



AYDIN ADNAN MENDERES UNIVERSITY
GRADUATE SCHOOL OF HEALTH SCIENCES
STEM CELL AND REGENERATIVE MEDICINE (INTERDISCIPLINARY)
STEM CELL AND REGENERATIVE MEDICINE INTERDISCIPLINARY
STEM CELL AND REGENERATIVE MEDICINE INTERDISCIPLINARY MASTER
COURSE INFORMATION FORM

Course Title	Molecular Essentials of Stem Cell Structure								
Course Code	KHÜ501		Course Level		Second Cycle (Master's Degree)				
ECTS Credit	7	Workload	176 (Hours)	Theory	2	Practice	2	Laboratory	0
Objectives of the Course	The aim of this course is to explain the basic properties, molecular and genetic properties of stem cells and their surface structures.								
Course Content	Pluripotency, self-renewal and differentiation, stem cell niche, stem cell-related genetic and epigenetic properties, stem cell-specific markers and stem cell types will be explained.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Demonstration, Discussion, Individual Study								
Name of Lecturer(s)	Prof. Kemal ERGİN								

Assessment Methods and Criteria

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

Recommended or Required Reading

1	Sell S, Stem Cells Handbook, Humana Press, second edition, 2013.
2	Alberio R, Epiblast Stem Cells, Humana Press, Methods and protocols, Wiley Blackwell, 2013
3	Regad T, Sayers TJ, Rees R, Principle of Stem Cell Biology and Cancer,
4	Healy L, Ruban L, Atlas of Human Pluripotent Stem Cells in Culture, Springer, 2015
5	Rich IN, Stem Cell Protocols, Humana Press, 2015
6	R. Lanza, J. Gearhart, B. Hogan, D. Melton, R. Pederson, E.D. Thomas, J.Thomson, I. Wilmut. Essentials of Stem Cell Biology. Academic Press.
7	Lewandowski M, Mouse Molecular Embryology, Methods and Protocols, Humana Press, 2014.

Week	Weekly Detailed Course Contents	
1	Theoretical	Course description and general information
2	Theoretical	Basic features of stem cells-I: pluripotency and self-renewal
3	Theoretical	Basic features of stem cells-II: differentiation
4	Theoretical	Stem cell life cycle and aging
5	Theoretical	Stem cell niche
6	Theoretical	Genes and genome structure in stem cells
7	Theoretical	Epigenetic mechanisms in stem cells
8	Intermediate Exam	Mid-term exam
9	Theoretical	Stem cell and signaling
10	Theoretical	Pluripotent stem cells and markers
11	Theoretical	Mesenchymal stem cells and markers
12	Theoretical	Fetal and adult stem cells
13	Theoretical	Bone marrow and cord blood stem cells
14	Theoretical	Cancer stem cell
15	Final Exam	Final exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	13	1	3	52
Assignment	4	10	2	48
Midterm Examination	1	24	2	26



Final Examination	1	48	2	50
Total Workload (Hours)				176
[Total Workload (Hours) / 25*] = ECTS				7
*25 hour workload is accepted as 1 ECTS				

Learning Outcomes

1	Explain the basic features of stem cell structure.
2	Explain the genetic and epigenetic properties of stem cells.
3	Knows the stem cell markers.
4	Distinguishes stem cell types.
5	Gains knowledge of stem cell signaling.

Programme Outcomes (*Stem Cell and Regenerative Medicine Interdisciplinary Master*)

1	To have comprehensive and in-depth knowledge of Stem Cell and Regenerative Medicine
2	To have information about stem cell production and characterization
3	To learn stem cell sources, stem cell types and their differences
4	To understand the molecular and genetic structure of stem cells
5	To be able to learn and make stem cell culture methods
6	To be able to adapt the knowledge in the field of stem cells to research in line with current developments
7	To be able to use molecular laboratory methods used in stem cell research
8	Learning in vitro disease models and in vivo experiments related to stem cells
9	To have knowledge about stem cell therapies and clinical use
10	Conduct independent research in accordance with the principles of research and publication ethics

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	3	4	4	4
P2	4	4	5	5	5
P4	3	5	5	3	3
P6	4	3	3	3	3
P9	3	3	2	2	2

