



Biology Department Guide

Prince Sattam bin Abdul-Aziz University
College Of Science & Humanity studies
Department of Biology

2022

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Chairman's message

The Biology Department at the College of Science, Prince Sattam bin Abdulaziz University, was established in 1433H as one of the biology departments in the Arab world to prepare qualified scientific cadres at the undergraduate level that have contributed and are still contributing to building the renaissance of this valuable country, Kingdom of Saudi Arabia - in various fields and with the grace of God and then thanks Those in charge of education affairs under the patronage of the Custodian of the Two Holy Mosques, may God protect him, the department has developed with the support and overcoming of difficulties from leaders who have harnessed their efforts to advance this young university. Through which to bring about a comprehensive renaissance in various aspects of life by working on the development of various economic, educational and health sectors.

The Biology Department contributes greatly to providing many opportunities for female citizens to obtain jobs in microbiology laboratories, sterilization and infection laboratories, and tissue laboratories, where the division provides its students with special concepts knowing the composition and components of living organisms, how they work, and how they communicate with each other, as well as making use of food in It deals with the structure, energy, and how genetic information is stored, translated and transmitted to future generations, and from what microorganisms such as bacteria and viruses are composed of, and what are their benefits and harms to humans and the environment. On diseases and epidemics, the biology major also has contributions in various applied fields that benefit humanity. For this reason, we ask God Almighty to make it a section full of success and progress for its students, employees and affiliates, and to join efforts to achieve what the university aspires to achieve further development and progress in educational services. Research and community studies of high quality in accordance with the vision and mission of the department.

Head of Biology Department

Dr. Khawla Ibrahim Al-Samahri

Introduction

Dear Student,

Peace be upon you and God's mercy and blessings be upon you.

We offer you the guide, which includes important information about the department, which will help you to learn about the fields of biology and the services provided by the department to male and female students.

Head of the Biology Department Board

Dr. Khawla Ibrahim Al-Samahri

About the Department:

The Biology Department is ambitiously involved in realizing Saudi VISION 2030 towards a prosperous economy by providing innovatively advanced programs in all biological disciplines. Our aspiration to excellence and innovation in biological sciences is supported by our diverse and outstanding foundation since our inception in 1433 AH (2012 AD) as one of the main programs of the College of Science and Humanities, PSAU and the studies started in the first semester of the academic year 1433/1434 AH.

The department is supported by several research centers within the college and the university. This has facilitated foundational research spanning the diversity of life. Our faculty are driven towards innovation; several have received awards of excellence in scientific research locally and nationally, and several have registered patents in their fields of research.

We are a collaborative, innovative community-focused department, enthusiastic to reach our vision. We aspire to collaborate and cooperate with private and public sectors to achieve our mission of better serving our community .

The biology program offers a four-year academic study program leading to a bachelor's degree in biology. The students graduated from the Department of Biology, are eligible to pursue their postgraduate studies on one hand and play a distinguished role in contributing to scientific research related to biology, on the other hand.

Furthermore, the Department of Biology offers its services to teach courses in other colleges/ departments, in addition to catering to the teaching needs of the Preparatory Year Deanship in their scientific and engineering tracks.

❖ Vision:

Excellence in the life sciences and their applications in community service.

❖ Mission:

Providing a high-quality standard of education that matches the current challenges, introducing graduates who meet the needs of the job market in the field of biology and contributing to the development of society by creative research.

❖ Objectives:

1. Acquiring students, the basic knowledge of biological sciences.
2. Preparing students having excellent practical skills.
3. Preparing graduates able to take responsibility and contribute to solving problems.
4. Achieve a high- quality undergraduate education program.
5. Achieve a strong foundation for postgraduate education, research, and practice development in biological sciences.
6. Contribution of solving biological society problems.

❖ Graduate Attributes:

The graduates will be able to:

1. Recognize specific theories, concepts, and principles of biological science.
2. Using acquired knowledge in identifying the different aspects of the most recent development of principles and theories in biological science and their relation to other sciences.
3. Ability to recognize problems, review previous relevant literature, collect and evaluate data, and make recommendations.
4. Acquire the required biological practical skills.
5. Ability to deliver information and communicate effectively and appropriately with others
6. Employing teamwork, time management, negotiating, professionalism, cooperation, and responsibility to demonstrate career-related abilities.

7. Committing to practice the established common and professional ethical principles.
8. Apply one's knowledge and skills to satisfy societal requirements.

❖ **Work Fields:**

According to the Saudi Professional Classification Guide, the biology program graduates can occupy the following jobs:

- Animal hybridization specialist
- Aqua biologist
- Physiologist
- Cytologist
- Biochemist
- Biophysicist
- Maritime ecologist
- Maritime pollution specialist
- Fishery specialist
- Botanists
- Plant hybridization specialist
- Pathologists
- Pathology specialist
- Entomologist
- Bacteriologist
- Epizootiologist
- Pathologists

❖ **Scientific Degree:**

The department offers bachelor's in biology (B. Sc. Degree)

Study plan of Biology Program

The student should successfully 138 credit hours before graduation; the following table displays the details of the study plan

Requirements	No. of courses	No. of credits
Preparatory year	11	31
Remaining university requirements	4	8

Specialized compulsory courses from inside the department	25	70
Compulsory courses from outside the department	4	14
Elective specialized courses from inside the department	3	6
Elective courses from outside the department	1	3
Elective courses from outside the department (free)	2	6
Total hours	50	138

First: Requirements of Preparatory Year (31 Units)

Course code and number	Course name	No. of credits	Prerequisite
1050 Math	Calculus	3	-
1210 Eng	Reading skills	3	-
1220 Eng	Writing skills	3	-
1230 Eng	Listening and Speaking skills	3	-
1400 Tech	Computer Skills	3	-
1010 Phys	General physics (1)	4	-
1060 Math	Integration	3	-
1400 Com	Communication skills	2	-
1604 Eng	Scientific English language	3	-
101 Salam	Introduction to Islamic culture	2	-
101 Arab	Language skills	2	-
Total hours		31	

Second: University Requirements

Code No.	Course Title	No. of Units	Pre-requisite	Co-requisite
Islam 102	Islam and society	2 (2, 0, 0)		
Arab 103	Arabic Editing	2 (2, 0, 0)		
Islam 103	Commercial system in Islam	2 (2, 0, 0)		
Islam 104	Political system in Islam	2 (2, 0, 0)		
Total hours		8 (8, 0, 0)		

Third: Department Requirements

(a) Requirements of compulsory courses from inside Biology department = 70 credit units

Course code and number	Course name	No. of credits	Prerequisite
2010 BIO	General Biology (1)	4 (3,0,1)	--
2020-BIO	General Biology (2)	4 (3,0,1)	2010 BIO
2120- BIO	Cytology	3 (2,0,1)	2010 BIO
2130 BIO	Marine Biology	2 (2,0,0)	2010 BIO
2410-BIO	General Microbiology	3 (2,0,1)	2010 BIO
2610 BIO	Basic Ecology	2 (2,0,0)	--
3210 BIO	Animal Physiology	3 (2,0,1)	2020-BIO
3220 BIO	General Entomology	3 (2,0,1)	2020-BIO
3310 BIO	Taxonomy of flowering plants	3 (2,0,1)	2010 BIO
3320 BIO	Plant Physiology	3 (2,0,1)	2020-BIO
3420 BIO	Virology	3 (2,0,1)	2410-BIO
3430-BIO	Bacteriology	3 (2,0,1)	2410-BIO
3440 BIO	Phycology	3 (2,0,1)	2010BIO
3510 BIO	General Genetics	3 (2,0,1)	2120- BIO
4030 BIO	Ethics	1 (1,0,0)	---
4140 BIO	Flora and Fauna of K.S. A	3 (2,0,1)	3310 BIO
4230-BIO	Embryology	3 (2,0,1)	2020-BIO
4240- BIO	Parasitology	3 (2,0,1)	3220 BIO
4620 BIO	Pollution	2(2,0,0)	2610 BIO
4250 BIO	Histology and microscopic preparations	3 (2,0,1)	2120- BIO
4270 BIO	Immunology	3 (2,0,1)	3210 BIO
4450 BIO	Mycology	3 (2,0,1)	2410-BIO
4520 BIO	Molecular Biology	3 (2,0,1)	3510 BIO
4980- BIO	Research Project	2 (0,0,2)	4230-BIO 4450BIO 3430-BIO 4250BIO
4590 BIO	Field Training	2(0,0,15)	90 Credit hrs.
Total hours		70 (47,0,36)	

(b): The compulsory courses (from outside the department): 13 credit units

Course code and number	Course name	No. of credits	Prerequisite
2060 Stat	Biostatistics	3 (2,1,0)	---
2010 Chem	General Chemistry (1)	4 (3,0,1)	---
2410 Chem	Organic Chemistry (1)	4 (3,0,1)	2010 Chem
3010 BioChem	General Biochemistry	3 (2,0,1)	2010 Chem
Total hours		14 (10,1,3)	

(c) Elective courses (from inside the department): 6 credit units

Course code and number	Course name	No. of credits	Prerequisite
3260 BIO	Hematology	2 (1,0,1)	3210 BIO
3530 BIO	Biotechnology	2 (1,0,1)	3510 BIO
3630 BIO	Applied Ecology	2 (2,0,0)	2610 BIO
4280 BIO	Animal Behavior	2 (1,0,1)	-
4330 BIO	Medicinal plants	2 (1,0,1)	3310 BIO
4460 BIO	Plant Pathology	2 (1,0,1)	2410-BIO
4470 BIO	Food Microbiology	2 (1,0,1)	2410-BIO
4540 BIO	Genetic Engineering	2 (1,0,1)	3510 BIO
Total hours		16 (9,0,7)	

(d): Optional (outside the department) one from these courses: 3 credit units

Course code and number	Course name	No. of credits	Prerequisite
4190Phys	Nanophysics	3 (3,1,0)	1010 Phys
2100 Phys	Optics (1)	3 (3,1,0)	1010 Phys
Total hours		6 (6,2,0)	

(e): Free course: 6 credit units

Code No.	Course Title	No. of Units	Pre-requisite	Co-requisite
	Free (inside or outside the faculty)	6		

Description of the Plan (Biology Program)

The student should successfully 138 credit hours before graduation. The undergraduate study plan is distributed on the following semesters:

(Preparatory year):Level one

Code No.	Course Title	No. of Units	Pre-requisite	Co-requisite
1050 Math	Calculus I (Differentiation)	3 (3 , 1 , 0)		
1210 Eng	Reading Skills	3 (2 , 2 , 0)		
1220 Eng	Writing Skills	3 (2 , 2 , 0)		
1230 Eng	Listening Skills	3 (2 , 0 , 2)		
1400 Tech	Principal of computer	3 (3 , 0 , 1)		
Total hours		15 (12, 5, 3)		

Level Two: (Preparatory year)

Code No.	Course Title	No. of Units	Pre-requisite	Co-requisite
101 Islam	Introduction to Islamic Culture	2 (2 , 0 , 0)		
101 Arab	Arabic Language Skills	2 (2 , 0 , 0)		
1010 Phys	General physics (1)	4 (3 , 1 , 1)		
1060 Math	Calculus 2 (Integration)	3 (3 , 1 , 0)		
1400 Sci	Communication skills	2 (2 , 0 , 0)		
1604 Eng	English for Science	3 (2 , 0 , 1)		
Total hours		16 (14, 2, 2)		

The Third level:

Course code and number	Course name	No. of credits	Pre-requisite
***	University Requirement	2 (2,0,0)	---
2060 Stat	Biostatistics	3 (2,1,0)	---
2010Chem	General Chemistry (1)	4 (3,0,1)	---
2010 BIO	General Biology (1)	4 (3,0,1)	---
2610 BIO	Basics of Ecology	2 (2,0,0)	---
***	Free course	2 (2,0,0)	
Total hours		17 (14,1,2)	

The Forth level:

Course code and number	Course name	No. of credits	Prerequisite
***	University Requirement	2 (2,0,0)	---
2410 Chem	Organic chemistry (1)	4 (3,0,1)	2010 Chem
2020-BIO	General Biology (2)	4 (3,0,1)	2010 BIO
2120-BIO	Cytology	3 (2,0,1)	2010 BIO
2410-BIO	Microbiology	3 (2,0,1)	2010 BIO
2130 BIO	Marine Biology	2 (2,0,0)	2010 BIO
Total hours		18 (14,0,4)	

The Fifth level:

Course code and number	Course name	No. of credits	Prerequisite
***	University requirement	2 (2,0,0)	
3010 BioChem	General Biochemistry	3 (2,0,1)	2010 Chem
3310 BIO	Taxonomy of flowering plants	3 (2,0,1)	2010 BIO
3420 BIO	Virology	3 (2,0,1)	2410-BIO
3210 BIO	Animal Physiology	3 (2,0,1)	2020-BIO
3220 BIO	General Entomology	3 (2,0,1)	2020-BIO
Total hours		17 (12,0,5)	

The Sixth level:

Course code and number	Course name	No. of credits	Prerequisite
***	University requirement	2 (2,0,0)	---
3320 BIO	Plant Physiology	3 (2,0,1)	2020-BIO
3430-BIO	Bacteriology	3 (2,0,1)	2410-BIO
3510 BIO	General Genetics	3 (2,0,1)	2120-BIO
3440 BIO	Phycology	3 (2,0,1)	2010BIO
***	Optional specialized course	2 (2,0,0)	
Total hours		16 (12,0,4)	

The Seventh level:

Course code and number	Course name	No. of credits	Prerequisite
4230-BIO	Embryology	3 (2,0,1)	2020-BIO
4450 BIO	Mycology	3 (2,0,1)	2410-BIO
4240- BIO	Parasitology	3 (2,0,1)	3220 BIO
4250 BIO	Histology and microscopic preparations	3 (2,0,1)	2120- BIO
4620 BIO	Pollution	2 (2,0,0)	2610 BIO
***	Optional specialized course	2 (2,0,0)	
***	Free course	2 (2,0,0)	
Total hours		18 (14,0,4)	

Field Training

Course code and number	Course name	No. of credits	Prerequisite
4590 BIO	Field Training	2(0,0,15)	90 Credit hrs.
Total hours		2(0,0,15)	

The Eighth level:

Course code and number	Course name	No. of credits	Prerequisite
4140 BIO	Flora and Fauna of K.S.A	3 (2,0,1)	3310 BIO
4520 BIO	Molecular Biology	3 (2,0,1)	3510 BIO
4270 BIO	Immunology	3 (2,0,1)	3210 BIO
4030 BIO	Ethics	1 (1,0,0)	---
4980-BIO	Research Project	2 (0,0,2)	4230-BIO 4450BIO 3430-BIO 4250BIO
***	Optional specialized course	2 (2,0,0)	---
***	Optional non specialized course	3 (3,0,0)	
***	Free course	2 (2,0,0)	
Total hours		19 (13,0,6)	

Service courses:

The courses offered by the department to other departments inside and outside the college.

Course code and no.	Course name	No. of credits	Remarks
106 BIO	General Biology for health college program	4 (3,0,1)	-----
2010 BIO	General biology (1) for Chemistry students	4 (3,0,1)	-----
2410-BIO	General microbiology for Chemistry students	3 (2,0,1)	Prerequisite 2010 BIO
3230 BIO	Animal physiology for chemistry students	3 (2,0,1)	Prerequisite 2010 BIO

Courses Description

First: Compulsory courses

- **BIO 2010: General Biology 1**

Credit Hours: 4 (3,0,1)

Pre-requisites:

Level: 3rd

Co-requisites:

Course objectives

- 1- Identify the basic concepts that form the crux of life.
- 2- Distinguish the structure and function of plant and animal cells and tissues.
- 3- Recognize different processes of nutrition, metabolism and bioenergy production.

Course contents

Definition of Biology- Chemical basis for life (organic and non-organic components of living organisms)-Biodiversity - Structure and function of cells and tissues - Basics of classification and taxonomy of)Viruses - Bacteria - Algae – Plant - Invertebrates (Protozoa to Annelida)- Nutrition and metabolism - Bioenergy production (Photosynthesis - Securing solar energy - The vital building of large molecules and energy storage - Breakdown of large molecules and the release of energy) – Plant morphology - The main basics of genetics - Cell division.

Practical section: include the following topics:

Study the components of plant and animal cell- types of pant and animal tissues- notes on viruses, bacteria, algae- experiments in photosynthesis and respiration in plant- morphology of different plant parts- invertebrates (protozoa to annelida).

• **BIO 2610: Basic Ecology**

Credit Hours: 2(2,0,0)
Pre-requisites:

Level: 3rd
Co-requisites:

Course objectives

1. Identify the concept of the environment and the relationship of ecology with other sciences and the environmental consequence.
2. Distinguish between the types of ecosystems.
3. Recognize how biotic and abiotic factors affect the abundance and distribution of plants in natural communities.

Course contents

Introduction to the knowledge of the environment - the concept of environment - the relationship with other sciences ecology - the role of Arab and Muslim scholars in ecology - the components of the ecosystem - the types of ecosystems – environmental consequence - the flow of energy in the ecosystem - biological cycles – the distribution of organisms - biological relationships within the Environmental - the identification of the different environments in Saudi Arabia. Study the components of plant and animal cell- types of plant and animal tissues- notes on viruses, bacteria, algae- experiments in photosynthesis and respiration in plant- morphology of different plant parts- invertebrates (protozoa to annelida).

• **BIO 2020: General Biology 2**

Credit Hours: 4 (3,0,1)
Pre-requisites: BIO 2010

Level: 4th
Co-requisites:

Course objectives

1. Identify the major criteria in plant and animal life and function.
2. Categorize major invertebrate and vertebrate groups of animals.

Course contents

Study (Plant- water relation-Mineral nutrition-Transport-hormones-Immunity- behavior) in plants - (A comparison between the animal body systems in the different phyla and classes is required to clarify the fundamental differences between them: Nutrition and Digestive system-Circulatory system- Respiratory system and types of respiration-Hormones and Endocrine system-Reproduction- Nervous system-Sensory and Motor mechanisms)- Taxonomy of Invertebrates (Arthropoda to Echinodermata) and Vertebrates in animals.

Practical section: include the following topics:

Study the plant water relationships- mineral nutrition- some plant hormones- tropism types- some animal systems like: digestive -circulatory – respiratory- nervous- taxonomy of invertebrates (arthropoda to Echinodermata) and vertebrates.

• **BIO - 2120: Cytology**

Credit Hours: 3 (2,0,1)
Pre-requisites: BIO 2010

Level: 4th
Co-requisites:

Course objectives

- 1- Distinguish the differences between prokaryotes and eukaryotes, living cells and viruses.
- 2- Describe the structure and function of the cell organelles.

- 3- Identify the cell cycle and cell respiration.

Course contents

An introduction to cell structure and function with surrounding environment - Differences between Prokaryotes and Eukaryotes, living cells and viruses – The plasma membrane (structure and function). Cell organelles (structure and function). Cytoskeleton and cell motility. Mitochondria and cell respiration. Cell cycle and cell division.

The Practical section includes the following topics: Cell structure – cell division.

- **BIO 2130: Marine Biology**

Credit Hours: 2 (2, 0, 0)

Pre-requisites: BIO 2010

Level: 4th

Co-requisites:

Course objectives

1. Identify the basic properties of seawater.
2. Acquire the skill of classification of different types of marine animals and plants.
3. Training on the skill of designing productive projects that depend on marine resources design.

Course contents

The basic concepts in marine biology- physico-chemical properties of the water, marine biodiversity, plankton, nekton, benthos, seaweeds, kelp forest, coral reefs, marine reptiles, birds, marine mammals and mariculture. Introduction to the physical, chemical and biotic factors of the marine environment. Classification of plant and animal life in the sea. A study of the scientific, economic, recreational and legal aspects of the sea. Field and laboratory exercises.

- **BIO-2410: General Microbiology**

Credit Hours: 3 (2,0,1)

Pre-requisites: BIO 2010

Level: 4th

Co-requisites:

Course objectives

- 1- Identify the basic fundamentals of microbiology and microbial diversity.
- 2- Training on the practical ways of isolation, purification and identification of microorganisms and controlling of microbial growth by physical, chemical and biological agents.

Course contents

Introduction - A Brief history of microbiology - The development of microbiology - Activities of microorganisms and scope of microbiology - Classification of microorganisms - Structure of prokaryotic and eukaryotic cells - Microbial nutrition - Metabolism and energy generation - Microbial growth - Controlling of microbial growth by physical, chemical and biological agents - An introduction to the general characteristics of the various groups of microorganisms including bacteria, fungi, viruses, protozoa and algae.

The practical section: includes the following topics:

Microbiological laboratory safety - Instruments and tools used - Microscope - Growth media - Sterilization - Isolation of microorganisms - Cultivation and examination - Factors affecting microbial growth.

• **BIO 3210: Animal Physiology**

Credit Hours: 3 (2,0,1)

Pre-requisites: BIO 2020

Level: 5th

Co-requisites:

Course objectives

1. Recognize the Structures and functions of body systems and their relationship with energy and cellular metabolism.
2. Recognize the physiological changes in relation to neural and hormonal effects.

Course contents

The functional processes of the vertebrate body systems with emphasis on mammals. It includes the relationship between structure and function, physiological activities of the body systems related to energy and cellular metabolism, homeostatic mechanisms, neural and hormonal control mechanisms, biochemistry of muscular contraction, circulation, respiration, excretion, food processing (food - in the ways of feeding the animals - the digestion and absorption), reproduction (methods in animal breeding - the members of reproduction - reproductive cycles-pregnancy and childbirth) and defense mechanisms of the body.

The practical section: includes the following topics:

Laboratory safety precautions-experiments on: properties and components of blood - red and white blood cells count- Chemical examination and detection of pathological cases in urine - Detection of digestion enzymes -Estimation of the glucose- Detection of Saponification degree.

• **BIO 3220: Entomology**

Credit Hours: 3 (2,0,1)

Pre-requisites: BIO 2020

Level: 5th

Co-requisites:

Course objectives

1. Classify different groups of insects.
2. Describe different life cycles of insects.
3. Recognize the economic and medical importance of insects.
4. Training on the study of external and internal anatomy of insects.

Course contents

The world of insects with reference to their position in the animal kingdom and their phylogeny. It includes, the external appearance of the insects - and the centuries, the head sensor - parts of the mouth - the eyes - forms of the wings and legs, insect classification especially the higher echelons, factors affecting their distribution, external as (the wall of the body) and internal anatomy as well as their physiology, metamorphosis and life cycles of some selected insect species, environmental factors affecting on the lives of insects - insect physiology - the identification of environments and the collection of insect specimens.

Practical sections: include the following topics: -

External anatomy of head-types of mouth parts –modifications of antenna-Modifications of wings and wing coupling- Modifications of legs- Abdomen and its Derivatives- larval and pupal types- Insect classification-life cycles-study the Cockroach Anatomy to identify different systems.

• **BIO 3310: Taxonomy of Flowering Plant**

Credit Hours: 3 (2,0,1)

Pre-requisites: BIO 2010

Level: 5th

Co-requisites:

Course objectives

- 1- Acquainting with a scientific back ground about taxonomy and its importance for the other sciences.
- 2- Provide with Knowledge about the most important means of classification, and modern theories and how their applications.

Course contents

Studying the differences and similarities between higher plant families, with emphasis on their economic and medicinal importance and development. It includes basic knowledge of flower structure, placentation, kinds of inflorescence, fruits, basic theories of plant taxonomy, pollination and fertilization, detailed studies of the general characteristics of some families belonging to both monocot-tyledons and dicotyledons. Representative species from each family and their economic importance are studied.

The practical section: includes the following subjects:

Studying of the Structure of the flower – types of the inflorescences – types of fruits –The systematic features of the families of monocot and dicot plants – identify the analytical taxonomic keys and how to use them.

• **BIO 3420: Virology**

Credit Hours: 3 (2,0,1)

Pre-requisites: BIO -2410

Level: 5th

Co-requisites:

Course objectives

- 1- Define the basic information about virology and detection of viruses.
- 2- Classify and nomenclature of viruses and methods of purification.
- 3- Training on the practical ways of viral diseases detection.

Course contents

viruses - viruses linked to other neighborhoods –their non living and Biological characteristics - the characteristics of viruses - virus's purification – the cultivation of viruses - virus's morphology - the chemistry of the virus - serological properties and the designation and classification of viruses – Types of viruses including bacterial, plant and animal viruses –reproduction and infection - the common viral diseases – viral vaccines.

The practical section: includes the following topics:

Cultivation and propagation of viruses- Different morphological shapes of viruses and the methods of measuring their sizes- Different symptoms of plant viruses and routes of transmission- dilution end point and thermal inactivation point.

• **BIO 3320: Plant Physiology**

Credit Hours: 3 (2,0,1)

Pre-requisites: BIO 2020

Level: 6th

Co-requisites:

Course objectives

1. Identify the basics of the various processes within the plant in terms of metabolic activity, as well as a summary of the chemistry and synthetic organic compounds within the plant.
2. Study the plant growth and factors affecting it and the role of plant hormones in it.
3. Provide with comprehensive overview of environmental and plant factors affecting negatively or positively on the agricultural crops.

Course contents

Studying the plant biochemistry and metabolism. It includes plant enzymology and metabolism with a detailed study of plant respiration and photosynthesis, Growth and germination rates and the measurement of growth - plant hormones and growth organizations - flowering, fundamentals of the physiological responses of plants to stressful environments oxygen stress, salinity stress and aridity stress which are common in plant habitats in K.S.A.

Practical section: include the following topics:

Plant enzymes- factors affecting respiration and photosynthesis- factors affecting growth and germination- plant hormones- environmental stresses like drought- heat- salinity- oxygen tension.

• **BIO -3430: Bacteriology**

Credit Hours: 3 (2,0,1)

Pre-requisites: BIO -2410

Level: 6th

Co-requisites:

Course objectives

1. Provide with the basics of scientific to isolate the bacteria and purified and saved from different environmental sources and the basic principles of the dye bacterial and microscopic examination.
2. Identify the basic pillars of the methods of classification and identification of bacteria, according to the approved system.
3. Describe the bacterial cell and applied important of bacteria in the food and drug production.

Course contents

Studying the bacterial cell Morphological characteristics of bacteria and the internal structure – the installation of the wall cell – the movement of bacteria - bacteria Interior – the growth and multiplication of bacteria – nutrition, nutrition types and metabolism in bacteria – the classification of bacteria to the totals for the most common species in each group – the medical and economic importance of bacteria – the impact of the bacteria to humans and the environment.

Practical Section: include the following topics:

Nutritive media of bacteria – Bacterial isolation, purification and preservation-Endo-spores; - dyeing- dyes' mechanisms and uses. Physical and chemical factors affecting bacterial growth – Antibiotics -Bacterial enzymes assay- Carbohydrate fermentation.- Bacterial importance in environment (soil & water).

• **BIO 3440: Phycology**

Credit Hours: 3 (2,0,1)

Pre-requisites: BIO 2010

Level: 6th

Co-requisites:

Course objectives

- 1- Identify the basic fundamentals of phycology and algae relationship with other organisms.
- 2-Recognize the essential principles in algae classification, identification and reproduction, their economic importance and distribution.

Course contents

Algae - Figure apparent – to reproduce - and the division of each section on the study alone – the relationship between the algae and other organisms – the economic importance of algae – the distribution of algae in different environments (snow – lake – river – pond freshwater – semi-saline water – the sea – the ocean) – benthic algae and plankton – chemical agents, natural and biological, which affect the distribution of algae and their proliferation.

Practical Section: include the following topics:

Identify and isolation the most important algal genera.

• **BIO 3510: General Genetics**

Credit Hours: 3 (2,0,1)

Pre-requisites: BIO -2120

Level: 6th

Co-requisites:

Course objectives

- 1- introduce basic information about genetics, its application and chromosomal mapping
- 2- Describe the genetic materials in terms of structure and function and genetic illnesses and ways to treat cancer and hereditary relationship.

Course contents

Introduction to the definition of Genetics, its branches, history and areas of application - the cellular basis of heredity - Mendelian and non Mendelian genetics – Multiple alleles and pseudoalleles - Quantitative genetics - Population Genetics- Linkage and crossing over – Karyotype and chromosomal mapping – Structural and numerical chromosomal aberrations – Genetic mutations - the inheritance of behavior - embryos and the inheritance of genetic disease and methods of treatment - genetics, cancer and immunity , the applications of genetics in the field of medicine in terms of detection of genetic diseases, prevention, treatment and other applications as well .

The practical section: includes following topics:

Applications of Mendelian and non-Mendelian laws- applications of multiple alleles and pseudoalleles-application of population genetics- mitotic and meiotic cell division- structural and numerical chromosomal aberrations.

• **BIO -4230: Embryology**

Credit Hours: 3 (2,0,1)

Pre-requisites: BIO 2020

Level: 7th

Co-requisites:

Course objectives

1. Identify the basics of embryology and introduce principles on the stages of vertebrate embryos and some applied experiment like, artificial insemination (AI) baby test tube.
2. Recognize the mechanism of the teratology methodology.

Course contents

Introduction - description of the normal chordate embryonic development. It includes gametogenesis, different types of fertilization and cleavage, the developmental stages of embryos in selected chordate examples Amphioxus, frog, chicken and mammals, and organogenesis and differentiation of various organs and systems. twins - artificial insemination - breeding Ethary - congenital malformations.

The practical section: includes the following topics:

The embryonic development (Cleavage -Blastula -Gastrula-Organogenesis of Amphioxus, toad, chicken and mammals) and differentiation of various organs and systems. twins - artificial insemination - breeding Ethary - congenital malformations.

- **BIO -4240: Parasitology**

Credit Hours: 3 (2,0,1)

Pre-requisites: BIO 3220

Level: 7th

Co-requisites:

Course objectives

1. Recognize the relationship between living organisms, classification and morphology of parasites.
2. Describe the life cycle, pathogenic effects, diagnosis and control of parasites.

Course contents

Introduction to animal Parasitology and the definition of Parasitism kinds between biological organisms – Parasitism relationship (the interaction of host against the parasite – the impact of the parasite on the host) – parasite environments within the host – the epidemiology of parasitic diseases– parasites that affect humans and animals such as protozoa and helminthes (trematodes-cestodes – nematodes) –external parasites –intermediate hosts - arthropods vectors of parasites – the life cycle of parasites - diseases caused by parasites – the prevention and treatment –methods for the detection of parasites.

The practical section: includes the following topics:

The study of different parasites morphology.

- **BIO 4450: Mycology**

Credit Hours: 3 (2,0,1)

Pre-requisites: BIO -2410

Level: 7th

Co-requisites:

Course objectives

- 1- Define the fundamentals and theories of mycology and installation of fungi and reproduction, nutrition and applied economic importance.
- 2- Recognize the scientific background about the classification of fungi, life cycles of the most important genus and isolation, purification methods.

Course contents

A general introduction to the fungi the definition of fungi, their structure, nutrition, growth, reproduction, economic and medical importance, and a taxonomic study of the major fungal groups through studying the life cycle and properties of one or more important fungi from each group family, vital activities of the fungi – the economic importance of fungi.

Practical Section: include the following topics:

-Identify, isolations and purification the most important fungal genera.

• **BIO 4250: Histology and Microscopic preparations**

Credit Hours: 3 (2,0,1)

Level: 7th

Pre-requisites: BIO -2120

Co-requisites:

Course objectives

1. Recognize the basic principles of biochemical and molecular composition of the tissue.
2. Distinguish theories and practical applications of the different microscopic preparations.
3. Training on the skills of using light and electron microscopes, tissue sampling and preparation of physiological solutions.

Course contents

Studying of the essential tissue constituents of the body in the living organisms, Epithelial tissue, Connective tissue, Muscular tissue and Nervous tissue (structure and function). Fixatives (advantages and disadvantages) - Sampling methods - physiological solution - Types of microscopes and microscopic preparations - Dyes and dyeing methods- Chemical and biological compositions of the different tissues. Histochemical techniques.

The practical section: includes the following topics: microscopic study of tissues, (epithelial - connective - muscle – nervous)- microscopic preparations: identification of laboratory instruments- Types of microscopes –sections in animal tissues -types of dyes- Physiological solutions- histochemical identification.

• **BIO 4260: Pollution**

Credit Hours: 2 (2,0,0)

Level: 7th

Pre-requisites: BIO 2610

Co-requisites:

Course objectives

The course aims to

- 1- Provide with knowledge of the information on persistent pollutants and the types of pollution.
- 2- Recognize the sources, transmission, dispersion, and the dynamic effects of different types of pollutants and the internationally prevention and control ways of adverse effects of pollution on the public health and the environment.

Course contents

Definition of pollution and its relationship to the ecosystem. Definition and types of pollutants of air pollution, water and food. Physical contaminants (heat, noise and radiation). Ways to control pollutants. Dynamic effects of pollutants. Pollution in the Gulf States and Saudi Arabia.

• **BIO 4270: Immunology**

Credit Hours: 3 (2,0,1)

Level: 8th

Pre-requisites: BIO 3210

Co-requisites:

Course objectives

1. Identify the basic information about Immunology, human immune system, immune types and immune responses.
2. Recognize the structures and functions of antigens and antibodies.
3. Training on the practical ways of serological reactions

Course contents

This course covers molecular and cellular immunology including molecular structure of antigens, antibodies, protein complements, cytokines and other soluble mediators; major histocompatibility complex (MHC) antigens, B- and T-cell receptors and immune recognition and responses. Topics include the human immune system, Types of immunity (innate and adaptive immunity). Applications of immunological concepts to medically significant issues (vaccination, transplantation, inflammation, autoimmunity, immunotherapy and autoimmune diseases) and serological reactions.

The practical section: includes the following topics: Blood centrifugation- Blood smear and counting of red blood cells and white blood cells by hemocytometer- Serological reaction including blood types and pregnancy test- Types of ELISA.

• **BIO 4250: Molecular Biology**

Credit Hours: 3 (2,0,1)

Level: 8th

Pre-requisites: BIO 3510

Co-requisites:

Course objectives

1. Identify the structure of nucleic acids and proteins and modulate the specificity of binding between them.
2. Distinguish different molecular biology techniques that are used to isolate, separate, clone and probe for nucleic acids, and their interactions.
3. Provide with basic principles to compare and contrast the mechanisms of prokaryotic and eukaryotic DNA replication, DNA repair, transcription, and translation

Course contents

Molecular biology deals with nucleic acids and proteins and how these molecules interact within the cell to promote proper growth, division, and development. It is a large and ever-changing discipline. Topics covered will include replication of DNA, transcription of DNA into RNA, and translation of RNA into protein and gene regulation in different organisms. Regulation and mechanisms of gene expression by different types of RNAs, as well as concepts of recombinant DNA technology including Cloning vectors, restriction enzymes and sites, transformation & transfection; Identification of recombinants; DNA sequencing methods, Polymerase chain reactions; Elements of Bioethics.

The practical section: includes the following topics: DNA and RNA electrophoresis-DNA isolation from different sources (Blood-plants)-DNA cloning- Restriction enzymes and sites- DNA transfection and transformation- Identification of recombinant clones-recombinant DNA isolation from bacteria- DNA sequencing method-Polymerase chain reaction.

• **BIO 4140: Flora and Fauna of K.S.A**

Credit Hours: 3 (2,0,1)

Level: 8th

Pre-requisites: BIO 3310

Co-requisites:

Course objectives

- 1- Identify the location of the Kingdom Saudi Arabia among the geographical zones in the world with the studying of its vegetation characters.
- 2- Acquire the basic principles of conservation of marine and wildlife in K.S.A.
- 3- Training on collection and classification of wild plants.

Course contents

Plants the Kingdom of Saudi Arabia - the site of the Kingdom of Saudi Arabia between the plant in the world- images of growth - the geographical areas in the Kingdom of Saudi Arabia Collection,

identification and clarification of natural flowering plants, preparation of herbarium specimens, and the types of wild plants in those areas - to collect plant samples from each region. Solution of small local problems. Study of different habitats in K.S.A. Identification and classification of the different species of the desert and marine fauna of K.S.A. Animal Kingdom of Saudi Arabia - the site of the Kingdom of Saudi Arabia between the regions in the animal world - the geographical areas in the Kingdom of Saudi Arabia, and the types of wild animals in those areas - the preservation of wildlife, marine and shed light on the system of nature reserves in Saudi Arabia.

The practical section: includes the following topics: Training on the drying and conservation of the plants- Identify some of the desert plants and its modification - the medicinal plants and their uses - study examples of some of the extinct wild animals and methods of conservation.

- **BIO 4030: Ethics**

Credit Hours: 1 (1,0,0)

Pre-requisites: ---

Level: 8th

Co-requisites:

Course objectives:

1. Carry tasks of the administrative and necessary ethics.
2. Improve the relationship between the biologists and preserve the positive relationship between biologists and administration
3. Overcoming obstacles to the application of ethics (not to apply the punishment)
4. Developing religious and national sense.

Course contents

Work ethic in Islam - the need for administrative work ethic - the relationship between the biologists and management - the relationship between the biologists - Establish the work ethic - obstacles to the application of the ethics of work - the interest of universities to work ethics - the moral collapse of the reasons - Respect for intellectual property rights - to respect the confidentiality of information.

- **BIO -4980: Research Project**

Credit Hours: 2 (0,0,2)

Pre-requisites: BIO-4230 / BIO 4450 / BIO-3430 / BIO 4250

Level: 8th

Co-requisites:

Course objectives

1. Recognize the scientific researches in the specialized periodicals.
2. Identify how collect data and make tabulation.
3. Discussion the obtained results and reaching to conclusions and recommendations, writing and submitting the final report.

Course contents

The training of the student, practically and theoretically in conducting scientific research under the supervision of a staff member of the department.

Second: Elective courses

- **BIO 3260: Hematology**

Credit Hours: 2 (1,0,1)

Pre-requisites: BIO 3210

Level:

Co-requisites:

Course objectives

1. Identify the structure and function of blood cells components.
2. Understand normal hemostasis and techniques of its determination.
3. Explain the morphological interpretation of a blood film and relate changes in blood cell morphology to clinical pathology.

Course contents

The basic concepts of hematology. It includes composition and characteristics of blood, hematopoiesis, a detailed description of erythrocyte and leucocyte structure and function, abnormalities in erythrocytes anemia and polycythemia, thrombocytes and the maintenance of homeostasis, with a brief consideration of non-malignant and malignant disorders of blood components.

The practical section: include the following topics:

Training of students in hospitals and scientific centres on the methods of determination of blood cells forms and counts, investigation of the anemia's, cases of physiologic polycythemia and polycythemia Vera (Erythremia), Benign and malignant disorders of blood cells.

- **BIO 4280: Animal Behavior**

Credit Hours: 2 (1,0,1)

Pre-requisites: BIO 2010

Level:

Co-requisites:

Course objectives

1. Define the basic information about the animal 's behaviorand the most important behavioral phenomena in animalsand effect of hormones on behaviorand stimuli and means of communication.
2. Training on the skill of the establishment and management of livestock production, poultry projects, breeding and care of domestic animals and pet's projects.
3. Provide the skill and knowledge of the proliferation of animal migration seasons, and the establishment of projects for the supply of lab animals for schools, colleges, universities and research centers.

Course contents

General introduction –behavioral phenomena - relationship between nervous system, hormones and behavior - sexual behavior, reproduction and motherhood –nutritional behavior – methods of communication – learning – migration and migration routes – biological models in animals.

• **BIO 4330: Medicinal Plants**

Credit Hours: 2 (1,0,1)

Pre-requisites: BIO 3310

Level:

Co-requisites:

Course objectives

- 1- Recognize different species of plants and parts used, in medicine and methods of their production and how to extract oil and effective substances from them.
- 2- Acquire the ability to classify plants of medicinal interest.

Course contents

Introduction to the growth, culture, and science related to the production and use of herbs, spices, and medicinal plants. Emphasis on plants used in the home with discussions on bioactivity of plant extracts. Laboratory practice in seeding, growing, oil extraction, and utilization of these plants. Examinations, project and identification of selected herbs. An assessment on medicinal plants that possess antimicrobial, antifungal, antiviral, and immune enhancing activity. A look at herbal medicines used around the world. A descriptive study of medicinal plants dividing the Kingdom of Saudi Arabia with the knowledge of the parts with medical use.

• **BIO 3530: Biotechnology**

Credit Hours: 2 (1,0,1)

Pre-requisites: BIO 3510

Level:

Co-requisites:

Course objectives

- 1- Identify the basic information about modern techniques and applications biotechnology and its impact on human life.
- 2- Recognize how to transfer genetic traits in plants and microorganisms.

Course contents

The multidisciplinary field of biotechnology and its impact on human life through several examples of applications. This course includes techniques and applications of modern biotechnology in plant and animal agriculture and the basis of genetics and Mendelian heredity and its applications and how the transmission of genetic traits in plants and micro-organisms in addition to mutations, new therapies for diseases and, discusses the legal, social and ethical aspects of biotechnology. It also addresses the study of nucleic acids to be the modern scientific methods in genetic engineering and its applications in the world of plant and microbiology.

• **BIO 3630: Applied Ecology**

Credit Hours: 2 (2,0,0)

Pre-requisites: BIO 2610

Level:

Co-requisites:

Course objectives

- 1- Explain the human impacts on the ecosystems through habitat destruction and fragmentation, harvesting, introduction of alien species, and pollution.
- 2- Develop an understanding of the processes that govern the interaction between biological systems and contaminants in environment media including soil, water, etc.
- 3- Apply applied ecological practices used in rehabilitating and restoring ecosystem function.

Course contents

The studying ecological theory and how it can be applied to environmental problems. It reviews the principles that underlie ecological processes and the extent to which these are used in environmental management. Applied Ecology starts with an analysis of our planet's basic natural resources – energy, water and soil; it moves on to the management of biological resources – fish, grazing lands and forests, and then to exploiting variability, pest control and measuring the effects of pollution; finally, the course tackles conservation and management of wild species, modeling ecosystems and the restoration of ecological communities.

- **BIO 4460: Plant Pathology**

Credit Hours: 2 (1,0,1)

Pre-requisites: BIO -2410

Level:

Co-requisites:

Course objectives

- 1- Identify the basic fundamentals of Plant Pathology.
- 2- Provide with scientific principles of applied biological and chemical technologies in overcoming and controlling plant diseases.

Course contents

Introduction, importance, symptoms, causes and classification of plant diseases, principles of plant pathology and plant disease control, study of selected examples to show the importance, nature, cause and control of plant diseases caused by fungi, bacteria, viruses and nematodes.

- **BIO 4470: Food Microbiology**

Credit Hours: 2 (1,0,1)

Pre-requisites: BIO -2410

Level:

Co-requisites:

Course objectives

1. Provide with essential principles and scientific background of food preservation from microbial spoilage.
2. Recognize the role of microorganisms in food & dairy industries and in food spoilage and poisoning.

Course contents

Food as microbial growth medium – Microorganisms naturally inhabiting foods –Microbes important in food and the most important attributes–Sources of food contamination –food preservation methods of microbes –the corruption of various food – canned food corruption–the important microbes in the milk and changes caused by–food poisoning (diagnosis and treatment).

- **BIO 4540: Genetic Engineering**

Credit Hours: 2 (1,0,1)

Pre-requisites: BIO 3510

Level:

Co-requisites:

Course objectives

- 1- Identify the basic information about genetic engineering and cloning of genes and its applications in the production of transgenic plants.
- 2- Recognize how to express foreign genes in bacterial cells.

- 3- Define the polymerase chain reaction and its applications, clone and express genes in bacterial system and purify recombinant proteins using protein purification methods and clone and transfect genes to mammalian cell lines.

Course contents

Studying strategies and tools of gene cloning and recombinant DNA. Restriction enzymes and sites. Extraction, purification and quantification of genetic materials. Gel electrophoresis of genetic materials and proteins. Expression of foreign genes in bacterial, plant and mammalian cells- Applications of genetic engineering in the production of genetically modified plants as well as the polymerase chain reaction technology PCR and its applications- Bioinformatics, Basis of computational Biology.

Third: Services Courses

• **BIO 106: General Biology for unified Health Sciences program students**

Credit Hours: 4 (3,0,1)

Level: 3rd

Pre-requisites: -

Co-requisites:

Course objectives

1. Define theories and principals of the biology.
2. Acquire skills for practical application such as using a microscope and slide preparation and examination

Course contents

Introduction, recognize the scope of biology and its relevance to medicine. Describe the importance of biology in diagnosis and treatment of diseases, animal cells the structural and functional of Organelles, metabolism and Enzymes, Cell division, the mitotic division of an animal cell. the meiotic division of an animal cell, structure of DNA and protein synthesis, biotechnology and genetic engineering, digestive system, endocrinology and hormones, reproductive system, circulatory system, nervous system.

Practical section: include the following topics:

Laboratory safety precautions. Structure of light microscopes. Differences between animal and plant cells. Cell organelles. Cell divisions. Types of tissues. Blood counts and blood groups. External features of an experimental animal. Main biological body systems

• **BIO 2010: General Biology (1) for Chemistry Students**

Credit Hours: 4 (3,0,1)

Level: 3rd

Pre-requisites: -

Co-requisites:

Course objectives

- 1- Identify the basic concepts that form the crux of life.
- 2- Distinguish the structure and function of plant and animal cells and tissues.
- 3- Recognize different processes of nutrition, metabolism and bioenergy production.

Course contents

Definition of Biology- Chemical basis for life (organic and non-organic components of living organisms)-Biodiversity - Structure and function of cells and tissues - Basics of classification and taxonomy of (Viruses - Bacteria - Algae – Plant - Invertebrates (Protozoa to Annelida)- Nutrition and metabolism - Bioenergy production (Photosynthesis - Securing solar energy - The vital building of large molecules and energy storage - Breakdown of large molecules and the release of energy) – Plant morphology - The main basics of genetics - Cell division.

Practical section: include the following topics:

Study the components of plant and animal cell- types of plant and animal tissues- notes on viruses, bacteria, algae- experiments in photosynthesis and respiration in plant- morphology of different plant parts- invertebrates (protozoa to annelida).

BIO -2410: General Microbiology for Chemistry

Credit Hours: 3 (2,0,1)

Level:

Pre-requisites: BIO 2010

Co-requisites:

Course objectives

- 1- Identify the basic fundamentals of microbiology and microbial diversity.
- 2- Training on the practical ways of isolation, purification and identification of microorganisms and controlling of microbial growth by physical, chemical and biological agents.

Course contents

Introduction - A Brief history of microbiology - The development of microbiology - Activities of microorganisms and scope of microbiology - Classification of microorganisms - Structure of prokaryotic and eukaryotic cells - Microbial nutrition - Metabolism and energy generation - Microbial growth - Controlling of microbial growth by physical, chemical and biological agents - An introduction to the general characteristics of the various groups of microorganisms including bacteria, fungi, viruses, protozoa and algae.

The practical section: includes the following topics:

Microbiological laboratory safety - Instruments and tools used - Microscope - Growth media - Sterilization - Isolation of microorganisms - Cultivation and examination - Factors affecting microbial growth.

BIO 3230: Animal Physiology for chemistry and biochemistry students

Credit Hours: 3 (2,0,1)

Level:

Pre-requisites: BIO 2010

Co-requisites:

Course objectives

- 1-Recognize the Structures and functions of body systems and their relationship with energy and cellular metabolism.
- 2-Recognize the physiological changes in relation to neural and hormonal effects.

Course contents

The functional processes of the vertebrate body systems with emphasis on mammals. It includes the relationship between structure and function, physiological activities of the body systems related to energy and cellular metabolism, homeostatic mechanisms, neural and hormonal control mechanisms, biochemistry

of muscular contraction, circulation, respiration, excretion, food processing (food - in the ways of feeding the animals - the digestion and absorption), reproduction (methods in animal breeding - the members of reproduction - reproductive cycles-pregnancy and childbirth) and defense mechanisms of the body.

The practical section: includes the following topics:

Laboratory safety precautions-experiments on: properties and components of blood - red and white blood cells count- Chemical examination and detection of pathological cases in urine - Detection of digestion enzymes -Estimation of the glucose- Detection of Saponification degree.

Academic Advising



Since the study plan has variety of courses, the student needs academic advice so that he/she may know (1) to plan his/her academic track, (2) choose the right elective courses that fit his/her interests and improve his academic capabilities. The academic advising helps students to achieve success and primacy in their academic endeavor. It also helps to encounter challenges and other academic problems that might hinder their progress. Accordingly, it is imperative to maintain channels of communication open between students and the academic advisors who can help to arrange the students' study plan in a way that would fit their future profession. Each student is assigned an academic advisor in his/her department or from the Department of Student Affairs or through the College web-site. To gain the utmost desired benefit from the experience of the academic advisory, students are advised to note the following:

1. The responsibilities as a student and as an academic adviser to go side by side.
2. The advisor is readily available to guide you whenever a need arises.
3. Do not hesitate to seek the advisor's help.

Important Note for student

1. Develop a sense of trust with the advisor as soon as possible.
2. Keep in constant touch with the advisor throughout the academic year because the advisor is a valuable source of knowledge for university education.

3. The salient rules and regulations that govern the teaching and learning processes, examinations and students' life at Prince Sattam bin Abdulaziz University

The Study System at the Biology Department

Teaching at the Biology Department is subject to the following scheme:

- 1- The school year consists mainly of two regular semesters and a summer semester, if available.
- 2- The stage of academic progress is indicated by the academic level since the number of levels to graduate is at least eight levels in conformity with the approved study plan.
- 3- The duration of the level is a full semester (not less than 15 weeks) and this period does not include the periods of registration and final exams.
- 4- The duration of the summer semester is not less than eight weeks where the teaching time allocated for each course is doubled.
- 5- Students have to study 138 class units (credit hours) to obtain a Bachelor's Degree as follows:
 - A- The student studies a number of 31 credit hours during the Preparatory Year (two semesters in one academic year).
 - B- University Requirements: The student studies 8 credit hours during the period of the study at the Department.
 - C- The students studies 76 credit hours (compulsory + elective) from the biology department throughout the six semester following the preparatory year (beginning with the third semester).
 - D- The students studies 14 credit hours (compulsory + elective) from other department.
 - E- The students studies 6 credit hours (free elective) from other departments.

The New Academic System (e-Register)

Registration is the cornerstone of the academic system, the center of the educational process, and the first step to start university life. The new Academic System (e-Register) offers students the following opportunities:

- 1- Online Registration (registration, adding, and dropping) using the link <https://eservices.psau.edu.sa/> helps the student to register, in person, from any location during the periods of registration and dropping plus an additional

period specified in the academic calendar; thus, without having to visit the College or the Department, the student can perform the following:

- A- Registration: Registration of courses and deciding the required number of credit hours.
 - B- Adding and dropping: The student may drop and add courses during the first week of teaching provided that the study load does not go above, or lower than, the allowed course load.
- 2- To view the course schedule of the college and the available/ closed groups.
 - 3- To view the study schedule and print it.
 - 4- To view the academic record and print a copy (an unofficial copy).
 - 5- To view the results of the final exams as soon as they are put online.
 - 6- To view the study plan, the courses passed by the student, and the ones remaining to be studied.
 - 7- To know about the penalties imposed upon the student.
 - 8- To view the financial rewards.
 - 9- To make suggestion and submit complaints.
 - 10- To write the academic performance evaluation of faculty members.
 - 11- To exchange electronic messages and change the password.

Rules and Mechanisms for Registration of Courses

- The Course is a module that meets the needs of the level specified in the approved Study Plan in each specialty (Program). The Course has a number, a code, a title, and a description depend on the different departments (see the Department's Manual Guide).
- The Course is divided into a set of theoretical lectures and practical lessons (study units) taught weekly during the academic level.
- The Credit Hour is a weekly theoretical lecture that is not less than fifty minutes, or a practical lesson which is not less than one hundred minutes.
- The registration of the courses for all students is done automatically through the website <https://eservices.psau.edu.sa/>
- The academic levels vary in the number of the units of study, from 12 units to 20 units, for each level.
- The Courses are registered automatically at the beginning of the following semester for the student's convenience. Then, the student can modify the course schedule by adding or dropping.
- The following table shows the student's study load corresponding to the cumulative average:

GPA	2	2.5	3	3.5	4	4.5	5
Hours allowed for registration	14	15	16	17	18	19	20

- The Processes of dropping and adding and adding are performed by the student electronically in the first week of the semester through accessing the gat of the academic system of the University Deanship of Admission and Registration (<https://eservices.psau.edu.sa/>).
- No student has the right to register a course without passing its per-requisite course.
- Students, who pass all courses without failures, are registered in the courses of the level beginning gradually with the lower levels according to the study plans approved.
- Students, who fail in some courses, are registered in the courses that ensure their minimum study load in each semester taking into account the following point:
 - No conflict in the course study schedule.
 - Satisfying the previous requirements of the course or courses to be registered.

Calculating the Average and Cumulative GPA

GPA are calculated every semester for the student automatically by the system. To know how to calculate the averages, you should follow the following steps:

Calculating the Semester Average:

The GPA is calculated considering the following points:

1. Knowing the number of hours of the courses.
2. Knowing the mark obtained in each course.
3. Knowing the corresponding grade of each mark.
4. Knowing the value of each grade.
5. Knowing the points = number of hours of the course x value of the grade.
6. Determining the total points obtained in all courses of the semester.
7. Determining the total number of hours registered in the semester.
8. The average is calculated every semester according to the following equation:

GPA =	Total points (item 6)
	Number of hours registered in the semester (item 7)

The following table shows the percentage of marks, grade and value obtained by the student in each course, which is used to calculate the points:

Mark	Grade	Letter of Grade	Value of Grade
From 95 - 100	+ Excellent	+A	5.00
From 90 to less than 95	Excellent	A	4.75
From 85 to less than 90	+ Very Good	+ B	4.50
From 80 to less than 85	Very Good	B	4.00
From 75 to less than 80	+ Good	+ C	3.50
From 70 to less than 75	Good	C	3.00
From 65 to less than 70	+ Pass	+ D	2.50
From 60 to less than 65	Pass	D	2.00
Less than	Failure	E	1.00
Absence from lectures (25% or more)	Debarred	H	1.00

Calculating the Average cumulative:

The GPA semester average is calculated as follows:

- 1) The grand total of points (for all semesters that have been student).
- 2) The grand total of credit hours (for all semesters that have been studied).
- 3) The cumulative average is calculated according to the following equation:

GPA =	Grand total of points / Grand total of credit hours
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Here is an example of how to calculate the grades above:

Calculating the grade of the first semester:

Course	Credit Hours	Mark	Grade	Grade Value	Points
BIO -2410	3	67	+ D	2.50	3 X 2.50 = 7.50
BIO 3430	3	73	C	3.00	3 X 3.00 = 9.00
BIO 3220	3	77	+ C	3.50	3 X 3.50 = 10.50
BIO 3310	3	81	B	4.00	3 X 4.00 = 12.00
BIO 3510	3	92	A	4.75	3 X 4.75 = 14.25
	15				53.25

GPA = Total points ÷ No. of hours registered in semester = 53.25 ÷ 15 = 3.55

Calculating the grade of the second semester:

Course	Credit Hours	Mark	Grade	Grade Value	Points
BIO 2610	2	67	+ A	5.00	2 X 5.00 = 10.00
BIO 2010	4	77	+ C	3.50	4 X 3.50 = 14
ARAB 101	2	73	C	3.00	2 X 3.00 = 6.00
BIO 4450	3	81	B	4.00	3 X 4.00 = 12.00
BIO 4330	2	63	D	2.50	2 X 2.50 = 5.00
BIO 4270	3	88	+ B	4.50	3 X 4.50 = 13.50
	16				60.50

GPA = Total points ÷ No. of hours registered in semester = 60.50 ÷ 16 = 3.78

Calculating the average cumulative:

GPA = total points ÷ total hours of the semester = 113.75 ÷ 31 = 3.67

Dropping and adding of a course:

1. The process dropping and adding is performed through portal (<https://eservices.psau.edu.sa/>).
2. during the first week of the semester only; but the number of credit hours registered must be at least 12 hours.
3. The student may drop only one course due to excuse acceptable to the dean of the College. This procedure should occur at least five weeks before the final exams begin. The student has the right to apply for such a procedure at a maximum of four courses during the whole period of study at the College.

Attendance, Postponing and Dropping out of College:

- The student must be regular in attendance attending at least 75% of the lectures and the practical classes.
- If any student has a percentage of absence of 25 %, or more, in any course, he is denied access to the final exam of this course and his result is F.
- A student may apply for postponement of the study before the beginning of the semester for an excuse accepted by the College Board. The postponement should not exceed two consecutive semesters or three semesters as a maximum limit while studying at the College.
- The University Council may, in case of necessity, exempt the applicant from the previous provision.
- If student drops out of college for one semester without requesting the postponement of his registration, the University has the right to dismiss his

registration. The university Council has the right to do this for a lesser period of time.

- The student is not considered as dropping out of college if he is a visiting student at another university.

Visiting student:

The Visiting student is student who studies some courses at another university, or at a branch of the university to which he belongs without being transferred. The courses he studied are accredited according to the following regulations:

- The student has a transcript (including a grade point average) for, at least, two semesters at his college before he applies as a visiting student.
- The student must obtain a prior approval from his college permitting him to study as a visiting student while specifying the courses that will be studied. The college has the right to require a specific grade to be achieved by the student to offset the course. The student should obtain an official letter from the Deanship of Admission and Registration directing him to study as a visiting student.
- The student has to join an officially recognized college or a university.
- The courses, under consideration by the student to be studied outside the university, must be equivalent in their description to the university courses, and their course units should be less than the units of any of the courses contained in the graduation requirement.
- The maximum of the total units of study that can be calculated from outside the University is twenty percent (20%) of the total units required for graduation at Salman bin Abdulaziz University.
- The courses that are studied by the visiting student are not included in the cumulative average. These courses are recorded in his academic record.
- The student must provide the Deanship of Admission and Registration with the results he obtained during the first two weeks of study in the semester following the period of study as a visitor. If not reported within that period, the student is considered as dropping out of college during those semesters.

Dismissal from the University:

The student is dismissed from the University in the following cases:

- If he received three consecutive warnings due to a cumulative average below a minimum of 2
- The student may be given a fourth opportunity by the Council of the University based upon the recommendation of the College Council to raise his cumulative GPA by studying the available courses.

- The University Council may give the dismissed students, due to warnings, an opportunity that does not exceed two semesters as a maximum.
- If the student does not fulfill his graduation requirements at the college in a period of up to half of the period prescribed for graduation in addition to the duration of the Program.
- The student is given an exceptional opportunity by the University Council to meet the graduation requirements during a maximum period not exceeding twice the original term specified for graduation.
- The University Council may allow dismissed students, due to the exhaustion of failure times, to attend twice the duration of the Program. This extension should not exceed a maximum of two semesters.

Examination and Grades:

- Based on a proposal from the Department council, the college council specifies a mark for the student's semester work, varying from 40% to 60% of the final grade of the course.
- The mark of the course's semester work is calculated by one of the following two methods:
 - Oral, practical tests, research, or other forms of classroom activity, or from all the above or some of them, in addition to at least one written exam.
 - Two at least written exams at least.
- Based on the recommendation of the course teacher, it is permissible for the Council of the Department, that teaches the course, to allow the student to complete the requirements of any course in the following semester and to give the student a grade of I (incomplete) in his academic record. Only the grades achieved by the student are included in the GPA or cumulative after the completion of the requirements of that course.
- If one semester passes without changing the grade incomplete (I), the student is given an F which is calculated in the GPA and cumulative.
- The grades obtained by the student in each course are calculated according to the schedule mentioned above.

Restriction of the Final Examination:

1. No student may be tested in more than two courses in one day.
2. The student is not allowed to enter the final exam after half an hour of its beginning and is not allowed to leave the exam room before half an hour after its beginning.

3. Based on a recommendation from the relevant Department Council, the College Council specifies the duration of the final written exam to be within a period not less than one hour, and not more than three hours.
4. Cheating in the exam, initiating it, or violating the instructions and rules of examination procedures are actions punishable in accordance with the Regulation of the students' Discipline issued by the University Council.
5. In cases of necessity, the college council, in charge of teaching a course, has the right to approve re-marking of the answer sheets in a period of time not later than the beginning of the following semester in accordance with the following rules:
 - A student may apply for re-marking the answer sheet of only one course per semester.
 - The student, who wishes to re-mark his answer sheets, may apply for re-marking to the department that teaches this course, not later than one month after taking the final exam.
 - A student, who has already applied for re-marking and proved the invalidity of his application, should never apply for re-marking his answer sheets in any exam in the future.

Transferring:

1) Transferring from one college to another within the University:

- It is permissible, with the consent of the respective dean of the colleges, to transfer from one college to another in accordance with the conditions approved by the College Council to which the student wishes to transfer.
- The student's college academic record has to show all courses previously studied, including grades, semester and cumulative averages throughout the study at the college from which he is transferred.

2) Transferring from one major to another within the college:

- The student may, after the approval of the Dean, transfer to another specialty within the College according to the guidelines established by the College Council.
- The student's college academic record has to show all courses previously studied, including grades, semester and cumulative averages throughout the study at the college from which he is transferred.

Graduation:

The student graduation after completing successfully the graduation requirements in accordance with the study plan, provided that his cumulative average is no less than 2 (pass).

- ❖ For more information about Regulations governing study and testing at Prince Sattam Bin Abdulaziz University, please see the following link:

<https://dar.psau.edu.sa/en/node/6795>

Students' Rights and Responsibilities

First: Academic Rights

1. The student has the right to enjoy an educational environment that induces to effective
2. Implementation of educational processes.
3. The student has the right to obtain knowledge and skills from courses taught according to
4. the regulations of the university educational system.
5. The student has the right to access the study plans offered by the college or by the department; and
6. has the right to access the administrative areas at a reasonable time before the beginning of the
7. academic semester to register for courses especially whenever his/her preferences cannot be met.
8. The student has the right to drop or add a course or a semester basic to the rules and regulations advanced
9. to students.
10. Staff members should abide themselves with the timetable of the lectures, exercise lessons, and office
- 11.hours. In case of unpredicted interruption, an alternative schedule should be set for compensations.
- 12.The student has the right to discuss and ask questions (during lectures, office hours, and open meetings) as
- 13.long as he/she observes the rules of proper conduct.
14. Questions of the exams should be set to meet the objectives specified in the teaching and learning
- 15.processes. Allocation of marks should be planned in a balanced order to achieve a fair assessment and
- 16.evaluation.
17. The student has the right to be informed well ahead of time of their academic

- status when he/she is to be
18. debarred from attending the final exam. Planned tests for all courses should be administered unless there
 19. are unforeseen reasons to prevent holding them.
 20. To enable the student to be better prepared for the final exam, a student has the right to review
 21. his/her answer sheets (basic to rules of tests and exams observed in assigning marks).
 22. The student has the right to apply for a reassessment of the final-exam answer sheet within the framework of the university regulations.
 - 23.- The student has the right to access the results of all his/her final tests

Second: Non-academic Rights

1. The university is legally bound to plan social activities stated in the University rules and regulations
2. The university is legally bound to plan a health care programs and make them accessible to all students at hospital and other University health facilities
3. Students should have access to university services e.g., textbooks, hostels, youth houses, libraries, sport yards, restaurants, parking lots, etc.
4. The university is legally bound to provide financial rewards and incentives especially for gifted students.
5. A participation in training courses (held on and off campus) and in cultural activities, community services, and voluntary works.
6. Complains pertinent to practices carried out by teachers, the department, the college or any other department but conducted based on the rules and regulation stipulated by the University.
7. The students have the right to defend themselves in cases relevant to misconduct with their defense heard prior to pronouncing a final verdict.
8. A student should have the right to appeal a judgment as long as he/she observes the University relevant rules and regulations.
9. Maintain the student's right to privacy of personal information. A student's file or record can be accessed only by parties authorized by the student, e.g., the parents, a guardian or any other person delegated by the student.

Committees and Their Tasks

1. Program Management and Quality Assurance Committee

1. Spreading culture of quality in the department.
2. Review of course files (Portfolios).
3. Review the updating of the files of community service, scientific research, and department alumni, and confirm the inclusion of any new activities.
4. Preparation of the Annual Program Report for the first and second semesters at both faculty branches (males and females).
5. Updating the Self Study Report (SSR) for the program at both faculty branches (males and females).
6. Update the Self Evaluation Scales for the program at both faculty branches (males and females).
7. Preparing and processing the academic accreditation files of the program.
8. Follow up the recent publications of the National Commission for Academic Accreditation and Assessment.
9. Communicating with the accreditation bodies recognized by the university.
10. Coordinating the meetings of the accreditation team with members of the faculty, staff, and students in the department.
11. Supervising the evaluation and academic accreditation activities of the department.

2. Curricula and Study Plan Committee

- 1-Preparing a strategic plan for the department based on the reality of the college and the university and the needs of the community and the modern directions of planning.
- 2-Updating the vision, mission, and objectives of the department in accordance with the vision of the college and the university, their mission, and strategic plan.
- 3-Provide advice and suggestions on improving academic and administrative performance within the department.
- 4-Introducing the strategic plan of the department and dissemination of its objectives and components.
- 5-Supervising the implementation of the department's strategic plan.
- 6-Supervising the development plans of the department.

3. Academic Advising Committee

- 1-Raising awareness of the importance of academic advising for the department's programs.
- 2-Emphasize the concept of academic advising and the role of academic advising in guiding students to plan for their educational future.
- 3-Follow up the preparation of the necessary questionnaires for academic accreditation regarding academic advising, distribution, collection, analysis of results, and advice to all students accordingly.
- 4-Deepening trust between students and faculty members.

4. Laboratories and Instrumentation Committee

- 1- Hold periodic meetings with concerned authorities to develop time plans for the development of equipment and laboratories to achieve the objectives of this committee.
- 2- Investigate and evaluate the current state of all devices and laboratories, and scheduling start-up of development processes.
- 3- Ensure that all lab equipment and student services are available for all programs offered by the department.
- 4- Ensure availability of plans for the maintenance of equipment and student services.
- 5- Provide a periodic report to the head of the department at the end of each year to make the necessary work on proposals.
- 6- Supervising the availability of guidance procedures for security and safety procedures in laboratories and study halls.
- 7- Raise awareness, prepare guidance publications on safety and safety measures for different risks, and distribute them to students at the beginning of the study year.
- 8- Prepare questionnaires to measure the satisfaction of the beneficiaries of the equipment and laboratories.
- 9- Discuss the preliminary results with the Quality Committee and present proposals and solutions.
- 10- Recommending the application of the required programs, equipment, and accessories in each laboratory in accordance with the specialization of the subjects being taught.
- 11- Coordinating with the competent authorities regarding the technical support of the devices.

5. Alumni Affairs Committee

- 1- Building the databases of graduate students.

- 2- Building the databases of the target parties in the employment of graduates
- 3- Studying the job market and its relation to the practical disciplines and programs required.
- 4- Develop a mechanism to contribute to the qualification and development of graduates to join the labor market
- 5- Activate communication with the graduates of the department and benefit from their experiences.
- 6- Coordinating with the alumni affairs department at the college and the university.
- 7- Presenting the success stories of some graduates in various fields.
- 8- Organizing the annual alumni forum.
- 9- Create a webpage for alumni on the department and college websites so that the graduates can register data and communicate with the department.
- 10- Announcing the innovative and distinguished programs of graduates, which serve the community and the university.

6. Field Experience Committee

- 1- Coordinating with the college administration to provide opportunities for field training for students.
- 2- Proposal to form a committee to evaluate the student's final report and approve it from the department council.
- 3- Follow up the training places through the academic advisor of the student so that the student can perform:
- 4- The connection between the theoretical and practical aspects.
- 5- Development of scientific skill in the field of specialization.
- 6- Deepening the student's ethics and behavior at work during the training period through discipline and punctuality, responsibility, and teamwork.
- 7- Enable students to demonstrate their scientific and practical abilities, which may allow them to employ in the same training place or be nominated in other places.
- 8- Enable students to develop their abilities by analyzing strengths and weaknesses during the training period.

7. Schedules Committee

- 1- Work on the preparation of study schedules to be delivered in a timely manner.
- 2- Review the teaching loads of faculty members.
- 3- Update the file of the faculty schedules periodically to fit the needs of the department.
- 4- Distribute the department's courses to the allocated halls.

- 5- Coordination between departments to achieve proportionality between the capacity of the hall and the number of students per course.
- 6- Follow up the announcement of the classrooms timetables on the halls assigned to the department.

8. Exams Committee

- 1- Prepare the final exam schedule.
- 2- Ensure that the classrooms are equipped with chairs, lighting, and air conditioning.
- 3- Distribution of halls and controls in the final exam's schedule.
- 4- Follow up the final exams, including:
 - a) Follow-up attendance of exam supervisors and provide alternatives in case of emergency.
 - b) Receiving questions and lists of students from the professors of the course and handing them over to the committees.
 - c) Receiving of exam answer sheets, papers and the signatures lists from the exam committee and delivering to the course instructors.
 - d) Provide a daily report on the progress of the final exams.
 - e) Recognition of denied students and ensuring they have no access to the relevant exam.
 - f) Arranging halls and seating according to the number of students per course.
 - g) Raise student issues (request for alternative exams - cases of cheating ..., etc.) to the relevant committees.
 - h) Preparation of the final exam report.

9. Scientific Research Committee

1. Monitoring of research projects within the department in various fields.
2. Prepare a research plan that considers the research interests and trends of the department faculty members in coordination with the college.
3. Implementation of scientific research programs and policies in the department.
4. Encouraging scientific research that meets the needs of the job market, and opening channels of communication with those wishing to benefit from the services of faculty members.
5. Working to raise the research skills of the department faculty members through specialized courses and lectures.
6. Searching for graduate programs that meet the needs of Vision 2030 of the Kingdom of Saudi Arabia.

7. Implementation of the research partnership between the members of the department and the college, and other faculties inside and outside the university.
8. Prepare and follow up the scholarships file in the department.
9. Follow files of graduate studies programs in the department.
10. Receive projects proposals from faculty members for certification before the beginning of the semester.
11. Create a database containing projects, supervisors, student names, and other necessary information.
12. Establish a clear mechanism for the distribution of students to graduation projects and the implementation of the executive rules for graduation projects certified by the university department of academic affairs.
13. Establish a bank of subjects and topics containing the proposals of the faculty members for graduation projects, with consideration to be applicable and serving the university and society.
14. Receive proposals for research seminars and arrange their schedule each academic year, with approval by the department.

10. Student Affairs Committee

1. Help students solve their academic problems.
2. Referral of the academic problems to the competent authority (such as: reregistration of students who have dropped out of school - separated from academia - problems of denied students – excuses of absent students from the final exams).
3. Develop a proposed plan to serve students who are failing the plan.
4. Follow up on receiving students' complaints and responding to their suggestions.
5. Guide students in some academic issues that are difficult for students to deal with.
6. Follow students' behavior and solve behavioral problems that could be an obstacle to their educational process.
7. Communicate with the guardians of students who commit academic or behavioral violation to inform them with the conditions those students.

11. Community Service Committee

1. Develop a proposal plan for the community service.
2. Document the relationship of the department with the external community and work to identify and meet its needs.

3. Follow up the implementation of programs and writing reports.
4. Evaluate the community service programs and work on developing them.
5. Writing the annual report of the department's activities.
6. Encourage the spirit of initiation among faculty members and similar positions, along with students (males and females) to participate in community service.
7. Dissemination of the achieved community service work through the social media and the websites of the department, college, and university's newspapers.

12. Graduation Project Committee

1. Making awareness and introductory seminars on graduation projects for seventh-level students.
2. Receive the titles of the proposed projects from the faculty in the department and choose the appropriate ones and approve them by the department board, choose discussion committees and put.
3. Supervising project discussions, ensuring that the deliberate standards and models of the department are applied and raising a report to the head of the department. Carry out other tasks assigned to the committee.

13. Equivalence Committee

1. Performing equivalence to the curricula and determining the percentage of equivalence for visiting students and those transferred from other colleges.
2. Studying the application submitted by the student (after completing the specified form supported by the student's academic record) and reviews it in accordance with the university terms and regulations.
3. Submitting a report on the status of the application with a recommendation for approval or rejection supported by justifications and reasons.

14. Students Activities Committee

1. Finding extracurricular activities that help develop the creative skills of students.
2. Discovering the talents and abilities of students.
3. Motivating students to participate in activities and competitions that are at the college and university levels.
4. Follow up and document all national, academic, cultural and social events.
5. Implementing social networking systems by creating groups for faculty members and students.

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