



Course Syllabus: Introductory Molecular Biology - B 104

Division	Biological and Environmental Sciences & Engineering Division
Course Number	B 104
Course Title	Introductory Molecular Biology
Academic Semester	Spring
Academic Year	2016/2017
Semester Start Date	01/22/2017
Semester End Date	05/18/2017
Class Schedule (Days & Time)	11:30 AM - 01:00 PM Mon Wed

Instructor(s)				
Name	Email	Phone	Office Location	Office Hours
Michael Florian Mette	florian.mette@kaust.edu.sa			Bldg. 2, Room 4327, anytime during working hours;

Teaching Assistant(s)	
Name	Email

Course Information	
Comprehensive Course Description	The course will provide insight to selected features of molecular biology and genetics. A particular focus will be on the basic mechanisms underlying the maintenance and expression of genetic information as well as on central concepts of classical genetics and contemporary experimental molecular biology. Upfront teaching will be combined with problem-based interactive approaches. Exemplary problems will be studied to further familiarize students with the essential concepts that will be built on in the advanced courses Cell Biology I B 224 and Cell Biology II B 213 as well as Genomics B 204. A central goal of the course is to make students aware of how deductive processes are applied in biological research for the advancement to new insight.
Course Description from Program Guide	This course aims at an audience with basic competences in molecular biology and genetics. It will serve as a reminder as well as extension course for those intending to major in all disciplines in biology. The class starts with an overview over the features of DNA as the carrier of genetic information in cells and the mechanisms by which it is maintained over cell generations. Further, it addresses the fundamental mechanisms by which the information encoded in DNA is transcribed into RNA and then translated into proteins as functional units. Basic concepts of eukaryote genetics such as chromosome function and Mendelian heredity will be covered, as well as aspects of bacterial genetics relevant for experimental molecular biology.
Goals and Objectives	This course aims to provide students with a solid theoretical foundation in basic molecular biology and genetics in order to prepare them for more advanced classes. It is in particular designed as a follow-up of B 102 Introductory Cell Biology and B 101 Introductory Biochemistry courses.
Required Knowledge	Basic understanding of general science and familiarity with topics covered by courses B 102 Introductory Cell Biology and B 101 Introductory Biochemistry are expected.
Reference Texts	Lewin's Genes XI, 11th revised edition (2013), ISBN: 978-1-4496-5985-1;
Method of evaluation	80.00% - Tests 20.00% - Quiz(zes)
Nature of the assignments	Students will be expected to prepare for the course based on assigned readings. Active preparation of course topics will be checked by ad hoc quizzes (20%), course progress by 3 interim exams and 1 final exam (80%).

Course Policies	Attendance of and active participation in classes is mandatory. Any planned absence needs to be discussed with the course instructor.
Additional Information	

Tentative Course Schedule

(Time, topic/emphasis & resources)

Week	Lectures	Topic
1	Mon 01/23/2017 Wed 01/25/2017	DNA: The Chemical Nature of the Gene (textbook chap. 1, 2 and 4)
2	Mon 01/30/2017 Wed 02/01/2017	DNA Replication and Recombination (textbook chap. 11, 14, and 15)
3	Mon 02/06/2017 Wed 02/08/2017	Gene Mutations, Transposable Elements, and DNA Repair (textbook chap. 16, 17, and 18)
4	Mon 02/13/2017 Wed 02/15/2017	Repetition and Problem Solving session, Exam Part A
5	Mon 02/20/2017 Wed 02/22/2017	From DNA to RNA: Transcription and RNA Processing (textbook chap. 19, 20, and 21)
6	Mon 02/27/2017 Wed 03/01/2017	From RNA to Protein: Translation (textbook chap. 22, 24, and 25)
7	Mon 03/06/2017 Wed 03/08/2017	Control of Gene Expression (textbook chap. 26, 28, 29)
8	Mon 03/13/2017 Wed 03/15/2017	Repetition and Problem Solving session, Exam Part B
9	Mon 03/20/2017 Wed 03/22/2017	Chromosomes, Mitosis, and Meiosis (textbook chap. 9 and 10)
10	Mon 03/27/2017 Wed 03/29/2017	Mendelian Genetics
11	Mon 04/03/2017 Wed 04/05/2017	Spring Break
12	Mon 04/10/2017 Wed 04/12/2017	Repetition and Problem Solving session, Exam Part C
13	Mon 04/17/2017 Wed 04/19/2017	Bacterial Gene Transfer: Plasmids, Conjugation, and Transformation
14	Mon 04/24/2017 Wed 04/26/2017	Heterologous Gene Expression Systems
15	Mon 05/01/2017 Wed 05/03/2017	Relevant Applications in Experimental Molecular Biology
16	Mon 05/08/2017 Wed 05/10/2017	Repetition and Problem Solving session, Exam Part D
17	Mon 05/15/2017 Wed 05/17/2017	No classes
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Note

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