Diyala University
جامعة ديالى

First Cycle – Bachelor's Degree (B.Sc.) – Biology
بكالوريوس – علوم الحياة

المستوى الثالث
Level Three

August, 2025

Table of Contents

1. Overview

This catalogue is about the courses (modules) given by the program of Biology to gain the Bachelor of Science degree. The program delivers (14) Modules with total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

نظره عامة

يتناول هذا الدليل المواد الدراسية التي يقدمها برنامج علوم الحياة للحصول على درجة بكالوريوس في العلوم ويقدم البرنامج (14) مادة دراسية مع إجمالي ساعات حمل الطالب و 240 إجمالي وحدات أوروبية. يعتمد تقديم المواد الدراسية على عملية بولونيا.

2. Undergraduate Courses 2024-2025

Module 1

Code	Course/Module Title	ECTS	Semester
Bio-3511	Cell Biology	5	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Cell biology, also known as cytology, is the study of cells as the fundamental units of life. It focuses on cell structure, function, growth, division, communication, and interactions with the environment. This field provides essential knowledge for understanding health, disease, and biological processes at the molecular and cellular levels.			

Module 2

Code	Course/Module Title	ECTS	Semester
Bio-3512	Ecology	4	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	37
Description			
Ecology is the branch of biology that studies the interactions between organisms and their environment, including both living (biotic) and non-living (abiotic) components. It examines how these interactions shape the distribution, abundance, and diversity of life on Earth. Ecology provides essential insights into ecosystem functioning, environmental balance, and the impact of human activities on nature.			

Module 3

Code	Course/Module Title	ECTS	Semester
Bio-3513	Histology	4	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	37
Description			
Histology is the science concerned with the study of the microscopic anatomy of cells and tissues in plants and animals. The course introduces students to tissue preparation techniques, staining methods, and the use of the light and electron microscope for structural examination. It covers the four basic tissue types epithelial, connective, muscular, and nervous tissues as well as the histological organization of major organs and systems. Emphasis is placed on the correlation between microscopic structure and physiological function, as well as recognition of pathological alterations. Histology provides a critical foundation for advanced studies in anatomy, physiology, pathology, and clinical medicine.			

Module 4

Code	Course/Module Title	ECTS	Semester
Bio-3514	Mycology	5	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Mycology is the scientific study of fungi, focusing on their diversity, structure, reproduction, physiology, and ecological roles. The course introduces students to fungal classification, morphology, growth, and metabolism, as well as their role as decomposers, symbionts, and pathogens. It also explores the medical, agricultural, and industrial importance of fungi, including their use in antibiotics, fermentation, biotechnology, and food production. Special attention is given to pathogenic fungi that cause diseases in humans, animals, and plants, along with methods of diagnosis, prevention, and control. Understanding mycology provides a foundation for advances in microbiology, medicine, agriculture, and environmental science.			

Module 5

Code	Course/Module Title	ECTS	Semester
Bio-3515	Plant Physiology	4	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	37
Description			
Plant Physiology is the branch of biology that studies the vital functions and processes of plants, including photosynthesis, respiration, water relations, mineral nutrition, growth, and development. It explains how plants interact with their environment and adapt to various internal and external factors.			

Module 6

Code	Course/Module Title	ECTS	Semester
Bio-3516	Immunology	4	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	37
Description			
Immunology is the scientific study of the immune system and its role in protecting the body from infections, toxins, and abnormal cells. The course covers the cells, tissues, and organs of the immune system, the molecular and cellular mechanisms of innate and adaptive immunity, and the regulation of immune responses. It also examines immunological memory, vaccination, hypersensitivity reactions, autoimmunity, immunodeficiency diseases, and transplantation immunology. Special emphasis is placed on the clinical applications of immunology in diagnosis, treatment, and prevention of diseases. Immunology serves as a foundation for medical sciences, microbiology, biotechnology, and therapeutic development.			

Module 7

Code	Course/Module Title	ECTS	Semester
Bio-3517	Parasitology	4	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	37
Description			
Parasitology is the scientific study of parasites and their relationships with host organisms. The course explores the morphology, physiology, life cycles, and epidemiology of protozoan, helminthic, and arthropod parasites that affect humans, animals, and plants. Emphasis is placed on host–parasite interactions, mechanisms of pathogenicity, immune responses to parasitic infections, and transmission dynamics. The course also addresses diagnostic techniques, treatment strategies, and preventive measures for parasitic diseases of medical and veterinary significance. Understanding parasitology provides essential knowledge for public health, epidemiology, medicine, veterinary science, and agriculture.			

Module 8

Code	Course/Module Title	ECTS	Semester
Bio-3611	Genetics	5	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Genetics is the branch of biology that studies genes, heredity, and variation in living organisms. It focuses on how traits are inherited, the structure and function of DNA and RNA, and the molecular mechanisms that control gene expression and genetic diversity.			

Module 9

Code	Course/Module Title	ECTS	Semester
Bio-3612	Environmental Pollution	5	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Environmental Pollution is the scientific study of contaminants in air, water, soil, and ecosystems, and their effects on living organisms and the environment. The course examines the sources, types, chemical and physical properties, transport, and fate of pollutants. It also addresses environmental monitoring techniques, risk assessment, and strategies for pollution control and management. Special attention is given to human-induced pollution, industrial discharges, agricultural runoff, solid waste, and emerging contaminants. Understanding environmental pollution is essential for sustainable development, public health, conservation, and policy-making aimed at minimizing ecological damage.			

Module 10

Code	Course/Module Title	ECTS	Semester
Bio-3613	Animal Physiology	4	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
1		63	37
Description			
Animal Physiology is the branch of biology that examines the functional processes of animals at the molecular, cellular, tissue, organ, and system levels. The course covers major physiological systems such as nervous, muscular, circulatory, respiratory, excretory, endocrine, and reproductive systems. It explores mechanisms of homeostasis, metabolism, thermoregulation, neurophysiology, hormonal regulation, and physiological adaptations to environmental challenges. Emphasis is placed on experimental approaches to studying physiological processes and understanding the integration of systems for overall animal health and function. Animal physiology provides foundational knowledge for medicine, veterinary science, zoology, and related biological sciences.			

Module 11

Code	Course/Module Title	ECTS	Semester
Bio-3614	Biotoxicology	4	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	37
Description			
Biotoxicology is the branch of science that studies the effects of biological toxins on living organisms. It focuses on the nature, mechanisms, and impacts of toxic substances produced by plants, animals, microbes, and other biological sources, as well as methods for detection, treatment, and prevention.			

Module 12

Code	Course/Module Title	ECTS	Semester
Bio-3615	Microbiology(Aquatic and Soil)	4	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	37
Description			
Microbiology (Aquatic and Soil) is the study of microorganisms in water and soil environments, including their diversity, structure, function, and ecological roles. It focuses on microbial interactions with the environment, nutrient cycling, and their impact on ecosystem health and productivity.			

Module 13

Code	Course/Module Title	ECTS	Semester
Bio-3616	Microbial Physiology	4	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	37
Description			
Microbial Physiology is the branch of microbiology that investigates the biochemical and physical processes of microorganisms. The course covers microbial growth, reproduction, metabolism, enzyme activity, and energy transformations, including aerobic and anaerobic respiration, fermentation, and photosynthesis in microorganisms. It also examines microbial responses and adaptations to environmental stresses, regulation of metabolic pathways, and interactions with other organisms. Understanding microbial physiology provides a foundation for applied fields such as industrial microbiology, biotechnology, medicine, and environmental microbiology.			

Module 14

Code	Course/Module Title	ECTS	Semester
Bio-3617	Biological Control	4	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	37
Description			
Biological Control is the science and practice of managing pest populations through the use of natural enemies, including predators, parasitoids, pathogens, and competitors. The course explores the principles of ecological interactions, host parasite relationships, population dynamics, and strategies for the introduction, augmentation, or conservation of biological control agents. Emphasis is placed on integrated pest management (IPM), assessment of environmental risks, and the application of biological control in agriculture, forestry, and public health. Understanding biological control is essential for sustainable pest management, reducing chemical inputs, and maintaining ecosystem health.			

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