



Course Syllabus: Fundamentals of Env Microbiology - EnSE 203

Division	Biological and Environmental Sciences & Engineering Division
Course Number	EnSE 203
Course Title	Fundamentals of Env Microbiology
Academic Semester	Fall
Academic Year	2018/2019
Semester Start Date	08/26/2018
Semester End Date	12/11/2018
Class Schedule (Days & Time)	10:30 AM - 12:00 PM Sun Wed

Instructor(s)				
Name	Email	Phone	Office Location	Office Hours
Pascal Saikaly	Pascal.Saikaly@kaust.edu.sa	+966128084903	4237, 4, Al-Jazri (bldg. 4)	Please send email to pascal.saikaly@kaust.edu.sa to set up an appointment at Building 4 Room 4237
Peiyong Hong	Peiyong.Hong@kaust.edu.sa	+966128082218	4275, 4, Al-Jazri (bldg. 4)	Please send email to peiyong.hong@kaust.edu.sa to set up an appointment at Building 4 Room 4275

Teaching Assistant(s)	
Name	Email

Course Information	
Comprehensive Course Description	This course is designed to provide introductory concepts on fundamentals of environmental microbiology to students from different engineering and science disciplines. Concepts related to the different molecular biology tools used in microbial ecology will also be introduced. The course will equip students with knowledge to apply these tools to unravel scientific questions relevant to natural and engineered biological processes.
Course Description from Program Guide	This course is designed to provide introductory concepts on fundamentals of environmental microbiology to students from different engineering and science disciplines. Concepts related to the different molecular biology tools used in microbial ecology will also be introduced. The course will equip students with knowledge to apply these tools to unravel scientific questions relevant to natural and engineered biological processes.
Goals and Objectives	<ul style="list-style-type: none"> - To introduce concepts of applied microbiology - To understand the role of microorganisms in many of the biological treatment systems - To introduce cultivation-dependent and cultivation-independent tools that are available to identify and characterize microorganisms - To utilize these tools to relate to the functionality of the treatment systems
Required Knowledge	Some understanding of basic chemistry, mathematics, environmental science and engineering concepts
Reference Texts	Brock Biology of Microorganisms

Method of evaluation	30.00% - Research Project 30.00% - Midterm exam 30.00% - Final exam 10.00% - Attendance and Participation
Nature of the assignments	Group project based on assigned research topic, paper presentation
Course Policies	<p>For all quizzes and exams, the answers that students turn in for grading must be formulated during the exam based on their own understanding of the material and without any supporting information. Copying or looking at the work of another student, or allowing another to copy your work or copying work from any other source is unacceptable. Students are required to always make a conscious effort to complete their own on their own and to protect it from the view of others, in order to ensure that it will be seen as their own.</p> <p>For final presentation and report, no plagiarism is allowed and that anything written using the words of other writers should be correctly attributed. Failure to adhere to these standards will result in a failure grade for that particular assignment,.</p> <p>For class attendance, any absences must be properly accounted for.</p>
Additional Information	

Tentative Course Schedule

(Time, topic/emphasis & resources)

Week	Lectures	Topic
1	Sun 08/26/2018 Wed 08/29/2018	Fundamentals of microbiology
2	Sun 09/02/2018 Wed 09/05/2018	Energetics, genetics and information flow
3	Sun 09/09/2018 Wed 09/12/2018	Bacterial diversity, bacterial populations relevant to nutrient cycles in environmental systems
4	Sun 09/16/2018 Wed 09/19/2018	Introduction on cultivation-dependent and molecular-based approaches
5	Sun 09/23/2018 Wed 09/26/2018	Mid-term exam
6	Sun 09/30/2018 Wed 10/03/2018	DNA/RNA extraction, PCR fundamentals
7	Sun 10/07/2018 Wed 10/10/2018	Molecular fingerprinting methods
8	Sun 10/14/2018 Wed 10/17/2018	16S rRNA gene cloning and sequencing approaches
9	Sun 10/21/2018 Wed 10/24/2018	Quantitative methods and staining approaches
10	Sun 10/28/2018 Wed 10/31/2018	Applied microbiology in engineered systems
11	Sun 11/04/2018 Wed 11/07/2018	Lab practical
12	Sun 11/11/2018 Wed 11/14/2018	Lab practical
13	Sun 11/18/2018 Wed 11/21/2018	Lab practical
14	Sun 11/25/2018 Wed 11/28/2018	Lab practical
15	Sun 12/02/2018 Wed 12/05/2018	Presentations
16	Sun 12/09/2018	
17		
18		

Note

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