

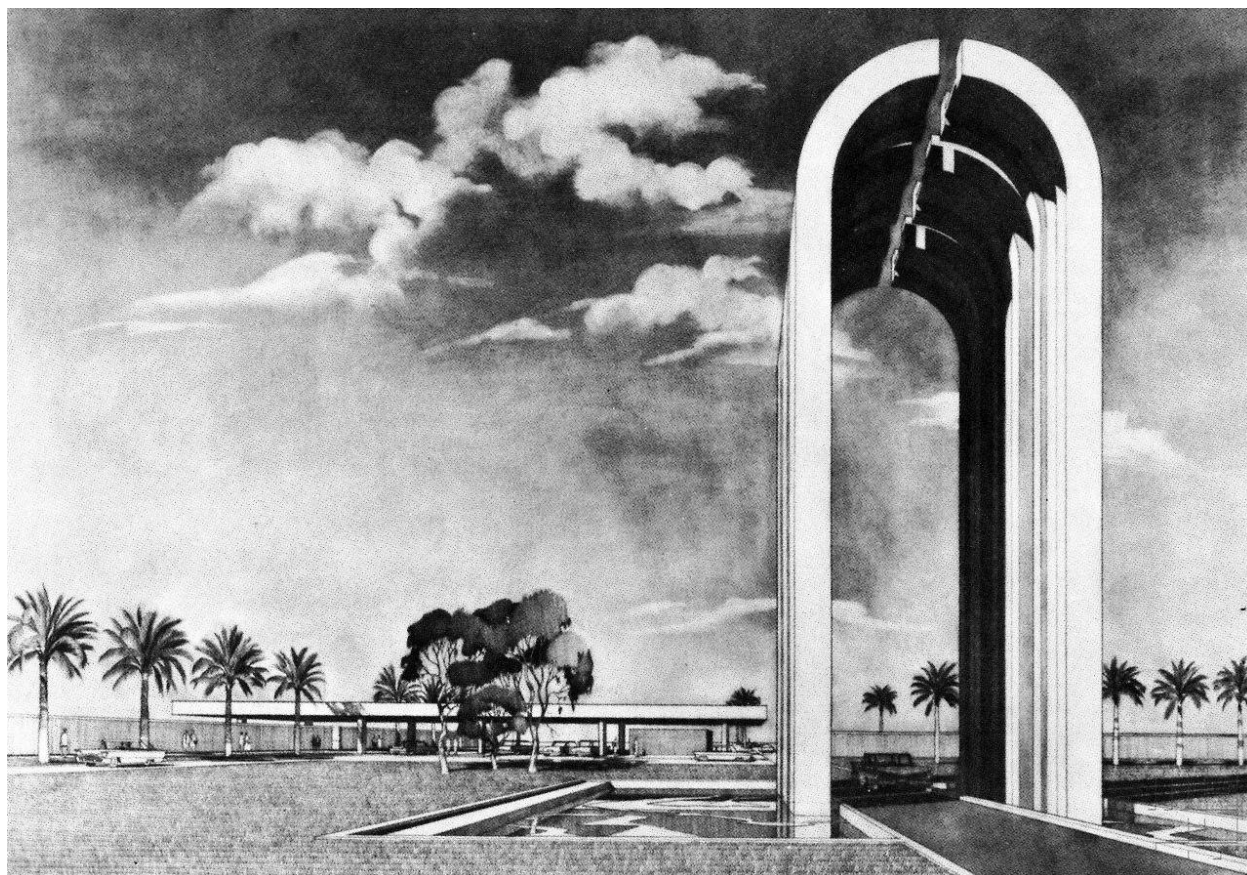
# UNIVERSITY of BAGHDAD



جامعة بغداد

Bachelor of Science Honours (B.Sc. Honours) -  
Biotechnology

بكالوريوس علوم – التقنيات الاحيائية



## Table of Contents

1. Overview
2. Undergraduate Courses/Modules 2023-2024
3. Postgraduate Courses/Modules 2019-2020
4. Contact

## 1. Overview

This catalogue is about the courses (modules) given by the program of Biotechnology to gain the Bachelor of Science degree. The program delivers (48) Modules with (6000) total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

نظرة عامه

يتناول هذا الدليل المواد الدراسية التي يقدمها برنامج التقنيات الاحيائية للحصول على درجة بكالوريوس العلوم. يقدم البرنامج (48) مادة دراسية مع (٦٠٠٠) إجمالي ساعات حمل الطالب و ٢٤٠ إجمالي وحدات أوروبية. يعتمد تقديم المواد الدراسية على عملية بولونيا.

## 2. Undergraduate Courses 2023-2024

1

Code	Course/Module Title	ECTS	Semester
BIOT1101	Principles of Biotechnology	7	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	94	81
Description			
<p>This course includes covering the concepts of the principles of biotechnology 1 and 2 aimed at exploiting industrial and environmental microbiology cells and their components in the production of many biological compounds such as enzymes, proteins, hormones, antibiotics, organic acid,s and the production of bio-fertilizers</p>			

and biofuels within renewable energies and their use in the industrial and environmental fields and work to improve the productivity of these vital compounds by applying all modern techniques in genetic engineering, as well as developing the use of biological systems for biological therapeutics, by grown and then purified from large-scale cell cultures of bacteria or yeast, or plant or animal cells. Such as vaccines, growth factors, immune modulators, monoclonal antibodies, as well as products derived from human blood and plasma.

2

Code	Course/Module Title	ECTS	Semester
BIOT1102	General Biology of Animal	6	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	79	71
Description			
<p>General Biology of Animals is a course that explores the fundamental principles of animal biology. The course covers topics such as animal classification, evolution, anatomy, physiology, behavior, and ecology. Students will learn about the diversity of animal life, including invertebrates and vertebrates, and their adaptations to different environments. Through lectures, laboratory exercises, and field trips, students will gain a comprehensive understanding of the structure and function of animal systems, as well as the relationships between animals and their environment. Additionally, students will examine the ethical and social issues associated with animal biology. This course is designed for students who are interested in pursuing careers in fields such as biology, zoology, veterinary medicine, or wildlife conservation.</p>			

3

Code	Course/Module Title	ECTS	Semester
COS1103	Analytical Chemistry	7	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	94	81
Description			
<p>A-Theory</p> <p>This course will present an overview of analytical chemistry including basic concepts employed in quantitative and qualitative analytical methods. It provides students with a comprehensive introduction to the field. Through understanding the fundamental concepts of chemistry and instruments used in qualitative and quantitative analysis. The course aims to familiarize students with chemistry specifically, exploring its branches, applications, and to familiarize with various instrumental analytical techniques and all steps in chemical analysis.</p> <p>B- Experiments</p> <p>Overall, the course aims to provide students with a solid foundation in Analytical Chemistry, enable them to understand and apply the principles, theories, and calculations necessary for successful analysis and experiments in the field. By the end of the course, students will have a solid understanding of volumetric analysis, titration, and its wide range of applications. They will be able to perform titration experiments, calculate and effectively interpret the results. The course aims to equip students with the necessary knowledge and skills to apply classical quantitative analytical methods in various laboratory settings.</p>			

4

Code	Course/Module Title	ECTS	Semester
COS1104	Biophysics	6	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	79	71
Description			
<p>A branch of science concerned with the nature and properties of matter and energy. The topic of general physics includes an introduction to physics, vector analysis, and Newton laws in motion. Also, gravitational force, work, energy, torque, angular momentum, laws of motion with a constant acceleration, fluids, particle stability, electric charge, electric field in electrical circuits and ray optics. Experimental general physics provides knowledge of some physical ideas and laws with their experimental applications such as gravity, flywheel moment of inertia, surface tension of water, viscosity, refractive index of glass and the speed of sound. In addition to determining the wavelength of light emitted from a laser diode using a diffraction grating and finding the focal length of the lens.</p>			

5

Code	Course/Module Title	ECTS	Semester
UOB1105	Human rights and democracy	2	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	0	33	17
Description			
<p>Human Rights and Democracy is a course that explores the fundamental concepts and principles of human rights, democracy, and governance. The course covers topics such as the history and evolution of human rights, the role of international law and institutions in protecting human rights, the relationship between democracy and human rights, and the challenges faced by democratic societies in promoting and protecting human rights. Students will also examine case studies of human rights violations and the responses of governments, civil society, and international organizations to these violations. Through readings, discussions, and written assignments, students will develop critical thinking skills and an understanding of the complex issues surrounding human rights and democracy. The course is designed for students who are interested in pursuing careers in fields such as law, international relations, human rights advocacy, or public policy..</p>			

6

Code	Course/Module Title	ECTS	Semester
UOB1106	Academic English	2	1
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2		33	17
Description			
<p>New Headway Beginner Plus is a Beginner course in English intended to provide students with the fundamentals of the language and a foundation at First Year students / college of science, moving towards a higher level of proficiency at this stage.</p>			

7

Code	Course/Module Title	ECTS	Semester
BIOT1217	Principle of Biotechnology 2	7	2
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	4	94	81
Description			
<p>This course includes covering the concepts of the principles of biotechnology 1 and 2 aimed at exploiting industrial and environmental microbiology cells and their components in the production of many biological compounds such as enzymes, proteins, hormones, antibiotics, organic acids and production of bio-fertilizers and biofuels within renewable energies and their use in the industrial and environmental fields and work to improve the productivity of these vital compounds by applying all modern techniques in genetic engineering, as well as developing the use of biological systems for biological therapeutics, by grown and then purified from large-scale cell cultures of bacteria or yeast, or plant or animal cells. Such as vaccines, growth factors, immune modulators, monoclonal antibodies, as well as products derived from human blood and plasma.</p>			

8

Code	Course/Module Title	ECTS	Semester
BIOT1208	General Biology of Plant	6	2
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	4	94	56
Description			
<p>General Biology of Plant is a course that provides an introduction to the structure, function, and diversity of plants. The course covers topics such as plant anatomy, physiology, reproduction, genetics, evolution, and ecology. Students will also learn about the interactions between plants and their environment, including the roles of photosynthesis, respiration, and physiology in plant growth and development. Through laboratory exercises, students will gain hands-on experience in plant identification, microscopy, and experimentation. The course is designed for students who are interested in pursuing careers in fields such as botany, agriculture, environmental science, or plant biotechnology.</p>			



9.

Code	Course/Module Title	ECTS	Semester
COS1209	Organic Chemistry	7	2
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	4	94	81
Description			
<p>Organic Chemistry is a course that explores the structure, properties, and reactions of organic compounds. The course covers topics such as nomenclature, stereochemistry, functional groups, reaction mechanisms, and spectroscopy. Students will also learn about the synthesis and characterization of organic compounds, including the use of laboratory techniques such as chromatography and spectroscopy. Through problem sets and laboratory experiments, students will develop their skills in critical thinking, problem-solving, and experimental design. The course is designed for students who are interested in pursuing careers in fields such as medicine, pharmacy, chemical engineering, or materials science.</p>			

10.

Code	Course/Module Title	ECTS	Semester
COS1210	Biostatistics	5	2
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
4	0	78	47
Description			
<p>Mathematical Statistics is a course that introduces students to the mathematical foundations of statistical theory and methods. The course covers topics such as probability theory, random variables, probability distributions, estimation, hypothesis testing, and regression analysis. Students will also learn about statistical inference, including the construction of confidence intervals and hypothesis tests. Through problem sets and data analysis projects, students will develop their skills in mathematical reasoning, statistical modeling, and data analysis. The course is designed for students who are interested in pursuing careers in fields such as statistics, data science, economics, or social sciences.</p>			

11.

Code	Course/Module Title	ECTS	Semester
UOB12011	Academic Arabic	2	2
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2		33	17
Description			
<p>The Arabic language is an identity for its speakers, and a link that unites and distinguishes them from all the peoples of the world. Therefore, this approach seeks to serve this language, take care of it, and spread its rules, so that it remains alive in what tongues speak and what pens write, and to remain a vessel for thought and knowledge that is preserved and cared for throughout the ages. .</p> <p>This course includes coverage of the concepts of (Arabic language), namely: grammar, morphology, spelling, expression, philology, and literature... according to the learning outcomes required to be achieved for the student..</p>			

12.

Code	Course/Module Title	ECTS	Semester
UOB12012	Computer skill 1	3	2
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
	4	62	13
Description			
<p>This course presents an overview of fundamental computer science topics and an introduction to Windows operating systems. Overview topics include an introduction to computer hardware, operating systems, computer security, Internet, and e-mail. This course also covers the essential concepts and skills relating to the use of devices, file creation and management. It help students to demonstrate the ability to use a Microsoft word processing application to accomplish small tasks associated with creating, formatting, and finishing small-sized word-processing documents, such as letters and other everyday documents. It also helps students to demonstrate the ability to use a Microsoft PowerPoint application to accomplish tasks associated with creating, and formatting a presentation, and demonstrate the ability to use a Microsoft Excel application to accomplish a spreadsheet for tasks.</p>			



13.

Code	Course/Module Title	ECTS	Semester
BIOT23013	Biochemistry 1	6	3
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	3	79	71
Description			
<p>This course provides an overview of basic biochemistry principles including an emphasis on clinical correlations and includes the following topics; Structure and function of proteins and biological membranes focusing on enzymes and integration of metabolism with a focus on fuel, glucose and fatty acid metabolism, and hormonal regulation of energy metabolism. This course will also focus on laboratory methods and simple analyses and statistical procedures for data analysis. Students will apply concepts and methods in laboratory exercises..</p>			

14.

Code	Course/Module Title	ECTS	Semester
BIOT23014	Microbiology 1	6	3
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	3	79	71
Description			
<p>This course will present an overview of Microbiology 1 which involves the study of microorganisms with particular emphasis on the biology of bacteria and fungi. The main focus of our course is the pathogenic potential of the bacteria and fungi that cause disease in man and also cover aspects of the their structural components, morphology, physiology and metabolism of the bacteria, pathogenesis and their virulence factors, nutrition and growth, genetics of microorganisms. In addition to sterilization and disinfection. This course will focus also on a laboratory diagnostic methods and simple procedures for detect of microorganisms. Students will apply the concepts and diagnostic methods in microbiological lab.</p>			

15.

Code	Course/Module Title	ECTS	Semester
BIOT23015	Histology and Microtechniques	5	3
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	3	79	46
Description			
<p>This course will recognize the structure and function of tissues of the four basic types of the human body at a microscopic level, the course topics will emphasize the normal anatomy and function of tissues and organs. Also this course includes an introduction to the microscopy and slides preparation by sectional (paraffin) and non sectional methods</p>			

16.

Code	Course/Module Title	ECTS	Semester
BIOT23016	Environmental Microbiology	5	3
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	3	79	46
Description			
<p>This course deals with the study of microorganisms in different environments such as soil, water and air, understand the role of microorganisms in metabolism and recycling of carbon, nitrogen, sulphur and phosphorous compounds and role of microorganism as pathogen transmission and as microbial indicators for water and food pollution</p>			

17.

Code	Course/Module Title	ECTS	Semester
BIOT23017	Biological control	5	3
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	3	79	46
Description			
<p>Biological control is a field of study in which living organisms, such as insects, fungi, and bacteria, are used to control or suppress pests and invasive species. This course covers the principles and practices of biological control, including the ecological and evolutionary factors that affect the interactions between organisms. Topics covered in this course may include the identification and selection of beneficial organisms, the biology and behavior of pests and their natural enemies, the design and implementation of biological control programs, and the evaluation of the effectiveness of biological.</p>			

18.

Code	Course/Module Title	ECTS	Semester
UOB23018	Computer skills 2	3	3
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
	4	62	13
Description			
<p>This course presents an overview of fundamental computer science topics and an introduction to Windows operating systems. Overview topics include an introduction to computer hardware, operating systems, computer security, Internet, and e-mail. This course also covers the essential concepts and skills relating to the use of devices, file creation and management. It help students to demonstrate the ability to use a Microsoft word processing application to accomplish small tasks associated with creating, formatting, and finishing small-sized word-processing documents, such as letters and other everyday documents. It also helps students to demonstrate the ability to use a Microsoft PowerPoint application to accomplish tasks associated with creating, and formatting a presentation, and demonstrate the ability to use a Microsoft Excel application to accomplish a spreadsheet for tasks.</p>			

19.

Code	Course/Module Title	ECTS	Semester
BIOT24119	Biochemistry 2	6	4
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	3	79	71
Description			
<p>This course provides an overview of basic biochemistry principles including an emphasis on clinical correlations and includes the following topics; Structure and function of proteins and biological membranes focusing on enzymes and integration of metabolism with a focus on fuel, glucose and fatty acid metabolism, and hormonal regulation of energy metabolism. This course will also focus on laboratory methods and simple analyses and statistical procedures for data analysis. Students will apply concepts and methods in laboratory exercises.</p>			

20

Code	Course/Module Title	ECTS	Semester
BIOT24120	Microbiology 2	7	4
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	5	109	66
Description			
<p>This course will present an overview of Microbiology 2 which involves the study of microorganisms with particular emphasis on immunology, the biology of parasite and antibiotics. The main focus of our course is the host defence and immune system components and their functions, pathogenic potential of the parasitic protozoan that cause disease in man and antibiotics with their origin, classes and their classification and different types of it. This course will focus also on a laboratory diagnostic methods and simple procedures for detect of microorganisms. Students will apply the concepts and diagnostic methods in microbiological lab.</p>			

21.

Code	Course/Module Title	ECTS	Semester
BIOT24021	Animal physiology	5	4
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	3	79	46
Description			
<p>Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat. Duis autem vel eum iriure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis at vero eros et accumsan.</p>			

22

Code	Course/Module Title	ECTS	Semester
BIOT24022	Phycology	5	4
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	3	79	46
Description			
<p>This course will present an overview of Phycology including basic concepts in classification systems and general characteristics of each division and classes o of Algae. Students will be able to collect and isolate Algae from different sources (soil and water). Then they will identify the isolates according to the theoretical and practical skills and techniques that he studied in the course.</p>			

23.

Code	Course/Module Title	ECTS	Semester
BIOT24023	Nanobiotechnology	5	4
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	3	79	46
Description			
<p>Nano biotechnology is deals with nanomaterial of synthesis nanoparticles by using different methods such as biological and chemical methods as well as studying characterizations of nano materials using different techniques ex., SEM, TEM, AFM etc. For different applications such antibacterial, anti cancer and develop sensors.</p>			

24.

Code	Course/Module Title	ECTS	Semester
UOB24024	Academic English	2	4
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2		33	17
Description			
<p>a pre-intermediate level course builds and further improves language proficiency for second year students/ college of science, the course aims at helping learners to achieve an overall English language proficiency leading to pre-intermediate Independent User of Reference for Languages, developing conversational skills, expressing ideas, and helping learners deal with problems and situations where they meet unpredictable language. The module caters to Second Year students in college, particularly those studying in the field of science</p>			



25.

Code	Course/Module Title	ECTS	Semester
BIOT35025	Molecular biology	5	5
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	3	79	46
Description			
<p>this course include covering the concepts of molecular biology ,a field of science concerned with studying the chemical structures and processes of biological phenomena that involve the basic units of life, molecules .The field of molecular biology is focused especially on nucleic acids (e.g., DNA and RNA) and proteins—macromolecules that are essential to life processes— and how these molecules interact and behave within the cells to promote proper growth, division, an development and learning how these interactions are regulated.. It is a large and ever-changing Discipline.</p>			

26.

Code	Course/Module Title	ECTS	Semester
BIOT35026	Plant biotechnology	5	5
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	3	79	46
Description			
<p>In this course, we will discuss the importance of the primary and secondary components of plants, (which are also called secondary metabolite compounds), and how to separate, extract and purify them. In addition of select which are the most important methods used to extract and separate each substance in a precise manner to obtain the best quality of that substance. As well as knowing the properties of each substance in terms of chemical, physical and pharmaceutical aspects and its medical, economic, industrial and other benefits.</p>			

27.

Code	Course/Module Title	ECTS	Semester
BIOT35027	Gene - chemobiotechnology	5	5
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	3	79	46
Description			
<p>This course will present an overview of modern techniques in experimental Biochemical and Gene Techniques. Experiments may include enzymology, protein purification, and gene expression and organization. Methods include spectrophotometry, polymerase chain reaction, DNA purification, DNA transformation by electroporation technique, protein detection by Ion-exchange chromatograph, estimation of protein molecular weight by gel filtration chromatography, DNA &amp; RNA hybridization, comet assay, oligo(dT) affinity chromatography, microarray technique, , and computer analysis of DNA and protein sequence data.</p>			

28.

Code	Course/Module Title	ECTS	Semester
BIOT35028	Pathogenic bacteria	5	5
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	3	79	46
Description			
<p>The course on Pathogenic Bacteria provides an in-depth understanding of the biology, epidemiology, and mechanisms of pathogenesis of various bacteria that cause human diseases. The course aims to explore the diverse range of bacterial pathogens, their interactions with the host, and the resulting disease processes. Students will gain comprehensive knowledge about the identification, virulence factors, diagnosis, and prevention strategies associated with pathogenic bacteria</p>			

29.

Code	Course/Module Title	ECTS	Semester
BIOT35029	Fermentation technology	5	5
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	3	79	46
Description			
<p>This course deals with the cultivation of microorganism for industrial applications, media formulation for industrial fermentation, study different culture systems, basic concepts of bioreactors or fermenters (design, construction, control and monitoring) and down stream processing</p>			

30.

Code	Course/Module Title	ECTS	Semester
BIOT35030	Mycology	5	5
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	3	79	46
Description			
<p>This course will present an overview of Mycology including basic concepts in classification systems and general characteristics of each division and classes of fungi. Students will be able to collect and isolate fungi from different sources (soil, water, food and patients). Then they will identify the isolates according to the theoretical and practical skills and techniques that he studied in the course.</p>			

31.

Code	Course/Module Title	ECTS	Semester
BIOT36031	Microbial Genetics	7	6
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	5	109	66
Description			
<p>this course include covering the concepts of microbial genetics which is a branch of genetics concerned with the transmission of heredity characters in microorganisms include prokaryotes focused almost entirely on their genes and essential tools for probing the nature of genes in microorganisms, and study the mechanisms of heritable information in microorganisms , the study of genetic systems for bacteria and viruses which possess a number of characteristics that make them suitable for genetic studies.</p>			

32.

Code	Course/Module Title	ECTS	Semester
BIOT36032	Food biotechnology	6	6
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	4	94	56
Description			
<p>Food Biotechnology is a course that explores the application of biotechnology in the food industry. The course covers the principles of food production and processing. Students will learn about the use of microorganisms, enzymes, and other biotechnological tools to improve the quality, safety, and nutritional value of food products. Additionally, students will examine the role of food biotechnology in addressing global food security challenges, sustainable agriculture, and food waste reduction. Through lectures, laboratory exercises, and case studies, students will gain a comprehensive understanding of the practical applications of food biotechnology.</p>			

33.

Code	Course/Module Title	ECTS	Semester
BIOT36033	Immunology	7	6
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	5	109	66
Description			
<p>This course will present an overview of Immunology including basic immunology concepts employed in other immunology subjects such as Immunogenetics, Immune diseases, and Immune research methods. This course will also focus on laboratory-based methods and simple statistical procedures for data analysis. Students will apply the concepts and methods in laboratory exercises, and how they deal with clinical samples.</p>			

34.

Code	Course/Module Title	ECTS	Semester
BIOT36034	Environmental Biotechnology	7	6
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	4	94	81
Description			
<p>This course will present an overview the exploitation of microorganisms for production of different biomolecules, organic acids, development of different biological system for waste treatment resulted from municipals and industries, recycling of wastes and production of biofuels and biofertilizers, monitoring the fate of pollutants in the Environment and biological control of pathogens and pest using microorganisms and microbial products</p>			

35.

Code	Course/Module Title	ECTS	Semester
BIOT36035	Academic English	2	6
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2		33	17
Description			
<p>This course develops further knowledge of the grammar and of essential vocabulary in order to lead the students to an advanced level of proficiency. Emphasis is placed on developing listening, speaking, reading and writing skills through an integrated approach. It focuses on grammar and fundamental writing skills. New Headway Plus, Special Edition, Intermediate Level is a writing course in which students read different essays and discuss ways to formulate their scientific writing. Peer revision, collaboration with class members, in-class writing activities, reading, extensive revision of essays, class discussion, and error pattern identification comprise the core requirements</p>			

36.

Code	Course/Module Title	ECTS	Semester
UOB36036	Research Methodology	1	6
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
1		18	7
Description			
<p>This course will present an overview of research methodology including basic concepts employed in quantitative and qualitative research methods. Research techniques and methods will be examined for the formulation of hypotheses, development of testable objectives, experimental design, subject selection, data collection, data analysis and interpretation, and report preparation. This course will focus also on laboratory-based methods and simple statistical procedures for the analysis of data. Students will apply the concepts and methods in laboratory exercises.</p>			



37.

Code	Course/Module Title	ECTS	Semester
BIOT47037	Principles of genetic engineering	6	7
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	4	94	56
Description			
<p>Principles of Genetic Engineering is a field of Biology that deals with the manipulation of DNA and genes of an organism through gene cloning in order to alter or modify a certain characteristic of an organism. An organism's genes are manipulated through artificial synthesis or entering a new DNA strand to the already existing genes of an organism in order to change a specific function or characteristic of that organism. These genetically modified organisms are then used for various purposes, for example, a plant can be genetically modified in order to produce fruits that have a longer shelf life. Genetic Engineering has done some groundbreaking research in the field of Agriculture and was one of the key factors in the green revolution.</p>			

38.

Code	Course/Module Title	ECTS	Semester
BIOT47038	Plant tissue culture	7	7
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	5	109	66
Description			
<p>In this course, the types of plant tissue culture will be discussed, and study what are the optimal conditions for the completion of these farms, as well as how to grow each plant part in a way that enables it to produce the best products, and how to avoid the obstacles and contamination that face the transplant process. Also, in this course, the advantage and disadvantage of plant tissue culture are discussed. In addition of learn about nanotechnology and its importance in tissue culture and the modern methods which used in this field. What are the benefits of tissue culture for plants?</p>			

39.

Code	Course/Module Title	ECTS	Semester
BIOT47039	Cytogenetic	7	7
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	5	109	66
Description			
<p>Cytogenetic is the study of human chromosomes number and structure, understanding how genetics play a role in the development and progression of certain diseases, Chromosomal Abnormalities included a neuploidies in autosomal and sexsomal chromosome, Chromosome Abnormalities structure and their related to several syndromes and Cancer Cytogenetics. This technique is accomplished by preparation of chromosomes, Visualization of chromosomes and staining then examination by microscope that are applied by blood sample and bone marrow cells furthermore fetal cells.</p>			

40.

Code	Course/Module Title	ECTS	Semester
BIOT47040	Elective	5	7
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	3	79	46
Description			
<p>The main focus of immunogenetics is to use the knowledge of immunology, molecular biology, and genetics to study the genetic factors affecting immunity, inheritance of tissue antigens, and tissue compatibility. Reviews the genetic mechanisms responsible for the generation of diversity in the genes thereby leading to immune diseases.</p>			

41.

Code	Course/Module Title	ECTS	Semester
BIOT47041	Academic English	2	7
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2		33	17
Description			
<p>This course aims to build and further improve language proficiency. At the end of English XI, I should be competent enough to: understand the general and specific points of clear standard input on general situations. deal with situations probable to happen in an area where English is spoken. produce connected text (written and oral) on topics which are familiar and of general interest.</p>			

42.

Code	Course/Module Title	ECTS	Semester
BIOT47042	Research project	3	7
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
	3	47	28
Description			
<p>research project is an independent study course that provides students with an opportunity to design, conduct, and report on original research in their field of study. The research project may involve laboratory experiments, field observations, data analysis, or a combination of these methods, depending on the research question and the discipline being studied.</p>			

43.

Code	Course/Module Title	ECTS	Semester
BIOT48143	Applications of genetic engineering	5	8
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	3	79	46
Description			
<p>In this course, students will explore the molecular methods and applications of recombinant DNA technology and the issues regarding their use through case studies on the effect of genetic engineering on medicine, agriculture, biology, forensics and other areas of technology. The course has 3 major components: 1) techniques used in the generation of recombinant molecules, 2) application of recombinant technology to diagnostics and therapeutics and 3) genetically modified organisms. The discussion of potential ethic concerns of genome manipulations will also be included in the course.</p>			

44.

Code	Course/Module Title	ECTS	Semester
BIOT48044	Animal tissue culture	6	8
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	4	94	56
Description			
<p>Animal cell culture has been one of the most important tools for designing cell culture from tumor cell or normal fibroblast cells and maintaining the cells for biomedical and clinical research and have many application to teach students which including It provides insights into the application of tissue culture on animal cells and particularly human cells for Toxicity Testing, Cell-based Manufacturing for clinical products , and supplied stem cells for research and therapy , specialized for drug development and cancer research.</p>			

45.

Code	Course/Module Title	ECTS	Semester
BIOT48045	Industrial biotechnology	6	8
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	4	94	56
Description			
This course deals with the isolation of important microorganisms for industrial applications, study basic concepts in bioprocess technology, improvement of industrial strains, production of different microbial products for industrial applications.			

46.

Code	Course/Module Title	ECTS	Semester
BIOT48046	Elective	5	8
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	3	79	46
Description			
Genetic Disease and molecular immunology is a course that covers the study of how genes work and transmit information from parents to offspring study of genetic variation and genetic mutation, study of differentiation strategies and information input required to identify genes in complex disease			

47.

Code	Course/Module Title	ECTS	Semester
BIOT48047	Elective	5	8
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
2	3	79	46
Description			
<p>Applications of animal tissue culture is a course that covers the principles and techniques of application of animal cell culture. The course provides an overview of the applications of animal tissue culture in various fields including biotechnology, medicine, pharmacology, and agriculture. The course also covers the use of animal tissue culture in the production of biologics, vaccines, and other therapeutic agents. Through lectures, laboratory exercises, and case studies, students will gain a comprehensive understanding of the practical applications of animal tissue culture.</p>			

48.

Code	Course/Module Title	ECTS	Semester
BIOT48048	Research project	3	8
Lectures (hr/w)	Lab./Prac./Tutor.	SSWL (hr/sem)	USSWL (hr/w)
	3	47	28
Description			
<p>research project is an independent study course that provides students with an opportunity to design, conduct, and report on original research in their field of study. The research project may involve laboratory experiments, field observations, data analysis, or a combination of these methods, depending on the research question and the discipline being studied.</p>			



