledge and broad understanding of Special Relativity | K1-I |

| CLOs | | Aligned PLOs |
|---|---|---|
| 1.2 | Explain the meaning and significance of the postulate of Special Relativity | K2-P |
| 1.3 | Explain true nature of Lorentz transformation and Doppler effect | K2-P |
| 1... | | |
| **2** | **Skills :** | |
| 2.1 | Derive Lorentz transformations from the two postulates of special theory of relativity. | S2-I |
| 2.2 | Use the Lorentz Transformation equation todescribe events and how it will be reported by different observers in different frames of reference. | S1-P |
| 2.3 | Determine proper time and dilated time; | S1-I |
| 2.4 | Determine proper length and contracted length;<br>Proof the invariability of physical laws; | S1-P |
| **3** | **Values:** | |
| 3.1 | Provide realistic visualization of relativistic effects | V1 |
| 3.2 | | |
| 3.3 | | |
| 3... | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | Galilean Transformations - Newtonian relativity- Electromagnetism and Newtonian relativity. | 3 |
| 2 | Absolute frame- The Michelson Morely experiment. | 3 |
| 3 | Einstein and the origin of relativity theory- The postulates of special theory of relativity. | 3 |
| 4 | Velocity Transformation and addition of velocities- A Three Event Problem | 3 |
| 5 | Relativity of simultaneity. Derivation of Lorentz transformations. | 3 |
| 6 | Doppler effect, space-time diagrams, time order and space-time separation of events, null cone, the twin-paradox. | 3 |
| 7 | Minkowski Space and Four Vectors- Proper Time a Four Scalar Momentum Energy Four Vector | 3 |
| 8 | Relook at Collision Problems- Zero Rest Mass Particle and Photon. | 3 |
| 9 | Electric & Magnetic Field Transformation | 3 |
| 10 | Current Density Four Vector and Maxwell Equation. | 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 | Demonstrate knowledge and broad understanding of Special Relativity | | Short |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| 1.2 | Explain the meaning and significance of the postulate of Special Relativity | Lectures Discussion-solve problems | quizzes, periodical and final exams. |
| 1.3 | Explain true nature of Lorentz transformation and Doppler effect | | |
| **2.0** | **Skills** | | |
| 2.1 | Use Michelson-Morley Interferometer Experiment to:<br>-refute the existence of a referenced stationary aether;<br>-proof the constancy of the speed of light. | Lectures Discussion-solve problems | Short quizzes, periodical and final exams. |
| 2.2 | Use the Lorentz Transformation equation to:<br>-describe events and how it will be reported by different observers in different frames of reference | | |
| 2.3 | Determine proper time and dilated time; | | |
| **3.0** | **Values** | | |
| 3.1 | Provide realistic visualization of relativistic effects | Lectures Discussion-solve problems | Short quizzes, periodical and final exams |
| 3.2 | | | |
| … | | | |

**2. Assessment Tasks for Students**

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Exercises and Homework | All weeks | 10% |
| **2** | Participation in activities | All weeks | 10% |
| **3** | Mid-term exam | 5th week | 30% |
| **4** | Final exam | 12th week | 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** | 1-Resnick Robert, Introduction to Special Relativity. New York, NY: Wiley, 1968. ISBN: 97804717172562-French, Anthony Philip. Special Relativity. New York, NY: Norton, 1968. ISBN: 9780393097931. |
| **Essential References Materials** | |
| **Electronic Materials** | https://www.space.com/36273-theory-special-relativity.html |
| **Other Learning Materials** | |

## 2. Facilities Required

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

## G. Course Quality Evaluation

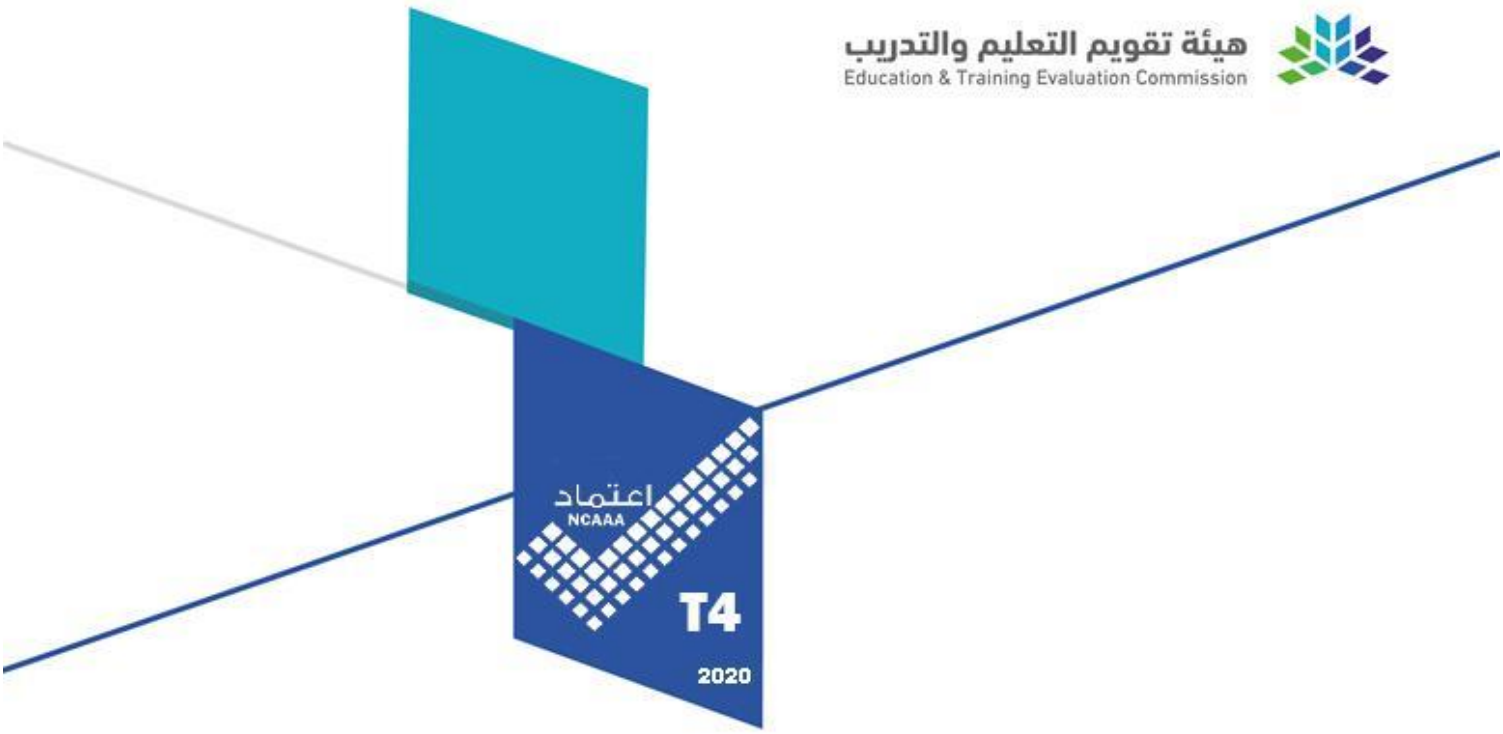
| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Effectiveness of teaching and assessment | Students | Questionnaire |
| Effectiveness of Student evaluation | Instructor | Exams |
| Extent of achieving course learning outcomes | Instructor | Course report |
| Quality of learning 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** | Prof. Khaled Abdel-Waged |
| **Reference No.** | |
| **Date** | |

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission




# Course Specifications

| | |
|---|---|
| **Course Title:** | **Introduction to Nanotechnology** |
| **Course Code:** | **PHY4706** |
| **Program:** | **Physics** |
| **Department:** | **Physics** |
| **College:** | **Applied Science** |
| **Institution:** | **Umm Al-Qura University** |

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## A. Course Identification

| | |
|---|---|
| **1. Credit hours:** | **3h** |
| **2. Course type** | |
| **a.** | University ☐ College ☐ Department ☑ Others ☐ |
| **b.** | Required ☐ Elective ☑ |
| **3. Level/year at which this course is offered:** | **4th year** |
| **4. Pre-requisites for this course** (if any)**:** | **Solid State Physics 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** | 30 |
| 2 | **Laboratory/Studio** | |
| 3 | **Tutorial** | |
| 4 | **Others** (specify) | |
| | **Total** | 30 |

## B. Course Objectives and Learning Outcomes

**1. Course Description**

The course indicates nanofabrication technology (how one achieves the nanometre length scale, from "bottom up" to "top down" technologies), the interdisciplinary nature of nanotechnology and nanoscience, examples of nanoscience phenomena (the crossover from bulk to quantum mechanical properties), and applications (from integrated circuits, quantum computing, MEMS, and Nano-magnetics).

**2. Course Main Objective**

-The aim is to provide students with knowledge and understanding fundamentals of Nanotechnology.
-To explain methods of fabricating nanostructures.
-To provide a base to students for his future research and study planning.
-To describe tools for properties of nanostructures
-To develop an interest in student to study more for this emerging nanotechnologies.

### 3. Course Learning Outcomes

| CLOs | | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | Describe physics laws active in the nano-range and as they differ from those in the micro-range. | K1 |
| 1.2 | Explain how to characterize major top-down and bottom-up strategies. | K2 |
| 1.3 | Outline the basics of the electronic structure of atoms, molecules, and nano-particles. | K1 |
| 1.4 | | K1 |
| 1.5 | | K2 |
| | List five techniques used to characterize nanomaterials | K2 |
| **2** | **Skills :** | |
| 2.1 | Distinguish between zero, one and two nanostructuresز | S1 |
| 2.2 | Discuss how to tune properties of carbon-based nanostructures | S2 |
| 2.3 | | S3 |
| 2... | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | General introduction and history of nanotechnology. Importance of nanoparticles in industries and in our lives. | 3 |
| 2 | Approaches in nanotechnology and typical syntheses of nanoparticles. | 3 |
| 3 | Properties of nanomaterials, chemical and physical properties. Reasons for changing the properties, Effects of the nanometre length scale. | 6 |
| 4 | Formation of energy gap, Discreteness of energy levels | 3 |
| 5 | Fabrication methods - Top-down and Bottom-up processes, Tunneling currents. | 6 |
| 6 | Nanodevices and applications. | 3 |
| 7 | Formation and characterization of Nanolayers, Applications of Nanolayers. | 3 |
| 8 | Synthesis and Fabrication of Nanoparticles, Characterization and Application of Nanoparticles. | 6 |
| 9 | The impact of nanotechnology: Scientific, Technical and Environmental | 6 |
| **Total** | | 39 |

## 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 changes in surface properties as decrease size of structures | Lecture | Written exam |
| 1.2 | Explain the top-down and bottom-up processes used to fabricate nanomaterials | Problem solving | Written exam |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| 1.3 | Outline the impact of nanotechnology on technology, health, energy and environment. | Lecture | Report assignments |
| 1.4 | List five techniques used to characterize nanomaterials | Problem solving | Homework assignments |
| **2.0** | **Skills** | | |
| 2.1 | Distinguish between zero, one and two nanostructures | Lecture | Written exam |
| 2.2 | Discuss how effects of the nanometre length scale | Lecture | Report assignments |
| 2.3 | Compare between different fabrication methods nano films. | Lecture | Written exam |

### 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| **1** | Assignments, participations, and quizzes | Throughout Semester | 10 % |
| **2** | Midterm Exam | Week 6 | 30 % |
| **3** | Oral presentation | Week 8 | 10 % |
| **4** | Final Exam | Week 13 | 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 :**

Different arrangements made by teaching staff to support student consultations:

- • Office hours: 8h per a week for each academic member.
- • Academic guidance: an academic member has a number of students to guide them throughout degree journey.

## F. Learning Resources and Facilities

### 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | Nanotechnology and Nanoelectronics Materials, Devices, Measurement Techniques, R. Fahrner, Springer, 2010 |
| **Essential References Materials** | Nanostructures And Nanomaterials: Synthesis, Properties, and Applications. Guozhong Ca, 2004.<br>Nanotechnology: An Introduction, Second Edition. Jeremy J. Ramsden, 2016. |

| | |
|---|---|
| | |
| **Electronic Materials** | Blackboard |
| **Other Learning Materials** | |

## 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation** (Classrooms, laboratories, demonstration rooms/labs, etc.) | A classroom with movable tables and chairs conducive to group discussion and teamwork. |
| **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) | |

## G. Course Quality Evaluation

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Effectiveness of teaching | Peer Reviewer | Direct |
| Effectiveness of assessment | Students | Indirect |
| Extent of achievement of course learning outcomes | Peer Reviewer | Direct |
| Quality of learning resources | Program Leaders & Faculty | Direct |
| | | |
| | | |
| | | |

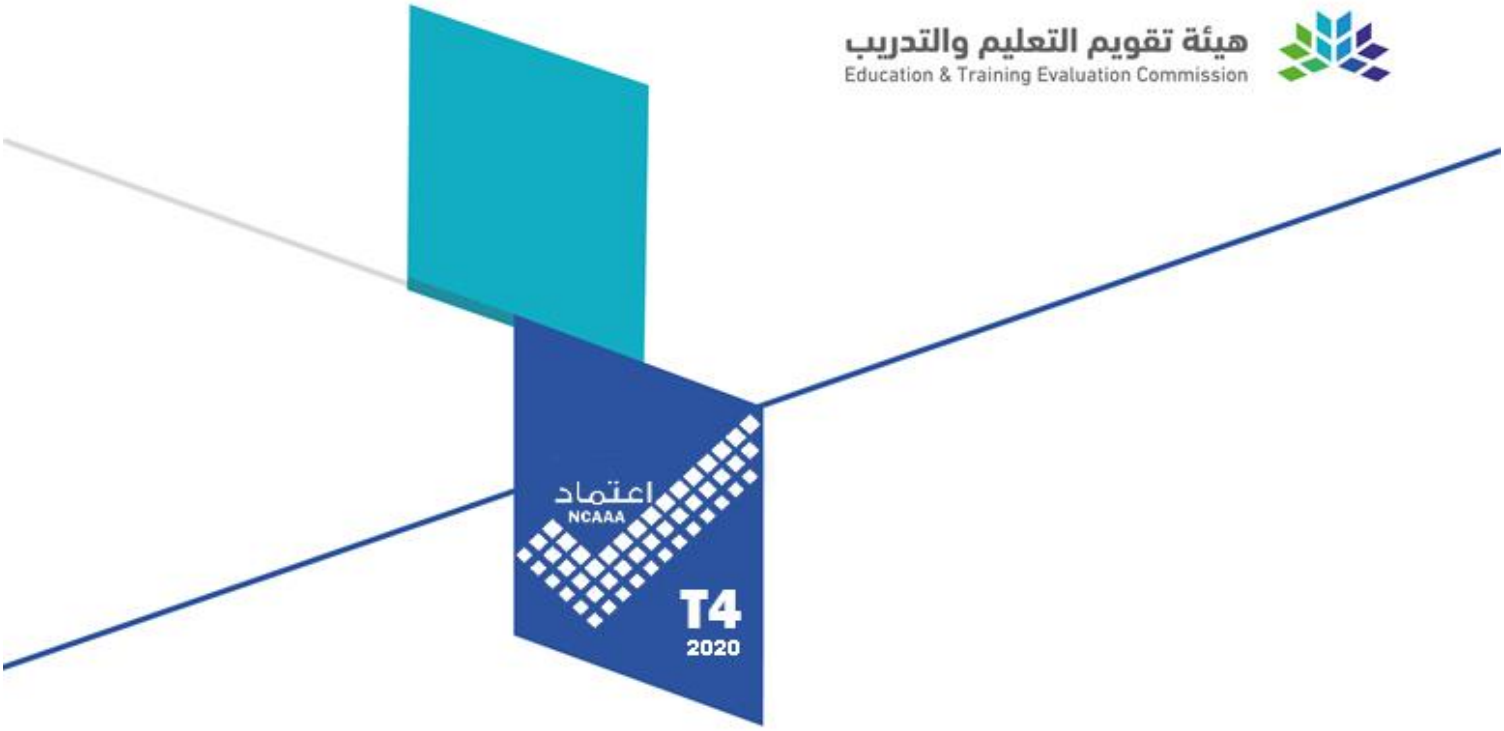
**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
**Assessment Methods** (Direct, Indirect)

## H. Specification Approval Data

| | |
|---|---|
| **Council / Committee** | |
| **Reference No.** | |
| **Date** | |

# مقررات الجامعة الاجبارية
# لبرنامج الفيزياء 1444

# مقررات الجامعة الاجبارية
# لبرنامج الفيزياء 1444




# توصيف المقرر الدراسي

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

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## 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<br>التلقي والسماع<br>العروض التقديمية | التقييم المستمر<br>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<br>الحوار والمناقشة<br>التلقِّي والمحاكاة<br>العرض والاستماع<br>التَّعلم الذاتي<br>العروض التقديمية<br>أسلوب حل المشكلات | الاختبارات الشفوية<br>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<br>التَّعليم التعاوني<br>حلقات النقاش<br>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.<br>– الميسر في غريب القرآن الكريم المطبوع بمجمع الملك فهد لطباعة المصحف الشريف.<br>– التجويد الميسر المطبوع بمجمع الملك فهد لطباعة المصحف الشريف. |
| **المراجع المساندة** | - البرهان في تجويد القرآن/ محمد الصادق قمحاوي.<br>- هداية القارئ إلى تجويد كلام البارئ/ عبد الفتاح السيد عجمي المرصفي.<br>- مذكرة في علم التجويد/ محمد نبهان بن حسين مصري. |
| **المصادر الإلكترونية** | - موقع مكتبة جامعة أم القرى.<br>- المكتبة الوقفية.<br>- المكتبة الشاملة.<br>- ملتقى أهل التفسير.<br>- منتديات قراء القرآن. |
| **أخرى** | - |

### 2. المرافق والتجهيزات المطلوبة:

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

## ز. تقويم جودة المقرر:

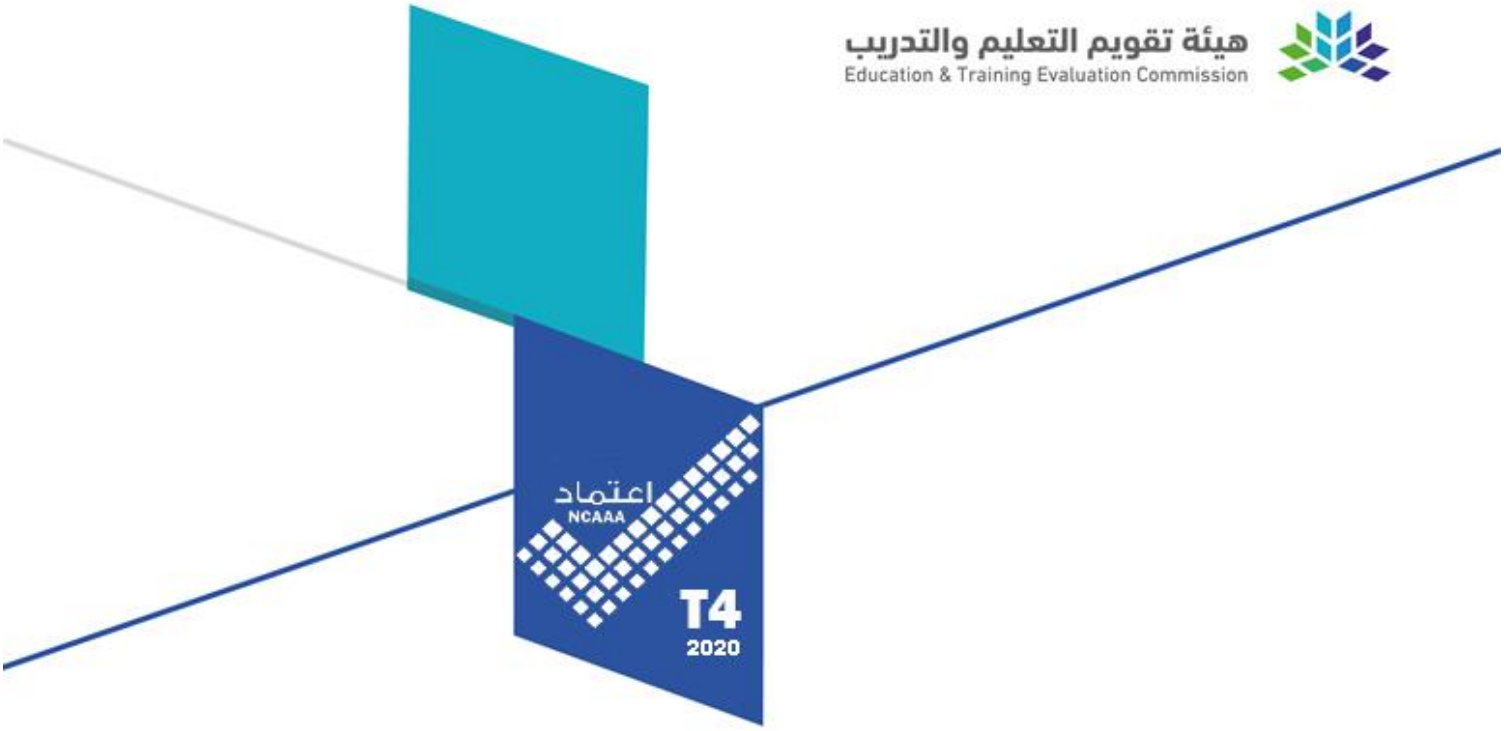
| مجالات التقويم | المقيمون | طرق التقييم |
|---|---|---|
| تقويم فاعليَّة استراتيجيات التَّدريس | أستاذ زميل يدرِّس نفس المقرَّر | مباشر: الزِّيارة للفصل وتقرير فاعليَّة |

| 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** | |




# توصيف المقرر الدراسي

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

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## 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<br>التلقي والسماع<br>العروض التقديمية | التقييم المستمر<br>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<br>الحوار والمناقشة<br>التلقِّي والمحاكاة<br>العرض والاستماع<br>التَّعلم الذاتي<br>العروض التقديمية<br>أسلوب حل المشكلات | الاختبارات الشفوية<br>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<br>التَّعليم التعاوني<br>حلقات النقاش<br>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.<br>- الميسر في غريب القرآن الكريم المطبوع بمجمع الملك فهد لطباعة المصحف الشريف.<br>- التجويد الميسر المطبوع بمجمع الملك فهد لطباعة المصحف الشريف. | |
| **المراجع المساندة** | - البرهان في تجويد القرآن/ محمد الصادق قمحاوي.<br>- هداية القارئ إلى تجويد كلام البارئ/ عبد الفتاح السيد عجمي المرصفي.<br>- 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.<br>- المكتبة الوقفية.<br>- المكتبة الشاملة.<br>- ملتقى أهل التفسير.<br>- منتديات قراء القرآن. | |
| **أخرى** | - | |

**2. المرافق والتجهيزات المطلوبة:**

| العناصر | متطلبات المقرر |
|---|---|
| **المرافق**<br>(القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ) | –قاعات دراسية بها عدد من الكراسي والطاولات للاختبارات النصفية والنهائية. |
| **التجهيزات التقنية**<br>(جهاز عرض البيانات، السبورة الذكية، البرمجيات) | – الحاسب الآلي.<br>– 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

اعتماد NCAAA
T4 2020

# توصيف المقرر الدراسي

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

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2. الهدف الرئيس للمقرر ..... 3
3. مخرجات التعلم للمقرر: ..... 3

**ج. موضوعات المقرر ..... 4**

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1. ربط مخرجات التعلم للمقرر مع كل من استراتيجيات التدريس وطرق التقييم ..... 5
2. أنشطة تقييم الطلبة ..... 5

**هـ - أنشطة الإرشاد الأكاديمي والدعم الطلابي: ..... 6**

**و – مصادر التعلم والمرافق: ..... 6**

1. قائمة مصادر التعلم: ..... 6
2. المرافق والتجهيزات المطلوبة: ..... 6

**ز. تقويم جودة المقرر: ..... 6**

**ح. اعتماد التوصيف ..... 7**

## 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<br>التلقي والسماع<br>العروض التقديمية | التقييم المستمر<br>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<br>الحوار والمناقشة<br>التلقِّي والمحاكاة<br>العرض والاستماع<br>التَّعلم الذاتي<br>العروض التقديمية<br>أسلوب حل المشكلات | الاختبارات الشفوية<br>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<br>التَّعليم التعاوني<br>حلقات النقاش<br>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.<br>– الميسر في غريب القرآن الكريم المطبوع بمجمع الملك فهد لطباعة المصحف الشريف.<br>– التجويد الميسر المطبوع بمجمع الملك فهد لطباعة المصحف الشريف. |
| **المراجع المساندة** | - البرهان في تجويد القرآن/ محمد الصادق قمحاوي.<br>- هداية القارئ إلى تجويد كلام البارئ/ عبد الفتاح السيد عجمي المرصفي.<br>- مذكرة في علم التجويد/ محمد نبهان بن حسين مصري. |
| **المصادر الإلكترونية** | - موقع مكتبة جامعة أم القرى.<br>- المكتبة الوقفية.<br>- المكتبة الشاملة.<br>- ملتقى أهل التفسير.<br>- منتديات قراء القرآن. |
| **أخرى** | - |

### 2. المرافق والتجهيزات المطلوبة:

| العناصر | متطلبات المقرر |
|---|---|
| **المرافق**<br>(القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ) | –قاعات دراسية بها عدد من الكراسي والطاولات للاختبارات النصفية والنهائية. |
| **التجهيزات التقنية**<br>(جهاز عرض البيانات، السبورة الذكية، البرمجيات) | – الحاسب الآلي.<br>– 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

اعتماد NCAAA
T4 2020

# 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: ..... 3**

**ب- هدف المقرر ومخرجاته التعليمية: ..... 3**

1. الوصف العام للمقرر: ..... 3
2. الهدف الرئيس للمقرر ..... 3
3. مخرجات التعلم للمقرر: ..... 4

**ج. موضوعات المقرر ..... 4**

**د. التدريس والتقييم: ..... 5**

1. ربط مخرجات التعلم للمقرر مع كل من استراتيجيات التدريس وطرق التقييم ..... 5
2. أنشطة تقييم الطلبة ..... 6

**هـ - أنشطة الإرشاد الأكاديمي والدعم الطلابي: ..... 6**

**و – مصادر التعلم والمرافق: ..... 6**

1. قائمة مصادر التعلم: ..... 6
2. المرافق والتجهيزات المطلوبة: ..... 6

**ز. تقويم جودة المقرر: ..... 7**

**ح. اعتماد التوصيف ..... 7**

## 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<br>التلقي والسماع<br>العروض التقديمية | التقييم المستمر<br>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<br>الحوار والمناقشة<br>التلقِّي والمحاكاة<br>العرض والاستماع<br>التَّعلم الذاتي<br>العروض التقديمية<br>أسلوب حل المشكلات | الاختبارات الشفوية<br>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<br>التَّعليم التعاوني<br>حلقات النقاش<br>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.<br>- الميسر في غريب القرآن الكريم المطبوع بمجمع الملك فهد لطباعة المصحف الشريف.<br>- التجويد الميسر المطبوع بمجمع الملك فهد لطباعة المصحف الشريف. |
| **المراجع المساندة** | - البرهان في تجويد القرآن/ محمد الصادق قمحاوي.<br>- هداية القارئ إلى تجويد كلام البارئ/ عبد الفتاح السيد عجمي المرصفي.<br>- مذكرة في علم التجويد/ محمد نبهان بن حسين مصري. |
| **المصادر الإلكترونية** | - موقع مكتبة جامعة أم القرى.<br>- المكتبة الوقفية.<br>- المكتبة الشاملة.<br>- ملتقى أهل التفسير.<br>- منتديات قراء القرآن. |
| **أخرى** | - |

**2. المرافق والتجهيزات المطلوبة:**

| العناصر | متطلبات المقرر |
|---|---|
| **المرافق**<br>(القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ) | -قاعات دراسية بها عدد من الكراسي والطاولات للاختبارات النصفية والنهائية. |

| العناصر | متطلبات المقرر |
|---|---|
| **التجهيزات التقنية**<br>(جهاز عرض البيانات، السبورة الذكية، البرمجيات) | – الحاسب الآلي.<br>– 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

# 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** |

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## أ. التعريف بالمقرر الدراسي:

| |
|---|
| **١. الساعات المعتمدة:** 32 |
| **٢. نوع المقرر**<br>أ. متطلب جامعة ■ متطلب كلية ☐ متطلب قسم ☐ أخرى ☐<br>ب. إجباري ■ اختياري ☐ |
| **٣. السنة / المستوى الذي يقدم فيه المقرر** **الأول** |
| **٤. المتطلبات السابقة لهذا المقرر** (إن وجدت)<br>**لا يوجد** |
| **٥. المتطلبات المتزامنة مع هذا المقرر** (إن وجدت)<br>**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) :**<br>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:**<br>يدرس الطالب في هذه المفردة مفهوم الدين، وتعريفاته، وأهميته، وحاجة الإنسان إليه من حيث فطريته، وتصحيح سلوكه.<br>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:**<br>في هذه المفردة سيدرس الطالب أصول محاسن، وكمال هذا الدين العظيم، كما سيدرس مظاهر وسطية الإسلام في عقائده وشرائعه وأخلاقه. | ٢ |
| ٤ | **مفهوم الإيمان:**<br>تتطرق هذه المفردة إلى بيان الحقيقة اللغوية والشرعية للإيمان، وأهمية الايمان بالغيب، والعلاقة بين الظاهر والباطن، وزيادة الإيمان ونقصانه.<br>في **الإيمان بالله (الربوبية، الأسماء والصفات):**<br>هذه المفردة سيدرس الطالب مفهوم الايمان بالله وبوجوده، وبربوبيته، وأسمائه وصفاته، وأثر الإيمان بها في حياة المسلم<br>**الإيمان بالله: (الألوهية):**<br>يدرس الطالب في هذه المفردة مفهوم الايمان بالألوهية، وأثر ذلك في حياة المسلم. | ٢ |
| ٥ | **الإيمان بالملائكة والكتب:**<br>هذه المفردة تعنى بتعريف الايمان بالملائكة والكتب وأهميته وآثاره.<br>كما سيدرس صفات الملائكة ووظائفهم، والكتب الإلهية الواجب الإيمان بها، بالإضافة إلى موقف المسلم من الكتب السماوية السابقة والقرآن الكريم. | ٢ |
| ٦ | **الإيمان بالرسل:**<br>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**:<br>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**:<br>في هذه المفردة سيدرس الطالب مفهوم القضاء والقدر وآثار الإيمان به، كما سيدرس مراتب الإيمان بالقدر والمراد بها. | ٢ |
| ٩ | **العبادة**:<br>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:**<br>سيكون التركيز في هذه المفردة على دراسة الآثار الإيمانية والتربوية للصلاة والزكاة والصوم والحج في حياة المسلم. | ٢ |
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## 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.<br>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<br>مكتبة اليكترونية |
| **التجهيزات التقنية** (جهاز عرض البيانات، السبورة الذكية، البرمجيات) | أجهزة حاسوب مرتبطة بالنت<br>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

اعتماد NCAAA
T4 2020

# 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** |

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## أ. التعريف بالمقرر الدراسي:

| |
|---|
| **١. الساعات المعتمدة:** |
| **٢. نوع المقرر**<br>أ. متطلب جامعة ☐ متطلب كلية ☐ متطلب قسم ☐ أخرى<br>ب. إجباري ☐ اختياري |
| **٣. السنة / المستوى الذي يقدم فيه المقرر** |
| **٤. المتطلبات السابقة لهذا المقرر** (إن وجدت)<br>ثقافة إسلامية ١٠١ |
| **٥. المتطلبات المتزامنة مع هذا المقرر** (إن وجدت)<br>**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:<br>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:<br>١- التعرف على مصادر المعرفة، ومجال كل منها.<br>٢- توضيح مصادر التشريع الإسلامي وأهميتها.<br>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**:<br>يدرس الطالب في هذه المفردة مصادر المعرفة، والتي تكمن في: النقل، والعقل، والحس، والفطرة، ومفهوم كل منها، ومجالاتها، وأهميتها. | ٢ |
| ٢ | **الوحي**:<br>يدرس الطالب في هذه المفردة تعريف الوحي، وصوره، وأدلة صدقه، وحاجة الناس إليه. | ٢ |
| ٣ | **مصادر التشريع**:<br>في هذه المفردة سيدرس الطالب التعريف بالقرآن والسنة والإجماع والقياس كمصادر للتشريع في الإسلام. | ٢ |
| ٤ | **مدخل إلى القرآن الكريم**:<br>هذه المفردة تتطرق لتعريف القرآن الكريم، وكيفية نزوله، ومراحل جمعه وتدوينه، خصائصه. | ٢ |
| ٥ | **واجبنا تجاه القرآن الكريم:**<br>في هذه المفردة سيدرس الطالب أهم واجبات المسلم نحو القرآن الكريم.<br>**التزكية بالقرآن الكريم:**<br>في هذه المفردة سيدرس الطالب طرق التزكية بالقرآن الكريم وأثره في تصحيح الأخلاق والسلوك. | ٢ |
| ٦ | **مدخل إلى السنة النبوية**:<br>في هذه المفردة سيدرس الطالب تعريف السنة، وأدلة حجيتها، ومراحل جمعها وتدوينها، وبيان مكانتها | ٢ |
| ٧ | **أقسام الحديث من حيث القبول والرد:**<br>في هذه المفردة سيدرس الطالب:<br>-أقسام الحديث الصحيح والحسن والضعيف، ومعرفة المقبول منها والمردود، إضافة إلى تعريفه بطرق البحث في المواقع الإلكترونية في مجال الحديث.<br>**المنهج النقدي عند المحدثين**:<br>-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:**<br>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:**<br>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:**<br>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 |
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## 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.<br>أوراق عمل |
| 1.2 | يبين تفسير سورة الحجرات | التعلم الذاتي<br>- ربط الطالب بالمراجع الأساسية والمساندة في معرفة هذه المفردات | الاختبارات التحريرية والشفوية.<br>عرض البحوث والمناقشة |
| 1.3 | يشرح مكانة السنة في التشريع وتدوينها وأهم مصطلحاتها ومصادرها ونماذج منها | المحاضرات والمناقشات<br>- ربط الطالب بالمراجع الأساسية والمساندة في معرفة هذه المفردات | الاختبارات التحريرية والشفوية.<br>عرض البحوث والمناقشة |
| 1.4 | يُقدم نبذة مختصرة عن الإجماع والقياس والاجتهاد والفتوى | الاستقراء والعصف الذهني<br>المحاضرات والمناقشات | الاختبارات التحريرية والشفوية. |
| **2.0** | **المهارات** | | |
| 2.1 | يوضح أهم أوجه إعجاز القرآن | العصف الذهني<br>الحوار والمناقشة<br>عمل أبحاث وأوراق عمل<br>زيارة بعض المواقع الالكترونية التي تعتني بهذا الموضوع | التقييم الجماعي<br>تقييم الأبحاث وأوراق عمل |
| 2.2 | يستنبط أهم الفوائد والأحكام من تفسير سورة الحجرات | الطريقة الاستقرائية<br>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<br>خريطة المفاهيم | الملاحظة المباشرة والتقييم الجماعي |
| 2.4 | يشرح عشرة أحاديث مختارة من السنة النبوية | التعلم الذاتي<br>التكليف بواجبات | الاختبار<br>تقييم أبحاث |
| **3.0** | **القيم** | | |
| 3.1 | يعظم قد النبي صلى الله علسه وسلم ويعرف مكانته وواجبه نحروه ونحو سنته | التعلم التعاوني<br>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<br>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.<br>٢- الإتقان في علوم القرآن للسيوطي.<br>٣- الاعتصام لأبي إسحاق إبراهيم بن موسى الشاطبي.<br>٤- نزهة النظر في شرح نخبة الفكر لابن حجر العسقلاني.<br>٥- رفع الملام عن الأئمة الأعلام لشيخ الإسلام ابن تيمية الحراني.<br>٦- مجموع فتاوى شيخ الإسلام ابن تيمية.<br>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<br>مكتبة اليكترونية |
| **التجهيزات التقنية** (جهاز عرض البيانات، السبورة الذكية، البرمجيات) | أجهزة حاسوب مرتبطة بالنت<br>قاعات افتراضية |
| **تجهيزات أخرى** (تبعاً لطبيعة التخصص) | لا يوجد |

## ز. تقويم جودة المقرر:

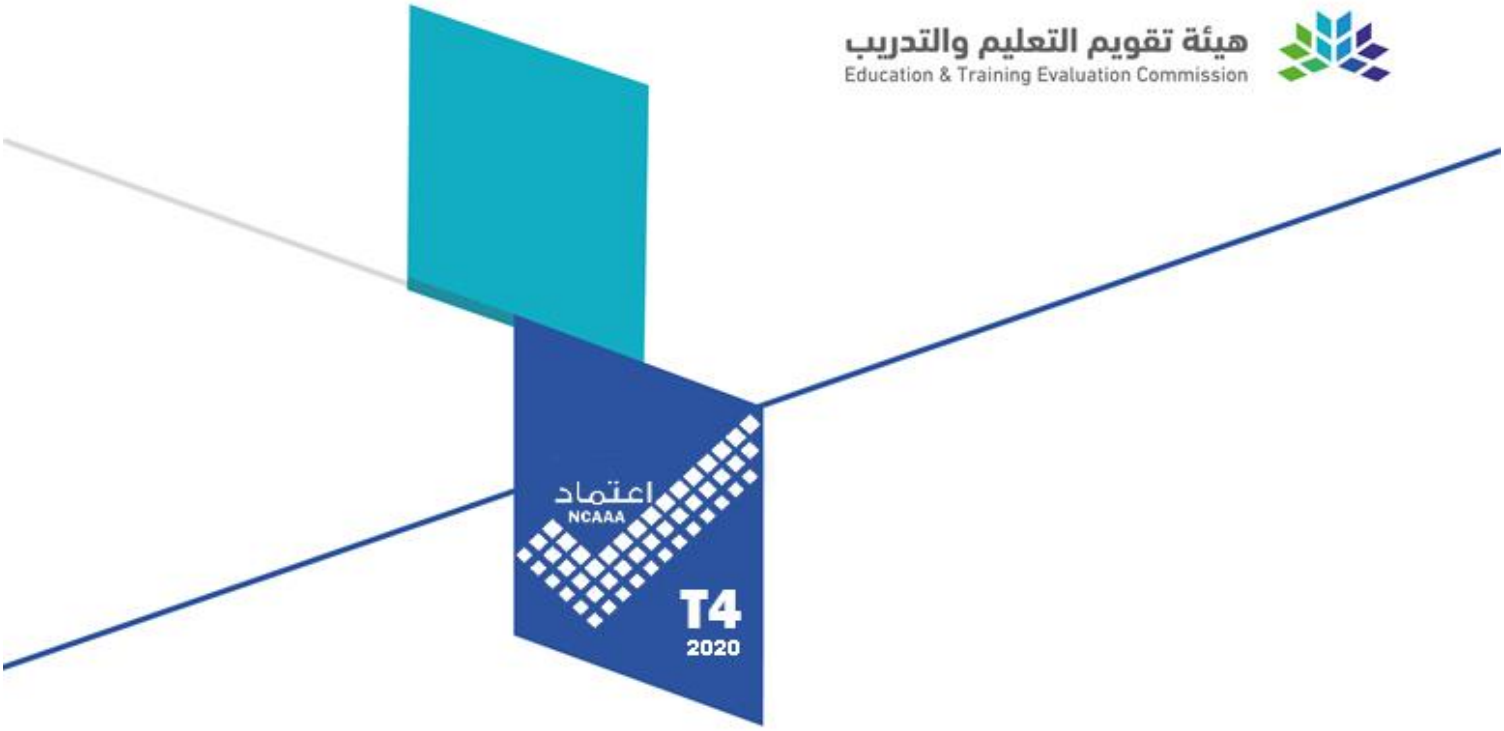
| مجالات التقويم | المقيمون | طرق التقييم |
|---|---|---|
| فاعلية التدريس | أعضاء هيئة التدريس، الطالب، إدارة القسم، لجنة الجودة | غير مباشر (الاستبانات) |

| 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** | |




# 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 |

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## 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:**<br>يدرس الطالب في هذه المفردة مفهوم الأسرة، وأهميتها، ومقاصد بنائها من حيث كونها اللبنة الأولى التي تنشأ فيها الأجيال. | ٢ |
| ٢ | **مراحل تكوين الأسرة:**<br>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:**<br>يدرس الطالب في هذه المفردة التعريف بأهم الواجبات والحقوق بين الزوجين، سواء الحقوق المفردة أو المشتركة بينهما.<br>**الواجبات والحقوق بين أفراد الأسرة (الإباء، الأبناء، الأرحام):**<br>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:**<br>في هذه المفردة سيتعلم الطالب منهج الإسلام في بناء الأسرة المسلمة، وعلاج الخلافات الأسرية وفق المنهج الرباني. | ٢ |
| ٥ | **المجتمع: مفهومه، مقاصده، سننه:**<br>تتطرق هذه المفردة إلى التعريف بالمجتمع، وخصائصه، والمقاصد الشرعية للاجتماع، والهدي الشرعي في الاجتماع.<br>**الفروض الكفائية والمسؤولية المجتمعية:**<br>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:**<br>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:**<br>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:**<br>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:**<br>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.<br>كذلك قصة حادثة الإفك التي حدثت لبيت النبي صلى الله عليه وسلم.<br>كما تتطرق المفردة إلى كيفية تحليل النص وتطبيقه في حياته الأسرية والاجتماعية. | ٢ |
| ١٠ | **دراسة تحليلية لمجتمع النبي ﷺ في المدينة:**<br>يدرس الطالب في هذه المفردة مجتمع النبي صلى الله عليه وسلم، ومكوناته، ويتعرف على خصائص مجتمع الصحابة رضي الله عنهم. | ٢ |
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## 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.<br>أوراق عمل |
| 1.2 | يلم بنظام الأسرة في الإسلام وأهم الشبه المثارة عيه | التعلم الذاتي<br>المحاضرات والمناقشات<br>ربط الطالب بالمراجع الأساسية والمساندة في معرفة هذه المفردات | الاختبارات التحريرية والشفوية<br>عرض البحوث والمناقشة |
| 1.3 | يحدد مفهوم النظام الاقتصادي الإسلامي وأهم مبادئه | المحاضرات والمناقشات<br>ربط الطالب بالمراجع الأساسية والمساندة في معرفة هذه المفردات | الاختبارات التحريرية والشفوية.<br>أوراق عمل |
| 1.4 | يذكر تعريف النظام السياسي في الإسلام وأصوله وحقوق الراعي والرعية | الاستقراء والعصف الذهني<br>المحاضرات والمناقشات | الاختبارات التحريرية والشفوية. |
| **2.0** | **المهارات** | | |
| 2.1 | يشرح أهم الشبه المثارة على نظام الأسرة في الإسلام وكيفية الرد عليها | العصف الذهني<br>الحوار والمناقشة<br>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<br>تكوين ملكة النقد واستخدام أسلوب المقارنة | بحوث وواجبات<br>تقييم قدرة الطلاب على الاستنباط والتحليل |
| 2.3 | يحرر مذهب السلف في تحريم الخروج على أئمة المسلمين | التعليم التعاوني<br>الطريقة الاستقرائية | الملاحظة المباشرة والتقييم الجماعي<br>تقييم أبحاث |

| الرمز | مخرجات التعلم | استراتيجيات التدريس | طرق التقييم |
|---|---|---|---|
| 2.4 | يفرق بين الحدود والتعازير وقوانين العقوبات الوضعية | التعلم الذاتي<br>التكليف بواجبات | تقييم الأبحاث |
| **3.0** | **القيم** | | |
| 3.1 | يشارك زملاءه في الأعمال والتكاليف الجماعية باستقلال ومسؤولية | التعلم التعاوني<br>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<br>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.<br>٢- كتاب النكاح من خلال كتب السنة وشروحها.<br>٣- تحفة المودود بأحكام المولود لابن قيم الجوزية. |
| **المصادر الإلكترونية** | المكتبة الرقمية السعودية |
| **أخرى** | |

### ٢. المرافق والتجهيزات المطلوبة:

| العناصر | متطلبات المقرر |
|---|---|
| **المرافق**<br>(القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ) | قاعة دراسية مجهزة افتراضية<br>مكتبة اليكترونية |
| **التجهيزات التقنية**<br>(جهاز عرض البيانات، السبورة الذكية، البرمجيات) | أجهزة حاسوب مرتبطة بالنت<br>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

اعتماد NCAAA
T4 2020

# 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


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## 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 | يشـــرح أبرز القضـــايا النبوية المرتبطة بأخلاق النبي صـــلى الله عليه وســـلم 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:**<br>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:**<br>يدرس الطالب في هذه المفردة تأصيلاً للأخلاق الفردية وبيان أهميتها مع ذكر أمثلة لها :كالصدق، والرفق، والتواضع، وغيرها من الأخلاق الفردية.<br>**عناية الإسلام بالأخلاق الاجتماعية:**<br>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:**<br>يدرس الطالب في هذه المفردة الثمرات الدنيوية والأخروية للأخلاق في الإسلام | ٢ |
| ٤ | **النبي ﷺ كما وصفه ربه تعالى:**<br>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:**<br>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:**<br>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:**<br>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:**<br>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:**<br>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:**<br>يدرس الطالب في هذه المفردة بيان مفهوم العمل وكسب الرزق في الإسلام وذكر أمثلة تطبيقية لأخلاقيات المهنة.<br>يدرس الطالب في هذه المفردة بيان مفهوم النزاهة في الإسلام، وأهميته، وذكر أمثلة أخلاقية تطبيقية لمحاربة الفساد. | ٢ |
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## 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.<br>وأوراق عمل |
| 1.2 | يلم بأبرز مصادر الأخلاق في الإسلام، ويلم بخصائص هذه المصادر. | التعلم الذاتي<br>ربط الطالب بالمراجع الأساسية والمساندة في معرفة هذه المفردات<br>تكليف الطالب بعمل بحث أو ورقة عمل | الاختبارات التحريرية والشفوية.<br>عرض البحوث والمناقشة |
| 1.3 | يذكر أهم الأخلاق الفردية والاجتماعية. | المحاضرات والمناقشات<br>ربط الطالب بالمراجع الأساسية والمساندة في معرفة هذه المفردات | الاختبارات التحريرية والشفوية.<br>وأوراق عمل |
| 1.4 | يلم بأبرز القضايا النبوية المرتبطة بأخلاق النبي صلى الله عليه وسلم وأثرها على الفرد والجماعة. | الاستقراء والعصف الذهني<br>المحاضرات والمناقشات | الاختبارات التحريرية والشفوية. |
| **2.0** | **المهارات** | | |
| 2.1 | يوظف محاسن الأخلاق في الدعوة إلى الله بحكمة وبصيرة. | العصف الذهني<br>الحوار والمناقشة<br>زيارة بعض المواقع الالكترونية التي تعتني بهذا الموضوع | التقييم الجماعي<br>أوراق عمل |
| 2.2 | يستخدم الأخلاق الحميدة في توعية وتثقيف الحجاج والمعتمرين. | الطريقة الاستقرائية<br>ربط الطالب بالمراجع الأساسية والمساندة في معرفة هذه المفردات | بحوث وواجبات<br>تقييم قدرة الطلاب على الاستنباط والتحليل |
| 2.3 | يحلل نصوص القرآن الكريم والسنة النبوية المرتبطة بالأخلاق. | التعليم التعاوني<br>الحوار والمناقشة | الملاحظة المباشرة والتقييم الجماعي |
| 2.4 | يرد على شبه المناوئين للدعوة الإسلامية وفق منهج أخلاقي قويم. | التعليم النشط<br>ربط الطالب بالمراجع الأساسية والمساندة في معرفة هذه المفردات | الملاحظة المستمرة<br>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<br>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<br>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 .<br>النزاهة في مواجهة الفساد : تجربة المملكة العربية السعودية ، لمحمد بن عبد الله الشريف .<br>الشمائل المحمدية للإمام الترمذي . |
| **المراجع المساندة** | ١- الأخلاق والسير لابن حزم الأندلسي .<br>٢- زاد المعاد في هدي خير العباد لابن قيم الجوزية .<br>٣- السيرة النبوية لابن هشام .<br>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**<br>(القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ) | قاعة دراسية مجهزة افتراضية<br>مكتبة اليكترونية |
| **التجهيزات التقنية**<br>(جهاز عرض البيانات، السبورة الذكية، البرمجيات) | أجهزة حاسوب مرتبطة بالنت<br>قاعات افتراضية |
| **تجهيزات أخرى** (تبعاً لطبيعة التخصص) | لا يوجد |

## ز. تقويم جودة المقرر:

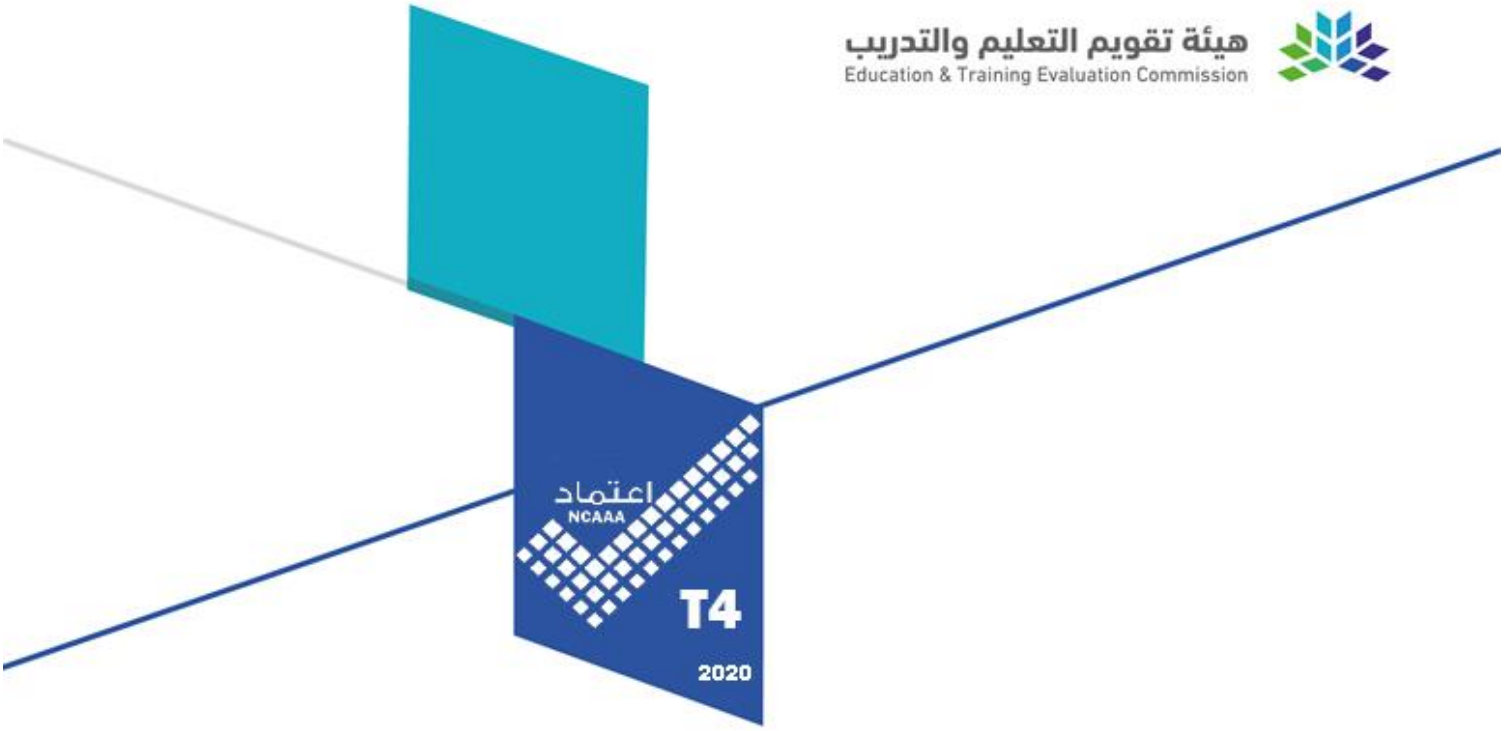
| مجالات التقويم | المقيمون | طرق التقييم |
|---|---|---|
| فاعلية التدريس | أعضـــاء هيئة التدريس، الطالب، لجنة الجودة، إدارة البرنامج | غير مباشر (الاستبانات) |
| فاعلية طرق تقييم الطالب | المراجع النظير | مراجعة عينات عشـــوائية من أوراق إجابات الطلاب |
| مدى تحصيل مخرجات التعلم | قيادات البرنامج | 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:** | 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 |

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## A. Course Identification

| |
|---|
| **1. Credit hours: 4 hours** |
| **2. Course type**<br>**a.** University ☐ College ■ Department ☐ Others ☐<br>**b.** Required ■ Elective ☐ |
| **3. Level/year at which this course is offered:**<br>**1st Year** |
| **4. Pre-requisites for this course** (if any)**:**<br><br>**N/A** |
| **5. Co-requisites for this course** (if any)**:**<br><br>**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:**<br><br>exhibit adequate comprehension of spoken materials at the A2 level through recognizing key words and simple changes in topic.<br>- understand the main ideas of conversations, presentations, radio programmes, news reports, podcasts, and interviews<br>- understand how to listen for detail in academic study<br>- understand the use of repetition for clarification<br>- understand a speaker's mood from intonation<br>- understand a speaker's attitude to a topic<br>- distinguish fact from opinion<br>- recognize features of connected speech, e.g. single sounds, intrusives, stress patterns |
| 1.2 | demonstrate basic understanding of grammar at the A2 level.<br>- use the present simple to describe habits and routines<br>- be aware of the use of formal vs informal language when making requests, writing email, etc.<br>- use the past simple and past continuous when describing events in someone's life with correct time clauses where needed<br>- use the present continuous to describe actions happening at the time of speaking or when discussing future plans<br>-use *going to* when talking about persona plans or intentions<br>- correctly use quantifiers, such as *too much*<br>- be aware of the difference in use of *to* and *for* when giving reasons<br>- use comparatives and superlatives for comparing people and objects<br>- make predictions using *will, may* or *might* where appropriate<br>- use present perfect to talk about experience or ack of it<br>- 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:<br>- develop vocabulary of the topics covered in order to be able to talk about them with others<br>- be able to combine clauses using *and* and *but*<br>- understand and use basic collocations with *have, make* and *do*<br>- write short texts, eg making comments on podcast chat or online discussions, or giving online travel advice |
| **2.0** | **Skills** |
| 2.1<br><br>2.1.1 | **Cognitive Skills:**<br>demonstrate comprehension of simple written texts at the A2 level through applying the skills of scanning, skimming, and guessing from context.<br><br>- develop scanning (to find information quickly) and skimming skills (to predict the meaning of the text from visuals, titles or common words)<br>- identify the author or speaker's audience and purpose<br>- listen or read for opinions, attitude, and identify fact from opinion<br>- 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.<br>- write a formal email of introduction<br>- post comments online with reasons and/or examples<br>- posting text msgs vs writing an email<br>- brainstorm and write points on presentation slides with correct format (parallelism)<br>- write an announcement and comment on it<br>- research a famous person, make notes, and produce a short paragraph from them<br>- write a vlog script<br>- write combined sentences, using *and* and *but*<br>- use sequencers: *first, then, next, etc*<br>- 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<br>- talk about familiar topics<br>- use functional language, such as greetings, inviting, expressing surprise, etc<br>- give short presentations<br>- produce a short vlog and video<br>- check understanding |
| 2.2 | **Critical Thinking**<br>- consider how people feel and think when meeting someone for the first time<br>- analyze a text regarding main ideas in paragraphs<br>- identify and discuss the habits of successful people<br>- identify the pros and cons of a topic<br>- identify a person's attitude or feelings based on what they have said<br>- identify solutions to a problem<br>- identify the purpose of a text based on its content<br>- form an opinion based on input, eg an article<br>- separate fact from fiction<br>- identify reasons people take some action and problems they may have<br>- evaluate a classmate's writing based on criteria provided<br>- identify the difference between fact and fiction in advertisements<br>- identify different points of view<br>- identify use of register/ formality<br>- reflect on how knowledge helps comprehension<br>- reflect on knowledge gained<br>- make predictions based on present knowledge |
| 2.3 | **Communication, Information Technology, Numerical**<br>- provide basic, prepared information<br>- describe and give personal opinions on a variety of topics<br>- give advice, eg on travel<br>- express general beliefs<br>- talk about advantages and disadvantages<br>- give recommendations<br>- present persuasively |
| 2.4 | **Psychomotor**<br>- give confident, persuasive presentations<br>- design slides for a presentation with appropriate parallelism<br>- 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:<br>- hold short discussions with a partner to activate knowledge before listening tasks<br>- hold short discussions with a partner to synthesize knowledge post-listening<br>- work with others to develop a plan, create a convincing argument<br>- give feedback to peers on writing, presentations, etc<br>- use intonation to show emotion and interest<br>- show levels of agreement *"I agree", "I guess"*<br>- ask for opinions and check information |
| 3.4 | take the responsibilities to meet the requirements of the jobs market:<br>- consider research needed before a job application<br>- write a formal letter of self-introduction<br>- be aware of the importance of first impressions<br>- consider and give advice on how to save<br>- 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<br>Family, possessions, greetings, email, first impressions, things in common<br>Video: Friends for dinner | |
| 2 | Unit 2: Work and Study<br>Routines, work or study space, explaining a problem, podcasts, smartphones, the Internet, useful apps<br>Video: Monday morning problems | |
| 3 | Unit 3: Let's move<br>Sport and exercise, asking for info, bike sharing, attitudes to keeping fit, a fitness program<br>Video: At the gym | |
| 4 | Unit 4: Good times<br>Comic Con, gifts, invitations, Bug Fest, National Day and national dishes<br>Video: A surprise party | |
| 5 | Unit 5: Firsts and lasts<br>A day in your life, events in your life, congratulating and sympathizing, first impressions, migration, the Titanic<br>Video: A photo album | |
| 6 | Unit 6: Buy now, pay later<br>Back Friday, shopping habits, discovering new words, money, online shopping advice, inventions<br>Video: An online shopping problem | |
| 7 | Unit 7: But first, food<br>Comfort food, street food, ordering, meat-free burgers, vegan food, celebrating<br>Video: Eating out | |
| 8 | Unit 8: Trips<br>Trip advice, A short trip, making suggestions, living abroad, a trip to Riyadh, planning a trip<br>Video: Lost in the city | |
| 9 | Unit 9: Looking good<br>What to wear, family photos, giving opinions, images in ads, recycling, advertisements<br>Video: An untidy guest | |
| 10 | Unit 10: Risky business<br>Dangers at work, health, fears, the future: yourself and work, TV shows<br>Video: A 911 call | |
| 11 | Unit 11: Me, online<br>Personal achievements, social media, requesting, selfies, Internet of Things (IoT), online videos<br>Video: Getting a job | |
| 12 | Unit 12: Outdoors<br>The weather, describing places, getting lost, guerilla gardening, writing a trip review, a tourism campaign<br>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:**<br><br>exhibit adequate comprehension of spoken materials at the A2 level.<br>- understand the main ideas of conversations, presentations, radio programmes, news reports, podcasts, and interviews<br>- understand how to listen for detail in academic study<br>- understand the use of repetition for clarification<br>- understand a speaker's mood from intonation<br>- understand a speaker's attitude to a topic distinguish fact from opinion<br>- recognize features of connected speech, e.g. single sounds, intrusives, stress patterns | Listening exercises | Listening mid-term exam<br><br>Listening final exam |
| 1.2 | demonstrate basic understanding of grammar at the A2 level.<br>- use the present simple to describe habits and routines<br>- be aware of the use of formal vs informal language when making requests, writing email, etc<br>- use the past simple and past continuous when describing events in someone's life with correct time clauses where needed<br>- use the present continuous to describe actions happening at the time of speaking or when discussing future plans<br>-use *going to* when talking about persona plans or intentions<br>- correctly use quantifiers, such as *too much*<br>- be aware of the difference in use of *to* and *for* when giving reasons<br>- use comparatives and superlatives for comparing people and objects<br>- make predictions using *will, may* or *might* where appropriate<br>- use present perfect to talk about experience or ack of it<br>- use relative clauses with *who, which* or *that* | Grammar exercises | Midterm Exam<br>Continuous writing assessment<br>Continuous speaking assessment<br>Quizzes<br>Writing Final Exam<br>Final Exam |
| 1.3 | recognize and use lexical items such as words, collocations related to everyday topics at the A2 level:<br>- develop vocabulary of the topics covered in order to be able to talk about them with others<br>- be able to combine clauses using *and* and *but*<br>- understand and use basic collocations with *have, make* and *do*<br>- 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<br>Continuous writing assessment<br>Continuous speaking assessment<br>Quizzes<br>Writing Final Exam<br>Final Exam |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| **2.0** | **Skills** | | |
| 2.1<br><br>2.1.1 | **Cognitive Skills:**<br>demonstrate comprehension of simple written texts at the A2 level through applying the skills of scanning, skimming, and guessing from context.<br>- develop scanning (to find information quickly) and skimming skills (to predict the meaning of the text from visuals, titles or common words)<br>- identify the author or speaker's audience and purpose<br>- listen or read for opinions, attitude, and identify fact from opinion<br>- understand meaning from context in both written and spoken texts | Reading comprehension exercises | Classroom discussion<br>Midterm exam<br>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.<br>- write a formal email of introduction<br>- post comments online with reasons and/ or examples<br>- posting text msgs vs writing an email<br>- brainstorm and write points on presentation slides with correct format (parallelism)<br>- write an announcement and comment on it<br>- research a famous person, make notes, and produce a short paragraph from them<br>- write a vlog script<br>- write combined sentences, using *and* and *but*<br>- use sequencers: *first, then, next, etc*<br>- punctuation: Capital letters, commas, periods. | Writing exercises | Continuous writing assessment<br><br>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<br>- talk about familiar topics<br>- use functional language, such as greetings, inviting, expressing surprise, etc<br>- give short presentations<br>- produce a short vlog and video<br>- check understanding | Speaking exercises<br>Discussion<br>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**<br>- consider how people feel and think when meeting someone for the first time<br>- analyze a text regarding main ideas in paragraphs<br>- identify and discuss the habits of successful people<br>- identify the pros and cons of a topic<br>- identify a person's attitude or feelings based on what they have said<br>- identify solutions to a problem<br>- identify the purpose of a text based on its content<br>- form an opinion based on input, eg an article separate fact from fiction<br>- identify reasons people take some action and problems they may have<br>- evaluate a classmate's writing based on criteria provided<br>- identify the difference between fact and fiction in advertisements<br>- identify different points of view<br>- identify use of register/ formality<br>- reflect on how knowledge helps comprehension<br>- reflect on knowledge gained<br>- make predictions based on present knowledge | | |
| 2.3 | **Communication, Information Technology, Numerical**<br><br>- provide basic, prepared information<br>- describe and give personal opinions on a variety of topics<br>- give advice, eg on travel<br>- express general beliefs<br>- talk about advantages and disadvantages<br>- give recommendations present persuasively | Demonstrations<br>Active self-learning<br>Pair work<br>Group work<br>e-learning<br>Online material<br>(Encourage students to make their presentations to small groups in the class) | Monitoring students' progress<br><br>Evaluating the individual contribution<br><br>Evaluating the teamwork<br><br>Evaluating the final product<br><br>(Evaluation of presentations may be by peers) |
| 2.4 | **Psychomotor**<br><br>- give confident, persuasive presentations<br>- design slides for a presentation with appropriate parallelism<br>- use linking and weak forms in sentences | Active self-learning<br>Pair work<br>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<br><br>Cambridge LMS | Built-in immediate feedback |
| 3.2 | develop academic integrity. | Writing exercises | Continuous writing assessment<br>Continuous speaking assessment<br>Writing Final Exam |
| 3.3 | collaborate in knowledge building and co-operate with peers:<br><br>- hold short discussions with a partner to activate knowledge before listening tasks<br>- hold short discussions with a partner to synthesize knowledge post-listening<br>- work with others to develop a plan, create a convincing argument<br>- give feedback to peers on writing, presentations, etc<br>- use intonation to show emotion and interest<br>- show levels of agreement *"I agree", "I guess"*<br>- ask for opinions and check information | Peer work<br>Group work | Evaluating the individual contribution<br><br>Evaluating the teamwork<br><br>Evaluating the final product |
| 3.4 | take the responsibilities to meet the requirements of the jobs market:<br><br>- consider research needed before a job application<br>- write a formal letter of self-introduction<br>- be aware of the importance of first impressions<br>- consider and give advice on how to save<br>- consider the future of work | Individual, peer and group work inside classrooms.<br><br>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:**<br>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**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | Classrooms |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | data show, Smart Board, and Cambridge application |
| **Other Resources**<br>(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | Blackboard |

## G. Course Quality Evaluation

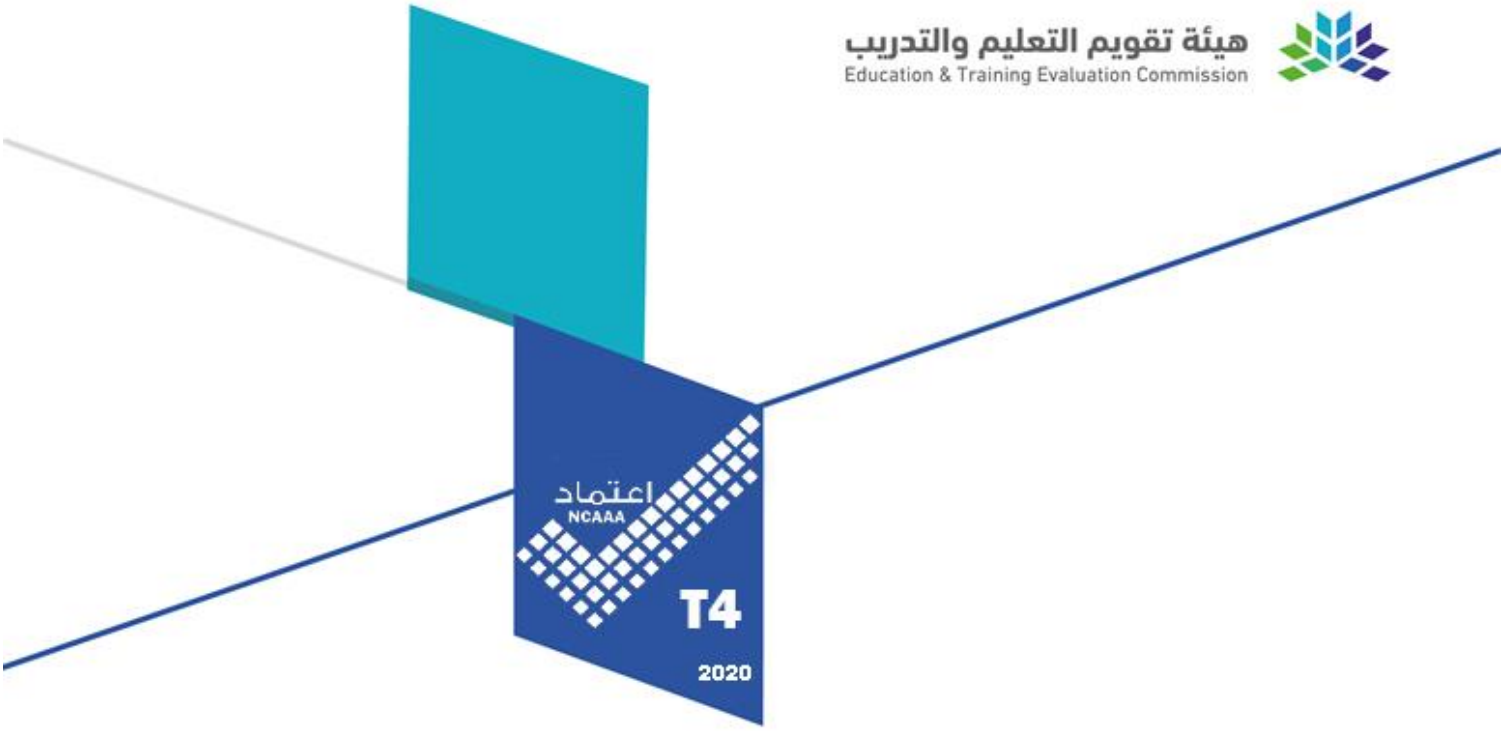
| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources. | Faculty members | Direct: Course reports |
| Effectiveness of teaching and assessment, Extent of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




# 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 |

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## A. Course Identification

| |
|---|
| **1. Credit hours: 4 hours** |
| **2. Course type**<br>**a.** University ☐ College ■ Department ☐ Others ☐<br>**b.** Required ■ Elective ☐ |
| **3. Level/year at which this course is offered:**<br>**1st Year** |
| **4. Pre-requisites for this course** (if any)**:**<br>EMI Colleges – English Language 1 |
| **5. Co-requisites for this course** (if any)**:**<br><br>**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:**<br><br>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.<br>- understand the main ideas of conversations, presentations, radio programmes, news reports, podcasts, discussions and interviews<br>- identify main ideas and supporting ideas<br>- develop listening for detail, examples and reasons<br>- listen for opinions, attitude, and identify fact from opinion<br>- identify rhetorical questions in a presentation<br>- 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.<br>- use indirect questions "Can you tell me where …? I'd like to know what…"<br>- use discourse markers for contrasting ideas<br>- expand knowledge of present perfect to include how long something has occurred, and whether something has been done or not<br>- use modals for giving advice "I would…/ you should/ could…"<br>- be aware of the difference in use of present continuous, going to and will for the future<br>- use -ed and -ing adjectives correctly to describe feelings or opinions<br>- use the past simple and past continuous correctly in narrative<br>- use conditionals for present and future real conditions, and for unreal conditions to talk about imaginary situations or to express wishes<br>- use present and past passive tenses when a product is more important than the producer<br>- use used to for past habits<br>- 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.<br>- develop vocabulary of the topics covered in order to be able to talk about them with others<br>- 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<br>- 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<br>- use a range of vocabulary for describing graphs<br>- use *this* and *these* for referencing within a text<br>- be aware of collocations, such as *significant advantage, key point*, and how they can help to follow and understand a talk<br>- be aware of the different types of phrasal verb<br>- provide definitions of difficult vocabulary in presentations, using expressions such as '*what I mean is…' 'that's when…'* |
| **2.0** | **Skills** |
| 2.1<br><br>2.1.1 | **Cognitive Skills:**<br>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.<br>- use scanning (to find information quickly) and skimming skills (to predict the meaning of the text from visuals, titles or common words)<br>- identify the author or speaker's audience and purpose<br>- read for opinions, attitude, and identify fact from opinion<br>- 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.<br>- write short texts, such as a travel post, movie review, an ad to request something, etc<br>- write an email, short story or anecdote of more than one paragraph<br>- use an appropriate opening and closing for a formal email<br>- write a description of a trend (describing statistics), using notes<br>- write complex sentences<br>- support opinions with facts in formal (academic) writing<br>- use a variety of linking words<br>- 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.<br>- discuss familiar and unfamiliar topics<br>- reach a common consensus, eg who should be class leader<br>- give short presentations<br>- rank items in order of importance<br>- show interest using short questions<br>- repeat to show comprehension |
| 2.2 | **Critical Thinking**<br>- develop well-reasoned, persuasive arguments<br>- analyze sources of information when conducting research<br>- evaluate things from a different perspective, eg what makes other people happy<br>- evaluate and rank items according to usefulness or importance<br>- evaluate arguments (evidence of support or relevance)<br>- analyze advantages and disadvantages<br>- infer meaning from written or spoken text<br>- identify a specific audience and consider their need<br>- appraise a text according to criteria, and provide feedback<br>- identify inconsistencies and errors<br>- appraise arguments<br>- evaluate the approach of others and reflect on personal assumptions, beliefs and values<br>- understand the links between ideas<br>- organize ideas in a logical, systematic way<br>- evaluate problems and propose solutions<br>- reflect on knowledge gained |
| 2.3 | **Communication, Information Technology, Numerical**<br>- research, discuss and present information<br>- describe and give personal opinions on a variety of topics<br>- express general beliefs<br>- paraphrase where needed<br>- give recommendations<br>- present persuasively |
| 2.4 | **Psychomotor**<br>- give confident, persuasive presentations<br>-take part in a role play<br>-use intonation to show mood: express agreement, surprise, confidence, trepidation, etc.<br>-use softening techniques when expressing opinions<br>-be aware of 'chunking' in speech<br>-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:<br>- hold short discussions with a partner to activate knowledge before listening tasks<br>-hold short discussions with a partner to synthesize knowledge post-listening<br>-work with others to brainstorm, create a convincing argument<br>-give feedback to peers on writing, presentations, etc.<br>-ask for opinions and check information |
| 3.4 | take the responsibilities to meet the requirements of the jobs market:<br>- write a personal statement<br>- write a resumé<br>- be aware of the importance of good time management<br>- be aware of the importance of turn-taking in debates or discussions<br>- 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<br>Personality, getting to know someone, spending money, qualities of a leader<br>Video: What's the right job for you? | |
| 2 | Unit 2: So Much Stuff<br>Personal possessions, describing things, switching topics, collecting things, the story of a person or place, essential items to take<br>Video: Collections, old and new | |
| 3 | Unit 3: Smart Moves<br>Describing a city, getting around, asking for and giving directions, a written personal statement, describing changes and trends, a 'secret spot'<br>Video: One day in… | |
| 4 | Unit 4: Think First<br>Opinions and reactions ("*it's interesting*"/ "*I'm interested*"), planning a trip, reassurance, describing plans, travel posts, microadventure<br>Video: Making plans | |
| 5 | Unit 5: And then …<br>Lost and found, needing and giving help, surprises, storytelling, selfies, 'Believe it or not'<br>Video: Lost and found | |
| 6 | Unit 6: Impact<br>Big-city problems, problems and solutions, concern and relief, a podcast point of view, Big-city life, 'green' city planning<br>Video: Green in the city | |
| 7 | Unit 7: Entertain Us<br>Reading, TV and movies, declining invites, a movie review, children and technology, changing tastes<br>Video: The history of cinema | |
| 8 | Unit 8: Getting There<br>Recent activity, describing progress, catching up, time management, hobbies, a better life<br>Video: Serious hobbies | |
| 9 | Unit 9: Make It Work<br>College subjects, studying or working from home (WFH), confidence – or lack of it, a resumé, bilingual education, a perfect job<br>Video: The college life | |

| | | |
|---|---|---|
| 10 | Unit 10: Why We Buy<br>'Green' clothing, product origins, a good choice? Product feedback, souvenirs, psychology of shopping<br>Video: Tricks of the ad world | |
| 11 | Unit 11: Pushing Yourself<br>Success, unreal situations, giving and responding to opinions, your comfort zone, the psychology of fear, success stories<br>Video: Testing your physical limits | |
| 12 | Unit 12: Life's Little Lessons<br>Accidents, extreme experiences, describing and asking about feelings, an anecdote, learning a skill<br>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:**<br><br>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.<br><br>- understand the main ideas of conversations, presentations, radio programmes, news reports, podcasts, discussions and interviews<br>- identify main ideas and supporting ideas<br>- develop listening for detail, examples and reasons<br>- listen for opinions, attitude, and identify fact from opinion<br>- identify rhetorical questions in a presentation<br>- recognize how discourse markers help identify main points, especially in academic discussions, presentations and lectures | Listening exercises | Listening mid-term exam<br><br>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.<br>- use indirect questions "Can you tell me where …? I'd like to know what…"<br>- use discourse markers for contrasting ideas<br>- expand knowledge of present perfect to include how long something has occurred, and whether something has been done or not<br>- use modals for giving advice "I would…/ you should/ could…"<br>- be aware of the difference in use of present continuous, going to and will for the future<br>- use -ed and -ing adjectives correctly to describe feelings or opinions<br>- use the past simple and past continuous correctly in narrative<br>- use conditionals for present and future real conditions, and for unreal conditions to talk about imaginary situations or to express wishes<br>- use present and past passive tenses when a product is more important than the producer<br>- use used to for past habits<br>- use modals for necessity, obligation, etc. | Grammar exercises | Midterm Exam<br>Continuous writing assessment<br>Continuous speaking assessment<br>Quizzes<br>Writing Final Exam<br>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.<br>- develop vocabulary of the topics covered in order to be able to talk about them with others<br>- 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<br>- 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<br>- use a range of vocabulary for describing graphs<br>- use this and these for referencing within a text<br>- be aware of collocations, such as significant advantage, key point, and how they can help to follow and understand a talk<br>- be aware of the different types of phrasal verb<br>- 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<br>Continuous writing assessment<br>Continuous speaking assessment<br>Quizzes<br>Writing Final Exam<br>Final Exam |

| 2.0 | Skills | | |
|---|---|---|---|
| 2.1<br><br>2.1.1 | **Cognitive Skills:**<br>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.<br>- use scanning (to find information quickly) and skimming skills (to predict the meaning of the text from visuals, titles or common words)<br>- identify the author or speaker's audience and purpose<br>- read for opinions, attitude, and identify fact from opinion<br>- understand meaning from context in both written and spoken texts | Reading comprehension exercises | Classroom discussion<br>Midterm exam<br>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.<br>- write short texts, such as a travel post, movie review, an ad to request something, etc<br>- write an email, short story or anecdote of more than one paragraph<br>- use an appropriate opening and closing for a formal email<br>- write a description of a trend (describing statistics), using notes<br>- write complex sentences<br>- support opinions with facts in formal (academic) writing<br>- use a variety of linking words<br>- use parallelism for bullet points in presentations and resumés | Writing exercises | Continuous writing assessment<br><br>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.<br>- discuss familiar and unfamiliar topics<br>- -reach a common consensus, eg who should be class leader<br>- give short presentations<br>- rank items in order of importance<br>- show interest using short questions<br>- repeat to show comprehension | Speaking exercises<br>Discussion<br>Presentation, eg an advertisement, a tourist campaign, a YouTube video | Continuous speaking assessment |

| | | | |
|---|---|---|---|
| 2.2 | **Critical Thinking**<br>- develop well-reasoned, persuasive arguments<br>- analyze sources of information when conducting research<br>- evaluate things from a different perspective, eg what makes other people happy<br>- evaluate and rank items according to usefulness or importance<br>- evaluate arguments (evidence of support or relevance)<br>- analyze advantages and disadvantages<br>- infer meaning from written or spoken text<br>- identify a specific audience and consider their need<br>- appraise a text according to criteria, and provide feedback<br>- identify inconsistencies and errors<br>- appraise arguments<br>- evaluate the approach of others and reflect on personal assumptions, beliefs and values<br>- understand the links between ideas<br>- organize ideas in a logical, systematic way<br>- evaluate problems and propose solutions<br>- reflect on knowledge gained | | |
| 2.3 | **Communication, Information Technology, Numerical**<br><br>- research, discuss and present information<br>- describe and give personal opinions on a variety of topics<br>- express general beliefs<br>- paraphrase where needed<br>- give recommendations<br>- present persuasively | Demonstrations<br>Active self-learning<br>Pair work<br>Group work<br>e-learning<br>Online material<br>(Encourage students to make their presentations to small groups in the class) | Monitoring students' progress<br><br>Evaluating the individual contribution<br><br>Evaluating the teamwork<br><br>Evaluating the final product<br><br>(Evaluation of presentations may be by peers) |
| 2.4 | **Psychomotor**<br><br>- give confident, persuasive presentations<br>- take part in a role play<br>- use intonation to show mood: express agreement, surprise, confidence, trepidation, etc<br>- use softening techniques when expressing opinions<br>- be aware of 'chunking' in speech<br>- use linking and weak forms in sentences | Active self-learning<br>Pair work<br>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<br><br>Cambridge LMS | Built-in immediate feedback |
| 3.2 | develop academic integrity. | Writing exercises | Continuous writing assessment<br>Continuous speaking assessment<br>Writing Final Exam |
| 3.3 | collaborate in knowledge building and co-operate with peers:<br>- hold short discussions with a partner to activate knowledge before listening tasks<br>- hold short discussions with a partner to synthesize knowledge post-listening<br>- work with others to brainstorm, create a convincing argument<br>- give feedback to peers on writing, presentations, etc<br>- ask for opinions and check information | Peer work<br>Group work | Evaluating the individual contribution<br><br>Evaluating the teamwork<br><br>Evaluating the final product |
| 3.4 | take the responsibilities to meet the requirements of the jobs market:<br><br>- write a personal statement<br>- write a resumé<br>- be aware of the importance of good time management<br>- be aware of the importance of turn-taking in debates or discussions<br>- be aware of learning from failure | Individual, peer and group work inside classrooms.<br><br>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:**<br>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.<br>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**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | Classrooms |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | data show, Smart Board, and Cambridge application |
| **Other Resources**<br>(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

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 |

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**A. Course Identification.....3**

6. Mode of Instruction (mark all that apply).....3

**B. Course Objectives and Learning Outcomes.....3**

1. Course Description.....3

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**C. Course Content.....6**

**D. Teaching and Assessment.....7**

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**G. Course Quality Evaluation.....12**

**H. Specification Approval Data.....12**

## A. Course Identification

| |
|---|
| **1. Credit hours: 4 hours** |
| **2. Course type**<br>**a.** University ☐ College ■ Department ☐ Others ☐<br>**b.** Required ■ Elective ☐ |
| **3. Level/year at which this course is offered:**<br>**1st Year** |
| **4. Pre-requisites for this course** (if any)**:**<br>EMI Colleges – English Language 1 & EMI Colleges – English Language 2 |
| **5. Co-requisites for this course** (if any)**:**<br><br>**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:**<br><br>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.<br>- understand the main ideas of conversations, presentations, radio programmes, news reports, podcasts, discussions and interviews<br>- identify main ideas and supporting ideas<br>- develop listening for detail, examples and reasons<br>- listen for transition words in spoken contexts to help follow the speech or conversation<br>- recognize how stress can emphasize a new point is being made<br>- 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.<br>- be aware of the difference between stative and dynamic verbs, and how rules may change in informal speech, eg "*I'm loving it*"<br>- modify comparisons, *"by far the best", "a little busier"*<br>- use modals for speculation, *"it may be…" "it could be"*<br>- use subject and object relative clauses correctly<br>- use the present unreal conditional to discuss hypothetical situations, e.g. "*if I were prime minister, I would…"*<br>- use modals to discuss past probability<br>- 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.<br>- develop vocabulary of the topics covered in order to be able to talk about them with others<br>- be aware of, and build word families<br>- be aware of the meaning of ALL CAPS in text messages<br>- use reporting words to convey meaning, e.g. *explained, persuaded*<br>- use various expressions (*not supposed to, allowed to*) to express prohibition, permission or obligation<br>- understand the use of the causative verbs, *help, let, make*<br>- recognize substitution and referencing in texts<br>- be aware of importance of linking words in academic texts, and develop the range and use<br>- reference another argument in your writing |
| **2.0** | **Skills** |
| 2.1<br><br>2.1.1 | **Cognitive Skills:**<br>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.<br>- infer attitude and meaning<br>- identify arguments and support<br>- identify main points of paragraphs, and make notes on the details to facilitate summarizing or paraphrasing later<br>- note the use of adjectives and adverbs to discern attitude in text<br>- recall key information<br>- 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.<br>- write a variety of texts of several paragraphs<br>- write a letter of apology<br>- write formal and informal emails<br>- produce and conduct a survey, and write a description of the data results<br>- write complex sentences, using *after, while, until*<br>- 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.<br>- discuss familiar and unfamiliar topics<br>- take part in an interview, role plays, debates and discussions<br>- give short presentations<br>- use signals to get back on track, eg *anyway, where was I?*<br>- discuss hypothetical situations, eg life without a phone<br>- talk about wishes and hopes |
| 2.2 | **Critical Thinking**<br>- develop well-reasoned, persuasive arguments<br>- analyze sources of information when conducting research<br>- analyze and interpret the results of a survey<br>- evaluate things from a different perspective<br>- reflect on own assumptions, beliefs and values<br>- evaluate and rank items according to usefulness or importance<br>- evaluate arguments (evidence of support or relevance)<br>- infer meaning from written or spoken text<br>- appraise a text according to criteria, and provide feedback<br>- appraise arguments, identify inconsistencies and errors<br>- understand the links between ideas<br>- organize ideas in a logical, systematic way<br>- evaluate problems and propose solutions<br>- reflect on knowledge gained |
| 2.3 | **Communication, Information Technology, Numerical**<br>- research, discuss and present information<br>- describe and give personal opinions on a variety of topics<br>- express general beliefs<br>- reach a compromise to solve a problem |
| 2.4 | **Psychomotor**<br>- give confident, persuasive presentations<br>- take part in an interview, role plays, debates and discussions<br>- 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:<br>- hold short discussions with a partner to activate knowledge before listening tasks<br>- hold short discussions with a partner to synthesize knowledge post-listening<br>- work with others to brainstorm, create a convincing argument<br>- work with others to rank items in order of importance<br>- give feedback to peers on writing, presentations, etc<br>- ask for opinions and check information |
| 3.4 | take the responsibilities to meet the requirements of the jobs market:<br>- recognize good employee qualities<br>- take part in a job interview role play<br>- appraise the interview performance of others, and provide written feedback<br>- be able to justify your decisions<br>- be aware of how to manage stress in the workplace<br>- develop note-taking skills<br>- maintain a calm rather formal tone when something goes wrong in business<br>- repair a customer relationship<br>- write a public apology<br>- 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<br>Personal achievements, right qualities for the job, introductions, responding to an article on job interviews, sport science: presentation examples, a job interview<br>Video: Fit for the job | |
| 2 | Unit 2: The Future of Food<br>Trends, food preparation, offers: making, accepting and declining, a food survey, traditional dishes, restaurant rescue<br>Video: Green cities | |
| 3 | Unit 3: What's It Worth?<br>Time and money, value for money, apologizing, product reviews, work-life balance, responding to negative reviews<br>Video: Save now, pay later | |
| 4 | Unit 4: Going Local<br>Merchandising, viral stories, discussing opinions, brands, product and business reviews, design an ad<br>Video: Saving the world, one hour at a time | |
| 5 | Unit 5: True Stories<br>Stories, changing plans, reacting to bad news, a written apology, language learning, a chance meeting<br>Video: Walking and talking | |
| 6 | Unit 6: Community Action<br>Charities and volunteers, acts of kindness, help: offering, accepting and refusing, a community project, responding to offers and requests, an urban art project<br>Video: Can do! | |
| 7 | Unit 7: Can We Talk?<br>Text messaging apps, written vs spoken language, retelling a story, formal vs informal communication, critical literacy, an online survey<br>Video: Mobile communication in Africa | |
| 8 | Unit 8: Lifestyles<br>Work lifestyles, wishes and regrets, considering options, comment on a podcast, post practical advice, digital detox<br>Video: Start-up life | |
| 9 | Unit 9: Yes, you can<br>Rules and regulations, discussing rules, tipping, a letter of complaint, a case study: urban regeneration, making improvements<br>Video: Opening doors for everyone | |
| 10 | Unit 10: What if ….?<br>Accidental discoveries, alternatives and possibilities, engaging the listener, good and bad inventions, turning points, the greatest invention?<br>Video: Game of bones | |
| 11 | Unit 11: Contrasts<br>College life, scientific facts, discussing alternatives, commenting on new technology, a healthy diet, mediation<br>Video: The future of driving | |

| | | |
|---|---|---|
| 12 | Unit 12: Looking Back<br>The story behind a photo, childhood memories, sharing past experiences, zoos: the pros and cons, national traditions, a 'national moment'<br>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:**<br><br>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.<br>- understand the main ideas of conversations, presentations, radio programmes, news reports, podcasts, discussions and interviews<br>- identify main ideas and supporting ideas<br>- develop listening for detail, examples and reasons<br>- listen for transition words in spoken contexts to help follow the speech or conversation<br>- recognize how stress can emphasize a new point is being made<br>- listen to the tone to distinguish attitude | Listening exercises | Listening mid-term exam<br><br>Listening final exam |
| 1.2 | demonstrate an understanding of grammar at the B1+ level, incorporating tenses, part of speech, modal auxiliaries, and sentence structure.<br>- be aware of the difference between stative and dynamic verbs, and how rules may change in informal speech, eg "*I'm loving it*"<br>- modify comparisons, *"by far the best", "a little busier"*<br>- use modals for speculation, *"it may be…" "it could be"*<br>- use subject and object relative clauses correctly<br>- use the present unreal conditional to discuss hypothetical situations, e.g. "*if I were prime minister, I would…"*<br>- use modals to discuss past probability<br>- understand the difference between the use of gerunds and infinitives after *forget, remember, stop* | Grammar exercises | Midterm Exam<br>Continuous writing assessment<br>Continuous speaking assessment<br>Quizzes<br>Writing Final Exam<br>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.<br>- develop vocabulary of the topics covered in order to be able to talk about them with others<br>- be aware of, and build word families<br>- be aware of the meaning of ALL CAPS in text messages<br>- use reporting words to convey meaning, e.g. *explained, persuaded*<br>- use various expressions (*not supposed to, allowed to*) to express prohibition, permission or obligation<br>- understand the use of the causative verbs, *help, let, make*<br>- recognize substitution and referencing in texts<br>- be aware of importance of linking words in academic texts, and develop the range and use<br>- reference another argument in your writing | Writing, reading, and vocabulary exercises | Midterm Exam<br>Continuous writing assessment<br>Continuous speaking assessment<br>Quizzes<br>Writing Final Exam<br>Final Exam |
| **2.0** | **Skills** | | |
| 2.1<br><br>2.1.1 | **Cognitive Skills:**<br>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.<br>- infer attitude and meaning<br>- identify arguments and support<br>- identify main points of paragraphs, and make notes on the details to facilitate summarizing or paraphrasing later<br>- note the use of adjectives and adverbs to discern attitude in text<br>- recall key information<br>- develop different note-taking skills, such as the use of timelines for chronologically ordered texts | Reading comprehension exercises | Classroom discussion<br>Midterm exam<br>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.<br>- write a variety of texts of several paragraphs<br>- write a letter of apology<br>- write formal and informal emails<br>- produce and conduct a survey, and write a description of the data results<br>- write complex sentences, using *after, while, until*<br>- reread and proofread to improve a finished text | Writing exercises | Continuous writing assessment<br><br>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.<br>- discuss familiar and unfamiliar topics<br>- take part in an interview, role plays, debates and discussions<br>- give short presentations<br>- use signals to get back on track, eg *anyway, where was I?*<br>- discuss hypothetical situations, eg life without a phone<br>- talk about wishes and hopes | Speaking exercises<br>Discussion<br>Presentation, eg an advertisement, a tourist campaign, a YouTube video | Continuous speaking assessment |
| 2.2 | **Critical Thinking**<br>develop well-reasoned, persuasive arguments<br>- analyze sources of information when conducting research<br>- analyze and interpret the results of a survey<br>- evaluate things from a different perspective<br>- reflect on own assumptions, beliefs and values<br>- evaluate and rank items according to usefulness or importance<br>- evaluate arguments (evidence of support or relevance)<br>- infer meaning from written or spoken text<br>- appraise a text according to criteria, and provide feedback<br>- appraise arguments, identify inconsistencies and errors<br>- understand the links between ideas<br>- organize ideas in a logical, systematic way<br>- evaluate problems and propose solutions<br>- reflect on knowledge gained | | |
| 2.3 | **Communication, Information Technology, Numerical**<br><br>- research, discuss and present information<br>- describe and give personal opinions on a variety of topics<br>- express general beliefs<br>reach a compromise to solve a problem | Demonstrations<br>Active self-learning<br>Pair work<br>Group work<br>e-learning<br>Online material<br>(Encourage students to make their presentations to small groups in the class) | Monitoring students' progress<br><br>Evaluating the individual contribution<br><br>Evaluating the teamwork<br><br>Evaluating the final product<br><br>(Evaluation of presentations may be by peers) |

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

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA
T4 2020

# 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 |

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| |
|---|
| **1. الساعات المعتمدة:** 2 |
| **2. نوع المقرر**<br>أ. متطلب جامعة [P] متطلب كلية [ ] متطلب قسم [ ] أخرى [ ]<br>ب. إجباري [P] اختياري [ ] |
| **3. السنة / المستوى الذي يقدم فيه المقرر** |
| **4. المتطلبات السابقة لهذا المقرر** (إن وجدت)<br><br>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:**<br>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**<br>يهدف المقرر إلى تعريف الطالب بالمصطلحات والمفاهيم الأساسية والتقنيات الحديثة المتعلقة باستخدام الحاسب الآلي.<br>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)<br>• On the Foundation of Computing, Giuseppe. P (2020), Oxford University Press |
| **المراجع المساندة** | • الأمن السيبراني مفهومه وخصائصه وسياسته – خالد سعد الشايع (2019)<br>• الحاسب الآلي واستخداماته في التعليم – أولفت محمد فودة ( 2018)<br>• اتجاهات في آمن المعلومات وأنواعها – ساري محمد الخالد ( 2018)<br>• فضاءات البيانات الضخمة – عبد مرزوق الظهوري وفاطمة سعيد سالم (٢٠٢١ )<br>• الذكاء الاصطناعي ثورة في تقنيات العصر – أحمد حبيب بلال وعبد الله موسي ( ٢٠١٩)<br>• أخلاقيات المعلومات - لوسيانو فلوريدي ( ٢٠١٩) |
| **المصادر الإلكترونية** | تحدد لاحقاً |

| | |
|---|---|
| **أخرى** | |

### 2. المرافق والتجهيزات المطلوبة:

| العناصر | متطلبات المقرر |
|---|---|
| **المرافق**<br>(القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ) | |
| **التجهيزات التقنية**<br>(جهاز عرض البيانات، السبورة الذكية، البرمجيات) | معامل افتراضية<br>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

# 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 |

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## أ. التعريف بالمقرر الدراسي:

| |
|---|
| **1. الساعات المعتمدة:** 2 ساعة |
| **2. نوع المقرر**<br>أ. متطلب جامعة ☑ متطلب كلية ☐ متطلب قسم ☐ أخرى ☐<br>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.<br>- فنون الكتابة ومهارات التحرير العربي. د/ كمال زعفر علي.<br>-فن الكتابة والتعبير. د/ محمد علي أبو حمدة.<br>- أساسيات التحرير وفن الكتابة بالعربية، د/ حسين المناصرة ورفيقيه.<br>- معجم الأخطاء الشائعة، محمد العدناني.<br>- معجم أخطاء الكتَّاب، صلاح الدين الزعبلاوي.<br>- قل ولا تقل، مصطفى جواد.<br>- نحو إتقان الكتابة العلمية باللغة العربية، لمكي الحسني.<br>-أخطاء الكتّاب والإذاعيين، أحمد مختارعمر.<br>-معجم الأغلاط اللغوية المعاصرة، للعدناني<br>- دليل الأخطاء الشائعة في الكتابة والنطق، لمروان البوَّاب<br>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<br>(القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ) | لا يوجد |
| التجهيزات التقنية<br>(جهاز عرض البيانات، السبورة الذكية، البرمجيات) | برنامج البلاك بورد |

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

## ز. تقويم جودة المقرر:

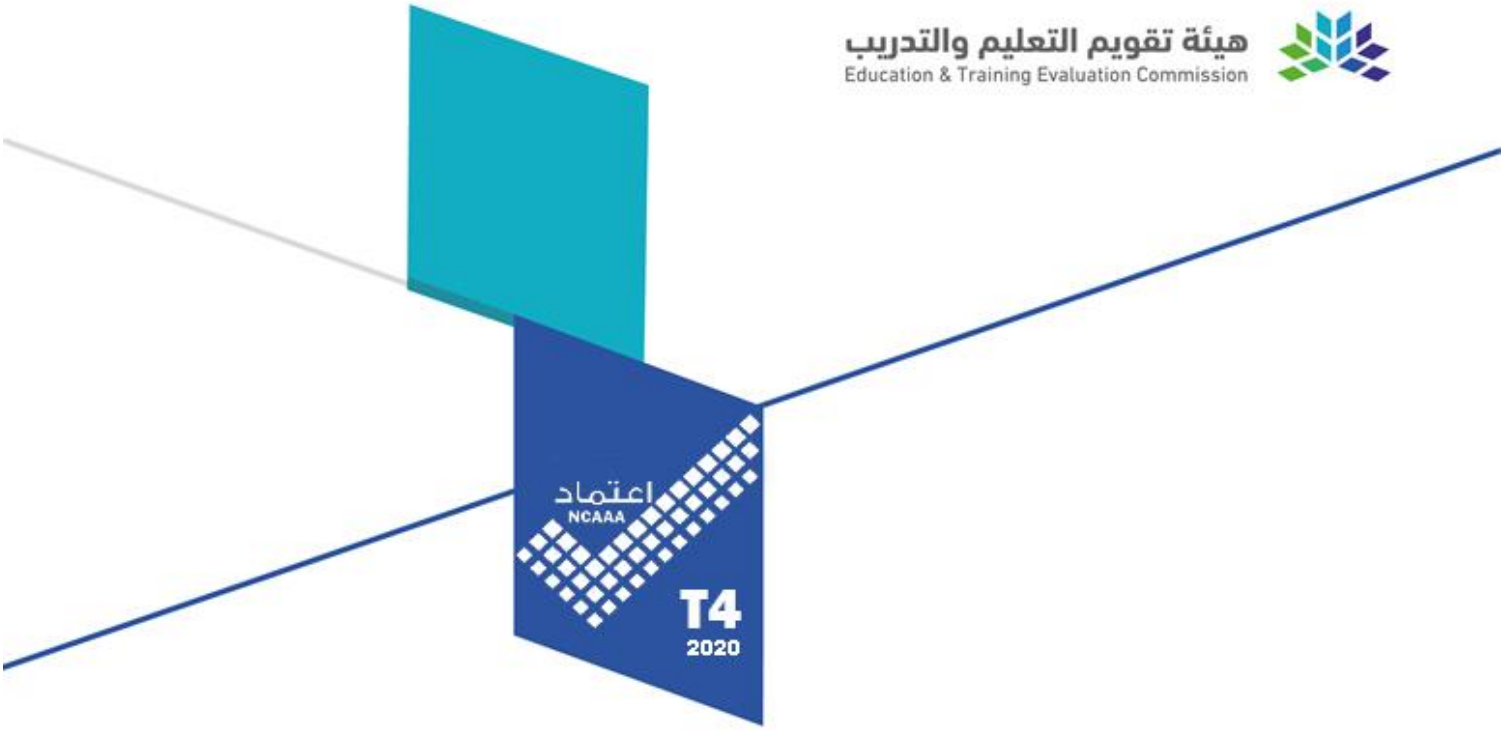
| مجالات التقويم | المقيمون | طرق التقييم |
|---|---|---|
| فاعلية استراتيجيات التدريس المستخدمة | النظير<br>الطلبة | ( مباشر )<br>( غير مباشر ) |
| فاعلية آلية تقييم الطلبة | النظير | ( مباشر ) |
| كفاية مصادر التعلم | أستاذ المقرر<br>الطلبة | ( مباشر )<br>( غير مباشر ) |
| مصداقية الاختبار وموضوعيته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

# مقررات الجامعة الاختيارية
# لبرنامج الفيزياء 1444




# 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** |

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## أ. التعريف بالمقرر الدراسي:

| |
|---|
| **١. الساعات المعتمدة:** ٢ |
| **٢. نوع المقرر**<br>أ. متطلب جامعة ✓ متطلب كلية ☐ متطلب قسم ☐ أخرى ☐<br>ب. إجباري ☐ اختياري ✓ |
| **٣. المتطلبات السابقة لهذا المقرر**<br>التقنية الرقمية ( متطلب جامعة) |
| **٤. المتطلبات المتزامنة مع هذا المقرر (إن وجدت)**<br>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 |
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| 6 | تطبيقات الذكاء الاصطناعي في القطاعات المختلفة ( التعليم، صحة، تجارة، صناعة .....و غيرها) | ٤ |
| 7 | تأثير الذكاء الاصطناعي في الحياة اليومية | ٢ |
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## 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.<br><br>Artificial Intelligence – A Modern Approach (3rd Edition) By Stuart Russell & Peter Norvig.<br><br>Artificial Intelligence for Humans, Volume 1: Fundamental Algorithms. ByJeff Heaton. |
| **المصادر الإلكترونية** | /https://teachablemachine.withgoogle.com<br>/https://monkeylearn.com<br>Orange Data Mining - Data Mining |
| **أخرى** | |

**٢. المرافق والتجهيزات المطلوبة:**

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

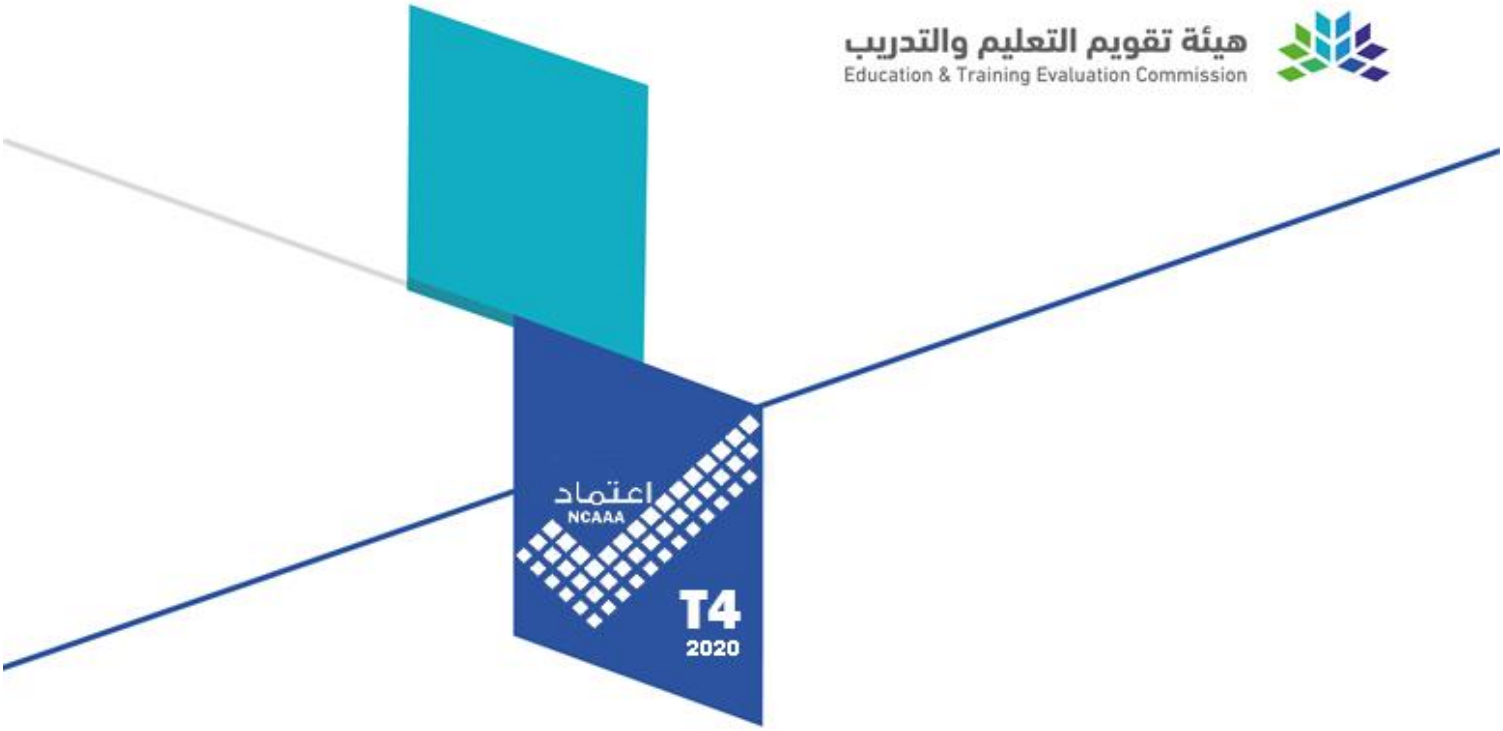
## ز. تقويم جودة المقرر:

| 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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1. ربط مخرجات التعلم للمقرر مع كل من استراتيجيات التدريس وطرق التقييم ..... 4
2. أنشطة تقييم الطلبة ..... 5

**هـ - أنشطة الإرشاد الأكاديمي والدعم الطلابي: ..... 5**

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1. قائمة مصادر التعلم: ..... 5
2. المرافق والتجهيزات المطلوبة: ..... 6

**ز. تقويم جودة المقرر: ..... 6**

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## أ. التعريف بالمقرر الدراسي:

| |
|---|
| **1. الساعات المعتمدة:** |
| **2. نوع المقرر**<br>أ. متطلب جامعة [√] متطلب كلية [ ] متطلب قسم [ ] أخرى [ ]<br>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<br>• يُنظر في المراجع المساندة أيضاً |
| **المراجع المساندة** | • كتاب المسار: دليل التطوير المهني – الأستاذ مشاري الغامدي<br>• كتاب فن البحث عن وظيفة – الأستاذ أحمد بادويلان<br>• 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<br>• *Stella Cottrell (2021). Skills for Success: Personal Development and Employability: 4th ed (Macmillan Study Skills)<br>• 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<br>• Roy Horn 2020. The Business Skills Handbook. https://www.koganpage.com/product/business-skills-handbook-9781843982180-cipd<br>• 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<br>• اللائحة التنفيذية للموارد البشرية في الخدمة المدنية - https://hrsd.gov.sa/ar<br>• موقع البوابة الوطنية للعمل - طاقات: https://www.taqat.sa/web/guest<br>• موقع العمل المرن: https://mrn.sa/<br>• موقع المنصة الوطنية للتدريب الإلكتروني - دروب: https://doroob.sa/ar/<br>• أكاديمية مسك - https://hub.misk.org.sa/?lang=ar<br>• Myers-Briggs Type Indicator (MBTI): https://www.myersbriggs.org/my-mbti-personality-type/<br>• DISC: https://www.discprofile.com/<br>• The Big Five Personality Test: https://www.outofservice.com/bigfive/ |
| **أخرى** | المكتبة الرقمية السعودية |

**2. المرافق والتجهيزات المطلوبة:**

| العناصر | متطلبات المقرر |
|---|---|
| **المرافق**<br>(القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ) | قاعات دراسية تناسب عدد الطلاب |
| **التجهيزات التقنية**<br>(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 |
|---|---|---|

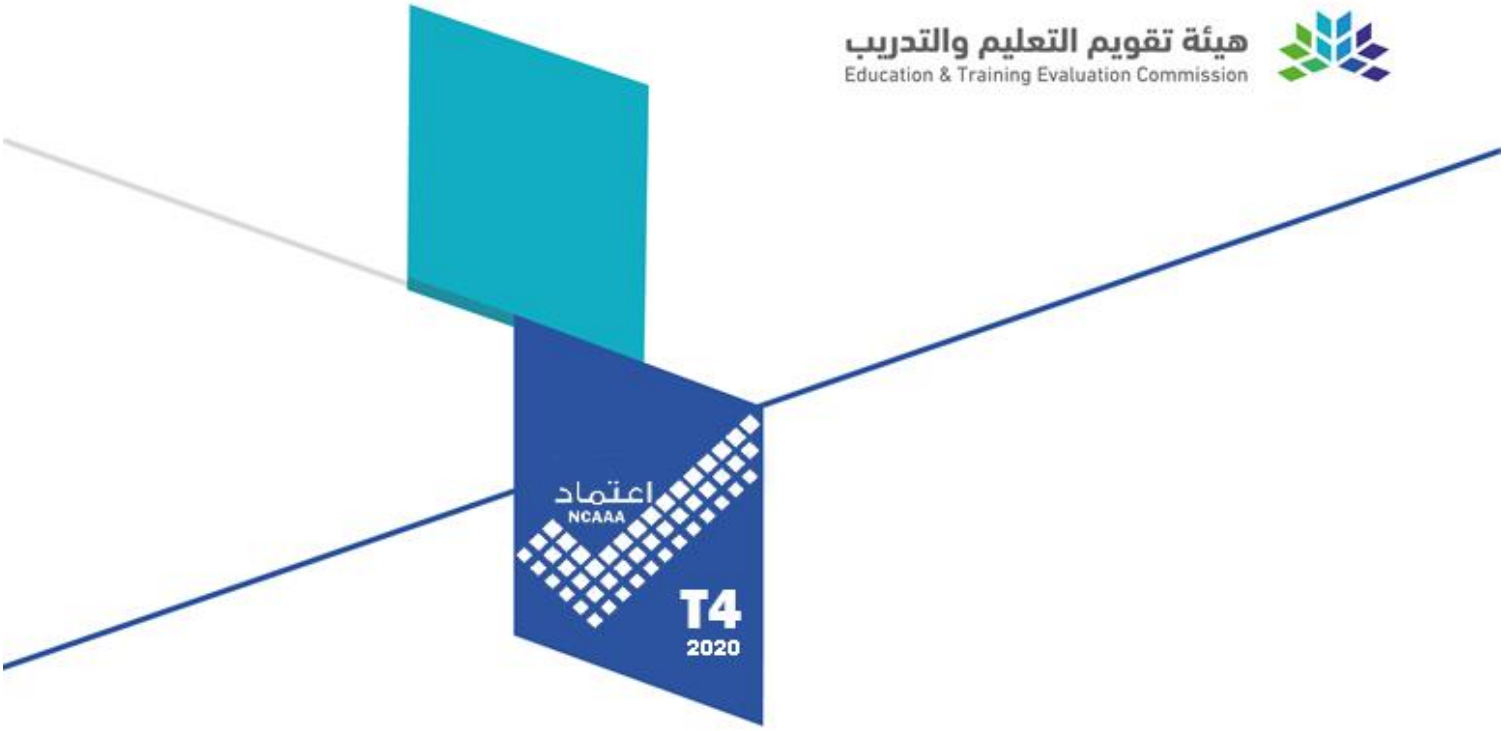
| مجالات التقويم | المقيمون | طرق التقييم |
|---|---|---|
| فاعلية التدريس | الطلاب – منسق المقرر – رئيس القسم – قيادات البرنامج | استطلاعات مباشرة، وملاحظة غيرمباشرة |
| فاعلية طرق تقييم الطلاب | المراجع النظير - منسق المقرر – رئيس القسم – قيادات البرنامج | مباشرة: عينة عشوائية من نماذج تقييم الطلاب 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** | |

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission




# توصيف المقرر الدراسي

| | |
|---|---|
| اسم المقرر: | التغذية والصحة Nutrition and Health |
| رمز المقرر: | NUT1101 |
| البرنامج: | |
| القسم العلمي: | التغذية الاكلينيكية |
| الكلية: | العلوم الطبية التطبيقية |
| المؤسسة: | جامعة أم القرى |

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## أ. التعريف بالمقرر الدراسي:

| |
|---|
| **1. الساعات المعتمدة:** 2 ساعة معتمدة |
| **2. نوع المقرر**<br>أ. متطلب جامعة [√] متطلب كلية [ ] متطلب قسم [ ] أخرى [ ]<br>ب. إجباري [ ] اختياري [√] |
| **3. السنة / المستوى الذي يقدم فيه المقرر:**<br>**أحد المتطلبات المؤسسية الاختيارية (متطلب جامعي)** |
| **4. المتطلبات السابقة لهذا المقرر** (إن وجدت)<br>**لا يوجد** |
| **5. المتطلبات المتزامنة مع هذا المقرر** (إن وجدت)<br>**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 |
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## 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<br>العمل في مجموعات | الاختبارات التحريرية<br>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<br>المناقشة والحوار | تقويم الواجبات المنزلية<br>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<br>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)<br>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<br>دليل السعرات الحرارية لخفض الوزن= الغذاء والتغذية - دليل السعرات الحرارية لخفض الوزن (moh.gov.sa)<br>فيديو من وزارة الصحة وزارة الصحة التغذيةBing video -<br>الهيئة العامة للغذاء والدواء(sfda.gov.sa)<br>الهيئة العامة للغذاء والدواء - قطاع الغذاء(sfda.gov.sa)<br>الموقع الرسمي لمنظمة الصحة العالمية(who.int) عربي |

| | |
|---|---|
| | المجلات العلمية الخاصة بالتغذية - التغذية الإكلينيكية - كلية العلوم الطبية التطبيقية \| جامعة أم القرى (uqu.edu.sa)<br>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**<br>(القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ) | التدريس اونلاين ويتطلب:<br>1- برنامج بلاك بورد<br>2- برنامج ويبكس<br>3- شبكة انترنت مجانية وقوية للطلاب |
| **التجهيزات التقنية**<br>(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<br><br>تقرير المقرر وأداء مخرجات التعلم |

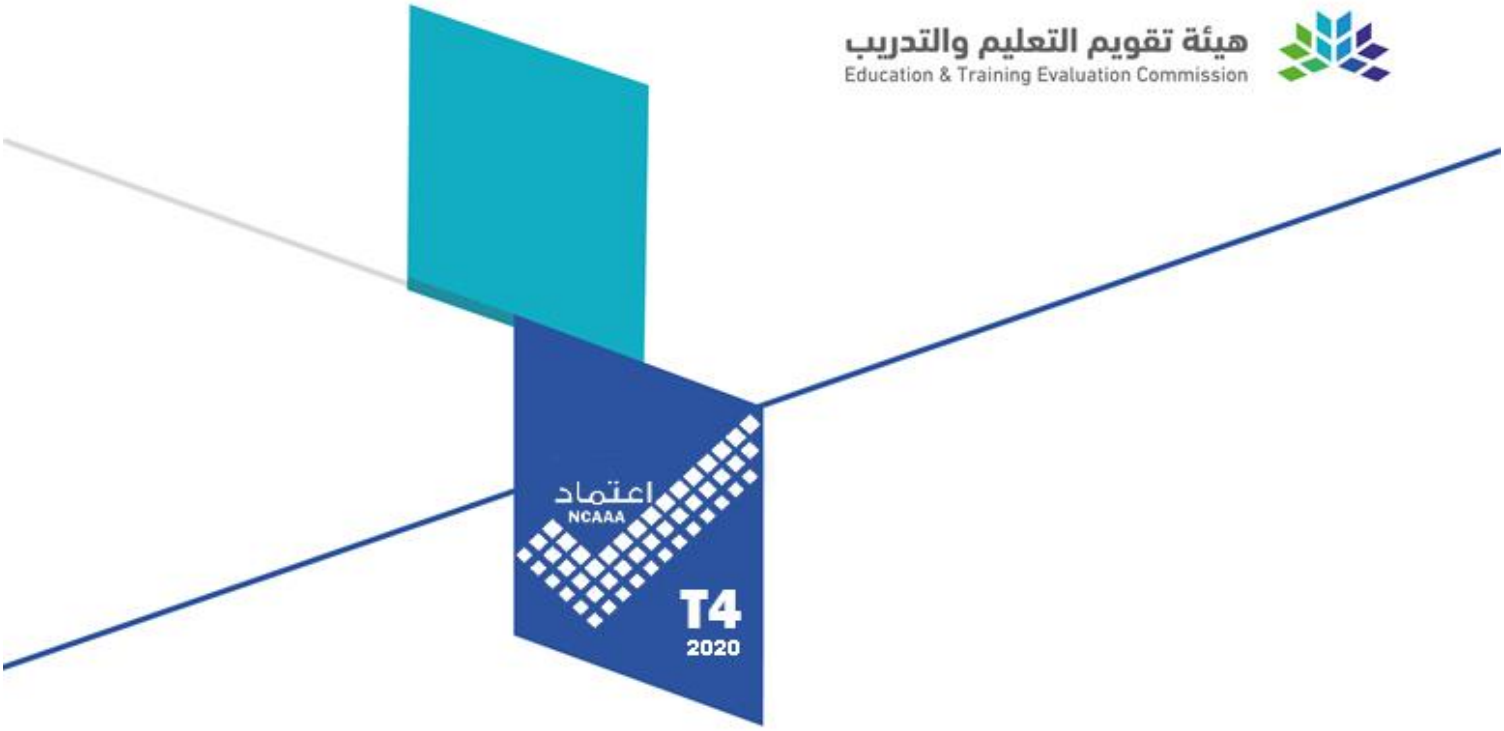
مجالات التقويم (مثل. فاعلية التدريس، فاعلة طرق تقييم الطلاب، مدى تحصيل مخرجات التعلم للمقرر، مصادر التعلم ... إلخ)
المقيمون (الطلبة، أعضاء هيئة التدريس، قيادات البرنامج، المراجع النظير، أخرى (يتم تحديدها)
طرق التقييم (مباشر وغير مباشر)

## 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** | |




# 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 |

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## 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<br>التفاعل خلال المحاضرات<br>العروض التفاعلية | الاختبارات القصيرة<br>الاختبارات النهائية<br>البحث<br>العرض |
| 1.2 | التعرف على اهم قطاعات السياحة مثل قطاع الضيافة والفعاليات والنقل وقطاع التجزئة | المحاضرات<br>التفاعل خلال المحاضرات<br>العروض التفاعلية | الاختبارات القصيرة<br>الاختبارات النهائية<br>البحث<br>العرض |
| 1.3 | التعرف على المنتج السياحي وموارد الجذب عالميا وفي المملكة العربية السعودية | المحاضرات<br>التفاعل خلال المحاضرات | الاختبارات النهائية<br>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<br>التفاعل خلال المحاضرات<br>العروض التفاعلية | الاختبارات النهائية<br>البحث<br>العرض |
| 1.5 | التعرف على قطـاع الفعـاليـات بجميع أنواعهـا واشكالها وطرق ادارتها وتسويقها | المحاضرات<br>التفاعل خلال المحاضرات<br>العروض التفاعلية | الاختبارات النهائية<br>البحث<br>العرض |
| 1.5 | التعرف على اهم الأســس الأخلاقية في العمل في قطاع السياحة وأيضـا اخلاقيات السـائح عند سـفره لاي وجهة سياحية | المحاضرات<br>التفاعل خلال المحاضرات<br>العروض التفاعلية | الاختبارات النهائية<br>البحث<br>العرض |
| **2.0** | **المهارات** | | |
| 2.1 | مهارة كتابة الأبحاث وتقديم العروض المرئية | التفاعل خلال المحاضرات<br>العروض التفاعلية | البحث<br>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<br>العروض التفاعلية | البحث<br>العرض |
| 3.2 | الحرص على نجـاح الجميع من خلال العمـل الجماعي | التفاعل خلال المحاضرات<br>العروض التفاعلية | البحث<br>العرض |
| 3.3 | الايمان بان العمل الجاد هو ما تقوم عليه الامم | التفاعل خلال المحاضرات<br>العروض التفاعلية | البحث<br>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<br><br>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<br><br>John Walker and Josielyn Walker (2019) Introduction to Hospitality, Edition 8, Pearson Education, Florida<br><br>Chiranjib kumar (2017) Introduction To Tourism & Hospitality, 1st edition, CreateSpace Independent Publishing Platform, ISBN 978-1541064492.<br><br>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**<br>(القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ) | منصة اليكترونية مثل البلاكبورد |
| **التجهيزات التقنية**<br>(جهاز عرض البيانات، السبورة الذكية، البرمجيات) | برنامج البلاكبورد والويبيكس |
| **تجهيزات أخرى**<br>(تبعاً لطبيعة التخصص) | غير مطلوب |

## ز. تقويم جودة المقرر:

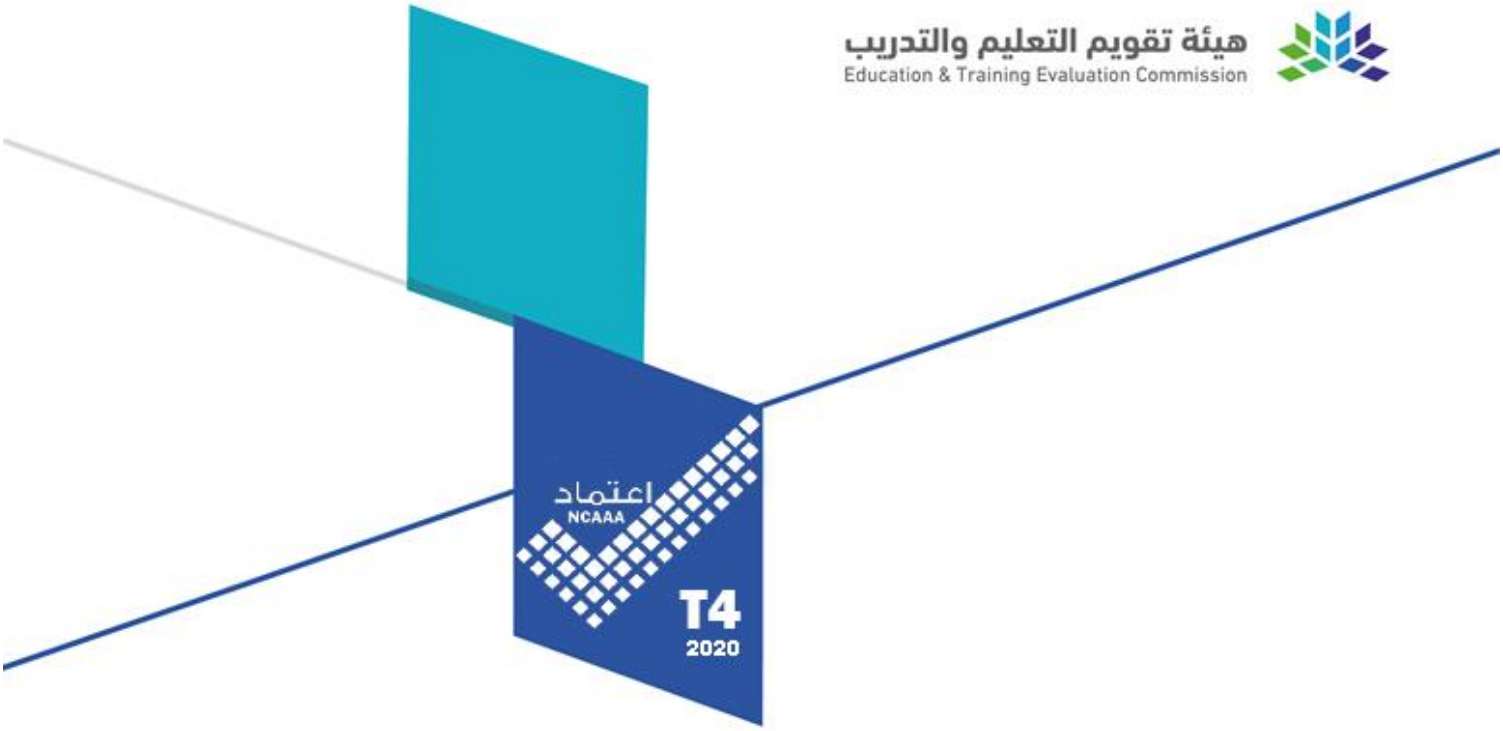
| مجالات التقويم | المقيمون | طرق التقييم |
|---|---|---|
| مدى تحصيل مخرجات التعلم للمقرر | لجنة الجودة بقسم إدارة السياحة والفندقة | نتائج الاستبيان مع الطلاب<br>نتائج الطلاب<br>مراجعات لجنة الجودة |
| فاعلية التدريس | الطلاب | استبيانات أراء الطلاب |
| | | |
| | | |
| | | |
| | | |

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** |

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## 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 |

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3. مخرجات التعلم للمقرر: ..... 3

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## أ. التعريف بالمقرر الدراسي:

| |
|---|
| **1. الساعات المعتمدة:** ساعتان |
| **2. نوع المقرر**<br>أ. متطلب جامعة [√] متطلب كلية [ ] متطلب قسم [ ] أخرى [ ]<br>ب. إجباري [ ] اختياري [√] |
| **3. السنة / المستوى الذي يقدم فيه المقرر :**<br>**جميع البرامج الدراسية** |
| **4. المتطلبات السابقة لهذا المقرر** (إن وجدت)<br>**لا يوجد** |
| **5. المتطلبات المتزامنة مع هذا المقرر** (إن وجدت)<br>**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:**<br>**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**<br>**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<br>العصف الذهني<br>التعلم التعاوني | عرض تقديمي |
| 1.6 | يشرح دور الابتكار في التنمية المستدامة | المحاضرة<br>البحث والاستقصاء | ورقة علمية بحثية مصغرة |
| 2.0 | المهارات | | |
| 2.1 | يطبق معايير تقييم الأفكار الابتكارية | المحاضرة<br>العصف الذهني<br>حل المشكلات | تقديم تقرير جماعي<br>كيف تستطيع الحكم بان افكارك قابلة للتطبيق والتنفيذ؟<br>كيف تقوم بتقييم افكارك الابتكارية؟ |
| 2.2 | يميز بين البحث الكمي والبحث النوعي | المحاضرة<br>العصف الذهني<br>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<br>العصف الذهني<br>التعلم التعاوني | تقرير جماعي يحدد الاستراتيجيات والأفكار الإبداعية التي تستخدم لحل المشكلات |
| 24 | يوظف مهارات البحث العلمي في حل المشكلات بطرق ابتكارية | المحاضرة<br>البحث والاستقصاء | ورقة علمية بحثية مصغرة |
| 2.5 | يستخدم التقنيات الحديثة في البحث والابتكار | المحاضرة<br>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<br>بصمة جي ، سائر(2016) مصادر الأفكار المبتكرة، دار الكتب العلمية<br>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<br>عبيدات،ذوقان ،عبدالحق،كايد وعدس،عبدالرحمن(2018)البحث العلمي،دار الفكر العربي |
| المصادر الإلكترونية | منصة ابتكر<br>/https://ibtekr.org<br>بوابة الابتكار الوطنية (فكرة)<br>/https://fikra.sa<br>منصة الابتكار المفتوح<br>/https://openinnovation.sa<br>محركات البحث العلمي<br>/https://www.academicinfo.net<br>/https://www.refseek.com<br>/https://scholar.google.ca<br>/https://www.sweetsearch.com |
| أخرى | |

### 2. المرافق والتجهيزات المطلوبة:

| العناصر | متطلبات المقرر |
|---|---|
| **المرافق**<br>(القاعات الدراسية، المختبرات، قاعات العرض، قاعات المحاكاة ... إلخ) | قاعات دراسية |
| **التجهيزات التقنية**<br>(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<br>- أعضاء هيئة التدريس<br>- المراجع النظير<br>- هيئة تقويم التعليم والتدريب | - استمارة تقويم المقرر والبرنامج<br>- 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<br>- 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<br>- 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

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|---|---|
| جهة الاعتماد | |
| رقم الجلسة | |
| تاريخ الجلسة | |