



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Cell Differentiation and Its Methods							
Course Code		KHÜ524		Course Level		Second Cycle (Master's Degree)			
ECTS Credit	6	Workload	153 ( <i>Hours</i> )	Theory	2	Practice	0	Laboratory	0
Objectives of the Course		The aim of this course is to give information about differentiation methods and their clinical usage from stem cells to various cells.							
Course Content		The concept of differentiation in stem cells, direct differentiation, differentiation from stem cells to various cells and their potential use in clinical will be explained.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Demonstration, Discussion, Individual Study					
Name of Lecturer(s)									

### Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	20
Final Examination	1	60
Assignment	1	20

### 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

Week	Weekly Detailed Course Contents	
1	Theoretical	The concept of differentiation in stem cells
2	Theoretical	Small molecules used in differentiation
3	Theoretical	Direct differentiation
4	Theoretical	Differentiation from mesenchymal stem cells
5	Theoretical	Differentiation from pluripotent stem cells-I
6	Theoretical	Differentiation from pluripotent stem cells-II
7	Theoretical	Differentiation from stem cells to retinal cells
8	Intermediate Exam	Mid-term exam
9	Theoretical	Differentiation from stem cells to heart cells
10	Theoretical	Differentiation from stem cells to nerve cells
11	Theoretical	Clinical use of differentiated cells-I
12	Theoretical	Clinical use of differentiated cells-II
13	Theoretical	Review of articles and discussion-I
14	Theoretical	Review of articles and discussion-II
15	Final Exam	Final exam

### Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	13	1	2	39
Assignment	2	18	1	38
Midterm Examination	1	24	2	26



Final Examination	1	48	2	50
Total Workload (Hours)				153
[Total Workload (Hours) / 25*] = <b>ECTS</b>				6
*25 hour workload is accepted as 1 ECTS				

### Learning Outcomes

1	Examine differentiation methods and materials used from stem cells to other cells.
2	Learn differentiation types
3	Discuss the potential of differentiating cells in clinical use
4	Have information about differentiation from mesenchymal stem cells
5	Have knowledge about differentiation from pluripotent stem cells

### 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	2	2	3	2	2
P3	2	2		2	2
P9		2	4	2	2

