

Planning and Quality Assurance Affairs

Form (A)

Course Specifications

General Information

Course name	Molecular Cell Biology
Course number	AMSL2305
Faculty	
Department	
Course type	Major Needs
Course level	2
Credit hours (theoretical)	3
Credit hours (practical)	0
Course Prerequisites	

## Course Objectives

- 1 - The student at the end of this course will be familiar with the following :Cells ,Cells ultra structure ,Shape, Size ,Functions
- 2 - Cells study Equipment Light microscope ,Electron Microscope ,Ultracentrifuge ,Staining
- 3 - The Cell membrane structure ,Lipid layers ,proteins function
- 4 - Transportation across membranes ,Carrier protein, Carrier protein
- 5 - Voltage gated channels ,Na +K+ Pump, Proton pump ,Voltage gated Channels
- 6 - Nerve cells –Muscle cells Impulses signals transmission ,Ion channels receptors ,Protein G linked receptors
- 7 - , Cell Cytoskeleton , Cell Junctions ,Cell divisions , Cell cycle
- 8 - Cell death activity ,Cell proliferation , Programmed cell death , Cancer cells
- 9 - General aspects :Introduction ,Scope of Cell Biology ,Cells ,Types of Cells ,Size ,Structure of Cell
- 10 - Cell study ;Equipments and Instruments for cell study ,Microscopes ,Centrifuges ,Tissue fractionations ,Isolations and culture of cells
- 11 - The Cell Membrane Structure ,Lipid bilayer ,Proteins ,Glycoproteins ,Glycolipids
- 12 - The Transport across the membrane ,Diffusion , Osmosis ,Facilitated transport ,Membrane proteins (Carriers ,Channels) ,Voltage gated Channels
- 13 - Nerve cells ,Neurotransmitters ,Sodium Potassium Pump ,Transmitter –gated ions ,Channel neuromuscular transmission
- 14 - Intracellular transport protein ,Signal in Tran membrane proteins ,Vesicular transport ,Secretory pathways in Endoplasmic reticulum ,Endocytosis ,Exocytosis
- 15 - Lysosomes ,Digestions ,Cell Communications ,Cell signals ,Cell responds , Signal receptors ,Ion Channel receptors ,G Proteins ,Cyclic AMP Pathway
- 16 - The Cytoskeleton ,Microtubules ,Intermediate filaments ,Microfilaments
- 17 - Tissues ,Cell Junctions ,Anchoring junction ,Tight junction ,Adhering junction ,Gap junction
- 18 - The cell division ,Cell cycle ,Mitosis division ,Meiosis division
- 19 - Cell cycle control system , Cell death , Activity of CNKs, Control of cells in multicellular organisms
- 20 - The cell proliferations , Signal programmed cell death

## Course Contents

- 1 - General aspects :Introduction ,Scope of Cell Biology ,Cells ,Types of Cells ,Size ,Structure of Cell
- 2 - Cell study ;Equipments and Instruments for cell study ,Microscopes ,Centrifuges ,Tissue fractionations ,Isolations and culture of cells
- 3 - The Cell Membrane Structure ,Lipid bilayer ,Proteins ,Glycoproteins ,Glycolipids
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- 12 - The cell proliferations , Signal programmed cell death
- 13 - The Cancer cells

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## Teaching and Learning Methods

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| 1 - Reports           |
| 2 - Quazes            |
| 3 - Reports           |
| 4 - Final examination |

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## Students Assessment

<u>Assessment Method</u>	<u>TIME</u>	<u>MARKS</u>
First mid term examination	after one month	25
Second Mid term Exmination	After the second month	25
Final examination	At the end of the semester	50

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## Books and References

Course note	1-Molecular Biology By Alberts et al .Garland Science, Fourth ed. 2002 Essential Cell Biology: Bruce Alberts, Dennis Bray, Karen .Garland Science; Third edition, 2009
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