



Course Specification

— (Bachelor)

Course Title: **General Chemistry 1**

Course Code: **CHM1101**

Program: **Environmental Sciences**

Department **Chemistry**

College: **Science**

Institution **Umm Al-Qura University**

Version: **1**

Last Revision Date: **Al-27 December 2024**



Table of Contents

A. General information about the course:	3
B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods	4
C. Course Content	5
D. Students Assessment Activities	5
E. Learning Resources and Facilities	5
F. Assessment of Course Quality	6
G. Specification Approval	6



A. General information about the course:

1. Course Identification

1. Credit hours: (2 Theoretical + 1 Experimental)

2. Course type

A. University College Department Track Others

B. Required Elective

3. Level/year at which this course is offered: (1/1)

4. Course general Description:

This course presents the essential principles and common applications of chemistry. It introduces the elementary principles and theories of chemistry, electronic structure of atoms, quantum mechanics and atomic orbitals; representations of orbitals, gases laws and properties, Intermolecular forces, liquids, solids, solutions, kinetics, equilibria, precipitation, thermodynamics, electrochemistry, organic chemistry

5. Pre-requirements for this course (if any):--

6. Pre-requirements for this course (if any):--

7. Course Main Objective(s):

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

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	75	100 %
2	E-learning	-	
3	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 	-	
4	Distance learning	-	

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	45
3.	Field	
4.	Tutorial	





5.	Others (specify)	
Total		75

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0 Knowledge and understanding				
1.1	Explain fundamental concepts and principles of units, measurements, physical, inorganic and organic chemistry.	K1	Lectures Library visits	Exam
2.0 Skills				
2.1	Demonstrate the ability to use basic laboratory techniques, tools, to conduct experiments, collect data, and analyze results related to fundamental chemistry topics	S1	Laboratory	Practical Exam Lab Reports Quiz
2.2	Solve quantitative and qualitative problems related to chemical equations, thermochemical processes, and kinetics.	S2	Lectures Web-based study	Quiz. Exam. Class discussion
2.3	Analyze and interpret data related to chemical equilibria and electrochemical reactions.	S3	Lectures Scientific discussion Web-based study	Quiz. Exam. Class discussion
3.0 Values, autonomy, and responsibility				
3.1	Ability to demonstrate learning skills to work as a team in a multidisciplinary environment.	V1, V2	Scientific discussion	long and short essays posters lab manuals



C. Course Content

No	List of Topics	Contact Hours
1.	Electronic structure of atoms, quantum mechanics and atomic orbital	4
2.	Gases laws and properties	4
3.	Intermolecular forces, liquids, solids, solutions	4
4.	Chemical kinetics	4
5.	Chemical equilibria	4
6.	Thermodynamics,	4
7.	Electrochemistry,	4
8.	Organic chemistry	2
List of Experiments		
1.	safety in chemistry laboratory	3
2.	intermolecular forces: viscosity, density, and surface tension	12
3.	atomic structure and quantum mechanics	3
4.	acids and bases titration	9
5.	determination of the heat capacity of the calorimeter	6
6.	solutions	6
7.	chemical equilibrium	6
Total		75

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
	Class activities, and Assignments	Throughout the Term	10%
	Mid-Term Exam (s)	8	20%
	Lab Activity	Throughout the Term	20%
	Practical Exam	15	10%
5.	Final Exam.(2 hours exam)	End of the Term	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Steven S. Zumdahl, Susan A. Zumdahl, 9th ed., 2009, New York.
Supportive References	P. Atkins and J. de Paula, Physical Chemistry, 10th ed., 2006, New York.
Electronic Materials	Power point lectures.
Other Learning Materials	Course available online

2. Required Facilities and equipment





Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms, laboratories
Technology equipment (projector, smart board, software)	The classroom is equipped with computer and projector.
Other equipment (depending on the nature of the specialty)	None

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect: course evaluation and graduates survey).
Effectiveness of students' assessment	Department	Improving course quality and effectiveness.
Quality of learning resources	Students	Direct: (feedback from faculty). Indirect (online survey at the end of the semester
The extent to which CLOs have been achieved	Faculty members	Direct:(Comments of course instructors regarding evaluation of teaching strategies for learning outcomes mentioned in course report).
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	





Course Specification

— (Bachelor)

Course Title: **Principle of Ecology**

Course Code: **BIOE1502**

Program: **Environmental Sciences**

Department: **Biology**

College: **Science**

Institution: **Umm AL-Qura University**

Version: *Course Specification Version Number*

Last Revision Date: 24 December 2024



Table of Contents

A. General information about the course:	3
B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods	4
C. Course Content	5
D. Students Assessment Activities	5
E. Learning Resources and Facilities	6
F. Assessment of Course Quality	6
G. Specification Approval	7



A. General information about the course:

1. Course Identification

1. Credit hours: (3hr.)

2. Course type

A. University College Department Track Others

B. Required Elective

3. Level/year at which this course is offered: (First Level)

4. Course General Description:

An introductory course on different ecology branches, ecological mechanisms, and main components of various ecosystems. It discusses the characteristics of different habitats and different ecosystem components.

5. Pre-requirements for this course (if any):

None

6. Pre-requirements for this course (if any):

None

7. Course Main Objective(s):

By the end of this course, the student can identify general ecological mechanisms, the main components of different ecosystems, and energy transfer mechanisms and distinguish between characteristics of various habitats and ecosystem components.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	5hr/week	100%
2	E-learning	-	-
3	Hybrid <ul style="list-style-type: none"> Traditional classroom E-learning 	-	-
4	Distance learning	-	-

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
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1.	Lectures	30
2.	Laboratory/Studio	45
3.	Field	-
4.	Tutorial	-
5.	Others (specify)	-
Total		75

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Identify different branches, applications, laws, and concepts of ecology.	K1	Lectures- Cooperative learning	exams
1.2	Enumerate differences between various ecosystems and their main components.	K2	Lectures- discussion groups	exams
2.0	Skills			
2.1	Utilize concepts and basics of ecology in economic and social contexts.	S1	Practical	Practical reports - Practical exams
3.0	Values, autonomy, and responsibility			
3.1	Demonstrate commitment to professional and leadership standards.	V1	Activities- discussion groups	Practical reports and practical exam
3.2	Evaluate creativity in professional planning for continuous learning and specialized work.	V2	Activities	Assignments
...				



C. Course Content

No	List of Topics	Contact Hours
1.	General introduction of the meaning of ecology and importance. The levels of ecology. Factors affecting the organisms in their environment. The climatic factors are precipitation, temperature, light, humidity, wind, and evaporation. Physiographic factor	6L+6P
2.	Biological factor, plant-plant relationship- plant-animal relationship Inter-relations of Living Organisms (Mutualism, Commensalism, Parasitism) Plant vegetation, types of plant vegetation, plant vegetation development	4L+6P
3.	Ecosystems and components of the ecosystem.	2L+3P
4.	Food chain and food web, energy flow and energy transfer along different types of ecosystems, and ecological pyramids.	2L+3P
5.	Zonobiomes, Biosphere: Atmosphere, Hydrosphere and Lithosphere.	4L+6P
6.	The cycles of materials in nature (water cycle, Carbon cycle, Nitrogen cycle, Phosphorous cycle, and Sulfur cycle)	4L+6P
7.	Mid-Term Exam	
8.	Habitat and Microhabitat - Adaption	4L+6P
8.	Nature and causes of drought Dry and semi-arid lands: definitions of drought Causes of dehydration Nature and causes of drought	2L+3P
10.	Final Exam Lab	
11.	Final Exam Lecture	
Total		

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Oral presentation Activities	Periodicaly	10
2.	Mid-term Lec.Exam	7 th	20
3.	Lab Report and Quizee	Periodicaly	10
4.	Final Lab Exam	16 th	20
5.	Final Lecture Exam	17 th	40

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).





E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	-Beeby & Brennan: First Ecology - Ecological Principles and Environmental Issues 3rd edition -Begon, M. et al. (1996 and subsequent editions) Ecology. Blackwells, Oxford -Krebs, C. (2008, or earlier editions). Ecology: The Experimental Analysis of Distribution and Publisher: Benjamin Cummings
Supportive References	
Electronic Materials	Blackboard website Website of Saudia Digital Library
Other Learning Materials	Microsoft Office package. - Multi-media associated with the textbook and the relevant websites

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	The lecture room is suitable for 35 students. The laboratory is suitable for 20 students.
Technology equipment (projector, smart board, software)	Data show
Other equipment (depending on the nature of the specialty)	-Equipment used in the measurement of Air parameters. -Equipment used in the measurement of soil parameters. -Equipment used in the measurement of water parameters.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect - Questionnaires
Effectiveness of Students assessment	Program committee. - Staff members. - Students.	Direct - Questionnaires. - Reports. - Meetings
Quality of learning resources	Program leaders. - Peer Reviewer.	Direct & Indirect - Questionnaires. - Reports. - Meetings



Assessment Areas/Issues	Assessor	Assessment Methods
The extent to which CLOs have been achieved	Peer Reviewers Students	Direct & Indirect
Other	NA	NA

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	





Course Specification

— (Bachelor)

Course Title: **Ecosystem in Saudi Arabia**

Course Code: **BIOE1501**

Program: **Environmental Sciences**

Department: **Biology**

College: **College of Science**

Institution: **Umm Al- Qura University**

Version: **2**

Last Revision Date: **8/1/2025**



Table of Contents

A. General information about the course:	3
B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods	4
C. Course Content	8
D. Students Assessment Activities	9
E. Learning Resources and Facilities	10
F. Assessment of Course Quality	10
G. Specification Approval	11



A. General information about the course:

1. Course Identification

1. Credit hours: (.....)

2 hours

2. Course type

A. University College Department Track Others

B. Required Elective

3. Level/year at which this course is offered: (Level 1 /1st year)

4. Course General Description:

This course reviews a general and comprehensive overview of the different and diverse natural geographical and plant environments in the Kingdom of Saudi Arabia. It also discusses the relationship of the quality of the environment to climate change and the impact of environmental impacts and risks on plants and biodiversity. It also discusses the types of natural environments with their geographical location and the different forms of plant patterns they contain. Finally, it discusses ways to protect, preserve, and regulate the natural environments in the Kingdom and the policies used to preserve them.

5. Pre-requirements for this course (if any):

None

6. Co-requirements for this course (if any):

None

7. Course Main Objective(s):

The main objective of the course is for the student to have a close knowledge of the various and diverse natural, geographical and plant environments in the Kingdom of Saudi Arabia through the theoretical and practical aspects of the course. Gain detailed knowledge of the specific relationship of environments to climate change and the impact of environmental impacts and risks on plants and biodiversity. And the types of natural environments with their geographical location and the different forms of plant patterns they contain. And that the student knows the ways to protect, preserve and regulate the natural environments in the Kingdom and the policies used to preserve them, and at the



end of the semester, he evaluates the status of these natural environments and submits appropriate proposals to preserve, protect and develop them.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30 hours	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30 hours
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		30 hours

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	On completion of the course the students should be familiar with basic principles and methods in Natural environments in Saudi Arabia.	K1	Data show to explain the topics scheduled - Showing some documentaries that relate to	-Midterm and final tests (objective tests and essay). - Reports. - Projects.





Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.2	Knowledge and learning capabilities: understand the concepts and principles of natural environments in Saudi Arabia.	K1	course- identify. Lectures. Video tapes, CDs and DVDs (audiovisuals). Assignments (essays and oral presentation). Tutorials. Accelerated learning (learning by fun). Mind maps. -The methodology includes a combination of lectures by the lecturer, seminar presentation by the students and web-interactions. - At the end of the program, students will be divided into groups for seminar presentation on important areas of the course to assess their understanding and comprehension of the course.	
1.3	Applied knowledge: learning experimental designs to do research in natural environments.	K2 K4		
1.4	Self-learning: develop research abilities through bibliographic research, synthesis capacity and interpretation of Natural environments in experiments.	K3		
2.0	Skills			
2.1	The student will be able to: identify and distinguish between natural and non-natural environments through data analysis of the collected	S1	Cognitive Skills: Discussions and periodic tests during the theoretical lectures - joint	- Midterm tests and final. -Evaluation of short research - Evaluation of offers.





Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	environmental elements.		research work between the students and some individual duties.	- Required activities and duties
2.2	Determine the extent to which the natural environment is viable, stable, evolving, or susceptible to deterioration.	S2 S3	Browsing in the internet. Self-studies are to be included in exams.	- productive discussions.
2.3	Analyzing and evaluating the causes of the persistence or deterioration of the natural environment.	S3 S4	Homework. Presentations by students. Lectures.	-Home business to assess and discuss the students.
2.4	Identify the most important components of biodiversity in every natural environment and the role of these components in the ecological balance.	S1	Interpersonal Skills and Responsibility: Participate in groups to research work. The implementation of all of the students assigned to the tasks and duties during the theoretical lessons.	-Assess the skills of preparing research.
2.5	Ability to conduct environmental studies and conduct his results of studies to others.	S5	Oral presentation lecture about the project presented by students and discussed with them after distributing the students into groups to encourage teamwork. - Full essay about the project, and group work.	





Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
			Numerical and Communication Skills: Communication via the World Wide Web with the professor to present research and projects.	
3.0	Values, autonomy, and responsibility			
3.1	Knowing the importance of values: honesty, sincerity, loyalty, and transparency in the scientific, practical, and community life.	V1	Giving students examples of the importance of these values and their role in strengthening relationships in scientific, practical, and societal life	Observing students during work and dealing with each other.
3.2	Respecting and understanding the value of teamwork and working within the group.	V3	Distributing students into groups and emphasizing that teamwork gives better payoff from individual work and promotes progress	
3.3	The study of this course can enhance the student's belief in God by discovering the Processes of formation, continuity, stability, balance, biodiversity and the integration of natural environments, which	V1	Giving students examples of the importance of natural environments and showing the greatness of God and the precision of God in creating these environments with	During my discussions with the students and their interest and understanding of the course





Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	insure the continuation of life.		this perfect balance.	
3.4	Understand the value and importance of time and work.	V2	Distributing students into groups and Observing students while working in emphasizing that teamwork gives better pay off from individual work and promotes progress.	Observing students while working in theoretical groups

C. Course Content

No	List of Topics	Contact Hours
1.	The Environment. Climate and environmental change. Environmental impacts and hazards.	2
2.	Geographical plant areas in the Kingdom of Saudi Arabia. The first region: the western coastal plain.	2
3.	The second region: the Hijaz Mountains or the Sarawat mountain range.	2
4.	The third region: the Western plateaus. The fourth region: the Central plateau.	2
5.	The fifth region: the Eastern region. The sixth region: Northern regions.	2
6.	Midterm exam I	2
7.	The seventh region: the region of An Nafud.. The eighth region: The Empty Quarter.	2
8.	The different types of environments in Saudi Arabia: First:- Marine environments 1- Coral reefs 2- Seaweed 3- Shura plants (corn) 4- Salt marshes 5- Bays (Al-Shurum, Al-Marassi and Al-Doha)	2
9.	Second: The natural terrestrial environments 1- Islands	2





	a) Tiran and Sanafir islands at the entrance to the Gulf of Aqaba b) Farasan Islands group in the Red Sea 2- Wet areas 3- Valleys 4- Mountain edges and mountains	
10.	5-Mountain forest areas. 6- Al-Harat 7- The gravel plains and the Hammad plains 8- Sandy deserts	2
11.	Growth types (Types of Plant Life) The plant in the environment in which it grows, such as: 1- Phanerophytes 2- Chamaephytes 3- Hemicryptophytes 4- Cryptophytes	2
12.	Growth types cont. 5- Therophytes 6- Epiphytes 7- Succulent plant 8- parasitic plant Midterm Exam II	2
13.	Annual and seasonal plants: Wild medicinal plants	2
14.	Environmental protection, regulation and policy	2
15.	Nature protected areas in the Kingdom of Saudi Arabia	2
	Final exam	
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm Exam I	6th	20%
2.	Midterm Exam II	12th	20%
3.	Final Exam	17th	50%
4.	Activities (Oral presentation)	13th and 14th	10%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).





E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	<p>Saudi Arabia: An Environmental Overview. Peter Vincent.2007. London.</p> <p>Vegetation & Biogeography of the Sand Seas of Arabia. David Watts, Abdulatif Al-nafie.2003. London.</p> <p>الجغرافيا النباتية للمملكة العربية السعودية، عبد اللطيف حمود النافع، 2004 الرياض</p>
Supportive References	<p>Flora Of Eastern Saudi Arabia. James P. Mandaville. 1990. London.</p> <p>Migahid, A., (1988). Flora of Saudi Arabia, King Saud University, Riyadh.</p> <p>Mandavill, J, (1990). Flora of Eastern Saudi Arabia, Kegan Paul International, London and New York, jointly with National Commission for Wildlife Conservation and Development (NCWCD), Riyadh.</p> <p>Heemstra, H., Al Hassan H. and Al Minwer F., (1990). Plants of Northern Saudi Arabia, An Illustrated Guide. Ministry of Agriculture and Water, Range and Animal Development Research Centre, Al-Jawf, Saudi Arabia.</p>
Electronic Materials	<p>المركز الوطني لتنمية الحياة الفطرية https://www.ncw.gov.sa/</p>
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
<p>facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)</p>	Classrooms
<p>Technology equipment (projector, smart board, software)</p>	Projector, Smart Board
<p>Other equipment (depending on the nature of the specialty)</p>	Herbarium

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching		





Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	student	Direct
Effectiveness of Students assessment	Staff and student	Direct, Indirect
Quality of learning resources	Staff and student	Direct, Indirect
The extent to which CLOs have been achieved	independent member teaching staff	Direct, Indirect

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	DEPARTMENT OF BIOLOGY
REFERENCE NO.	2
DATE	8/1/2025





Course Specification

(Bachelor)

Course Title: General Biology

Course Code: BIO1101

Program: Environmental Sciences

Department: Biology

College: Science

Institution: Umm Al-Qura University

Version: 47

Last Revision Date: 22/12/2-024



Table of Contents

A. General information about the course:	3
B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods	4
C. Course Content	6
D. Students Assessment Activities	8
E. Learning Resources and Facilities	8
F. Assessment of Course Quality	9
G. Specification Approval	10



A. General information about the course:

1. Course Identification

1. Credit hours:

3 credits

2. Course type

A. University College Department Track Others

B. Required Elective

3. Level/year at which this course is offered:

1st year / 1st level

4. Course general 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). Practical lessons include general rules for safety in Biology Lab. Study of different cell organelles, stages of cell division, plant growth experiments and hormones, and osmosis and diffusion

5. Pre-requirements for this course (if any):

N/A

6. Pre-requirements for this course (if any):

N/A

7. Course Main Objective(s):

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."

2. Teaching mode (mark all that apply)





No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30 h
2.	Laboratory/Studio	45 h
3.	Field	---
4.	Tutorial	
5.	Others (specify)	
Total		75

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Understanding the basic biological principles through an integrated approach	K1	lectures	exams
1.2	Recognize the cellular processes of living organisms with an emphasis on biological chemistry applications.	K1 & K2	lectures	exams
1.3	Identify the unifying themes and key concepts of different organisms	K2	lectures	Exams
1.4	Describe the anatomy, function, genetics, and	K2	lectures	Exams



Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	evolution of different types of organisms			
1.5	Demonstrate factual knowledge of contemporary natural science.	K2	lectures	exams
...				
2.0	Skills			
2.1	The student will apply contemporary scientific models to describe the natural world	S1		
2.2	Conduct the scientific method	S1 & 2		
2.3	Solve problems, including observation, inference, measurement, prediction, use of numbers, classifying and use of space and time	S1 & S3		
2.4	Demonstrate integrated process skills, including identification and control of variables, interpretation of data, formulation and testing of hypotheses, and experimentation in the life sciences	S3		
...				
3.0	Values, autonomy, and responsibility			
3.1	work independently and as part of a team to finish some assignments.	V1		
3.2	Awareness about conservation natural biodiversity	V2		
...	Advocate for ethical practices and life sustainability	V3		



C. Course Content

No	List of Topics	Contact Hours
	Theoretical Topics	
1.	Introduction into biology * The Cell (History, Theory) * Prokaryotic and Eukaryotic structure * Types of Cells (Plant and animal)	2
2.	Cell Biology * Protoplasmic components * Non-protoplasmic components * Secondary compounds (Alkaloids, Glycosides, Tannins, Latex, organic acids, salts). * Metabolism	2
3.	Genetics and Molecular Biology * Structure and function of DNA and RNA * DNA replication, transcription, and translation * Biotechnology (Genetic engineering, cloning)	2
4.	Systematics • Two Kinds of Systematics; Taxonomy & Phylogeny • Role of Binomial nomenclature Diversity of life-forms	2
5.	Domains of Life I * Prokaryotes (bacteria and archaea) * Viruses and prions * Protists and fungi	2
6.	Domains of Life II * Plant diversity and adaptations * Animal diversity and classification	2
7.	Plant Biology * Plant structure and function * Photosynthesis and plant metabolism	2
8.	Plant Biology * Growth, hormones, and development * Reproduction in plants (pollination, seed dispersal)	2
9.	Animal Physiology and Homeostasis * Nervous system and endocrine system * Circulatory and respiratory systems * Digestive and excretory systems	2
10.	Animal Physiology and Homeostasis	2



	<ul style="list-style-type: none"> * Immune system and disease * Reproductive system and development 	
11.	<p>Environmental pollution</p> <ul style="list-style-type: none"> *The concept of environmental pollution * Types, risks and controlling 	2
12.	<p>Ecology and Environmental Biology</p> <ul style="list-style-type: none"> * Community interactions (competition, predation, symbiosis) * Ecosystem structure and energy flow (food chains, food webs, trophic levels) * Biomes and global climate change * Conservation biology and sustainability 	2
13.	<p>Environmental Sustainability & Biodiversity Conservation in Saudi Arabia</p> <ul style="list-style-type: none"> * Desert greening projects: Using plant biology and biotechnology to combat desertification. * Coral reef and marine biodiversity conservation: Protecting the Red Sea's unique marine life. 	2
14.	<p>Environmental Sustainability & Biodiversity Conservation in Saudi Arabia</p> <ul style="list-style-type: none"> * Wildlife conservation programs: Protecting endangered species like the Arabian leopard. * Renewable bio-based industries: Promoting sustainable biofuels and biodegradable materials. 	2
15.	<p>Agriculture and Food Security</p> <ul style="list-style-type: none"> * Genetically modified crops (GMOs) to improve yield and resistance to extreme climates. * Sustainable aquaculture to increase seafood production in Saudi Arabia. * Vertical farming and hydroponics for efficient urban food production. * Biological pest control to reduce dependence on chemical pesticides. 	2
Total		45
Practical Topics		Contact Hours
1	<p>Biology Lab Safety</p> <ul style="list-style-type: none"> -Lab Notebook -Basic Biology -Laboratory Equipment 	3
2	Scientific Investigation Laboratory	3
3	Microscopes and Cells Laboratory	3
4	<p>The Cell</p> <ul style="list-style-type: none"> -Prokaryotic and Eukaryotic structure -Types of Cells (Plant and animal) 	3





	-Protoplasmic components,	
5	Non-protoplasmic components of cell	3
6	Diffusion and Osmosis Laboratory	3
7	Mitosis And Meiosis laboratory	3
8	Domains of Life I -Prokaryotes (bacteria and archaea) - Viruses -Protists and fungi	3
9	Midterm exam	3
10	Domains of Life II -Plant & Animal diversity and classification	3
11	Bacteriology laboratory -Investigating Characteristics of Microorganisms Including Bacteria -Bacteria in the Environment, -Controlling the Growth of Bacteria	3
12	Cellular Respiration and Fermentation Laboratory	3
13	Photosynthesis Laboratory	3
14	Plant Growth Laboratory	3
15	Animal Physiology -Nervous system and endocrine system -Circulatory and respiratory systems -Digestive and excretory system	3
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Exams (mid & final) theoretical & practical	7 & 13	70%
2.	Quizzes (1 & 2)	3 & 9	20%
3.	Student individual reports or work	final	10%
...	Total		100%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources





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

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	1. Lecture room suitable for 40 students. 2. Lecture room equipped with Data show. 3. Biology laboratory.
Technology equipment (projector, smart board, software)	1. Computers or internet connection. 2. Active Board. 3. Data show is required in every room
Other equipment (depending on the nature of the specialty)	Laboratory instruments & equipment: light microscope, Spectrophotometer, centrifuge, pH meters, flasks, beakers, screw capped tubes, slides and tips and chemicals kits.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Course lecturer	direct
Effectiveness of Students assessment	Course lecturer	direct
Quality of learning resources	Course lecturer	direct
The extent to which CLOs have been achieved	Course lecturer	direct
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)





G. Specification Approval

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	

