

## COURSES IN FOREIGN LANGUAGES for ERASMUS INCOMING STUDENTS

Sofia University 2020/2021 academic year

### Faculty of Biology

Faculty coordinator: Assoc. Prof. Dr. Trayana Nedeva, nedeva@biofac.uni-sofia.bg

Programme: B.Sc. in Biology BLB010116

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E044	Basic Entomology	English	BS	Summer	3	30		15	Assoc. Prof. Albena Gjonova, PhD	gjonova@uni-sofia.bg

**Short description of the course (in the language of instruction):** The course provides a general introduction to insect biology and systematics. The topics covered include insect structure, development, life histories and classification. The practical classes give students knowledge of the morphology, anatomy, immature stages and major orders of insects. The students become familiar with basic external and internal structures and their functions, different types of insect development and basic insect ecology. They learn how to prepare insect collection and distinguish the orders of insects and some common species.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C093	Systematics of algae and fungi	English	BS	Winter	6	45		45	Prof. Maya P. Stoyneva, PhD, DrSc,	mstoyneva@uni-sofia.bg

**Short description of the course (in the language of instruction):** This **compulsory course** is oriented towards students in Biology and Ecology (regular education). It provides data on the structure, reproduction, distribution and classification of algae and fungi (incl. lichenized fungi) as significant components of ecosystems and their position in the systems of organisms. The course is of theoretical-applied character and provides basic knowledge on the cytology, morphology, physiological, biochemical and genetic peculiarities, reproduction and life cycles, bases of ecology and distribution, evolution and phylogeny of the main taxonomic groups of algae and fungi and their role in Nature.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL F045	Lichenology	English	BS	Winter	5	45		30	Prof. Maya P. Stoyneva, PhD, DrSc	mstoyneva@uni-sofia.bg

**Short description of the course (in the language of instruction):** This is a **facultative course for students** in regular education. It is with a theoretical-applied character. It shows the peculiar position of lichens in the organism world, the partner relations in this complex organism and possibilities for biosynthesis of lichen organisms. Data on the main anatomical and morphological organization of the lichen thalli, on the main types of reproduction and distribution, lichen classification and evolution are provided. When discussing the ecology and geographic distribution, their role as components of the ecosystem biodiversity is taken into account. Special attention is paid to the practical application of lichens, especially for bioindication, biomonitoring and lichenometry and to their use in perfumery and pharmaceutical industry. The main methods used in lichen taxonomy and in ecological-lichenological investigations, are explained.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E186	Mycology	English	BS	Summer	3	30		15	Assoc. Prof. Blagoy Uzunov, PhD	buzunov@uni-sofia.bg

**Short description of the course (in the language of instruction):** This is a **chosen course for students** in regular education. The students will learn the most important representatives of the wild-growing fungi in Bulgaria, their edible, poisonous and threatened species and with measures for conservation of fungal resources.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C226	Ecology and Environmental Protection	English	BS	Winter	6	45		30	Assoc. Prof. Anelia Kenarova	kenarova@biofac.uni-sofia.bg
				Summer	4	30		30	Assoc. Prof. Ivan Traykov	itraykov@biofac.uni-sofia.bg

**Short description of the course (done in the language of instruction):** The course offers rather theoretical and practical knowledge than on fundamental biological disciplines, as well as on a number of physico-mathematical, economic and geographic disciplines. This provides a good foundation for their success in the field of ecology and environmental protection. They trainees are prepared to carry out activities related to the different theoretical and applied aspects of ecology as restore ecosystem balance, biocenoses and populations, conservation of protected plant and animal species, biological monitoring and management of natural resources, pest control, water management and waste, introduction and acclimatization of economically valuable plant and animal species, management of biological macrosystems and others.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		

<b>BL E397</b>	<b>Aquaculture</b>	<b>English</b>	<b>BS</b>	<b>Winter</b>	<b>3</b>	<b>30</b>		<b>15</b>	<b>Assoc. Prof. Dr. Eliza Uzunova</b>	<b>euzunova@un i-sofia.bg</b>
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**Short description of the course (in the language of instruction):** The course introduces the basic concepts and principles underlying the processes of cultivation of marine and freshwater organisms. It tracks the historical development of aquaculture - from its origins in ancient China to the present day. Students are acquainted with up-to-date statistics on world trends in aquaculture development, focusing on the main species in this sector - salmonid and cyprinid fishes. The course gives also a brief overview of the main groups of organisms that are cultivated in aquatic ecosystems - fish, algae, molluscs and crustaceans. The potential impacts of aquaculture on the environment are addressed in the light of global warming and water scarcity. Students will have the opportunity to get acquainted with the work in a re-circulating aquaculture system (RAS) and small pond farm as well.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
<b>BL C257</b>	<b>Fundamentals of biodiversity – part Microbial biodiversity</b>	<b>English</b>	<b>BS</b>	<b>Winter</b>	<b>5</b>	<b>30</b>		<b>15</b>	<b>Assoc. Prof. Yovana Todorova, PhD</b>	<b>yovanatodorova@biofac.uni -sofia.bg</b>

**Short description of the course (done in the language of instruction):** The main objective of the course is to introduce the key issues of structural and metabolic biodiversity of microorganisms with emphasis of relationships of biodiversity with opportunities for assessment, rehabilitation, bioremediation and conservation of natural resources and processes.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		

<b>BL E326</b>	<b>Water treatment bio-control and management</b>	<b>English</b>	<b>BS</b>	<b>Summer</b>	<b>3</b>	<b>30</b>		<b>15</b>	<b>Prof. Yana Topalova, PhD, DSc</b>	<b>ytopalova@uni-sofia.bg</b>
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**Short description of the course (done in the language of instruction):** The course is aimed to introduce the basic biological, microbiological, hydrochemical methods and approaches for control and management of water treatment processes and technologies, natural water resources, self-purification processes. The specific target of course is verification and introduction of CCP (Critical Control Point) approach for water management and water treatment processes using biological indication.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C205	Microbiology and virology	English	BS	Winter	5	30		30	Assoc. Prof. Dr. Michail Iliev	miliev1@biofac.uni-sofia.bg
				Summer	5	30		30	Assoc. Prof. Dr. Ventzislava Petrova	vpetrova@biofac.uni-sofia.bg

**Short description of the course (done in the language of instruction):** The course aims to provide basic knowledge about prokaryotic microorganisms: structure and chemical composition of the cell; characteristics of energy and constructive metabolisms, genetic information transfer mechanisms, microbial systematics. Students are acquainted with the various prokaryotic forms. The main features of Archaea are also discussed. The distribution of microorganisms in the environment and their role in biogeochemical transformations in nature is presented. The interrelations between micro- and macro-organisms are also revealed. Basic data about viruses are included as well.

**Requirements for enrollment: NO**

**Programme:** B.Sc. in Biology BLB010216

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C083	Systematics of algae and fungi	English	BS	Winter	6	23		22	Prof. Maya P. Stoyneva, PhD, DrSc	mstoyneva@uni-sofia.bg

**Short description of the course (in the language of instruction):** This **compulsory course** is oriented towards students in Biology (part-time training). It provides data on the structure, reproduction, distribution and classification of algae and fungi (incl. lichenized fungi) as significant components of ecosystems and their position in the systems of organisms. The course is of theoretical-applied character and provides basic knowledge on the cytology, morphology, physiological, biochemical and genetic peculiarities, reproduction and life cycles, bases of ecology and distribution, evolution and phylogeny of the main taxonomic groups of algae and fungi and their role in Nature.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E228	Mycology	English	BS	Summer	3	15		8	Assoc. Prof. Blagoy Uzunov, PhD	buzunov@uni-sofia.bg

**Short description of the course (in the language of instruction):** This is a **chosen course for students** in part-time education. The students will learn the most important representatives of the wild-growing fungi in Bulgaria, their edible, poisonous and threatened species and with measures for conservation of fungal resources.

**Requirements for enrollment: NO**

**Programme:** B.Sc. in Molecular Biology BLM020119

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C225	Biochemistry 2	English	BS	Winter	4	30		30	Prof. Dr. Svetla Petrova	spetrova@biofac.uni-sofia.bg
BL C174	Biochemistry 1	English	BS	Summer	6	60		30	Assoc. Prof. Dr. Jordan Doumanov	doumanov@biofac.uni-sofia.bg

**Short description of the course (in the language of instruction):** Biochemistry course comprises the structural, functional, bioenergetic and informational aspects of biochemical processes. The relationship structure-function of major classes of biomolecules (proteins, carbohydrates, lipids and nucleic acids) is discussed with accent on central metabolic pathways, their organisation, energy transformation and regulation. The basic principles of expression and transfer of genetic information are explained through the processes of biosynthesis of DNA (replication), biosynthesis of RNA (transcription), and protein synthesis (translation) in prokaryotic and eukaryotic organisms. The use of biochemical approaches to deeply understand other fundamental (molecular biology, pharmacology, human physiology, genetics, etc.) and applied (drug design, clinical laboratory, etc.) biosciences is demonstrated with appropriate examples. The laboratory exercises illustrate and extend the lectures, creating the practical skills necessary for the future professional realization of students. This compulsory course is oriented towards students in Molecular Biology and Biology (regular education).

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C337	Biocatalysis	English	BS	Winter	8	45	15	30	Prof. Dr. Svetla Petrova	spetrova@biofac.uni-sofia.bg

**Short description of the course (in the language of instruction):** The purpose of Biocatalysis course is to integrate knowledge of biochemistry, bioorganic chemistry and molecular biology in order to throw a light on the relationship between the enzyme protein structure, cofactors, kinetics, catalytic strategies and diversity of regulatory mechanisms. The lectures discuss the current concepts of the molecular mechanism of enzyme-catalyzed reactions in their cell and metabolic context as well as the possibilities to apply enzyme catalytic strategies for creating new biocatalytic models. Special attention will be paid to the multifunctional enzymes, metalloenzymes, mechanoenzymes, pseudoenzymes, as well as the enzymes involved in cell signaling and transport across the membranes. Topics, as behavior of certain enzymes in non-aqueous media, enzyme nanotechnologies and enzyme synthesis of important biological products and pharmaceuticals, will demonstrate the advanced enzyme applications. This compulsory course is oriented towards students in Molecular Biology (regular education).

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C368	Molecular immunology	English	BS	Summer	7	60		30	Assoc. Prof. Dr. Ivanka Tsacheva	itsacheva@bio fac.uni- sofia.bg

**Short description of the course (in the language of instruction):** This immunology course presents the organization of a functional immune system with its molecular mechanisms of innate and adaptive immunity. A comprehensive view of the development of T- and B-lymphocytes is presented altogether with the molecular mechanisms of generation of the huge diversity of their antigen receptors. The biochemical characteristics of humoral and cell immunity are discussed as well as antigen recognition by B-cell and T-cell receptors, antigen presentation to T lymphocytes, the major histocompatibility complex and its functions. The course contains a full description of the effector mechanisms of humoral and cell-mediated immune response. The laboratory practice complements the lectures with appropriate immunology techniques like immunoprecipitation, ELISA, immunoblotting, RIA, purification of immunoglobulins etc. This compulsory course is oriented towards students in Molecular Biology (regular education).

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		



<b>BL C286</b>	<b>Molecular biology</b>	<b>English</b>	<b>BS</b>	<b>Summer</b>	<b>6</b>	<b>60</b>		<b>30</b>	<b>Assoc. Prof. Dr. Ivelin Panchev</b>	<b>ijpanchev@bi ofac.uni-sofia.bg</b>
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**Short description of the course (in the language of instruction):** The course in Molecular Biology discusses the processes of replication, transcription and translation in prokaryotes and eukaryotes with an accent on the recent knowledge on their regulation and differences. It also considers the molecular mechanisms of: nuclear transport; protein sorting; types of posttranslational modifications; cell-to-cell signaling and signal transduction; cell adhesion; program cell death. Practices introduce students to the basic methods for experimental work with DNA and proteins – PCR; DNA and 2D PAAGE electrophoresis; preparation of competent cells and transformation. This compulsory course is oriented towards students in Molecular Biology and Biology (regular education).

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/Seminars	Practical work		
<b>BL E255</b>	<b>Human Physiology 1</b>	<b>English</b>	<b>BS</b>	<b>Winter</b>	<b>4</b>	<b>30</b>		<b>30</b>	<b>Prof. Dr. Hristo Gagov</b>	<b>hgagov@uni-sofia.bg</b>
<b>BL E296</b>	<b>Human Physiology 2</b>	<b>English</b>	<b>BS</b>	<b>Summer</b>	<b>6</b>	<b>45</b>		<b>45</b>	<b>Prof. Dr. Hristo Gagov</b>	<b>hgagov@uni-sofia.bg</b>

**Short description of the course (in the language of instruction):** This course includes knowledge in the fields of nature and regulation of all basic physiological functions in human – resting membrane potential, generation and propagation of action potential, muscle contraction, synaptic transmission, processes in CNS and functions of its divisions, sensory systems, blood and body fluids physiology, circulation, breathing and respiration in the lungs and tissues, digestion, metabolism, thermoregulation, excretion, hormonal regulation. Special attention is paid on the cellular and molecular mechanisms of physiological processes and their pharmacology. The course aims to give knowledge on the basis of vital processes, as well as on their complex and cross-linked regulation and dynamic in humans. Basic knowledge in the fields of Human Anatomy, Cell Biology and Biochemistry will be helpful.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/Seminars	Practical work		

<b>BL C041</b>	<b>Fundamentals of algology and mycology</b>	<b>English</b>	<b>BS</b>	<b>Winter</b>	<b>4</b>	<b>15</b>		<b>30</b>	<b>Prof. Maya P. Stoyneva, PhD, DrSc,</b>	<b>mstoyneva@uni-sofia.bg</b>
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**Short description of the course (in the language of instruction):** This **compulsory course** is oriented towards students in Molecular Biology (regular education). Students receive information on the structure, reproduction and bases of the classification of algae and fungi (incl. lichenized fungi) relevant to their position in the organism world. The course is of theoretical-applied character and provides the necessary minimum of knowledge on the cytology, morphology, physiological, biochemical and genetic peculiarities, reproduction and life cycles, bases of ecology and distribution, evolution and phylogeny of the main taxonomic groups of algae and fungi. Special attention is paid to the application of the knowledge on the structural and functional peculiarities of algae and fungi as interesting and significant model subjects in science and industry. The knowledge provided is absolutely necessary in further courses, related with functional and physiological features of organisms and new molecular data, incl. modern phylogenetic cladograms.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
<b>BL E012</b>	<b>Medicinal algae and fungi</b>	<b>English</b>	<b>BS</b>	<b>Summer</b>	<b>3</b>	<b>30</b>		<b>15</b>	<b>Prof. Maya P. Stoyneva, PhD, DrSc,</b>	<b>mstoyneva@uni-sofia.bg</b>

**Short description of the course (in the language of instruction):** This is a **chosen course for students** in regular education. It provides knowledge on the main types of algal products and biologically-active compounds produced by cyanoprokaryotes and other eukaryotic algae, as well as on fungal toxins and secondary lichen metabolites. Additionally are provided data on the application of algae, fungi and lichens in both traditional and modern medicine and pharmacy and related with them food, cosmetic and perfumery industry together with the main possibilities and trends in the cultivation of the most important algae and fungi.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
<b>BL C327</b>	<b>Molecular virology</b>	<b>English</b>	<b>BS</b>	<b>Winter</b>	<b>7</b>	<b>45</b>		<b>45</b>	<b>Prof. Stoyan Shishkov</b>	<b>sashishkov@yahoo.com</b>

										<b>Assist. prof. Daniel Todorov</b>	<b>dani_todorov@abv.bg</b>
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**Short description of the course (in the language of instruction):** The course provides specialized knowledge of the replication strategy of the various classes of viral genomes of human and animal viruses. The interaction of viruses with cellular factors - enzymes, regulatory proteins, transcription factors and translation factors for the synthesis of viral macromolecules. The training and learning of this program aims to provide students with specific knowledge about the replication features of viruses, as well as the ability to track the mechanism of viral reproduction. The course discusses intermolecular interactions (protein-protein, protein-nucleic acids, protein-lipid) that guide the structuring of viral particles.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C204	Microbiology 1	English	BS	Summer	6	45		45	Assoc. Prof. Dr. Trayana Nedeva	nedeva@biofac.uni-sofia.bg
BL C245	Microbiology 2	English	BS	Winter	4	30		30	Assoc. Prof. Dr. Trayana Nedeva	nedeva@biofac.uni-sofia.bg

**Short description of the course (done in the language of instruction):** This is a theoretical discipline that aims to familiarize students with the current state of microbiology as a basic biological science. The specific features of microorganisms as biological objects, the structural and functional organization of prokaryotes, as well as the specific characteristics of eukaryotic microorganisms are revealed. The structural and functional organisation of the prokaryotic cell as well as the structural organization and functions of the genome, and the types of genetic information transfer mechanisms are discussed. The basic principles of energy and constructive metabolism of microorganisms are also under discussion. Substantial attention is paid to the distribution of microorganisms in the environment and their role in the biogeochemical transformations in the nature, the basic principles of microbial ecology and relationships between them and other living organisms. A systematic review of the major groups of microorganisms and their possible practical application is made as well. The structural and functional organisation of *Archea* is also part of the course. Special attention is paid to the microorganisms-producers of biologically active substances and their use in various branches of industry and environment protection.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E256	Physiology and biochemistry of microorganisms	English	BS	Summer	3	30		15	Assoc. Prof. Dr. Trayana Nedeva	nedeval@biofac.uni-sofia.bg

**Short description of the course (in the language of instruction):** The course Physiology and biochemistry of microorganisms aims to upgrade the fundamental courses in Microbiology and Biochemistry, focusing on the diverse biochemical properties of microorganisms. The physiological-biochemical organization of the microbial cell, the bio-energetic aspects of fermentations, bacterial photosynthesis and microbiological oxidation, as well as mechanisms of biosynthesis and regulation of primary and secondary metabolites are discussed. The course complements and builds on the knowledge and skills, already acquired during the training in general microbiology and biochemistry and promotes the acquisition of new knowledge in the field of biochemical and bio-energetic characteristics of microorganisms. It helps as well in competence development regarding integrated approach to analyzing the biology of microorganisms.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E124	Geological microbiology	English	BS	Summer	3	30		15	Assoc. Prof. Dr. Michail Iliev	miliev1@biofac.uni-sofia.bg

**Short description of the course (done in the language of instruction):** Theoretical discipline devoted to bacteria connected with biogeochemical cycles of the elements in the nature. Different biogeochemical cycles of elements as well as the main characteristics of the bacteria involved are under discussion. Different types of the interactions between bacteria are also discussed. The possibilities for practical application of metabolic activities of the microorganisms in environmental protection and bioremediation. The course complements and upgrades the skills acquired in other biological disciplines, which is a prerequisite for increasing students' general biological knowledge.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E035	Ethology	English	BS	Winter	3	30		15	Prof. Dr. Daniela Simeonovska-Nikolova	dansim@biofac.uni-sofia.bg

**Short description of the course (in the language of instruction):** Lecture course on basic principles in ethology. The course follows the Tinbergen's four questions. In this connection, how behavior develops during the life of the individual, how learning and experience influence patterns of behavior, how particular behavior patterns contribute to an animal's chances of survival and its reproductive success are part of questions which are discussed. Topics include mechanisms of behavior, sign stimulus, foraging and optimality, animal social behavior and organization, sexual selection and mating systems, parental care and conflict, altruism and cooperation. Furthermore, the course introduces the students to methods for measuring and analysis of behavior.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C092	Biodiversity of plants and fungi (part algae and fungi)	English	BS	summer	3	15		15	Prof. Maya P. Stoyneva, PhD, DrSc, Assoc. Prof. Blagoy Uzunov, PhD	mstoyneva@uni-sofia.bg  buzunov@uni-sofia.bg

**Short description of the course (in the language of instruction):** This is a ½ part of a compulsory course in botany (cryptogams, phanerogams and fungi) for students in pedagogical disciplines related with biology (regular education). Students receive information on the main groups of algae, fungi and lichens and their role in Nature, and usage in human-affairs. The course provides the necessary minimum of knowledge on the structure, reproduction and bases of the classification of algae and fungi (incl. lichenized fungi) relevant to their position in the organism world. The course is of theoretical-applied character. The knowledge provided is absolutely necessary in further courses, related with functional and physiological features

of organisms and their ecology and biodiversity. The course ensures not only achievement of fundamental, basic theoretical knowledge but also of competence in identification of field material.

**Requirements for enrollment: NO**

**Programme:** B.Sc. in Biotechnology BLT040117

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E044	Applied Algology	English	BS	Summer	3	30		15	Prof. Maya P. Stoyneva, PhD, DrSc,  Assoc. Prof. Blagoy Uzunov, PhD	mstoyneva@uni-sofia.bg  buzunov@uni-sofia.bg

**Short description of the course (in the language of instruction):** This is a chosen course for students in regular education. It has a theoretical-applied character. The main accents in the theoretical part are related with the most used algae and their metabolites in the practice of human affairs, incl. biotechnologies. Important part of the course is focused on algae and their products as food and medicinal sources, their role as energetic sources and use in modern biodiesel production, etc.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C257	Biotechnological methods in ecology	English	BS	Winter	4	45		30	Prof. Yana Topalova, PhD, DSc	ytopalova@uni-sofia.bg

										<b>Assoc. Prof. Irina Schneider, PhD</b>  <b>Assoc. Prof. Yovana Todorova, PhD</b>
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**Short description of the course (done in the language of instruction)**

The main highlights of the course systematize the management approaches for the implementation of biotechnological methods to protect and restore the ecological balance in the nature. Built on a modular principle, the course includes: a/ introduction in specific area and terminology of environmental biotechnology; b/ basis of wastewater treatment processes and technologies; c/ bioremediation of polluted resources; d/ utilization of industrial, agricultural and household wastes by aerobic and anaerobic biotechnological processes; e/ biotech alternatives in agriculture and specific industries with a view to minimizing waste, use of new energy sources and future sustainable development; f/ specific control in environmental biotechnological processes.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C195	Microbiology	English	BS	Winter	3.5	30		30	Assoc. Prof. Dr. Trayana Nedeva	nedeва@biofa c.uni-sofia.bg
BI C195	Microbiology	English	BS	Summer	4.5	45		30	Assoc. Prof. Dr. Trayana Nedeva	nedeва@biofa c.uni-sofia.bg

**Short description of the course (done in the language of instruction):** Theoretical discipline aimed to familiarize students with the current state of microbiology as a basic biological science. The specific features of microorganisms as biological objects, the structural and functional organization of prokaryotes as well as the typical characteristics of eukaryotic microorganisms are revealed. The basic principles of constructive and energy metabolism of microorganisms; the genome organization and the specific mechanisms of transfer of genetic material are discussed. Special emphasis is given to the microbial diversity and distribution in the environment and their role in biogeochemical cycles in nature. The course displays as well the basic principles of microbial ecology and microbial interaction with other living organisms. A systematic overview of the main groups of given microorganisms and their basic practical application is foreseen. Information about microorganisms-producers of biologically active substances is

and their use in various industries and environmental protection is outlined. The course complements and upgrades the competence and skills gained during training in organic chemistry, biochemistry and genetics.

**Requirements for enrollment: NO**

**Programme:** B.Sc. in Biotechnology BLT040217

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C042	Structure and biodiversity of plants and fungi (part algae and fungi)	English	BS	Summer	2.3	6		8	Prof. Maya P. Stoyneva, PhD, DrSc,  Assoc. Prof. Blagoy Uzunov, PhD	mstoyneva@uni-sofia.bg  buzunov@uni-sofia.bg

**Short description of the course (in the language of instruction):** The course is a 1/3 part of a complex botanical compulsory course for students in Biotechnology (part-time education) and is oriented towards structure and biodiversity of algae and fungi. Data on their morphology and reproduction is provided with special attention on the application of the knowledge on structural and functional peculiarities of algae and fungi in biotechnologies.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		



<b>BL E045</b>	<b>Applied Algology</b>	<b>English</b>	<b>BS</b>	<b>Winter</b>	<b>3</b>	<b>15</b>		<b>8</b>	<b>Prof. Maya P. Stoyneva, PhD, DrSc,</b>  <b>Assoc. Prof. Blagoy Uzunov, PhD</b>	<b>mstoyneva@uni-sofia.bg</b>  <b>buzunov@uni-sofia.bg</b>
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**Short description of the course (in the language of instruction):** This is a chosen course for students in regular education. It has a theoretical-applied character. The main accents in the theoretical part are related with the most used algae and their metabolites in the practice of human affairs, incl. biotechnologies. Important part of the course is focused on algae and their products as food and medicinal sources, their role as energetic sources and use in modern biodiesel production, etc.

**Requirements for enrollment: NO**

**Programme:** B.Sc. in Ecology and Environment Protection BLE050119

<b>Course code</b>	<b>Course title (in English)</b>	<b>Language of instruction</b>	<b>Course offered to BA/BS, MA/MS, PhD</b>	<b>Semester</b>	<b>ECTS</b>	<b>Number of hours</b>			<b>Lecturer/s's name</b>	<b>Lecturer/s's E-mail</b>
						<b>Lectures</b>	<b>Exercises/Seminars</b>	<b>Practical work</b>		
<b>BL C215</b>	<b>Ethology</b>	<b>English</b>	<b>BS</b>	<b>Winter</b>	<b>4</b>	<b>30</b>		<b>30</b>	<b>Prof. Dr. Daniela Simeonovska -Nikolova</b>	<b>dansim@biofac.uni-sofia.bg</b>

**Short description of the course (in the language of instruction):** Lecture course on basic principles in ethology. The course follows the Tinbergen's four questions. In this connection, how behavior develops during the life of the individual, how learning and experience influence patterns of behavior, how particular behavior patterns contribute to an animal's chances of survival and its reproductive success are part of questions which are discussed. Topics include mechanisms of behavior, sign stimulus, foraging and optimality, animal social behavior and organization, sexual selection and mating systems, parental care and conflict, altruism and cooperation. Furthermore, the course introduces the students to methods for measuring and analysis of behavior.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E216	Ecology of algae	English	BS	Summer	3	30		15	Prof. Maya P. Stoyneva, PhD, DrSc,	mstoyneva@uni-sofia.bg

**Short description of the course (in the language of instruction):** This is a **chosen course for students** in regular education. It provides knowledge on the influence of ecological factors on the development and distribution of the algae and on the main algal communities in different biotopes. Special attention is paid to the algal indicators for the state of recent water and land ecosystems and for paleo-reconstructions. Additionally, other aspects of applied algology are discussed (e.g. toxic algae). The main methods used in ecological-algological investigations are introduced.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E064	Mycology	English	BS	Summer	3	30		15	Assoc. Prof. Blagoy Uzunov, PhD	buzunov@uni-sofia.bg

**Short description of the course (in the language of instruction):** This is a **chosen course for students** in part-time education. The students will learn the most important representatives of the wild-growing fungi in Bulgaria, their edible, poisonous and threatened species and with measures for conservation of fungal resources.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		

<b>BL E195</b>	<b>Basics of phytocoenoloical analysis</b>	<b>English</b>	<b>BS</b>	<b>Winter</b>	<b>3</b>	<b>30</b>		<b>15</b>	<b>Assist. Prof. Kalina Pachedjieva, PhD</b>	<b>kalina.pachedjieva@biofac.uni-sofia.bg</b>
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**Short description of the course (in the language of instruction):** Phytocoenology is the study of the plant communities – their composition and structure, development and distribution as well as relationships with environment. The course is methodologically oriented combining knowledges from botany/floristics, plant ecology and statistics. In the frame of the course the methodologies for sampling and analyzing the vegetation data are presented. Students get acquainted with the main stages of phytocoenological analysis for vegetation classification and its importance for identifying plant communities as basis of habitat types' categorization. Computer programs for analysis of vegetation and environmental data are used and material is presented through implementing case studies.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
<b>BL C358</b>	<b>Waste Management</b>	<b>English</b>	<b>BS</b>	<b>Summer</b>	<b>5</b>	<b>30</b>		<b>30</b>	<b>Assoc. Prof. Anelia Kenarova, PhD</b>	<b>kenarova@biofac.uni-sofia.bg</b>

**Short description of the course (in the language of instruction):** The course aims to introduce students to the growing worldwide problem of waste management, including all stages from collection, through temperate storage and transportation until the treatment (recovery and disposal) of waste. The course is consistent with the National Strategy for Waste Management and updated legislation for options of their treatment. It is focused on the basic concepts and principles of waste management and the hierarchy of the priorities of waste treatment. Each of the priorities is discussed in details as an opportunity for the recovery of waste, reducing the environmental risk of waste disposal, and the ability to use waste as secondary resources. It will discuss also a number of alternatives to the disposal technology for waste treatment. In the course, students will learn not only the most advanced options for waste treatment, but will become familiar with the ecological and economic impacts of the introduction of newer technologies and approaches for waste treatment. The students will be acquainted with national and European legislation relating to issues of collection, transport and treatment of solid waste.

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		

<b>BL C235</b>	<b>Ecology</b>	<b>English</b>	<b>BS</b>	<b>Winter</b>	<b>7</b>	<b>45</b>		<b>45</b>	<b>Assoc. Prof. Anelia Kenarova</b>	<b>kenarova@bi ofac.uni- sofia.bg</b>
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**Short description of the course (done in the language of instruction):** The course offers rather theoretical and practical knowledge than on fundamental biological disciplines, as well as on a number of physico-mathematical, economic and geographic disciplines. This provides a good foundation for their success in the field of ecology and environmental protection. They trainees are prepared to carry out activities related to the different theoretical and applied aspects of ecology as restore ecosystem balance, biocenoses and populations, conservation of protected plant and animal species, biological monitoring and management of natural resources, pest control, water management and waste, introduction and acclimatization of economically valuable plant and animal species, management of biological macrosystems and others.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
<b>BL E124</b>	<b>Aquaculture</b>	<b>English</b>	<b>BS</b>	<b>Winter</b>	<b>3</b>	<b>30</b>		<b>15</b>	<b>Assoc. Prof. Dr. Eliza Uzunova</b>	<b>euzunova@u ni-sofia.bg</b>

**Short description of the course (in the language of instruction):** The course introduces the basic concepts and principles underlying the processes of cultivation of marine and freshwater organisms. It tracks the historical development of aquaculture - from its origins in ancient China to the present day. Students are acquainted with up-to-date statistics on world trends in aquaculture development, focusing on the main species in this sector - salmonid and cyprinid fishes. The course gives also a brief overview of the main groups of organisms that are cultivated in aquatic ecosystems - fish, algae, molluscs and crustaceans. The potential impacts of aquaculture on the environment are addressed in the light of global warming and water scarcity. Students will have the opportunity to get acquainted with the work in a re-circulating aquaculture system (RAS) and small pond farm as well.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		

<b>BL E135</b>	<b>Ichthyology and Fish Conservation</b>	<b>English</b>	<b>BS</b>	<b>Winter</b>	<b>3</b>	<b>30</b>		<b>15</b>	<b>Assoc. Prof. Dr. Eliza Uzunova;</b>  <b>Dr. D. Rozdina</b>	<b>euzunova@uni-sofia.bg</b>
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**Short description of the course (in the language of instruction):** Course is an integrated approach to fish biology from a physiological and ecological viewpoint. The course is built on a general background of fish diversity and environmental adaptations while discussing anatomy, physiology, ecology, behavior. It also be reviewed the fundamentals of fish design and physiological adaptation to environment that contributes to remarkable success of fishes to survive and disperse. The course aims to increase familiarity with evolutionary history and taxonomic diversity of fishes. To improve understanding of the basic physiological and behavioral adaptations that fishes use to carry out their life cycle. To enhance student's skills at collecting and identifying local fish species. To expose to some of the issues surrounding the conservation of fish biodiversity in the environment. To introduce you to some of the quantitative techniques used in describing fish biology. Lectures will include slide and video shows of fishes from around the world and descriptions of what it is like to do field science. The lecture cycle will present and discuss examples of activities that have contributed to the conservation of fishes, carried out by both the state and non-governmental sectors. Laboratory exercises will include methods in fish anatomy, identification fish species, age determination. Field trips with aim local fish collection and also to the fish collection at the National Museum of Natural History will broaden the perspective of the course.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
<b>BL E205</b>	<b>Bioinvasions</b>	<b>English</b>	<b>BS</b>	<b>Summer</b>	<b>3</b>	<b>30</b>		<b>15</b>	<b>Assoc. Prof. Eliza Uzunova;</b>  <b>Assoc. Prof. Rosen Tzonev;</b>  <b>Dr. Ilija Gjonov</b>	<b>euzunova@uni-sofia.bg</b>  <b>rossentzonev@abv.bg</b>  <b>gjonov@cicadina.com</b>

**Short description of the course (in the language of instruction):** The course Bioinvasions synthesizes current knowledge of the ecology and economics of biological invasions, providing an in-depth evaluation of the science and its implications for managing the causes and consequences of one of the most pressing environmental issues facing humanity today. The introduction of pests, predators, and competitors into many ecosystems has disrupted the benefits they provide to people, in many cases leading to the extirpation or even extinction of native species. This course includes: 1. Terminology and basic concepts for the invasive process; 2. The main drivers of bioinvasions - the growth of world trade, global transport and travel, habitat conversion and land-use intensification, and climate change; 3. Biology and ecology of the invasive species occurring in the terrestrial and aquatic ecosystems; 4. Consequences for ecosystem functioning human health and economic activity. 5. Legal framework related to invasive and alien species and 6. Measures to prevent and limit the invasion and spread of invasive species. In the course are discussed the options for improving assessment and management of invasive species risks, and especially needs for achieving the international cooperation.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C225	Microbiology	English	BS	Winter	6	45		45	Assoc. Prof. Dr. Trayana Nedeva	nedevea@biof ac.uni- sofia.bg

**Short description of the course (done in the language of instruction):** The course of Microbiology and microbiological methods for treatment covers the study of the morphological and structural organization of prokaryotes and specific features in their energy metabolism. It also provides basic knowledge about filamentous fungi and yeasts as objects of microbiology. The distribution of microorganisms in nature, the impact of environmental factors on their development, the interactions that occur between different microbial populations and among populations of microorganisms and other organisms is discussed. The role of microbes in the biogeochemical cycles in nature and their use in pollutants treatment and bioremediation of aquatic and terrestrial ecosystems is outlined.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		

<b>BL C194</b>	<b>Biochemistry</b>	<b>English</b>	<b>BS</b>	<b>Summer</b>	<b>6</b>	<b>45</b>	<b>15</b>	<b>30</b>	<b>Prof. Dr. Svetla Petrova</b>	<b>spetrova@biofac.uni-sofia.bg</b>
									<b>Assoc. Prof. Dr. Jordan Doumanov</b>	<b>doumanov@biofac.uni-sofia.bg</b>
<p><b>Short description of the course (in the language of instruction):</b> Biochemistry course comprises the structural, functional, bioenergetic and informational aspects of biochemical processes. The relationship structure-function of major classes of biomolecules (proteins, carbohydrates, lipids and nucleic acids) is discussed with accent on central metabolic pathways, their organisation, energy transformation and regulation. The basic principles of expression and transfer of genetic information are explained through the processes of biosynthesis of DNA (replication), biosynthesis of RNA (transcription), and protein synthesis (translation) in prokaryotic and eukaryotic organisms. The use of biochemical approaches to deeply understand other fundamental (molecular biology, pharmacology, human physiology, genetics, etc.) and applied (drug design, clinical laboratory, etc.) biosciences is demonstrated with appropriate examples. The laboratory exercises illustrate and extend the lectures, creating the practical skills necessary for the future professional realization of students. This compulsory course is oriented towards students in Molecular Biology and Biology (regular education).</p>										
<p><b>Requirements for enrollment: NO</b></p>										

**Programme:** B.Sc. in Ecology and Environment Protection BLE050219

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
<b>BL C123</b>	<b>Systematics of algae and fungi</b>	<b>English</b>	<b>BS</b>	<b>Winter</b>	<b>7</b>	<b>23</b>		<b>22</b>	<b>Prof. Maya P. Stoyneva, PhD, DrSc,</b>	<b>mstoyneva@uni-sofia.bg</b>
<p><b>Short description of the course (in the language of instruction):</b> This compulsory course is oriented towards students in Ecology (part-time training). It provides data on the structure, reproduction, distribution and classification of algae and fungi (incl. lichenized fungi) as significant components of ecosystems and their position in the systems of organisms. The course is of theoretical-applied character and provides basic knowledge on the cytology, morphology, physiological, biochemical and genetic peculiarities, reproduction and life cycles, bases of ecology and distribution, evolution and phylogeny of the main taxonomic groups of algae and fungi and their role in Nature.</p>										
<p><b>Requirements for enrollment: NO</b></p>										

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E248	Ecology of algae	English	BS	Summer	3	15		8	Prof. Maya P. Stoyneva, PhD, DrSc,	mstoyneva@uni-sofia.bg

**Short description of the course (in the language of instruction):** This is a **chosen course for students** in part-time education. It provides knowledge on the influence of ecological factors on the development and distribution of the algae and on the main algal communities in different biotopes. Special attention is paid to the algal indicators for the state of recent water and land ecosystems and for paleo-reconstructions. Additionally, other aspects of applied algology are discussed (e.g. toxic algae). The main methods used in ecological-algological investigations are introduced.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E238	Mycology	English	BS	Summer	3	15		8	Assoc. Prof. Blagoy Uzunov, PhD	buzunov@uni-sofia.bg

**Short description of the course (in the language of instruction):** This is a **chosen course for students** in part-time education. The students will learn the most important representatives of the wild-growing fungi in Bulgaria, their edible, poisonous and threatened species and with measures for conservation of fungal resources.

**Requirements for enrollment: NO**



Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E035	Ethology	English	BS	Winter	3	30		15	Prof. Dr. Daniela Simeonovska-Nikolova	dansim@biof.ac.uni-sofia.bg

**Short description of the course (in the language of instruction):** Lecture course on basic principles in ethology. The course follows the Tinbergen's four questions. In this connection, how behavior develops during the life of the individual, how learning and experience influence patterns of behavior, how particular behavior patterns contribute to an animal's chances of survival and its reproductive success are part of questions which are discussed. Topics include mechanisms of behavior, sign stimulus, foraging and optimality, animal social behavior and organization, sexual selection and mating systems, parental care and conflict, altruism and cooperation. Furthermore, the course introduces the students to methods for measuring and analysis of behavior.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C092	Biodiversity of plants and fungi (part algae and fungi)	English	BS	Summer	2.5	15		15	Prof. Maya P. Stoyneva, PhD, DrSc,  Assoc. Prof. Blagoy Uzunov, PhD	mstoyneva@uni-sofia.bg  buzunov@uni-sofia.bg

**Short description of the course (in the language of instruction):** This is a ½ part of a compulsory course in botany (cryptogams, phanerogams and fungi) for students in pedagogical disciplines related with biology (regular education). Students receive information on the main groups of algae, fungi and lichens and their role in Nature, and usage in human-affairs The course provides the necessary minimum of knowledge on the structure, reproduction and bases of the classification of algae and fungi (incl. lichenized fungi) relevant to their position in the organism world. The course is of theoretical-applied character. The knowledge provided is absolutely necessary in further courses, related with functional and physiological features

of organisms and their ecology and biodiversity. The course ensures not only achievement of fundamental, basic theoretical knowledge but also of competence in identification of field material.

**Requirements for enrollment: NO**

**Programme:** B.Sc. in Biomanagement and sustainable development BLU070119

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E206	Ethology	English	BS	Summer	3	30		15	Prof. Dr. Daniela Simeonovska-Nikolova	dansim@biof.ac.uni-sofia.bg

**Short description of the course (in the language of instruction):** Lecture course on basic principles in ethology. The course follows the Tinbergen's four questions. In this connection, how behavior develops during the life of the individual, how learning and experience influence patterns of behavior, how particular behavior patterns contribute to an animal's chances of survival and its reproductive success are part of questions which are discussed. Topics include mechanisms of behavior, sign stimulus, foraging and optimality, animal social behavior and organization, sexual selection and mating systems, parental care and conflict, altruism and cooperation. Furthermore, the course introduces the students to methods for measuring and analysis of behavior.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C154	Biodiversity of plants and fungi (part algae and fungi)	English	BS	Summer	3.5	8		15	Prof. Maya P. Stoyneva, PhD, DrSc,  Assoc. Prof. Blagoy Uzunov, PhD	mstoyneva@uni-sofia.bg  buzunov@uni-sofia.bg

**Short description of the course (in the language of instruction):** This is a ½ part of a compulsory course in botany (cryptogams, phanerogams and fungi) for students in Biomanagement (regular education). Therefore, it provides data on the most important groups and structural peculiarities of the algal and fungal cells, vegetative bodies and reproductive structures in relation with the environmental factors. The accent is on the specific organisms, used in biomonitoring programs, on indicators of anthropogenic impact and conservation important species, used in environmental impact assessments.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E074	Applied Algology	English	BS	Summer	3	30		15	Prof. Maya P. Stoyneva, PhD, DrSc,  Assoc. Prof. Blagoy Uzunov, PhD	mstoyneva@uni-sofia.bg  buzunov@uni-sofia.bg

**Short description of the course (in the language of instruction):** This is a chosen course for students in regular education. It has a theoretical-applied character. The main accents in the theoretical part are related with the most used algae and their metabolites in the practice of human affairs, incl. biotechnologies. Important part of the course is focused on algae and their products as food and medicinal sources, their role as energetic sources and use in modern biodiesel production, etc.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C215	Ecology and environment protection	English	BS	Winter	6	45		45	Assoc. Prof. Anelia Kenarova	kenarova@biofac.uni-sofia.bg

**Short description of the course (done in the language of instruction):** The course offers rather theoretical and practical knowledge than on fundamental biological disciplines, as well as on a number of physico-mathematical, economic and geographic disciplines. This provides a good foundation for their success in the field of ecology and environmental protection. They trainees are prepared to carry out activities related to the different theoretical and applied aspects of ecology as restore ecosystem balance, biocenoses and populations, conservation of protected plant and animal species, biological monitoring and management of natural resources, pest control, water management and waste, introduction and acclimatization of economically valuable plant and animal species, management of biological macrosystems and others.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E256	Bioinvasions	English	BS	Summer	3	30		15	Assoc. Prof. Eliza Uzunova;  Assoc. Prof. Rosen Tzonev;  Dr. Ilija Gjonov	euzunova@uni-sofia.bg;  rossentzonev@abv.bg;  gjonov@cicadina.com

**Short description of the course (in the language of instruction):** The course Bioinvasions synthesizes current knowledge of the ecology and economics of biological invasions, providing an in-depth evaluation of the science and its implications for managing the causes and consequences of one of the most pressing environmental issues facing humanity today. The introduction of pests, predators, and competitors into many ecosystems has disrupted the benefits they provide to people, in many cases leading to the extirpation or even extinction of native species. This course includes: 1. Terminology and basic concepts for the invasive process; 2. The main drivers of bioinvasions - the growth of world trade, global transport and travel, habitat conversion and land-use intensification, and climate change; 3. Biology and ecology of the invasive species occurring in the terrestrial and aquatic ecosystems; 4. Consequences for ecosystem functioning human health and economic activity. 5. Legal framework related to invasive and alien species and 6. Measures to prevent and limit the invasion and spread of invasive species. In the course are discussed the options for improving assessment and management of invasive species risks, and especially needs for achieving the international cooperation.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C317	Water resources management	English	BS	Winter	5	45		30	Prof. Yana Topalova, PhD, DSc	ytopalova@uni-sofia.bg

**Short description of the course (done in the language of instruction):** This course provides the basic principles of management of waters as a strategic natural and economic resource. In consistent view, the main topics of course present the legislation base of management - regulations for the control of natural, drinking and waste waters, basic principles of self-purification and water treatment, organization and elements of state-regulated and scientific control of water quality.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C235	Microbiology	English	BS	Winter	5	45		30	Assoc. Prof. Ventzislava Petrova	vpetrova@biofac.uni-sofia.bg

**Short description of the course (done in the language of instruction):** The course of Microbiology provides knowledge on morphological, structural and functional organization of microorganisms. It offers an overview of microbial metabolism with special emphasis on energy transformation. Microbial growth and development, and the methods for their control through physical and chemical factors are discussed. The presented knowledge is focused on the relationship between microorganisms and other organisms; their distribution in natural environments and their role in the biogeochemical cycles of the main elements. The impact of microorganisms to the processes of contaminated soil and water treatment, and their role in the processing and spoilage of food products is given.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		

<b>BL E226</b>	<b>Microbiological monitoring of the environment</b>	<b>English</b>	<b>BS</b>	<b>Summer</b>	<b>3</b>	<b>30</b>		<b>15</b>	<b>Assos. Prof. Dr. Michail Iliev</b>	<b>miliev1@biofac.uni-sofia.bg</b>
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**Short description of the course (done in the language of instruction):** The course "Microbiological monitoring of the environment" presents microorganisms in their natural habitats. It is focused on microbial diversity in different environmental habitats, microbial communities and relationships between them. The basic methodology concerns microbial quantification and study of metabolic activity. Information about the structure and qualitative composition of the microorganisms in aquatic ecosystems is given, and analysis of microbial communities in soil and extreme habitats is performed. The biogeochemical cycles of elements in nature and the role of microorganisms in the transformation of inorganic and organic matter is revealed. The prospects for application of microbial metabolic activity in bioremediation of pollutants of various types are discussed.

**Requirements for enrollment: NO**

**Programme:** B.Sc. in Biology and English language BLA080119

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
<b>BL E035</b>	<b>Ethology (Module Biology)</b>	<b>English</b>	<b>BS</b>	<b>Winter</b>	<b>3</b>	<b>30</b>		<b>15</b>	<b>Prof. Dr. Daniela Simeonovska-Nikolova</b>	<b>dansim@biofac.uni-sofia.bg</b>

**Short description of the course (in the language of instruction):** Lecture course on basic principles in ethology. The course follows the Tinbergen's four questions. In this connection, how behavior develops during the life of the individual, how learning and experience influence patterns of behavior, how particular behavior patterns contribute to an animal's chances of survival and its reproductive success are part of questions which are discussed. Topics include mechanisms of behavior, sign stimulus, foraging and optimality, animal social behavior and organization, sexual selection and mating systems, parental care and conflict, altruism and cooperation. Furthermore, the course introduces the students to methods for measuring and analysis of behavior.

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		

<b>BL C082</b>	<b>Biodiversity of plants and fungi (part algae and fungi)</b>	<b>English</b>	<b>BS</b>	<b>Summer</b>	<b>2</b>	<b>15</b>		<b>15</b>	<b>Prof. Maya P. Stoyneva, PhD, DrSc,</b>  <b>Assoc. Prof. Blagoy Uzunov, PhD</b>	<b>mstoyneva@uni-sofia.bg</b>  <b>buzunov@uni-sofia.bg</b>
<p><b>Short description of the course (in the language of instruction):</b> This is a ½ part of a compulsory course in botany (cryptogams, phanerogams and fungi) for students in pedagogical disciplines related with biology (regular education). Students receive information on the main groups of algae, fungi and lichens and their role in Nature, and usage in human-affairs The course provides the necessary minimum of knowledge on the structure, reproduction and bases of the classification of algae and fungi (incl. lichenized fungi) relevant to their position in the organism world. The course is of theoretical-applied character. The knowledge provided is absolutely necessary in further courses, related with functional and physiological features of organisms and their ecology and biodiversity. The course ensures not only achievement of fundamental, basic theoretical knowledge but also of competence in identification of field material.</p>										
<p><b>Requirements for enrollment: NO</b></p>										

**Programme:** B.Sc. in Agrobiotechnology BLR090116

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
<b>BL E013</b>	<b>Applied Algology</b>	<b>English</b>	<b>BS</b>	<b>winter</b>	<b>3</b>	<b>30</b>		<b>15</b>	<b>Prof. Maya P. Stoyneva, PhD, DrSc,</b>  <b>Assoc. Prof. Blagoy Uzunov, PhD</b>	<b>mstoyneva@uni-sofia.bg</b>  <b>buzunov@uni-sofia.bg</b>
<p><b>Short description of the course (in the language of instruction):</b> This is a chosen course for students in regular education. It has a theoretical-applied character. The main accents in the theoretical part are related with the most used algae and their metabolites in the practice of human affairs, incl. biotechnologies. Important part of the course is focused on algae and their products as food and medicinal sources, their role as energetic sources and use in modern biodiesel production, etc.</p>										

<b>Requirements for enrollment: NO</b>										
Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C134	General and Soil Microbiology	English	BS	summer	9	45		45	Assoc. Prof. Dr. Ventsislava Petrova	vpetrova@biofac.uni-sofia.bg
<p><b>Short description of the course (in the language of instruction):</b> The course is designed for students of bachelor degree program Agrobiotechnology. The program includes selected topics of general and soil microbiology. Subjects covered in the section "General Microbiology" are morphology, physiology, genetics of microorganisms and mechanisms of genetic transmission. The course introduces students to the fundamentals of modern microbiology. Allows for the acquisition of knowledge on the characteristics of the microorganism; structural and functional organization of microbial cell; processes of metabolism and practical application of metabolic abilities; characteristic of prokaryotic genome and the natural variability of induced bacteria and forms of genetic exchange. Specific part focuses on the distribution of microorganisms in the soil. Discusses all the main groups of microorganisms forming soil biota, as discussed in detail their involvement in nutrient cycles, energy flow and soil formation. The course includes a study of the environmental aspects of the biology of the soil: the specifics of soil as a habitat for microorganisms, micro and mezo zones, population ecology and vertical distribution of microorganisms in terrestrial ecosystems, role of soil microbiota for environmental protection. Particular attention is paid to the existing interactions between different organisms in the soil, as well as their application in bioindication of polluted soils.</p>										
<b>Requirements for enrollment: NO</b>										

**Programme:** M.Sc. in Botany (Higher Plants) BLB222119

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C083	Pre-Diploma Practicum	English	MS	winter	15			90	Prof. Dr. Dolja Pavlova	pavlova@biofac.uni-sofia.bg



**Short description of the course (in the language of instruction):** The basic aim of this course is to broaden the knowledge of students how to determine higher plants with specialized Bulgarian and foreign floristic literature. The students get familiar with representatives of plant species from mosses, pteridophytes, conifers, monocotyledonous and dicotyledonous families distributed on the territory of the country. Of particular importance is the information about the rare, endangered and endemic plants in the Bulgarian flora.

**Requirements for enrollment: YES**

**If any, please describe the specific requirements:** Basic knowledge of higher plant systematics, plant morphology and experience with floristic literature (field guides, floras) is required.

**Programme:** M.Sc. in Algology and Mycology BLB 212115

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C011	Theoretical bases of the biodiversity and bioresources of algae and fungi in Bulgaria	English	MS	Winter	15	45		60	Prof. Nesho Chipev, PhD;  Prof. Maya P. Stoyneva, PhD, DrSc,	mstoyneva@uni-sofia.bg

**Short description of the course (in the language of instruction):** This compulsory course for both modules Algology and Mycology of the master program Algology and Mycology. Its aim of the course is to show to students the theoretical bases of one of the most actual topics in recent biology – the biodiversity and with the state and problems of bioresources of algae and fungi in Bulgaria. During the lectures students get the idea for the general approaches for the understanding of the biodiversity, new concepts and hot spots in spatial and temporal aspects. In the part dedicated to the biodiversity of the algae and fungi in Bulgaria students get involved in the theoretical and practical problems related with the protection of the bioresources in Bulgaria, while during the exercises they will get knowledge on their real distribution in the country. Special attention is paid to the bioresource species in the main types of ecosystems and in protected natural areas.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C021	Basic algological and mycological methods	English	MS	Winter	15	45		60	Prof. Maya P. Stoyneva, PhD, DrSc,  Assoc. Prof. Blagoy Uzunov, PhD	mstoyneva@uni-sofia.bg  buzunov@uni-sofia.bg

**Short description of the course (in the language of instruction):** This compulsory course for both modules Algology and Mycology of the master program Algology and Mycology. Its aim is to demonstrate to the students the main field and cameral methods, the specific software products and statistical result processing, which are used in the recent algological and mycological studies. During the field exercises the specific methods for collection and fixation of algae and fungi from different recent ecological groups and from fossil material will be demonstrated. Special attention is paid to the methods for keeping of the living material and its cultivation in laboratory conditions. During the exercises in the laboratory students will achieve self-dependent practical experience in the preliminary processing of the collected samples for work in different algal groups (burning, drying-out, lightening, etc.), in the coloration techniques of various cytological structures for diagnostic purposes and in preparation of different slide types. They will learn to apply different methods for quantitative processing of the samples including different software products. Special attention will be paid to the methods for statistical processing and presentation of the achieved results.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C042	Taxonomy and evolution of algae	English	MS	Summer	15	60		60	Prof. Maya P. Stoyneva, PhD, DrSc,  Assoc. Prof. Blagoy Uzunov, PhD	mstoyneva@uni-sofia.bg  buzunov@uni-sofia.bg

**Short description of the course (in the language of instruction):** This **compulsory course** in the module Algology of the master program Algology and Mycology. It is aimed to prepare specialists, which will work in the field of development of the recent lines in algological investigations, with the main taxonomical principles used in algology for prokaryotic and eukaryotic algae. During the lectures the development and recent lines in algological research, as well as with the main taxonomical principles applied in algology in relation to prokaryotic and eukaryotic algae. In details are shown data on the morphological, cytological and ecological peculiarities of each algal group and of modes of reproduction and life cycles, related with their phylogeny and identification problems. During the seminars the main lines in the evolution of algae and their role in different types of ecosystems. During the practical course students will work with main representatives of each algal group and a special attention will be paid on the self-dependent determination of taxa from different hierarchical levels.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C062	Taxonomy and evolution of fungi	English	MS	Summer	15	60		60	Prof. Maya P. Stoyneva, PhD, DrSc,  Assoc. Prof. Blagoy Uzunov, PhD	mstoyneva@uni-sofia.bg  buzunov@uni-sofia.bg

**Short description of the course (in the language of instruction):** This is a **compulsory course** in the module Mycology of the master program Algology and Mycology. Its **aim is students to receive theoretical and practical knowledge in the field of mycology. The subject of the course are all groups of organisms, which traditionally have been accepted as a subject of the mycological science, namely myxomycetes and their close groups, fungi-like organisms and fungi.** In the beginning of the course there is a historical overview of the mycological studies is made and the unique character of fungi is discussed together with their position in the organism world, which is delimited by their type of feeding and their main morphological and physiological features. The second part is concentrated on the morphology and life style of fungi: common trend with the other organisms; peculiarities in the body organization, feeding, life cycles, distribution and physiological activity. The third part is dedicated completely to the systematics: classification systems, taxonomically important features and taxonomical procedures, nomenclature. The origin and evolution of fungi are discussed. The fourth part has applicative character and is turned to the industrial importance of fungi.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C052	Phytoplanktonology and Phytobenthosology	English	MS	Summer	7	30		30	Prof. Maya P. Stoyneva, PhD, DrSc,  Assoc. Prof. Blagoy Uzunov, PhD	mstoyneva@uni-sofia.bg  buzunov@uni-sofia.bg

**Short description of the course (in the language of instruction):** This is a compulsory course in the module Algology of the master program Algology and Mycology. Its aim is to demonstrate to the students the main terminology, concepts and theories about the state and development of the phytoplankton and phytobenthos, their relations and with specific contrivances and ecological peculiarities of the representatives of these groups, which are the life bases in the water ecosystems. During the lectures, seminars and practical courses special attention is paid to the most important representatives and to the peculiar methods for phytoplankton and phytobenthos studies (for collection of the material in the field and for cameral processing) and for processing of the results in the floristic, screening and monitoring investigations.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E012	Algal cultures with bases of aquacultures	English	MS	Summer	4	30		15	Prof. Maya P. Stoyneva, PhD, DrSc,  Assoc. Prof. Blagoy Uzunov, PhD	mstoyneva@uni-sofia.bg  buzunov@uni-sofia.bg

**Short description of the course (in the language of instruction):** This is a chosen course in the module Algology of the master program Algology and Mycology. The main aim of the course is to introduce the recent methods and criteria for evaluation of different ecosystem types and the most

recent methods for their restoration and principles of their management. The basis of the course is the holistic approach with accent on the algal communities as the first level in the food-web chains, which earliest reacts to the changes in the ecosystems. During the exercises students will apply the received knowledge in a way that after a field trip, collecting of the necessary samples from chosen sites they will prepare themselves assessments of some different types of ecosystems and will propose the most appropriate methods for their restoration and management.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E052	Biology and systematics of soil and aerophilic algae	English	MS	Summer	4	30		15	Prof. Maya P. Stoyneva, PhD, DrSc,  Assoc. Prof. Blagoy Uzunov, PhD	mstoyneva@uni-sofia.bg  buzunov@uni-sofia.bg

**Short description of the course (in the language of instruction):** This is a chosen course in the module Algology of the master program Algology and Mycology. The aim of the course is to show to students the main terms, concepts and theories for the state and development of algae from the ecological group of the aerophyton, with the biological peculiarities of the aerophilic algae, their geographical distribution, as well as with their systematics and diagnostic features. In the course a special attention is paid to the specific methods for studying of algae of this peculiar ecological group (collection in the field, cultivation and camera teaching) an application of the achieved results in floristic, screening and monitoring studies.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C072	Ecology of fungi	English	MS	Summer	4	30		15	Prof. Maya P. Stoyneva, PhD, DrSc,	mstoyneva@uni-sofia.bg

										<b>Assoc. Prof. Blagoy Uzunov, PhD</b>	<b>buzunov@uni-sofia.bg</b>
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**Short description of the course (in the language of instruction):** This is a compulsory course in the module Mycology of the master program Algology and Mycology. The aim of the course is to represent to students the modern concepts about the place and role of fungi in the structural and functional organization of ecosystems. In the course theoretical and practical problems of mycology are included. During the practical exercises the details of the main research methods for studying of fungal ecology in forest and herbal ecosystems will be shown to students.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E112	Phytopathology (fungal pathogenes)	English	MS	Summer	4	30		15	Prof. Maya P. Stoyneva, PhD, DrSc,  Assoc. Prof. Blagoy Uzunov, PhD	mstoyneva@uni-sofia.bg  buzunov@uni-sofia.bg

**Short description of the course (in the language of instruction):** This is a chosen course in the module Mycology of the master program Algology and Mycology. The aim of the course is to provide theoretical and practical knowledge on plant diseases of herbs and trees. The principles of pathological process, the causative disease agents and ecological preconditions for disease initiation and epiphytotic development, as well as plant immunology are discussed. Certain diseases are represented together with their geographical distribution, specific features, damages and methods for their limitation. During the exercises skills for identification of the diseases, methods of investigation of pathogenes and their identification and protective methods will be provided.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		

BL E132	Applied lichenology	English	MS	summer	4	30		15	Prof. Maya P. Stoyneva, PhD, DrSc,  Assoc. Prof. Blagoy Uzunov, PhD	mstoyneva@uni-sofia.bg  buzunov@uni-sofia.bg
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**Short description of the course (in the language of instruction):** This is a chosen course in the module Mycology of the master program Algology and Mycology. The aim of the course is to represent the possibilities for lichen usage in medicine and different industries in historical and modern aspect, in bioconservation and monitoring studies in various natural territories. Special attention is paid to the biocorrosion of cultural, historical and natural monuments caused by lichens and methods for their protection. The possibilities for artificial synthesis and cultivation of lichens are discussed. During the exercises students will receive knowledge how to apply in practice the modern lichenometric, lichenoidicative and restoration methods.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C022	Algological assessment, managing and restoration of ecosystems	English	MS	summer	4	30		15	Prof. Maya P. Stoyneva, PhD, DrSc,  Assoc. Prof. Blagoy Uzunov, PhD	mstoyneva@uni-sofia.bg  buzunov@uni-sofia.bg

**Short description of the course (in the language of instruction):** This is a chosen course in the module Algology of the master program Algology and Mycology. The main aim of the course is to introduce the recent methods and criteria for evaluation of different ecosystem types and the most recent methods for their restoration and principles of their management. The basis of the course is the holistic approach with accent on the algal communities as the first level in the food-web chains, which earliest reacts to the changes in the ecosystems. During the exercises students will apply the received knowledge in a way that after a field trip, collecting of the necessary samples from chosen sites they will prepare themselves assessments of some different types of ecosystems and will propose the most appropriate methods for their restoration and management.

**Requirements for enrollment: NO**

**Programme:** M.Sc. in Applied hydrobiology and aquacultures BLB312117

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C072	Aquatic toxicology	English	MS	Summer	6	30		15	Assist. Prof. Desislava Rozdina, PhD	rozdina@uni-sofia.bg
<p><b>Short description of the course (in the language of instruction):</b> The course follows the contemporary tendencies in the aquatic toxicology. The students are introduced to the eco-toxicological assessment of the xenobiotic's impact on the biological components of the aquatic ecosystems, the study and diagnosis of the pollution of the water bodies with the main groups of toxicants. The course covers the following topics: the main pollution sources in the aquatic ecosystems; classification and characteristics of the polluted waters; contemporary methods for monitoring the behavior of the chemical components in the aquatic environment; the toxic effect of numerous organic and non-organic components in the water environment on the hydrobionts. The practical exercises include: Standard scheme of aquatic-toxicological experiment; acute toxicity testing of certain toxicants on hydrobionts; observation of behavioral responses of aquatic organisms on different toxicants; pathoanatomical analysis of poisoned fish. Completing the course the students will be able to apply the new competences as part of the biomonitoring and biological control of the aquatic ecosystems, solving cases associated with mass fish death with unknown chemical etiology.</p>										
<p><b>Requirements for enrollment: NO</b></p>										

**Programme:** M.Sc. in Environmental biotechnology BLT212113

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL C011	Environmental biotechnology	English	MS	winter	9	45		45	Prof. Yana Topalova, PhD, DSc	ytopalova@uni-sofia.bg



											<b>Assoc. Prof. Irina Schneider, PhD</b>
<b>Short description of the course (done in the language of instruction):</b> The main task of this course is to create an integrative view on the role of biotechnology for improvement of environmental quality. It ensures emphasizing knowledge about wastewater treatment processes and technologies, modulation of xenobiotic biodegradation and critical points in pollution control. The accent is put on the modern technologies suitable for different pollutants, the mechanisms of biodegradation of different types of xenobiotics (phenols, nitro- and chlorophenols, phthalates, polycyclic aromatic hydrocarbons), treatment of sludges.											
<b>Requirements for enrollment: NO</b>											
Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail	
						Lectures	Exercises/ Seminars	Practical work			
BL E021	Drinking waters	English	MA/MS	winter	4	30		15	Assoc. Prof. Yovana Todorova, PhD	yovana.todorova@gmail.com	
<b>Short description of the course (done in the language of instruction):</b> The course includes the specific area of drinking waters – sources, problems, technologies for obtaining of pure water for drinking and domestic needs, i.e. the way from reservoir to end user. The processing of raw water by appropriate methods for elimination of suspended substances, colouring compounds, metals and microorganisms is summarized. Some specific schemes for production of high-purified water as well as the problems of international standards and legislation are also considered in this elective course.											
<b>Requirements for enrollment: NO</b>											
Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail	
						Lectures	Exercises/ Seminars	Practical work			
BL E052	Utilization of secondary products	English	MA/MS	summer	4	30		15	Assoc. Prof. Irina Schneider	i.schneider@biofac.uni-sofia.bg	

**Short description of the course (done in the language of instruction):** This elective course has a task to give the students knowledge on the qualitative and quantitative characteristics of secondary products from different biotechnological industries, on the possibilities and technological ways for their utilization through producing new useful products, either as sources or as consumption goods. Examples of industries that use raw materials like organic products, as well as examples of the use of biomass to energy production are summarized. The economic, ecological and social effect of this approach will be discussed. The main attention will be turned to utilization of secondary products from dairy industry, technologies of composting and anaerobic biotechnologies for biofuel production. Some original approaches will be regarded.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E011	Bioremediation	English	MA/MS	winter	4	30		15	Prof. Yana Topalova, PhD, DSc	ytopalova@uni-sofia.bg

**Short description of the course (done in the language of instruction):** The biological, microbiological, functional and biotechnological approaches in bioremediation as a key strategy for restoration of water sludges and sediments have been studied in this course. The general concepts and principles of the bioremediation have been discussed step by step: 1) biotechnological and economical base and management of the remediation processes; 2) the general bioremediation technologies independent on resources; type of pollution and parameters of the *in site* and *ex site* processes; 3) post-remediation strategies for monitoring and control. At the time of the course the students develop the real practical bioremediation project and defend this project before specialized jury.

**Requirements for enrollment: NO**

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E092	Genetic and molecular biological methods in environmental biotechnology	English	MA/MS	summer	4	30		15	Assist. Prof. Mihaela Belouhova PhD	mihaela.kirilova@uni-sofia.bg

**Short description of the course (done in the language of instruction):** This course aims to provide information on the following two general topics: - Molecular biology in environmental biotechnology: genome organization in prokaryotes, main types of transfer of genetic material in prokaryotes; main types of mutations in bacteria and systems for reparation of DNA injury; regulation of genes' expression; recombinant DNA and gene cloning; molecular phylogeny. - Methods and approaches in environmental biotechnology - molecular methods for monitoring of the dynamic in the natural microbial ecosystems; recombinant technologies; methods for diagnostic of microbial communities.

**Requirements for enrollment: NO**

**Programme:** M.Sc. in Microbiology and microbiological control BLM212119

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		
BL E011	Bioinformatics methods in microbiology	English	MS	Summer	4	30	15		Assoc. Prof. Dr. Ventzislava Petrova	vpetrova@biofac.uni-sofia.bg

**Short description of the course (done in the language of instruction):** This course is a general introduction to Bioinformatics, as a new direction in biological science. It focuses on available computer databases and the possibility of their use in decoding the biological information. Major projects in recent years related to sequencing of various genomic sequences. This led to intensive development of bioinformatics science. The disclosure of these genetic codes allows the acquisition of detailed understanding of the synthesis of proteins, as well as the mechanisms of regulation of all life processes. In this course students will be shown how the use of genetic sequences can lead to much more complete understanding of the biological processes, how the application of such a database would help pharmaceutical and biotech companies in the detection of target sites for new drugs or how to enhance the production efficiency of a given product. Students will be introduced to the basic concepts of Bioinformatics and computational biology tools, such as the most frequently used online tools and resources. The course will include the use of Entrez NCBI's, Blast, PSI-BLAST, ClustalW, Pfam, PRINTS, BLOCKS, Prosite and PDB. An introduction will be made on the possibilities of creating a database, and basic design principles of programming languages.

Course code	Course title (in English)	Language of instruction	Course offered to BA/BS, MA/MS, PhD	Semester	ECTS	Number of hours			Lecturer/s's name	Lecturer/s's E-mail
						Lectures	Exercises/ Seminars	Practical work		

<b>BL E051</b>	<b>GMOs in food and food products</b>	<b>English</b>	<b>MS</b>	<b>Winter</b>	<b>4</b>	<b>30</b>		<b>15</b>	<b>Assoc. Prof. Dr. Ventsislava Petrova;</b>  <b>Assist Prof. Dr. Anna Tomova</b>	<b>vpetrova@biofac.uni-sofia.bg</b>  <b>aatomova@biofac.uni-sofia.bg</b>
<p><b>Short description of the course (done in the language of instruction):</b> This course provides basic knowledge on the key features and applications of GMOs in modern agriculture and food industry, and their impact on public health. It is designed to create a better understanding of scientific and safety issues associated with the GMO. Different classifications of foods and food additives derived from GMO are presented, special attention is paid to the fundamental principles for assessing the safety of the GMOs in food. The risks to human health from the use of genetically modified foods are concerned and specific safety aspects of the GMO are discussed. The safety of different genetic markers used for selection, as well as the potential GMO interaction with the intestinal microflora and the immune response is appraised. Information is provided for the concept of the substantial equivalence of GMO. Different groups GMMs and the products derived and applied for human and animal consumption are described. European and international regulations dedicated on the use of genetically modified foods and aiming to protecting human health and the environment are considered.</p>										
<p><b>Requirements for enrollment: NO</b></p>										

**Legend:**

C- Compulsory course

E – Elective course