



## Course Syllabus: Fundamentals of Env Microbiology - EnSE 203

<b>Division</b>	Biological and Environmental Sciences & Engineering Division
<b>Course Number</b>	EnSE 203
<b>Course Title</b>	Fundamentals of Env Microbiology
<b>Academic Semester</b>	Fall
<b>Academic Year</b>	2019/2020
<b>Semester Start Date</b>	08/25/2019
<b>Semester End Date</b>	12/10/2019
<b>Class Schedule</b> (Days & Time)	10:30 AM - 12:00 PM   Sun Tue

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 <a href="mailto:pascal.saikaly@kaust.edu.sa">pascal.saikaly@kaust.edu.sa</a> to set up an appointment at Building 4 Room 4237
Johannes Simon Vrouwenvelder	Johannes.Vrouwenvelder@kaust.edu.sa	+966128084851	4234, 4, Al-Jazri (bldg. 4)	Please send email to <a href="mailto:johannes.vrouwenvelder@kaust.edu.sa">johannes.vrouwenvelder@kaust.edu.sa</a> to set up an appointment at Building 4 Room 4234
Peiyong Hong	Peiyong.Hong@kaust.edu.sa	+966128082218	4275, 4, Al-Jazri (bldg. 4)	Please send email to <a href="mailto:peiyong.hong@kaust.edu.sa">peiyong.hong@kaust.edu.sa</a> to set up an appointment at Building 4 Room 4275

Teaching Assistant(s)	
Name	Email

Course Information	
<b>Comprehensive Course Description</b>	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.
<b>Course Description from Program Guide</b>	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 with 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.

<b>Goals and Objectives</b>	<ul style="list-style-type: none"> <li>- To introduce concepts of applied microbiology</li> <li>- To understand the role of microorganisms in many of the biological treatment systems</li> <li>- To introduce cultivation-dependent and cultivation-independent tools that are available to identify and characterize microorganisms</li> <li>- To utilize these tools to relate to the functionality of the treatment systems</li> </ul>
<b>Required Knowledge</b>	Some understanding of basic chemistry, mathematics, environmental science and engineering concepts
<b>Reference Texts</b>	Brock Biology of Microorganisms
<b>Method of evaluation</b>	<p>30.00% - Midterm exam</p> <p>30.00% - Final exam</p> <p>30.00% - Course Project(s)</p> <p>10.00% - Attendance and Participation</p>
<b>Nature of the assignments</b>	Group project based on assigned research topic, paper presentation
<b>Course Policies</b>	<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>
<b>Additional Information</b>	

## Tentative Course Schedule

*(Time, topic/emphasis & resources)*

<b>Week</b>	<b>Lectures</b>	<b>Topic</b>
1	Sun 08/25/2019 Tue 08/27/2019	Fundamentals of microbiology
2	Sun 09/01/2019 Tue 09/03/2019	Energetics, genetics and information flow
3	Sun 09/08/2019 Tue 09/10/2019	Bacterial diversity, bacterial populations relevant to nutrient cycles in environmental systems
4	Sun 09/15/2019 Tue 09/17/2019	Introduction on cultivation-dependent and molecular-based approaches
5	Sun 09/22/2019 Tue 09/24/2019	Saudi National holiday (September 22) Mid-term exam (Septemeber 24)
6	Sun 09/29/2019 Tue 10/01/2019	DNA/RNA extraction, PCR fundamentals
7	Sun 10/06/2019 Tue 10/08/2019	16S rRNA gene cloning and sequencing approaches
8	Sun 10/13/2019 Tue 10/15/2019	Quantitative methods and staining approaches
9	Sun 10/20/2019 Tue 10/22/2019	Biological stability of drinking water: introduction and impact of water
10	Sun 10/27/2019 Tue 10/29/2019	Mid semester break/ Biological stability of drinking water: impact of materials
11	Sun 11/03/2019 Tue 11/05/2019	Biological stability of drinking water: impact of biofilms
12	Sun 11/10/2019 Tue 11/12/2019	Lab practical
13	Sun 11/17/2019 Tue 11/19/2019	Lab practical
14	Sun 11/24/2019 Tue 11/26/2019	Lab practical
15	Sun 12/01/2019 Tue 12/03/2019	Study week
16	Sun 12/08/2019 Tue 12/10/2019	Exam week

### Note

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