# GAZIANTEP ISLAMIC SCIENCE AND TECHNOLOGY UNIVERSITY

## GRADUATE EDUCATION INSTITUTE

## COURSE CONTENT FORM

| | **COURSE INFORMATION** | | | | | |
|---|---|---|---|---|---|---|
| **Curriculum year** | **Course name** | *Code* | *Semester* | *T+P Hour* | *Credit* | *ECTS* |
| | Cell Biology, Cell and Tissue Culture Techniques | | I or II | 2+2 | 3 | 6 |

| | |
|---|---|
| **Language of the Course** | Turkish |
| **Level of the Course** | Master's Degree |
| **Department/Program** | Histology-Embryology |
| **Education Type** | Formal |
| **Type of Course** | Elective courses |
| **Prerequisite Courses** | No |
| **Department/Program coordinator** | Prof. Dr. Mehmet Yüncü |
| **Course Supervisor(s)** | Asst. Prof. Üyesi Mustafa Öztatlıcı |
| **Course Assistants** | Asst. Prof. Çiğdem Karaca<br>Asst. Prof. Ayşegül Burçin Yıldırım |
| **Course Objectives** | Learning the general structure of the cell and the basic metabolism of the cell, Learning the basic techniques required for cell and tissue culture. |
| **Course Content** | General structure of the cell, cell membrane and its specializations, exocytosis and endocytosis events, cell organelles, basic metabolism of the cell, nucleus, cell divisions, cell death, apoptosis, cell culture laboratory equipments, cell culture laboratory organization and applications, primary cell culture and cell lines acquisition and preservation, obtaining and production of embryonic and adult stem cells, methods of producing cells and tissues in various culture media. |
| **Teaching-Learning Methods and Techniques used in the Course** | Lecture (Presentation) method, student lecture presentations, Discussing scientific articles, laboratory pratices |
| **Course Internship Status** | No |

| Course Learning Outcomes |
|---|
| 1. Counts the cell organelles, explains their morphological structures, and expresses their functions. |
| 2. Explains the structure and functions of the cytoskeleton elements, describes the surface differentiations of the cell and expresses their functions. |
| 3. Explains and summarizes cell metabolism, cell cycle and cell death. |
| 4. Specifies the laboratory, devices, and consumables used in cell culture. |
| 5. Learns and applies cell culture, passage, freezing and examination methods using primer cell culture and cell lines. |
| 6. Explains the definition and properties of stem cells, produces stem cells in culture and differentiates them. |
| 7. Explains and evaluates stem cell treatments in various diseases. Discribes and explains organ cultures. |

| COURSE FLOW | |
|---|---|
| **Week** | **Topics** |
| 1 | Introduction to cell biology, cell organelles and their functions |
| 2 | Cell membrane and cell surface differentiations |
| 3 | Cell metabolism |
| 4 | Cell proliferation and cell cycle |
| 5 | Apoptosis and other cell death types |
| 6 | What is cell culture? What is used for? Cell culture laboratory, devices and equipments |
| 7 | Midterm exam |
| 8 | Culture media and their properties, preparation of culture media |
| 9 | Establishment and culture of cell lines |
| 10 | Primary cell culture and primary culture preparations |
| 11 | Stem cell definition, types and properties |
| 12 | Embryonic stem cells, Non-embryonic and cancer stem cells and culture |
| 13 | Differentiation of stem cells and their clinical use |
| 14 | Stem cell treatments in various diseases, tissue and organ cultures |
| 15 | Semester final exam |

| RESOURCES |
|---|
| - Freshney R.L: Culture of Animal Cells: A Manual of Basic Technique and Specialized Applications, Wiley-Blackwell 2010<br>- Ross M.H, Pawlina W: Histology, A Text and Atlas. Lippincott Williams and Wilkins. 2011<br>- Junqueira L.C: Basic Histology. McGraw-Hill Medical. 2013<br>-Kierszenbaum A: Histology and Cell Biology. Elsevier-Mosby. 2011<br>-Can A.: Kök Hücre Biyolojisi, Türleri ve Tedavide Kullanımları, 2014 |

| ASSESSMENT SYSTEM | | |
|---|---|---|
| **SEMESTER STUDIES** | **number** | **PERCENTAGE OF CONTRIBUTION** |
| Midterm | 1 | %40 |
| Quiz | | |
| Homework | | |
| Attending the course | | |
| Seminar | | |
| Practice | 1 | %10 |
| Course Specific Internship (if applicable) | | |
| Project | | |
| Workshop | | |
| Presentation | | |
| Semester final exam | 1 | %50 |
| **Total** | 3 | %100 |
| Contribution of Midterm Studies to Success Grade | | |
| The Contribution of the Final Exam to the Success Grade | | |
| **Total** | | |

| ECTS / WORKLOAD TABLE | | | |
|---|---|---|---|
| **Activity** | **number** | **Time (Hour)** | **Total Workload (Hour)** |
| Course Duration (Including the exam week: 15x total course hours) | *15* | *2* | *30* |
| Out of Class Study Time (Pre-study, reinforcement) | *15* | *4* | *60* |

| | | | |
|---|---|---|---|
| Homework | *1* | *5* | *5* |
| Seminar | *1* | *10* | *10* |
| Presentation | *3* | *5* | *15* |
| Practices | *15* | *2* | *30* |
| Lab | *15* | *2* | *30* |
| Course Specific Internship (if applicable) | | | |
| Project | | | |
| Workshop | | | |
| Other (……..) | | | |
| Midterm exam | *1* | *1* | *1* |
| Quiz | | | |
| Semester final exam | *1* | *1* | *1* |
| **Total Workload** | | | *182* |
| **Total Workload / 30(s)** | | | |
| ***ECTS Credits of the Course*** | | | *6* |

**ASSOCIATION OF COURSE LEARNING OUTCOMES WITH PROGRAM OUTCOMES**

| No. | Program Learning Outcomes |
|---|---|
| **1** | Have general knowledge about the human body |
| **2** | Have detailed information about the histological structures of human tissues and organs. |
| **3** | Learns histological and histochemical techniques |
| **4** | Have detailed information about general human embryology. |
| **5** | Learn to use research lab tools and materials |
| **6** | Improves scientific article reading and evaluation proficiency |
| **7** | Can make histology laboratory applications to undergraduate students |
| **8** | Gains a general vision about basic medical sciences |
| **9** | Provides the necessary knowledge to participate in the doctoral program |
| **10** | Provides the competence to be a researcher in multidisciplinary research |

| **Learning Outcomes** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** |
|---|---|---|---|---|---|---|---|---|---|---|
| LO1. | 3 | 5 | 3 | 2 | 3 | 3 | 5 | 5 | 5 | 4 |
| LO2. | 4 | 4 | 3 | 2 | 3 | 4 | 4 | 5 | 5 | 5 |
| LO3. | 4 | 4 | 3 | 2 | 3 | 4 | 4 | 5 | 5 | 5 |
| LO4. | 2 | 2 | 5 | 2 | 5 | 4 | 3 | 5 | 5 | 5 |
| LO5. | 3 | 3 | 5 | 2 | 5 | 5 | 4 | 5 | 5 | 5 |
| LO6. | 3 | 4 | 4 | 4 | 5 | 5 | 3 | 5 | 5 | 5 |
| LO7. | 3 | 3 | 4 | 3 | 4 | 4 | 3 | 5 | 5 | 5 |
| **LO: Learning Outcomes PO: Program Outcomes** | | | | | | | | | | |
| **Contribution Level** | 1. Very Low | | 2. Low | | 3. Medium | | 4. High | | 5.Very High | |