

Planning and Quality Assurance Affairs

Form (A)

Course Specifications

General Information

Course name	General Biology
Course number	MDCN1411
Faculty	
Department	
Course type	College Needs
Course level	1
Credit hours (theoretical)	3
Credit hours (practical)	1
Course Prerequisites	

Course Objectives

1 - To realize the importance of studying biology and its branches.
2 - To develop the medical students' basic knowledge of biology as a science
3 - To provide an introduction to the biological basis of modern medicine
4 - To provide a foundation to more in-depth knowledge in fundamental principles of the modern biology that help medical students in their medical and clinical courses.
5 - To realize the basic unit of living things including why and how living things are classified

Intended Learning Outcomes

Knowledge and Understanding	<ul style="list-style-type: none"> * Students should be able to demonstrate an understanding of the major concepts in cell biology, the characteristics of living organisms including their biochemical composition, cellular structure, function * Mastering essential laboratory techniques and procedures related to the topics of the course including microscopy, preparation of silds, preparation of standard solution, and spectrophotometry * By the end of this course the students should be able to explain the differences and characteristics of prokaryotic and eukaryotic cells
Intellectual Skills	<ul style="list-style-type: none"> * By the end of this course the students should be able to demonstrate an understanding of biology both and the cellular and the molecular levels * By the end of this course the students will have extended their knowledge and understanding of the various range of biological processes in living organisms
Professional Skills	<ul style="list-style-type: none"> * By the end of this course the students should be to apply biological concepts to solve real-world scientific problems

Course Contents

- 1 - Water, pH, Weak Acids, Weak Bases, and buffers.
- 2 - Macromolecules, structure and function Amino acids and proteins, carbohydrates, Lipids, nucleic acids.
- 3 - The cell: Prokaryotic and eukaryotic cells.
- 4 - Microscopy (principles of magnification and resolution).
- 5 - Eukaryotic cell compartmentalization, endomembrane system and organelles structure and function; Animal vs plant cell
- 6 - The cytoskeleton: Microtubules, microfilaments, & intermediate filaments.
- 7 - Extracellular components and connections between cells.
- 8 - Cell Walls of Plants (primary and secondary cell wall and the middle lamella)
- 9 - The Extracellular Matrix (ECM) of Animal Cells
- 10 - Cell Junctions Cells in animal (Tight Junctions, Desmosomes, and Gap Junctions in Animal Cells) and plant cells (Plasmodesmata in Plant Cells).
- 11 - Biological Membranes and Transport
- 12 - Cell membrane structure and function
- 13 - , The Fluidity of Membranes
- 14 - Membrane Proteins and Their Functions Traffic across membranes including exocytosis and endocytosis
- 15 - The cell cycle and cell divisions Mitosis and Meiosis (gametogenesis and nondisjunction) in details
- 16 - DNA replication Prok vs Euk
- 17 - From gene to protein: Transcription and translation

Teaching and Learning Methods

- 1 - in-class discussions, online assignments and homework
- 2 - regular weekly lectures
- 3 - practical part that include microscopy and other real laboratory experiments about the major topics of the course

Teaching and Learning Methods for the Disabled Students

- 1 - this will be determined individually according to the type of disability

Students Assessment

<u>Assessment Method</u>	<u>TIME</u>	<u>MARKS</u>
online quizzes and assignments via Moodle	10-60 mins	30
midterm exam	60 mins	30
final exam	120 mins	40

Books and References

Course note	PowerPoint material collected and prepared by the course instructor
Essential books	Biology 12th edition by Peter H. Raven, George B. Johnson, Kenneth A. Mason, Jonathan Losos, Tod Dunca 2020
Recommended books	Campbell Biology, 12th Edition. Authors: Lisa A. Urry, Micheal L. Cain, Steven A. asserman, Peter V. Minorsky, Rebecca B. Orr, Neil A. Campbell .2020 Beckers World of the Cell 8th edition. Authors: Jeff Hardin, Gregory Paul Bertoni, Lewis J. Kleinsmith. 2018
Other References (Periodical, web sites, etc.)	Lehninger Principles of Biochemistry 7th edition. Authors: David L. Nelson, Michael M. Cox. 2017

