

Syllabus

Code/Name	GBM 106 / Biology II
Type	Required
Credit/ECTS	7/7
Hour per Week	3 (3+0+0)
Level/Year	Undergraduate/1
Semester	Spring
Classroom	D305
Content	This course discusses evolution, phylogeny, biodiversity, and ecology of prokaryotes and eukaryotic plants and animals. The course places an emphasis on problem-solving, analysis, synthesis of information, and applying data effectively as it relates to the course content and biological concepts discussed. Making connections to real life application of course content will be emphasized across the material.
Prerequisites	-----
Textbooks	<p>Primary Campbell Biology 11th edition text book (Urry, Cain, Wasserman, Minorsky, Reece (either hardback or e-text)</p> <p>Supplementary Text book and “Mastering Biology available as a package as follows: Campbell Biology book, 11th edition (Urry, Cain, Wasserman, Minorsky, Reece) hard back PLUS access to online “Mastering Biology” e-text access package card/code.</p>
Objectives	<ul style="list-style-type: none"> • Given terms and facts pertaining to evolution, biodiversity, physiology, and ecology, students will be able to classify them correctly. • Given biological examples, students will be able to correctly differentiate how they relate to evolutionary concepts and theories. • Given phylogenetic relationships, students will be able to correctly interpret the level of organisms' relatedness. • Given organismal features, students will be able to correctly reconstruct phylogenetic classifications. • Given real biological observations, students will be able to correctly implement the concepts of evolution and biodiversity. • Given the descriptive characteristics of plants, students will be able to correctly identify distinguishing features of plants in general as well as key features of major plant divisions. • Given the descriptive characteristics of animals, students will be able to correctly identify distinguishing features of animals in general as well as key features of major animal divisions from simple invertebrates through advanced vertebrates. • Given the characteristics of a given ecosystem, students will be able to make connections between biotic and abiotic factors and understand how organisms are linked to their environment as well as each other through trophic level interactions.
Course Outcomes	<p>In this course you will be able to:</p> <p>CO1 Discuss the contribution of disciplines such as Systematics and Taxonomy to the organization of living organisms. Provide criteria for classification and naming. Explain how organisms are evolutionarily related. Understand the concept of homology.</p> <p>CO2 Identify Prokaryotic organisms and distinguish them from Eukaryotes depending on their cellular characteristics. Provide examples of organisms belonging to the domain Bacteria and the domain Archaea. Elaborate over the contribution of bacterial infections to the development of diseases in the modern society. Explain the</p>

differences between Prokaryotes and Viruses and why viruses are not considered alive.

CO3 List and explain the characteristics of the kingdom Protista and of the variety of organisms belonging to it. Provide examples of various kinds of protists and how they differ from each other in cell composition, organization and general behavior. Compare the relationships of protists with other organisms, including examples of parasitic and, generally, disease-causing organisms.

CO4 List and explain the characteristics of the Kingdom Fungi and of the organisms belonging to it. Distinguish between zygosporangium, ascospore and basidiospore fungi. Provide examples of the different kinds of fungi, their habitats and their survival skills.

CO5 List and explain the characteristics of the kingdom Plantae and of the organisms belonging to it. Explain the concept of alternation of generations and the main differences between gametophyte and sporophyte individuals. Provide classification criteria to distinguish between different kinds of plants. Describe the differences between various plant tissues and their purpose within the plant. Analyze the main kinds of plant organs (roots, stems and leaves) and their contribution to the life cycle of plants. Describe the main steps in plants' reproduction, and the importance of the flower as the main reproductive organ in angiosperms. Distinguish between micro- and macronutrients and their importance within the life of any plant

CO6 List and explain the characteristics of the kingdom Animalia and of the organisms belonging to it. List the various criteria for animal classification, ranging from the type of symmetry to the presence or absence of an internal body cavity. Distinguish between invertebrates and chordates. Describe the four main kinds of animal tissues along with examples of where they can be found in humans and of the purpose they may serve. Explain the purpose of having tissues organized into organs and organs into organ systems within the human body. Present the concept of homeostasis, along with examples of how it may function in humans. Describe vital processes including hemolymph/blood circulation, immunity, gas exchange, food digestion and nutrient absorption, body fluid regulation, control of nervous impulses and reproduction and be able to compare and contrast features in invertebrates versus vertebrates (including humans). Dissect and identify the main organs in a fetal pig model. List the components of each main organ system in the provided animal model and compare them with their counterparts in humans. Dissect and identify the main components of a sheep's brain and compare them with the corresponding structures in a human brain model.

Weekly Schedule of Topics

W	Topic
1	Classification of Living Organisms
2	Viruses, Bacteria and Archaea
3	The Protists
4	The Fungi
5	Evolution and Diversity of Plants – Seedless Plants
6	Seed Plants
7	Mid-term Exam
8	Evolution and Diversity of Animals
9	Animal Organization

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Genetic and Bioengineering Department
 2023-2024 Spring Semester

10	Circulation
11	Immunity
12	Digestion and Nutrition
13	Respiration
14	Body Fluid Regulation and Excretion
15	Nervous System
16	Final exam

Professional Contribution To have knowledge that will allow working in companies or research laboratories working on biology, to be able to design research and projects on biology.

Contribution to Program Outcomes*

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	2	3	4	3	3	3	4	3	3	3	3
CO2	3	2	3	5	3	2	2	4	2	0	3
CO3	2	3	2	4	3	4	2	1	2	2	3
CO4	3	3	2	3	3	3	3	2	2	2	2
CO5	3	1	3	4	3	3	1	3	1	2	3
CO6	2	2	2	2	3	4	2	2	2	3	2

* Contribution Level | 0: None | 1: Very Low | 2: Low | 3: Medium | 4: High | 5: Very High

Special Conditions	<ul style="list-style-type: none"> Students work in groups for project and presentations. 						
Requirements	Basic knowledge of Biology I						
Course Policy	<ul style="list-style-type: none"> Be in the class on time. English should always be used to communicate with one another. At least 70% attendance is required, otherwise a grade of DZ will be assigned. 						
Cheating & Plagiarism	<ul style="list-style-type: none"> Copying or letting someone copy your work on exams, assignments, or reports is cheating. Cutting and pasting text, figures and tables from web sources or any other electronic source is plagiarism. The consequence of academic dishonesty is to receive a grade of FF for the course. 						
Evaluation	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Mid-term Exam</td> <td style="text-align: right;">40%</td> </tr> <tr> <td>Final Exam</td> <td style="text-align: right;">60%</td> </tr> <tr> <td>Total</td> <td style="text-align: right;">100%</td> </tr> </table>	Mid-term Exam	40%	Final Exam	60%	Total	100%
Mid-term Exam	40%						
Final Exam	60%						
Total	100%						
Rubric	-----						

Instructor

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