



Course Specifications

Course Title:	Animal physiology
Course Code:	42011314
Program:	Biology
Department:	Biology
College:	Science and Arts in Qilwah
Institution:	Albaha University

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A. Course Identification

1. Credit hours: 3 hours (2 theoretical+1 practical)			
2. Course type			
a.	University <input type="checkbox"/>	College <input type="checkbox"/>	Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b.	Required <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>	
3. Level/year at which this course is offered: 6th level – 3th year			
4. Pre-requisites for this course (if any): Histology (42011214)			
5. Co-requisites for this course (if any): None			

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	60%
2	Blended	5	5%
3	E-learning	5	5%
4	Correspondence		
5	Other	30	30%

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	
4	Others (specify)	
	Total	60
Other Learning Hours*		
1	Study	1
2	Assignments	1
3	Library	
4	Projects/Research Essays/Theses	
5	Others (specify)	
	Total	2

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

This course is designed to give a broad overview of general physiology. The course encompasses: introduction to physiological principles and some other physiological topics as outlined in the next table.

2. Course Main Objective

The main objectives of this course are to:

- Propose hypotheses based on physiological Statistics and learn to evaluate the using data provided by Professor
- Provide physiological explanations for the data provided by Professor
- Describe possible experiments that can help students to distinguish between different physiological hypotheses

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	Know about the physiological principles in living organism	K1
1.2	Understand physiological principles	K3
1.3	Prepare and design the various physiological cycles.	K4
2	Skills :	
2.1	Present concise interpretations and discussions of physiological processes	S1
2.2	Discuss the reasons of physiological disorders.	S1
2.3	Explain the importance of hormones and enzymes in physiology.	S4
2.4	Describe the action of the hormones	S4
3	Competence:	
3.1	Use of university library and websites for searching literature and also collecting information.	C1
3.2	Work effectively both in a team, and independently for solving problems.	C2

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to physiological principles	3
2	Cell physiology	3
3	Cellular signals	3
4	Nutrients	3
5	Digestion physiology	6
6	Circulatory systems in animals	3
7	Heart and circulation	3
8	.Respiration physiology	3
9	Locomotion and muscle physiology	3

10	Excretion physiology	3
11	Nervous system	6
12	Endocrine glands	3
13	Reproduction	3
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	Know about the physiological principles in living organism	Lectures using board	Written and oral exams
1.2	Understand physiological principles	Discussion and group tutorial	Written and oral exams, regular homework assignments
1.3	Prepare and design the various physiological cycles.	Discussion and group tutorial	Written and oral exams, regular homework assignments
2.0	Skills		
2.1	Present concise interpretations and discussions of physiological processes	Cooperative learning- Brain storming	Written and oral exams. Class discussions
2.2	Discuss the reasons of physiological disorders.	Cooperative learning - Brain storming	. Written and oral exams - Class discussions.
2.2	Explain the importance of hormones and enzymes in physiology.	Cooperative learning - Brain storming	Written and oral exams - Class discussions.
2.3	Describe the action of the hormones	Cooperative learning - Brain storming	Written and oral exams - Class discussions.
2.4	Describe the action of the hormones	Cooperative learning - Brain storming	Written and oral exams - Class discussions.
3.0	Competence		
3.1	Use of university library and websites for searching literature and also collecting information.	Writing group reports.	Checklist –grading reports
3.2	Work effectively both in a team, and independently for solving problems.	Peer review teaching.	Observation cards

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz 1	5	5
2	Midterm Written Theoretical Exam	9	10
3	Quiz2	13	5
4	Assignments, Activities & Attendance	During Semester	10
5	Final Practical Exam	16	10
6	Lab Reports	16	10
7	Final Written Theoretical Exam	17	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 :

- The presence of faculty members to provide advice, academic advice and academic guidance to the student who is in need during the six hours a week, available to all students.

Arrange extra hours for gifted students or Program additional time for students who are weak in academics and scholastic achievements.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<ul style="list-style-type: none"> Moye, C.D, & P.M Schulte. 2008. Principles of Animal Physiology. Pearson Sadava, Hillis, Heller and Berenbaum. 2009. Life: The Science of Biology. 9th edition. Sinauer (this text is also used in BIOL 101 and BIOL 102) <p>Sadava, Hillis, Heller and Berenbaum. 2009. Life: The Science of Biology. 9th edition. Sinauer</p>
Essential References Materials	Access to quality, general science publications and journals; e.g., Science, Nature, Bioscience.
Electronic Materials	<ul style="list-style-type: none"> http://animaldiversity.ummz.umich.edu/site/index.html The National Digital Science Library: http://nsdl.org/resources_for/university_faculty/
Other Learning Materials	CD-ROM containing the animated physiological processes.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> Classrooms equipped with smart board and display screen for (40) students <p>Practical labs provided with microscope and different equipment for (20-25) students.</p>

Item	Resources
Technology Resources (AV, data show, Smart Board, software, etc.)	Provision of computers for students training to be used in research on scientific topics that serve the course
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	<ul style="list-style-type: none"> • Optical microscopes - microscopic slides for parasite samples • Microscope equipped with a digital camera to photograph samples • Centrifuges. • Glass tubes. • Incubators. • A sensitive balance • Chemicals & stains for parasite diagnosis and preparations. <p>ELISA and a refrigerator to store the sample.</p>

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	Students, Faculty and Program Leaders	Indirect:(students)- direct:(Program Leaders
Effectiveness of assessment	Members of teaching staff, Peer Reviewer and the students	Direct: Department exam committee by using course blueprint- Peer Reviewer-The form for meeting a course test for test standards. Indirect: Students course evaluation questionnaire
Extent of achievement of course learning outcomes	Program-coordinator, Peer Reviewer and Evaluation Commissions	Direct: Exams, standard exams and Evaluation Commissions exams

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	Department Committee
Reference No.	
Date	



Course Specifications

Course Title:	Plant Ecology
Course Code:	42011316
Program:	Biology
Department:	Biology
College:	Science and Arts in Qilwa
Institution:	Al-Baha University

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A. Course Identification

1. Credit hours:			
2. Course type			
a.	University <input type="checkbox"/>	College <input type="checkbox"/>	Department <input type="checkbox"/>
b.	Required <input type="checkbox"/>	Elective <input type="checkbox"/>	Others <input type="checkbox"/>
3. Level/year at which this course is offered:			
4. Pre-requisites for this course (if any): Fundamentals of Ecology 42011219			
5. Co-requisites for this course (if any): None			

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	15	30%
2	Blended	2.5	5%
3	E-learning	2.5	5%
4	Correspondence	-	-
5	Other practical	30	60%

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	15
2	Laboratory/Studio	30
3	Tutorial	-
4	Others (specify)	-
	Total	45
Other Learning Hours*		
1	Study	45
2	Assignments	7
3	Library	13
4	Projects/Research Essays/Theses	10
5	Others (specify)	5
	Total	80

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

Lectures: This course is designed to give a broad overview of plant ecology, with respect to the biological and physical factors that affect the plants, and to describe the plant communities and how to study their structure.

Labs: The labs will provide student with an opportunity to identify and study plant communities with emphasis on field studies

2. Course Main Objective

The objectives of this course are to:

- Define Plant Ecology.
- ☐ Identify the biological and physical factors of the environment and their effect on plants.
- ☐ Describe the Plant Community and explain the Study of Plant Community Structure.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	Define, understand and explain the concept of plant ecology.	K1
1.2	Recognize the ecological factors, both biological and physical.	K2
1.3	Recognize plant community, community structure and its analysis plant succession	K3
1.4	Identify biological factors: plant-plant relationships, plant-animal relationships.	K3
2	Skills :	
2.1	Understand the nature of ecological factors. And identify types of succession	S1
2.2	Compare Plant adaptation types and identify different biological factors	S3
2.3	Propose methods for analysis of plant community structure	S4
3	Competence:	
3.1	Take responsibility for own learning and professional development	C1
3.2	Work effectively in groups and exercise leadership when appropriate.	C2
3.3	Present information clearly in both written and oral form.	C2

C. Course Content

No	List of Topics	Contact Hours
1	Introduction: The environment – What is Ecology.	3
2	Ecological factors affecting plants: Physical factors – Climatic factors.	6
3	Plant adaptation : Xerophytes – Halophytes.	3
4	Edaphic factors – Topographic factors.	3
5	Biological factors: Plant-plant relationships (competition – association – commensalism).	6
6	Plant – animal relationships (grazing – pollination – dispersal)	3
7	Plant community – Community structure.	3
8	Analytical characters of the community :qualitative characters – quantitative characters.	6
9	Methods of studying and analysis of vegetation cover.	6
10	Plant succession: Xerosere – Hydrosere.	6

11		
Total		45

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	Define, understand and explain the concept of plant ecology.	<ul style="list-style-type: none"> • Lectures • PowerPoint presentation • Scientific movies • Debate and discussion. • Assignments (Co-operative & Individual assignments). • Cooperative Learning • Working in small groups 	<ul style="list-style-type: none"> • Continuous evaluation through interaction, and presentation of research projects. • presentation of summaries and reports during lectures. • Evaluation of assignments. • Quiz1 & Quiz2. • Midterm exam. • Final written theoretical exam.
1.2	Recognize the ecological factors, both biological and physical.	<ul style="list-style-type: none"> • Lectures • PowerPoint presentation • Scientific movies • Debate and discussion. • Assignments (Co-operative & Individual assignments). • Cooperative Learning • Working in small groups • Individual & group research 	<ul style="list-style-type: none"> • Continuous evaluation through interaction, and presentation of research projects. • presentation of summaries and reports during lectures. • Evaluation of assignments. • Quiz1 & Quiz2. • Midterm exam. • Final written theoretical exam.
1.3	Recognize plant community, community structure and its analysis plant succession	<ul style="list-style-type: none"> • Lectures • PowerPoint presentation • Scientific movies • Debate and discussion. • Assignments (Co-operative & Individual assignments). • Cooperative Learning • Working in small groups • Individual & group research 	<ul style="list-style-type: none"> • Continuous evaluation through interaction, and presentation of research projects. • presentation of summaries and reports during lectures. • Evaluation of assignments. • Quiz1 & Quiz2. • Midterm exam. • Final written theoretical exam.
1.4...	Identify biological factors: plant-plant relationships, plant-animal relationships.	<ul style="list-style-type: none"> • Lectures • PowerPoint presentation • Scientific movies • Debate and discussion. • Assignments (Co-operative & Individual assignments). • Cooperative Learning • Working in small 	<ul style="list-style-type: none"> • Continuous evaluation through interaction, and presentation of research projects. • presentation of summaries and reports during lectures. • Evaluation of assignments. • Quiz1 & Quiz2.

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
		groups Individual & group research	• Midterm exam. Final written theoretical exam.
2.0	Skills		
2.1	Understand the nature of ecological factors. And identify types of succession	<ul style="list-style-type: none"> • Lectures • Scientific movies and animated life cycles. • Debate and discussion. • Assignments (Co-operative & Individual assignments). • Cooperative Learning • Working in small groups Individual & group research	<ul style="list-style-type: none"> • Continuous evaluation through interaction, and presentation of research projects. • presentation of summaries and reports during lectures. • Quiz1 & Quiz2. • Midterm exam. • Final written theoretical exam. Evaluation of assignments
2.2	Compare Plant adaptation types and identify different biological factors	<ul style="list-style-type: none"> • Lectures • Scientific movies and animated life cycles. • Debate and discussion. • Assignments (Co-operative & Individual assignments). • Cooperative Learning • Working in small groups Individual & group research	<ul style="list-style-type: none"> • Continuous evaluation through interaction, and presentation of research projects. • presentation of summaries and reports during lectures. • Quiz1 & Quiz2. • Midterm exam. • Final written theoretical exam. Evaluation of assignments
2.3	Propose methods for analysis of plant community structure	<ul style="list-style-type: none"> • Lectures • Scientific movies and animated life cycles. • Debate and discussion. • Assignments (Co-operative & Individual assignments). • Cooperative Learning • Working in small groups Individual & group research	<ul style="list-style-type: none"> • Continuous evaluation through interaction, and presentation of research projects. • presentation of summaries and reports during lectures. • Quiz1 & Quiz2. • Midterm exam. • Final written theoretical exam. Evaluation of assignments
2.4...	Interpret results obtained from techniques of vegetation analysis	<ul style="list-style-type: none"> • Lectures • Scientific movies and animated life cycles. • Debate and discussion. • Assignments (Co-operative & Individual assignments). • Cooperative Learning • Working in small groups Individual & group research	<ul style="list-style-type: none"> • Continuous evaluation through interaction, and presentation of research projects. • presentation of summaries and reports during lectures. • Quiz1 & Quiz2. • Midterm exam. • Final written theoretical exam. Evaluation of assignments
3.0	Competence		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.1	Take responsibility for own learning and professional development	Team work- Assignments- student presentation- reporting- Scientific media- Training on scientific drawing, reading slides and reporting-Lab work Co-operative & Individual assignments. Cooperative Learning	Evaluation of individual & group works. Observation Card
3.2	Work effectively in groups and exercise leadership when appropriate.	Team work- Assignments- student presentation- reporting- Scientific media- Training on scientific drawing, reading slides and reporting-Lab work Co-operative & Individual assignments. Cooperative Learning	Evaluation of individual & group works. Observation Card
...	Present information clearly in both written and oral form	Develop the ability of students to reach information easily in the network.	Oral discussion Report evaluation Observation cards

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz 1	5	5
2	Midterm Written Theoretical Exam	9	10
3	Quiz2	13	5
4	Assignments, Activities & Attendance	During Semester	10
5	Final Practical Exam	15	10
6	Lab Reports	15	10
7	Final Written Theoretical Exam	16	50
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 :

- The presence of faculty members to provide advice, academic advice and academic guidance to the student in need within the six hours a week available to all students.
- Arrange extra hours gifted students or Program for students who default in scholastic achievement

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<ul style="list-style-type: none"> • -اسس علم البيئه (1993) عبدالفتاح بدر و عبدالعزيز • - علم البيئه (1991) حسين علي ابو الفتح – • - علم البيئه النباتيه (1987) احمد مجاهد وآخرون – • Molles, M. 2009. Ecology: Concepts and Applications; 5th edition. McGraw-Hill; ISBN-13978-0073383224 Sadava, Hillis, Heller and Berenbaum. 2009. Life: The Science of Biology.
Essential References Materials	<ul style="list-style-type: none"> • Nature • Ecology • Journal of Ecology
Electronic Materials	All web sites of relevance.
Other Learning Materials	<ul style="list-style-type: none"> • CD-ROM containing illustrations of the ecological factors. • Movies for the different plant communities.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> • Classrooms equipped with smart board and display screen for (40) students • Practical labs provided with microscope and different equipment for (20-25) students
Technology Resources (AV, data show, Smart Board, software, etc.)	Provision of computers for students training to be used in research on scientific topics that serve the course.
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	Student discussions and dialogues Recoding student suggestion for improvement through academic advices and consultation meeting Analysis & interpretations of

Evaluation Areas/Issues	Evaluators	Evaluation Methods
		student marks
Effectiveness of Teaching	Instructor/department	<ul style="list-style-type: none"> • Presenting the results of a sample of students to an external reviewer. • Analyzing the results of students. • Follow-up of graduates after graduation. • Periodical revision of the Course Specification models . check marking by an independent member teaching staff of a sample of student work

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	

Course Specifications

Course Title:	Biochemistry
Course Code:	42021336
Program:	Bachelor Degree in Chemistry
Department:	Chemistry
College:	Science and Arts in Qilwa
Institution:	Albaha University

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1.Learning Resources	7
2. Facilities Required.....	8
G. Course Quality Evaluation	8
H. Specification Approval Data	8

A. Course Identification

1. Credit hours: 3 Credit hours (2T + 1P)	
2. Course type	
a.	University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b.	Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: 6 th level – 3 rd year	
4. Pre-requisites for this course (if any): Organic Chemistry (31021226)	
5. Co-requisites for this course (if any): None	

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	50%
2	Blended		
3	E-learning		
4	Correspondence		
5	Other (Laboratory)	30	50%

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	
4	Others (specify)	
	Total	60
Other Learning Hours*		
1	Study	
2	Assignments	
3	Library	
4	Projects/Research Essays/Theses	
5	Others (specify)	
	Total	

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

Course Description:

Lectures: This course is designed to give a broad overview of the foundations of biochemistry, with an emphasis on organic chemistry. Topics include: structure and properties of water, Amino acids structures, peptides, carbohydrates, lipids, proteins, and nucleic acids; and vitamins - Fat soluble vitamins - Water soluble vitamins, Endocrine gland Membranes; membrane bilayers and transport across membranes.

Labs: The labs will provide student with an opportunity to identify and study commonly of water, carbohydrates, Amino acids, peptides, lipids, proteins. Emphasis will be placed on the Precautions and safety rules and the safety in the chemical laboratory. The laboratory will include determination of Physical properties of unknown, Molish's test, Iodine test, Benedict's test, Fehling test, Ketose test Barfoed's test, Biuret's test, Heat coagulation test, Folin's test, Millon's test, Acrolin's test. Lieberman's test, and Sodium hypobromite test.

2. Course Main Objective

The objectives of this course are to:

- 1-This course introduces students to the foundations of the basic concepts of Biochemistry.
- 2-Expose students to the knowledge of Biochemistry and know the structure and function of carbohydrates, amino acids, peptides, proteins, lipids, and nucleic acid compounds.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	Define the general concepts and terms related to biochemistry such as amino acid, enzymes, proteins, lipids, carbohydrates, nucleic acids, hormones, vitamins and properties of water.	K3
1.2	Recall the molecular structures, the physical and the chemical properties of amino acids, peptides, monosaccharides, disaccharides, polysaccharides, proteins primary, secondary tertiary and quaternary, enzymes, fatty acids, lipids and nucleic acids.	K3
1.3	Explain the different classes and types of carbohydrate, amino acids, fatty acids, lipids, vitamins, hormones and nucleic acids.	K3
2	Skills :	
2.1	Show and Draw the chemical structure of some monosaccharides, disaccharides, amino acids, peptides, fatty acids, triglycerides and nucleotides.	S1
2.2	Compare and contrast (structure and location) between the types of nucleic acids, polysaccharides and enzyme inhibitors.	S1
2.3	Explain the models of enzyme, its mechanism of action and regulation.	S3
2.4	Present and interpret results obtained from using practical techniques	S4
3	Competence:	
3.1	Solve problems and assignments individually.	C1
3.2	Cooperate with his colleagues in teamwork and actively collaborate within one team in solving chemical problems and serving the community.	C2

CLOs		Aligned PLOs
3.3	Write reports using various techniques to collect and analyze information and presenting it to others.	C2

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to the course	1
2	Review: Water, It's properties and effects	1
3	Review: Amino Acids and Peptides	2
4	Protein composition and primary/secondary structure; protein purification & amino acid sequencing and quantization	2
5	Protein tertiary and quaternary structure, and protein function: ligand binding and allostery; protein regulation	2
6	Enzyme catalysis and kinetics	2
7	Enzyme mechanisms and regulation	2
8	Mono- and Disaccharides: Review of nomenclature, structure and properties	3
9	Polysaccharides, structure properties and analysis	2
10	Structure & Properties of Nucleic acids and Nucleopeptides	3
11	Lipids, occurrence and properties; Cholesterol & lipoproteins	2
12	Composition and structure of Membranes; membrane bilayers and transport across membranes	2
13	Vitamins: Water soluble vitamins and Fat soluble vitamins	2
14	Endocrine gland and Hormones	4
15	Course review	--
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		
1.1	Define the general concepts and terms related to biochemistry such as amino acid, enzymes, proteins, lipids, carbohydrates, nucleic acids, hormones, vitamins and properties of water.	<ul style="list-style-type: none"> • PowerPoint presentation • Cooperative Learning • Working in small groups Individual & group assignments 	<ul style="list-style-type: none"> • Evaluation of assignments and participating in discussions. • Quizzes. • Midterm exam • *Final written exams..
1.2	Recall the molecular structures, the physical and the chemical properties of amino acids, peptides, monosaccharides, disaccharides, polysaccharides, proteins primary,	<ul style="list-style-type: none"> • PowerPoint presentation • Cooperative Learning 	<ul style="list-style-type: none"> • Evaluation of assignments and participating in discussions. • Quizzes.

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	secondary tertiary and quaternary, enzymes, fatty acids, lipids and nucleic acids.	<ul style="list-style-type: none"> Working in small groups Individual & group assignments	<ul style="list-style-type: none"> Midterm exam *Final written exams..
1.3	Explain the different classes and types of carbohydrate, amino acids, fatty acids, lipids, vitamins, hormones and nucleic acids.	<ul style="list-style-type: none"> PowerPoint presentation Cooperative Learning Working in small groups Individual & group assignments	<ul style="list-style-type: none"> Evaluation of assignments and participating in discussions. Quizzes. Midterm exam *Final written exams..
1.4			
2.0	Skills		
2.1	Show and Draw the chemical structure of some monosaccharides, disaccharides, amino acids, peptides, fatty acids, triglycerides and nucleotides.	<ul style="list-style-type: none"> Lectures Debate and discussion. Cooperative Learning Working in small groups Individual & group research	<ul style="list-style-type: none"> Evaluation of assignments and participating in discussions. Quizzes. Midterm exam *Final written exams.
2.2	Compare and contrast (structure and location) between the types of nucleic acids, polysaccharides and enzyme inhibitors.	<ul style="list-style-type: none"> Lectures Debate and discussion. Cooperative Learning Working in small groups Individual & group research	<ul style="list-style-type: none"> Evaluation of assignments and participating in discussions. Quizzes. Midterm exam *Final written exams.
2.3	Explain the models of enzyme, its mechanism of action and regulation.	<ul style="list-style-type: none"> Lectures Debate and discussion. Cooperative Learning Working in small groups Individual & group research	<ul style="list-style-type: none"> Evaluation of assignments and participating in discussions. Quizzes. Midterm exam. *Final written exams.
2.4	Present and interpret results obtained from using practical techniques	<ul style="list-style-type: none"> Training on lab experiments and reporting-Lab work 	Lab reports. <ul style="list-style-type: none"> Practical exams.
3.0	Competence		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.1	Solve problems and assignments individually.	Individual work-Assignments student presentation	<ul style="list-style-type: none"> Evaluation of individual works.
3.2	Cooperate with his colleagues in teamwork and actively collaborate within one team in solving chemical problems and serving the community.	Individual & Team work- Assignments- student presentation- reporting- Scientific media- reporting-Lab work	**Evaluation of individual & group works. ** reports evaluation Observation Card
3.3	Write reports using various techniques to collect and analyze information and presenting it to others.	<ul style="list-style-type: none"> Working in small groups Individual & group research	<ul style="list-style-type: none"> Evaluation of individual & group works. Laboratory reports Observation Card

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz 1	5	5%
2	Mid-term Exam	9	10%
3	Quiz 2	13	5%
4	Assignments, Activities & Attendance	During Semester	10%
5	Lab report	During semester	10%
6	Lab final	16	10%
7	Final exam	17	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 :

- The presence of faculty members to provide advice, academic advice and academic guidance to the student in need within the six hours a week available to all students.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	Note book of chemistry department
Essential References Materials	Moran, Horton, Scrimgeour, & Perry (2012). Principles of Biochemistry, 5 th edition. Prentice Hall. 9780321707338

Electronic Materials	http://themedicalbiochemicalpage.org . <ul style="list-style-type: none"> • http://www.bio.cmu.edu/Courses/BiochemMols/BCMolecules.html • https://en.wikipedia.org/wiki/Carbohydrate. • https://en.wikipedia.org/wiki/Protein. • https://en.wikipedia.org/wiki/Amino_acid. https://en.wikipedia.org/wiki/Lipid
Other Learning Materials	Nelson, David and Michael Cox, Lehninger <i>Principles of Biochemistry</i> , 5 th ed., 2006, NY: W.H. Freeman Publishers, Inc. ISBN: 0-7167-7108-X

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> • Classrooms equipped with smart board and display screen for (40) students Practical labs provided with glass wares, reagents, melting point apparatus and different equipment for (20-25) students
Technology Resources (AV, data show, Smart Board, software, etc.)	Provision of computers for students training to be used in research on scientific topics that serve the course.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	<ul style="list-style-type: none"> • Reagents • Glass tubes • A sensitive balance . Chemicals.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching strategies.	Students	Direct Students feedback/survey
Course contents and Learning resources	Students, Faculty and external reviewer.	Direct
Verifying Standards of Student Achievement	Independent member teaching staff	Direct, check marking and assessment methods. Analyzing results 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	
Reference No.	
Date	



Course Specifications

Course Title:	Microbial Ecology
Course Code:	42011318
Program:	Biology
Department:	Biology
College:	Science and Arts in Qilwa
Institution:	Albaha university

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A. Course Identification

1. Credit hours: 2 hours (1 lecture + 1 Practical)			
2. Course type			
a.	University <input type="checkbox"/>	College <input type="checkbox"/>	Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b.	Required <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>	
3. Level/year at which this course is offered: 6 th level, 3 rd year			
4. Pre-requisites for this course (if any): Fundamentals of Ecology 42011219			
5. Co-requisites for this course (if any): None			

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	
2	Blended	5	
3	E-learning	5	
4	Correspondence	-	
5	Other	30	

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	60
2	Laboratory/Studio	30
3	Tutorial	10
4	Others (specify)	10
	Total	100
Other Learning Hours*		
1	Study	40
2	Assignments	30
3	Library	10
4	Projects/Research Essays/Theses	20
5	Others (specify)	
	Total	100

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

Microbes are the most abundant and diverse group of organisms in ecosystem. They are responsible for energy production and recycling of wastes and elements in the soil, water and atmosphere. Some microbes are important source of food and are also used in industrial processes for production of antibiotics, organic acids ...etc; They play an important role in wastes treatment as well. Microorganisms interact with themselves and with organisms (plants, animals, and human) in their respective environments. This course account for microbial biodiversity and diverse microbial metabolism in different microbial environment.

2. Course Main Objective

identify the microbes harboring different environments. • explain the role of microbes in ecosystem and elements cycle. • elucidate the microbial adaptation to different environment. • explain the interrelations among microorganisms and other organisms • discuss the uses of microbes in environmental remediation

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	know the main terms of microbial ecology	K1
1.2	identify the microbes of different environment and their adaptation	K1
1.3	describe the components of ecosystem and the microbial role in ecosystem	K3
1.4	understand element cycling and the role of microbes in element cycling in the nature	K3
1.5	aware with interaction among microbes and between microbes and other organism	K4
1.6	determine the environmental applications of different microbes	K4
2	Skills :	
2.1	analyze the relations among microorganisms and between microorganisms and other organisms	S1
2.2	compare between microbes of different environments	S3
2.3	create new methods for solving environmental problems using microbes	S4
3	Competence:	
3.1	Development of Data analysis skills using computer programs and conclusion formation.	C1
3.2	Realizing the personal responsibility by carrying out homework assignments, improving linguistic skills	C2
3.4	Drawing of scientific diagrams and sketches and isolation of microbes from different environment, using microscope	C2

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to microbial ecology and biodiversity	2
2	Ecosystem and role of microbes in environmental balance and element cyclin	4
3	Microbes of different natural environments and their adaptation for environments	4
4	Living organisms such as plants, mammals, invertebrates, animals, humans etc as microbial habitats	4
5	Succession of microorganisms	2
6	Interaction among microbes and between microbes and other living organism	4
7	Oil Microbiology	2
8	Uses of microbes in environmental remediation (wastewater treatment, biodegradation, biofuel, bioremediation)	6
9	Environmental microbial hazardous (acid mine drainage – biocorrosion – biodeterioration)	2
Total		30

D. Teaching and Assessment

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

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		
1.1	know the main terms of microbial ecology	Lectures and practical exercise	Question and homework assignment analysis • Writing and oral exams that include topical and overarched questions designed to evaluate student understanding
1.2	identify the microbes of different environment and their adaptation	Scientific trips	Question and homework assignment analysis • Writing and oral exams that include topical and overarched questions designed to evaluate student understanding
1.3	describe the components of ecosystem and the microbial role in ecosystem	Collecting, showing, and analyzing of information collected from internet and correlating them to other information	Question and homework assignment analysis • Writing and oral exams that include topical and overarched questions designed to evaluate student understanding
1.4	understand element cycling and the role of microbes in element cycling in the nature	Individual homework assignments	Question and homework assignment analysis • Writing and oral exams that include topical and overarched questions designed to evaluate student understanding
1.5	aware with interaction among microbes and between microbes and other organism	Student seminars and shows	Question and homework assignment analysis • Writing and oral exams that include

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
			topical and overarched questions designed to evaluate student understanding
1.6	determine the environmental applications of different microbes	Student practical projects	Question and homework assignment analysis • Writing and oral exams that include topical and overarched questions designed to evaluate student understanding
2.0	Skills		
2.1	analyze the relations among microorganisms and between microorganisms and other organisms	Lectures • Practical exercises • Discussions	Exercise
2.2	compare between microbes of different environments	Lectures • Practical exercises • Discussions	Exams
2.3	create new methods for solving environmental problems using microbes	Brainstorming	Problem solving
3.0	Competence		
3.1	Development of Data analysis skills using computer programs and conclusion formation.	Conducting dialogues and discussion in the classroom Individual home works and sample preparations assignments Formation of small working groups Laboratory experiments and small research Determination of student role in working group	• Observation of working groups • Project discussion • Realizing student respond to assignments • Measuring student learning ability • Evaluation of working groups performance • Evaluation of individual students performance 3
3.2	Realizing the personal responsibility by carrying out homework assignments, improving linguistic skills	• Internet exploring • Using computer in results preparation and statistical analysis • Preparation of reports in suitable formats • Using computer and data through ICT •	• Observation of working groups • Project discussion • Realizing student respond to assignments • Measuring student learning ability •

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
		Learning reference writing	Evaluation of working groups performance • Evaluation of individual students performance 3
3.3	Drawing of scientific diagrams and sketches and isolation of microbes from different environment, using microscope	Laboratory work and scientific trips	Evaluating of reports and articles Evaluating student computer using skills Evaluating of data collecting skills

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz1	5	5
2	Midterm Written Theoretical Exam	9	10
3	Quiz2	13	5
4	Assignments, Activities & Attendance	During semester	10
5	Final Practical Exam	16	10
6	Lab Reports	16	10
7	Final Written Theoretical Exam	17	50
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 :

The presence of faculty members to provide advice, academic advice and academic guidance to the student who is in need during the six hours a week, available to all students. • Arrange extra hours for gifted students or Program additional time for students who are weak in academics and scholastic achievements

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<p>(الرياض –) الكائنات الحية الدقيقة والبيئة. جامعة الملك سعود 4111 عبد الوهاب رجب (الرياض –) . البيئة وسبل المواجهة. جامعة نايف للعلوم • هاشم بن الصادق التجارب العملية في أسس التلوث (•) الأمنية 4111 عبد الوهاب رجب هاشم بن الصادق (الرياض –) . (الميكروبي البيئي). جامعة الملك 4112 عبد الوهاب رجب هاشم بن الصادق • • Mitchell, R. (1992). Environmental Microbiology. Wiley-Liss Publi. New York. • Madigan, M. T., & Brock, T. D. (2012).</p>
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	Brock Biology of microorganisms (13th ed., global.). Boston ; London: Pearson
Essential References Materials	<ul style="list-style-type: none"> • https://www.nature.com/subjects/microbial-ecology • https://link.springer.com/journal/248 • http://aem.asm.org/
Electronic Materials	<ul style="list-style-type: none"> • www.google.com () - - • https://en.wikipedia.org • http://www.asmscience.org/VisualLibrary • https://www.facebook.com/Ecologie-Microbienne-Microbial-Ecology384754438205277/ • https://www.facebook.com/Microbiology.and.Our.Life/
Other Learning Materials	computer-based programs/CD, professional standards or regulations and software

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> • Suitable classrooms provided with comfortable seats (up to 25) • Overhead projector/data show • Television and scientific video tapes • Computer with internet access • Microbiological lab. With suitable instruments
Technology Resources (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"> • Provision of computers for students training to be used in research on scientific topics that serve the course
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	<ul style="list-style-type: none"> • Well-equipped microbiology lab • Computers, software, internet access points.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Teaching effectiveness	students	course evaluation questionnaire
Teaching and course evaluation	Staff member and Supervisors	Reports
<ul style="list-style-type: none"> • Student achievement 	Faculty member	Analyzing the students answers and evaluation of strength and weak points in Periodical and oral exams
Course evaluation	Counselling Committee	Meeting reports Inviting visiting professors to evaluate the course. <ul style="list-style-type: none"> • Semiannual meetings to discuss development of the course. • Periodic meetings with scholarly students to learn the strengths and weaknesses of the course. • Benefit from the corresponding university

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	



Course Specifications

Course Title:	Biostatistics
Course Code:	42041322
Program:	Biology
Department:	Biology
College:	Science and Arts in Qilwa
Institution:	AL BAHA university

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A. Course Identification

1. Credit hours: 2 hours (1theoretical+ 1 Practical)			
2. Course type			
a.	University <input type="text"/>	College <input type="text"/>	Department <input type="text"/> Others <input type="text"/>
b.	Required <input type="text"/>	Elective <input type="text"/>	
3. Level/year at which this course is offered: 6 ^h level			
4. Pre-requisites for this course (if any): None			
5. Co-requisites for this course (if any): None			

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	15 hours	43%
2	Blended	2 hours	6%
3	E-learning	3 hours	8%
4	Correspondence	-	-
5	Other (20%Practical)	15 hours	43%

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	15
2	Laboratory/Studio	30
3	Tutorial	-
4	Others (specify)	-
	Total	45
Other Learning Hours*		
1	Study	30
2	Assignments	7
3	Library	10
4	Projects/Research Essays/Theses	8
5	Others (specify)e-learning and blended	5
	Total	60

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

This course will explore ways of designing, analyzing, interpreting and representing evidence in biological experiments. It will address descriptive statistics, design elements of experiments and probabilities, test hypotheses for the first and second errors, Analysis of variance (And correlation and regression techniques) correlation & regression During this course, statistical techniques within the biological context will be applied to the use of data from laboratory and field studies through a program SPSS .

2. Course Main Objective

1. What is the purpose of the Chairman's decision? After studying this course, the student is expected to identify the types of data (quantitative and descriptive), graphically represent them, measure the central tendency, some simple probability rules, variable types, random variables, statistical distributions (natural distribution and its applications, binomial distribution, And analysis of variance.

Learning outcomes of this course: It is expected after studying this course that the student is able to:

- **Defines data types.**
- **It can represent data graphically.**
- **Specify the sample size.**
- **Simulates data in a program SPSS .**
- **Calculation and interpretation of measures of central tendency.**
- **Compares the types of variables (quantity-quality-intermittent).**
- **Compares the types of statistical distributions.**
- **Calculate and interpret the confidence interval .**
- **Compares correlation and regression.**

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	Define data types and represent data graphically	
1.2	Specify the sample size and recognize the design of biological experiments	
1.3	Recognize statistical inference	
1.4	Recognize the analysis of variance	
2	Skills :	
2.1	Plays and tests hypotheses on type 1 and 2 errors	S1
2.2	Stimulates data in program SPSS	S1
2.3	Calculation and interpretation of measures of central tendency	S4
2.4	Compares the types of variables, statistical distributions and compares correlation and regression	S4
3	Competence:	
3.1	Estimate self-learning and self -development skills in scientific terms	C1
3.2	Communicates effectively in educational situations related to the subjects of the course	C2
3.3	Work in groups and discuss of terminology	C2

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to Statistics	2
2	Sources and data collection <ul style="list-style-type: none"> • Sources and methods of data collection • Sample and test methods • Organize and display data and types of curves 	6
3	Measures of central tendency	4
4	Scattering metrics	2
5	Sprinklers and sprains	2
6	Natural distribution	2
7	Variable types	2
8	Correlation and regression	4
9	Introduction to probability and binomial theory	4
10		
Total		28

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	Define data types and represent data graphically	<ul style="list-style-type: none"> • Lectures • Use presentations power point. • Discussion and dialogue. • My work on the Excel program 	<ul style="list-style-type: none"> • Tests (periodic tests - mid-semester - final test). • Assessment of duties. • Posts during lectures • Practical testing • Assessment of duties..
1.2	Specify the sample size and recognize the design of biological experiments	<ul style="list-style-type: none"> • Lectures • Use presentationspower point. • Discussion and dialogue 	<ul style="list-style-type: none"> • Tests (periodic tests - mid-semester - final test). • Assessment of duties. • Posts during lectures
1.3	Recognize statistical inference	<ul style="list-style-type: none"> • Lectures • Use presentationspower point. • Discussion and dialogue 	<ul style="list-style-type: none"> • Tests (periodic tests - mid-semester - final test). • Assessment of duties. • Posts during lectures

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.4	Recognize the analysis of variance	<ul style="list-style-type: none"> Lectures Use presentationspower point. Discussion and dialogue 	<ul style="list-style-type: none"> Tests (periodic tests - mid-semester - final test). Assessment of duties. Posts during lectures
2.0			
2.1	Plays and tests hypotheses on type 1 and 2 errors	<ul style="list-style-type: none"> Lectures Use presentationspower point. Discussion and dialogue. 	<ul style="list-style-type: none"> Tests (periodic tests - mid-semester - final test). Assessment of duties. Posts during lectures.
2.2	Stimulates data in program SPSS	my work SPSS	practical test
2.3	Calculation and interpretation of measures of central tendency	my work SPSS	practical test
2.4	Compares the types of variables, statistical distributions and compares correlation and regression	<ul style="list-style-type: none"> Lectures Use presentationspower point. Discusscoion and dialogue. 	<ul style="list-style-type: none"> Tests (periodic tests - mid-semester - final test). Assessment of duties. Posts during lectures.
3.0	Competence		
3.1	Estimate self-learning and self - development skills in scientific terms	<ul style="list-style-type: none"> Cooperative learning. Work in small groups. Participate in classroom and non-classroom activities Self-education. 	<ul style="list-style-type: none"> Note card to evaluate students' attitudes in different situations. Evaluation of individual and collective business.
3.2	Communicates effectively in educational situations related to the subjects of the course	<ul style="list-style-type: none"> Search and survey Individual and group research Dialogue and discussion 	<ul style="list-style-type: none"> Assessment of duties Evaluation of research on time
3.3	Work in groups and discuss of terminology	<ul style="list-style-type: none"> Search and survey Individual and group research Dialogue and discussion 	<ul style="list-style-type: none"> Assessment of duties Evaluation of research on time

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	First periodic test	5	5%

#	Assessment task*	Week Due	Percentage of Total Assessment Score
2	Mid-term theoretical test	9	10%
3	Mid-term test is practical	9	10%
4	Second periodic test	14	5%
5	Duties and participations	Throughout the chapter	10%
6	Final practical test	15 th	10%
7	Final theoretical test	17	50%
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 :

Arrangements for the availability of faculty and faculty members for each student's counseling and academic guidance (indicating the amount of time staff members are expected to attend for this purpose each week).

- The presence of faculty members to provide advice, advice and academic guidance to the student in need of it within six hours a week available to all students.
- Schedule additional appointments with students who need it outside of the school hours of academic excellence or defaulters to prepare their own programs.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<ul style="list-style-type: none"> • Asking Questions in Biology: A Guide to Hypothesis Testing, Experimental Design and Presentation in Practical Work and Research Projects (4th Edition) 4th Edition • Baran E., Warry F. 2008 Simple data analysis for biologists. WorldFish Center and the Fisheries Administration. Phnom Penh, Cambodia. 67 pages. • Biostatistics: A foundation for analysis in the health science by WA Daniel. • Elementary Biostatistics with applications from Saudi Arabia by Dr. Nancy AEyink Hasabelnaby
Essential References Materials	
Electronic Materials	<p>Include electronic materials, websites, social networking sites and others:</p> <ul style="list-style-type: none"> • http://www.biostathandbook.com/analysisteps.html (the most important one) • http://www.zoology.ubc.ca/~whitlock/ABD/teaching/datasets/

	02/datasets02.html(Biology Data set) • http://aquaticcommons.org/1800/1/WF_1817.pdf
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> Modern classrooms equipped with modern teaching techniques and various projectors. The number of seats in the halls is enough for all students. Laboratory equipped with computers for teaching statistics.
Technology Resources (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"> One computer and smart board. Software
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	<ul style="list-style-type: none"> a program SPSS

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
effectiveness of teaching	students	a student assessment questionnaire panel discussions with a limited number of students
evaluate the teaching process	Professors / head of department	<ul style="list-style-type: none"> Periodic review of the course description form. The use of colleagues and independent evaluation of the skills achieved by students. Independent recommendations on duties and assessment of duties. Take a random sample and re-evaluate it. Meet a number of students studying the course and express their opinions on the assessment of the teaching process

Evaluation Areas/Issues	Evaluators	Evaluation Methods

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

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

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	



Course Specifications

Course Title:	Taxonomy of Flowering Plants
Course Code:	42011320
Program:	Biology
Department:	Biology
College:	Science and Arts in Qilwa
Institution:	Al-Baha University

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1. Learning Resources	6
2. Facilities Required.....	7
G. Course Quality Evaluation	7
H. Specification Approval Data	8

A. Course Identification

1. Credit hours: 3 (2 theoretical + 1 practical)			
2. Course type			
a.	University <input type="checkbox"/>	College <input type="checkbox"/>	Department <input type="checkbox"/>
b.	Required <input type="checkbox"/>	Elective <input type="checkbox"/>	Others <input type="checkbox"/>
3. Level/year at which this course is offered: 6th level/ third year			
4. Pre-requisites for this course (if any): Plant Morphology (42011211)			
5. Co-requisites for this course (if any):None			

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	60%
2	Blended	5	5%
3	E-learning	5	5%
4	Correspondence		
5	Other	30	30 %

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	
4	Others (specify)	
	Total	60
Other Learning Hours*		
1	Study	45
2	Assignments	7
3	Library	15
4	Projects/Research Essays/Theses	8
5	Others (specify)	10
	Total	85

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

The course includes the study of different classification systems, taxonomic characteristics, scientific nomenclature, introducing to the students to herbarium and botanical gardens and use of taxonomic keys and their importance in the classification of plant materials. The course also includes the study of the relationship between plant species and their evolution, Such as the use of chemical and molecular markers and phylogenetic analysis, as well as the study of several examples of monocotyledons and Dicotyledons plants. The study will be focused on plant species and families based on the flora of Saudi Arabia particularly that are distributed in Albaha area.

2. Course Main Objective

1-What is the main purpose for this course?

The objectives of this course are to:

Learn basic techniques of plant identification and its relationship to other sciences

Use technical identification to gain exposure to a diversity of plant communities and species within Kingdom of Saudi Arabia.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	Study the history of plant taxonomy and the basic principles of classification systems	K1
1.2	Determination of taxonomic characteristics of shoot system and reproductive system- inflorescences	K2
1.3	introducing the student to herbarium and preparing of herbarium specimens	K3
1.4	Study of several non-traditional taxonomic characters in taxonomy such as the use of chemical and molecular markers and pollen analysis	K3
1.5	Identification of some plant species (monocot- dicots) and determining their taxonomic status.	K3
2	Skills :	
2.1	Study the history of plant taxonomy and the basic principles of classification systems.	S2
2.2	Determination of taxonomic characteristics of shoot system and reproductive system- inflorescences	S2
2.3	introducing of student to herbarium and preparing of herbarium specimens	S4
2.4	Identification of some plant species (monocot- dicots) and determining their taxonomic status.	S4
3	Competence:	
3.1	To shoulder the responsibility for self-learning and professional development	C1
3.2	Work effectively in groups and also work as leader when appropriate.	C2

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to plant taxonomy and its scientific and applied importance - the history of taxonomy	3
2	Study of different classification systems and the concept of taxonomic characteristics	3
3	Study of taxonomic keys, taxonomic units, scientific nomenclature of plants and the definition of herbaria and botanical gardens	6
4	Studying the relationship between the taxonomic units (Phylogenetic study)	3
5	Study of Non-Traditional Taxonomic characters (Chemotaxonomy- (Molecular taxonomy- palynological characters)	6
6	Study of some monocotyledon families	9
7	Study of some Dicotyledons families	12
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	Study the history of plant taxonomy and the basic principles of classification systems	Lectures. Research and survey. Collaborative learning. presentations using of Power Point presentations	Written and oral tests. Questions and analysis. Activities. Discussion and interpretation during lectures
1.2	Determination of taxonomic characteristics of shoot system and reproductive system- inflorescences		
1.3	introducing the student to herbarium and preparing of herbarium specimens.		
1.4	Study of several non-traditional taxonomic characters in taxonomy such as the use of chemical and molecular markers and pollen analysis		
1.5	Identification of some plant species (monocot- dicots) and determining their taxonomic status.		
2.0	Skills		
2.1	Study the history of plant taxonomy and the basic principles of classification systems.	Open discussion and workshops Activities Train and guide students to use and apply websites. Research sessions	Achievement tests (Periodic tests – Midterm tests - final exams). Questions and analysis. Activities. Discussion and interpretation during lectures
2.2	Determination of taxonomic characteristics of shoot system and reproductive system- inflorescences		
2.3	introducing of student to herbarium and preparing of herbarium specimens		
2.4	Identification of some plant species (monocot- dicots) and determining their taxonomic status.		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.0	Competence		
3.1	To shoulder the responsibility for self-learning and professional development	Team work- Assignments- student presentation-reporting- Scientific media- Training on scientific drawing, reading slides and reporting-Lab work Co-operative & Individual assignments. Cooperative Learning.	Evaluation of individual & group works. Observation Card
3.2	Work effectively in groups and also work as leader when appropriate.	Working in small groups Individual & group research	Evaluation of individual & group works. Observation Card

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz 1	5	5
2	Midterm Written Theoretical Exam	9	10
3	Quiz2	13	5
4	Assignments, Activities & Attendance	During Semester	10
5	Final Practical Exam	16	10
6	Lab Reports	16	10
7	Final Written Theoretical Exam	17	50
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 :

The presence of faculty members to provide advice, academic advice and academic guidance to the student who is in need during the six hours a week, available to all students.

Arrange extra hours for gifted students or Program additional time for students who are weak in academics and scholastic achievements.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<ul style="list-style-type: none"> • أ.د. جمال الطيب الغزالي (2007) مقدمة في علم تقسيم النبات . مكتبة أرشد – المملكة العربية السعودية.
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	<ul style="list-style-type: none"> • - سعد، شكري إبراهيم (1994). النباتات الزهرية، دار الفكر العربي، القاهرة. • - (1980). تصنيف النباتات الزهرية • - (1994). مقدمة في تصنيف النباتات الزهرية، ط 1 <p>الدار الدولية للنشر، القاهرة.</p> <ul style="list-style-type: none"> • Smith PM. The Chemotaxonomy of plants London, Edward Arnold, 1976.- • Stace, C. A. (1989). Plant Taxonomy and Biosystematics. 2nd ed. Cambridge.Univ . <p>Samuel, B. Jones, Jr., Arlene, E. Luchsinger, M. S. and A. M. L. S. (1979). Plant Systematics. McGraw- Hill Book Company</p>
Essential References Materials	<ul style="list-style-type: none"> • Taxon • Journal of Taxonomic and Economic Botany • Systematic Botany <p>Phytotax</p>
Electronic Materials	<p>as electronic sources and authenticated international DATA bases such (The International Plant Names Index (IPNI))</p> <p>http://www.ipni.org/</p> <p>The Plant List (http://www.theplantlist.org/).</p>
Other Learning Materials	<p>CD-ROM</p> <p>Movies.</p>

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) <ul style="list-style-type: none"> • Classrooms equipped with smart board and display screen for (40) students Practical labs provided with microscope and different equipment for (20-25) students.
Technology Resources (AV, data show, Smart Board, software, etc.)	2. Technology resources (AV, data show, Smart Board, software, etc.) <p>Provision of computers for students training to be used in research on scientific topics that serve the course.</p>
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) <ul style="list-style-type: none"> • Optical microscopes - microscopic slides. Hand lens Microscope equipped with a digital camera for digital herbarium

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	Students, Faculty and Program Leaders	Indirect:(students)- direct:(Program Leaders
Effectiveness of assessment	Members of teaching staff, Peer Reviewer and the students	Direct: Department exam committee by using course blueprint- Peer Reviewer-The

Evaluation Areas/Issues	Evaluators	Evaluation Methods
		form for meeting a course test for test standards. Indirect: Students course evaluation questionnaire
Extent of achievement of course learning outcomes	Program-coordinator, Peer Reviewer and Evaluation Commissions	Direct: Exams, standard exams and Evaluation Commissions exams
Quality of learning resources	Students and members of teaching staff	Indirect

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

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

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	Feb26,2020



Course Specifications

Course Title:	Molecular Biology
Course Code:	42011322
Program:	Biology
Department:	Biology
College:	Science and Arts in Qilwa
Institution:	Al-Baha University

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A. Course Identification

1. Credit hours:	3 hours (2 lecture + 1 Practical)		
2. Course type			
a.	University <input type="checkbox"/>	College <input type="checkbox"/>	Department <input type="checkbox"/>
b.	Required <input type="checkbox"/>	Elective <input type="checkbox"/>	Others <input type="checkbox"/>
3. Level/year at which this course is offered:	Third level, Second year		
4. Pre-requisites for this course (if any):	Genetics 42011210		
5. Co-requisites for this course (if any):	None		

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	26	70%
2	Blended		5%
3	E-learning	4	5%
4	Correspondence		
5	Other (Practical)	15	20%

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	-
4	Others (specify)	-
	Total	60
Other Learning Hours*		
1	Study	45
2	Assignments	7
3	Library	15
4	Projects/Research Essays/Theses	8
5	Others (specify)	10
	Total	85

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

The molecular biology course is about genes - their structure and function - therefore; students will learn nucleic acid structure and the mechanism of DNA replication, transcription, and translation in prokaryotic as well as eukaryotes. A central goal is to understand gene regulation at all levels, and the structure-function relationships of nucleic acids and proteins. In addition, critical experiments will be performed in the laboratory to learn how our current understandings have come about. Techniques in molecular biology will be discussed in lecture as necessary to understand experiments and concepts.

2. Course Main Objective

Upon successful completion of the course, the student will be able to explain or describe:

1. the structure of the nucleic acids,
2. the fundamental mechanisms of gene transcription and its regulation,
3. the packaging of DNA into chromatin, its modifications and roles in regulation,
4. the fundamental mechanisms of RNA processing,
5. the fundamental mechanisms of translation of genetic information into protein, and its regulation
6. the fundamental mechanisms involved in DNA replication, and repair.

Students will be able to recite the known facts related to the topics above, and also understand in outline the methods and approaches used to study these processes.

3. Course Learning Outcomes

CLOs		Aligned PLOs
	On successful completion of this course, students will be able to... (demonstrate/express/design)	
1	Knowledge:	
1.1	<ul style="list-style-type: none">• Define various terms related to molecular biology and know the chemical structure of different macromolecules such as carbohydrate, and proteins.• Gain knowledge about the complete structure of DNA, RNA and proteins• Have knowledge about genetic engineering and biotechnology.	K1
1.2	<ul style="list-style-type: none">• Have insight into the fundamental mechanisms of gene transcription.• Learn the packaging of DNA into chromatin, its modifications and roles in regulation.• Recognize the fundamental mechanisms of RNA processing.	K1
1.3	<ul style="list-style-type: none">• Determine the translation mechanism.• Recognize the steps of DNA replication mechanism.	K3
2	Skills :	
2.1	<ul style="list-style-type: none">• Differentiate between different types of chemical bonds.	S1

CLOs		Aligned PLOs
	<ul style="list-style-type: none"> Explain the differences between DNA and RNA structure. 	
2.2	<ul style="list-style-type: none"> Compare & contrast between numerous biological mechanisms including (transcription, and gene regulation). 	S2
2.3	<ul style="list-style-type: none"> Distinguish between translation mechanism in prokaryote and eukaryote. 	S4
2.4	<ul style="list-style-type: none"> Recite and explain the basic techniques in molecular biology and manipulate the biological data 	S4
2.5	<ul style="list-style-type: none"> Draw DNA and RNA structure, PCR steps and cycles, and practice primers design. 	S4
3	Competence:	
3.1	<ul style="list-style-type: none"> Take responsibility for self-learning and professional development 	C1
3.2	<ul style="list-style-type: none"> Work effectively in groups 	C2
3.3	<ul style="list-style-type: none"> Communicate effectively both in verbal and written form during educational discussions/ meetings on the various subjects of the course. 	C2

C. Course Content

No	List of Topics	Contact Hours
1	Introduction: will include the following topics: <ul style="list-style-type: none"> Molecule structure Molecule bonds Biological molecules Functional groups Isomers in biology Molecular structure of carbohydrates Molecular structure of proteins 	6
2	Molecular structure of nucleic acids (DNA and RNA)	6
3	Transcription ; Definition of transcription unit; promoter structure Transcription in (prokaryotic): <i>E. coli</i> initiation mechanism, role of sigma () subunit; <i>E. coli</i> transcription elongation; 3D structure of bacterial RNA polymerases; Rho-dependent & independent termination.	6
4	Regulation of Bacterial transcription: * <i>lac</i> operon & negative and positive regulation. *Major shifts: Alternative sigma factors, Polymerase modifications, polymerase switching, antitermination, etc.	6
5	Eukaryotic transcription ; Three RNA polymerases: Functions & Structures Concepts of eukaryotic transcription: Three RNA polymerases	6
6	RNA splicing	4
7	Control of gene expression in prokaryotes and eukaryotes Regulation of eukaryotic protein gene expression 1	6
8	Chromatin & chromosomes: Chromatin structure. Regulation of gene expression in a chromatin context.	6

	Histone modification & chromatin remodeling; silencing & insulators	
9	• Genetic codes Direction of translation & The genetic code; amino acid activation & tRNAs <ul style="list-style-type: none"> Translation in prokaryotic and eukaryotic Translation; ribosome structure; initiation in prokaryotes Translation; initiation in eukaryotes, elongation Translation: termination; Regulation 	6
10	DNA replication/topology; semiconservative, semidiscontinuous; priming; • Steps of DNA replication: initiation, elongation and termination. • Comparison between prokaryotic and eukaryotic recombination. Homologous recombination	8
Total		60

D. Teaching and Assessment

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

Assessment Methods			
Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		
1.1	<ul style="list-style-type: none">Define various terms related to molecular biology and know the chemical structure of different macromolecules such as carbohydrate, and proteins.Gain knowledge about the complete structure of DNA, RNA and proteins	<ul style="list-style-type: none">LecturesPowerPoint presentationScientific moviesDebate and discussionAssignments (Co-operative & Individual assignments).Working in small groups	<ul style="list-style-type: none">Evaluation of assignments by rubricQuiz1 & Quiz2.Midterm exam.Final written exams.
1.2	<ul style="list-style-type: none">Have insight into the fundamental mechanisms of gene transcription.Learn the packaging of DNA into chromatin, its modifications and roles in regulation.Recognize the fundamental mechanisms of RNA processing.		
1.3	<ul style="list-style-type: none">Determine the translation mechanism.Recognize the steps of DNA replication mechanism.		
2.0	Skills		
2.1	<ul style="list-style-type: none">Differentiate between different		<ul style="list-style-type: none">Final written exams.Assignment evaluation

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	types of chemical bonds. <ul style="list-style-type: none"> Explain the differences between DNA and RNA structure 		by rubric
2.2	<ul style="list-style-type: none"> Compare & contrast between numerous biological mechanisms including (transcription, and gene regulation) 	<ul style="list-style-type: none"> Lectures Scientific movies and animation . Debate and discussion. Assignments (Co-operative & Individual assignments). Cooperative Learning Working in small groups Individual & group research 	<ul style="list-style-type: none"> Quiz1 & Quiz2. Midterm exam. Final written theoretical exam. Assignment evaluation by rubric
2.3	<ul style="list-style-type: none"> Distinguish between translation mechanism in prokaryote and eukaryote. 		
2.4	<ul style="list-style-type: none"> Recite and explain the basic techniques in molecular biology and manipulate the biological data. 	<ul style="list-style-type: none"> Practical labs Training on scientific drawing, reading slides and reporting - Lab work 	<ul style="list-style-type: none"> Practical exams
2.5	<ul style="list-style-type: none"> Draw DNA and RNA structure, PCR steps and cycles, and practice primers design. 	<ul style="list-style-type: none"> Practical labs 	<ul style="list-style-type: none"> Practical exams Lab report Observation Card
3.0	Competence		
3.1	<ul style="list-style-type: none"> Take responsibility for self-learning and professional development 	<ul style="list-style-type: none"> Assignments 	<ul style="list-style-type: none"> Assignment evaluation by rubric
3.2	<ul style="list-style-type: none"> Work effectively in groups 	<ul style="list-style-type: none"> Working in small group. Participate in curricular and extracurricular activities. 	<ul style="list-style-type: none"> Assignment evaluation by rubric Observation Card Presentations
3.3	<ul style="list-style-type: none"> Communicate effectively both in verbal and written form during educational discussions/ meetings on the various subjects of the course. 	<ul style="list-style-type: none"> Power point presentation Lab Reports 	<ul style="list-style-type: none"> Presentation evaluation by rubric Lab reports evaluation by Rubric

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz 1	5	5
2	Midterm Written Theoretical Exam	9	10
3	Quiz2	13	5
4	Assignments, Activities & Attendance	During Semester	10
5	Final Practical Exam	15	10
6	Lab Reports	15	10
7	Final Written Theoretical Exam	16	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:

- The presence of faculty members to provide advice, academic advice and academic guidance to the student who is in need during the six hours a week, available to all students.
- Arrange extra hours for gifted students or program additional time for students who are weak in academics and scholastic achievements.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<p>-Molecular Biology, 5th Edition (or above), by Robert Weaver .ISBN-13: 978-0073525327. ISBN-10: 0073525324</p> <p>-Molecular biology of the gene, 6th Edition (or above), by Watson, Baker, Bell, Gann, Levine and Losick. ISBN 0-8053-9592-X/978-0-8053-9592-1</p>
Essential References Materials	
Electronic Materials	<ul style="list-style-type: none"> • http://www.nature.com/scitable • http://public.ornl.gov/hgmis/genetics/default.cfm • http://www.aw-bc.com/campbell • A) http://www.nature.com/scitable • http://public.ornl.gov/hgmis/genetics/default.cfm • المكتبة العلمية الرقمية العالمية B) • http://nsdl.org/resources_for/university_faculty/ • http://animaldiversity.ummz.umich.edu/site/index.html • المكتبة الرقمية الوطنية للعلوم: http://nsdl.org/resources_for/university_faculty/
Other Learning Materials	

2. Facilities Required

Item	Resources
<p>Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)</p>	<ol style="list-style-type: none"> 1) Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) 2) Classrooms equipped with smart board and display screen for (40) students 3) Practical labs provided with microscope and different equipment for (20-25) students.
<p>Technology Resources (AV, data show, Smart Board, software, etc.)</p>	<ol style="list-style-type: none"> 1) Computer 2) Smart board

Item	Resources
	3) Provision of computers for students training to be used in research on scientific topics that serve the course.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	Students, Faculty and Program Leaders	-In direct: Built-in university website reports on courses and student satisfaction questionnaire-NCAAA course evaluation questionnaire. -Direct: Analysis & interpretations of student marks Indirect:(students)- direct:(Program Leaders
Effectiveness of assessment	Members of teaching staff, Peer Reviewer and students	Direct: Department exam committee by using course blueprint- Peer Reviewer-The form for meeting a course test for test standards. Indirect: Students course evaluation questionnaire
Extent of achievement of course learning outcomes	Program-coordinator, Peer Reviewer and Evaluation Committee.	Direct: Exams, standard exams and Evaluation Commissions exams
Quality of learning resources	Students and members of teaching staff	Indirect: Students course evaluation questionnaire

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	Department Committee
Reference No.	
Date	