



Course Syllabus: Cell Structure Development Physiology II - B 213

Division	Biological and Environmental Sciences & Engineering Division
Course Number	B 213
Course Title	Cell Structure Development Physiology II
Academic Semester	Spring
Academic Year	2018/2019
Semester Start Date	01/27/2019
Semester End Date	05/23/2019
Class Schedule (Days & Time)	11:30 AM - 01:00 PM Sun Wed

Instructor(s)				
Name	Email	Phone	Office Location	Office Hours
Jasmeen Merzaban	jasmeen.merzaban@kaust.ed u.sa	+966128082383	4218, 2, Ibn Al- Haytham (bldg. 2)	Office hours are flexible and students just need to inform the professor when a meeting is desired.
Valerio Orlando	Valerio.Orlando@KAUST.ED U.SA	+966128082674		Office hours are flexible and students just need to inform the professor when a meeting is desired.

Teaching Assistant(s)	
Name	Email
N/A	N/A

Course Information	
Comprehensive Course Description	The scope of this course is to provide a comprehensive overview of the fundamental functional and pathological aspects of genome and epigenome regulation in the context of development, cell division, growth and adaptation to the changing environment.
Course Description from Program Guide	The scope of this course is to provide a comprehensive overview of eukaryotic cell structure and the fundamental functional aspects of membranes, organelles, nuclear architecture, genome and epigenome in the context of development, specialization, and integration with the environment. This course will run over the fall and spring semesters.
Goals and Objectives	Students will have acquired a deep knowledge of the mechanistic aspects (histone modifications, nuclear architecture, non-coding RNA) that regulate epigenome structure and function in the context of development, cell identity, cell memory, reprogramming and adaptation. Students will also learn about cutting-edge technologies including Chromatin Immunoprecipitation (CHIP), RNA IP, Chromosome Conformation Capture (Hi-C) and ATAC Sequencing. In addition, they will acquire a fundamental understanding of how the cell regulates choices such as cell division, growth, death, differentiation and senescence.
Required Knowledge	The Cell: Structure, Development and Physiology I
Reference Texts	1) Molecular Biology of THE CELL, 5th or 6th edition or any other mainstream cell biology text book 2) Epigenetics, by Allis, Reinberg and Jenuwein

Method of evaluation	40.00% - Final exam 30.00% - Presentation 15.00% - Exam 2 15.00% - Exam 1
Nature of the assignments	<p><u>Tests</u> --> 2 tests will be given following a block of lectures by the professors.</p> <p><u>Presentation/Group Discussion/Open Questions</u> --> In small groups (2-3 students), a topic will be given and related articles will be assigned to be presented to the class and instructors for in depth discussions. In order to make these discussions profitable and valuable for evaluation purposes, everyone should read the same articles prior to coming to class and be ready to answer questions. The results of these discussions will be summarized as "Open Questions" that will feed into the final projects.</p> <p><u>Written Proposal and Oral defense = FINAL EXAM</u> --> will be prepared on an individual basis on a topic of choice that was discussed in class.</p> <p>Written topic should be chosen based on topics and Open Questions covered during this course.</p> <p>Written proposal should be no longer than 5-6 pages, excluding references and it should be divided into three main sections:</p> <p>Introduction/general background and identification of the question/aim of the proposal (1.5-2 pages)</p> <p>Experimental plan specifying technology, expected results, coherence with the rest of the outlined aims of the proposal (2-3 pages)</p> <p>Final discussion and conclusions (1 page).</p> <p>Examples from previous years will be made available by the instructors. Proposal should be handed in by the last day of classes.</p> <p>Oral presentation should recap the topic and, like for the written proposal, introduce the question, then discuss the experimental plan with some emphasis also on the technologies and final outcome of the project. Altogether 15min presentation (~15 slides) plus 15min questions.</p> <p>Dates: May 19-23, 2018. Final schedule will be circulated later.</p>
Course Policies	<ul style="list-style-type: none"> -Attendance in class is mandatory unless a valid excuse is provided -It is the responsibility of the student to attend classes, exams and submit work on time -Plagiarism is not tolerated and this will be monitored for all work submitted
Additional Information	

Tentative Course Schedule

(Time, topic/emphasis & resources)

Week	Lectures	Topic		
1	Sun 01/27/2019 Wed 01/30/2019	Sun, Jan 27 Wed, Jan 30	General Introduction/Development Development	Orlando/Merzaban Orlando
2	Sun 02/03/2019 Wed 02/06/2019	Sun, Feb 3 Wed, Feb 6	Epigenetics: General Introduction Epigenetics: Technologies	Orlando Orlando
3	Sun 02/10/2019 Wed 02/13/2019	Sun, Feb 10 Wed, Feb 13	Epigenetics: Cell Memory systems Epigenetics: The role of noncoding RNA	Orlando Orlando
4	Sun 02/17/2019 Wed 02/20/2019	Sun, Feb 17 Wed, Feb 20	Epigenetics: Metabolic Signalling and Epigenome Epigenetics: Cell Reprogramming, Aging, Transgenerational Effects	Orlando Orlando
5	Sun 02/24/2019 Wed 02/27/2019	Sun, Feb 25 Wed, Feb 28	Tutorial Tutorial	Orlando Orlando
6	Sun 03/03/2019 Wed 03/06/2019	Sun, Mar 3 Sun, Mar 6	Exam #1 <i>Cell Cycle Control System</i>	Orlando Merzaban
7	Sun 03/10/2019 Wed 03/13/2019	Sun, Mar 10 Wed, Mar 13	Cell Division Control of Cell Division and Cell Growth	Merzaban Merzaban
8	Sun 03/17/2019 Wed 03/20/2019	Sun, Mar 17 Wed, Mar 20	Cell Death Cancer	Merzaban Merzaban
9	Sun 03/24/2019 Wed 03/27/2019	Sun, Mar 25 Wed, Mar 28	Cancer <i>Ch. 20</i> Test #3	Merzaban Merzaban
10	Sun 03/31/2019 Wed 04/03/2019	Sun, Mar 31 Wed, Apr 3	Cancer Stem Cell Hypothesis Reprogramming and Epithelial-mesenchymal-transition in Cancer	Merzaban Merzaban
11	Sun 04/07/2019 Wed 04/10/2019	Sun, Apr 7 Wed, Apr 10	Overview and tutorial Exam #2	Merzaban Merzaban

12	Sun 04/14/2019 Wed 04/17/2019	Sun, Apr 14 Wed, Apr 17	Presentation/Group Discussion/Open Questions Presentation/Group Discussion/Open Questions	Merzaban Orlando Merzaban Orlando
13	Sun 04/21/2019 Wed 04/24/2019	Sun, Apr 21 Wed, Apr 24	Presentation/Group Discussion/Open Questions Presentation/Group Discussion/Open Questions	Merzaban Orlando Merzaban Orlando
14	Sun 04/28/2019 Wed 05/01/2019	Sun, Apr 28 Wed, May 1	Presentation/Group Discussion/Open Questions Presentation/Group Discussion/Open Questions	Merzaban Orlando Merzaban Orlando
15	Sun 05/05/2019 Wed 05/08/2019	Sun, May 5 Wed, May 8	Presentation/Group Discussion/Open Questions Presentation/Group Discussion/Open Questions	Merzaban Orlando Merzaban Orlando
16	Sun 05/12/2019 Wed 05/15/2019	Sun, May 12 Wed, May 15	Proposal Preparation LAST DAY OF CLASS - Written proposal due	Merzaban Orlando Merzaban Orlando
17	Sun 05/19/2019 Wed 05/22/2019	FINAL EXAMS- ORAL DEFENSE OF PROPOSAL		

Note

The instructor reserves the right to make changes to this syllabus as necessary.