



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

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|--|---|---|------------|--|---|--------------------------------|---|------------|---|
| Course Title | | Molecular Biology of the Cell- II | | | | | | | |
| Course Code | | BYF528 | | Course Level | | Second Cycle (Master's Degree) | | | |
| ECTS Credit | 3 | Workload | 80 (Hours) | Theory | 2 | Practice | 0 | Laboratory | 0 |
| Objectives of the Course | | The purpose of the course is to be able to tell about the intracellular organnels, vesicular regulation in the secretory and endocytic pathways | | | | | | | |
| Course Content | | Intracellular compartments and protein sorting, endoplasmic reticulum, vesicular traffic in the secretory and endocytic pathways, golgi network, lysosomes, cell signaling, cell division cycle, and cytokines. | | | | | | | |
| Work Placement | | N/A | | | | | | | |
| Planned Learning Activities and Teaching Methods | | | | Explanation (Presentation), Discussion, Individual Study | | | | | |
| Name of Lecturer(s) | | | | | | | | | |

Assessment Methods and Criteria

| Method | Quantity | Percentage (%) |
|---------------------|----------|----------------|
| Midterm Examination | 1 | 40 |
| Final Examination | 1 | 60 |

Recommended or Required Reading

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| 1 | Medical Physiology (Guyton & Hall) |
| 2 | Hücre |

| Week | Weekly Detailed Course Contents | |
|------|---------------------------------|---|
| 1 | Theoretical | Diffusion through cell membrane |
| 2 | Theoretical | Endocytosis and exocytosis |
| 3 | Theoretical | Digestion of pinocytic and fagocytic foreign material in cells: function of lysosomes |
| 4 | Theoretical | Vesicular structures in endoplasmic reticulum and Golgi apparatus |
| 5 | Theoretical | Fuctions of mitochondria |
| 6 | Theoretical | DNA replication in cell proliferation |
| 7 | Intermediate Exam | Midterm exam |
| 8 | Theoretical | Chromosomes and their conjugation |
| 9 | Theoretical | Meiosis and mitosis |
| 10 | Theoretical | The control of cell growth and proliferation |
| 11 | Theoretical | Signal transduction pathways in cells |
| 12 | Theoretical | Cell differentiation |
| 13 | Theoretical | Apoptosis and necrosis |
| 14 | Theoretical | Cancer |
| 15 | Theoretical | Cancer |
| 16 | Final Exam | Final exam |

Workload Calculation

| Activity | Quantity | Preparation | Duration | Total Workload |
|---------------------------------------|----------|-------------|----------|----------------|
| Lecture - Theory | 14 | 0 | 2 | 28 |
| Assignment | 4 | 2 | 2 | 16 |
| Reading | 8 | 1 | 1 | 16 |
| Midterm Examination | 1 | 8 | 2 | 10 |
| Final Examination | 1 | 8 | 2 | 10 |
| Total Workload (Hours) | | | | 80 |
| [Total Workload (Hours) / 25*] = ECTS | | | | 3 |

*25 hour workload is accepted as 1 ECTS



Learning Outcomes

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|---|--|
| 1 | To learn about the diffusion and material transport routes through cell membrane |
| 2 | To be able to tell about the secretion systems and signal transduction pathways inside cells |
| 3 | To be able to explain the vesicular regulation and pathways in cells |
| 4 | To gain knowledge on cell growth, proliferation and differentiation, the control of these pathways |
| 5 | To gain knowledge on the pathways related to apoptosis, necrosis and cancer |

Programme Outcomes (Biophysics Master)

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|----|--|
| 1 | To be able to acquire an up-to-date theoretical and practical background on biophysical and electrophysiological research |
| 2 | To be able to acquire a background needed for basic biophysical research and having the ability to use the theoretical and practical knowledge in the field |
| 3 | To be able to attain the ability to get access to the up-to-date knowledge, interpret and improve the information in the field of biophysics |
| 4 | To be able to attain the ability to perform experimental methods in the field, produce new approaches and ability to produce analytical solutions to the problems faced during application of new methods |
| 5 | To be able to reach a level to follow research in the field, to possess written and spoken communication skills and be able to join discussions |
| 6 | To be able to acquire knowledge and skill to apply scientific principles of ethics. |
| 7 | To be able to gain knowledge and skill about the basic issues of electric and magnetic fields, the interaction of light with matter, spectroscopy, radiation biophysics such as radiation, electromagnetic spectrum, ionizing radiation and radioactivity; learn about the physical properties of these issues and to be able to evaluate biological effects of radiation on tissues |
| 8 | To be able to construct knowledge and skill about the molecular structure and function in living systems, bioenergetic concepts, information theory and the processing of information in living systems |
| 9 | To be able to master about the basic principles of bioelectrical incidents that occur in cells, such as transport across membranes, electrical properties of membranes, resting membrane potential, and to be able to discuss the bioelectrical behaviour of excitable membranes |
| 10 | To be able to define the kinds, sources and biophysical properties of bioelectrical signals, to store knowledge in areas of biophysical concepts and characteristics such as nerve action potential and compound nerve action potential and to record to record these potential variants, analyze and evaluate the results |
| 11 | To be able to define basic biophysical principles of the visualization techniques used in medical field and the techniques used to determine biological signals, such as electromyography (EMG), electroencephalography (EEG), and electrocardiography (ECG), and attain the ability to apply these techniques |
| 12 | To be able to attain knowledge on molecular biophysics and its basic principles |
| 13 | To be able to attain the ability to plan and conduct projects in the field of biophysics, and attain the ability to write and publish scientific results |
| 14 | To be able to acknowledge the national and international laws and regulations about the concepts related to biophysics |
| 15 | To be able to attain the skills to organize activities together with non-governmental organizations or to conduct collaborative projects with other disciplines |
| 16 | To be able to acquire the ability of critical thinking, making judgements and solving problems in the field of biophysics |
| 17 | To be able to use statistical, computational and communicational tools, which can be applied in the field of biophysics |
| 18 | To be able to use basic knowledge and skills of the field; be able to evaluate data, identify problems and propose solutions |

Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

| | L1 | L2 | L3 | L4 | L5 |
|-----|----|----|----|----|----|
| P1 | 5 | 5 | 5 | 5 | 5 |
| P2 | 4 | 4 | 4 | 4 | 5 |
| P3 | 5 | 5 | 5 | 5 | 5 |
| P4 | 4 | 3 | 3 | 3 | 3 |
| P5 | 4 | 5 | 4 | 4 | 4 |
| P6 | 2 | 2 | 2 | 2 | 2 |
| P7 | 1 | 1 | 1 | 1 | 1 |
| P8 | 5 | 5 | 5 | 5 | 5 |
| P9 | 5 | 5 | 4 | 5 | 5 |
| P10 | 4 | 3 | 3 | 3 | 3 |
| P11 | 1 | 1 | 1 | 1 | 1 |
| P12 | 4 | 4 | 5 | 5 | 4 |
| P13 | 4 | 4 | 4 | 4 | 4 |
| P14 | 2 | 2 | 2 | 2 | 2 |
| P15 | 3 | 3 | 3 | 3 | 3 |



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|-----|---|---|---|---|---|
| P16 | 4 | 4 | 4 | 4 | 4 |
| P17 | 2 | 3 | 2 | 2 | 2 |
| P18 | 5 | 5 | 5 | 5 | 5 |

