SHAMOON COLLEGE OF ENGINEERING

COURSE SYLLABUS

Microbiology and the Chemical Industry

3010888

COURSE DETAILS

Campus:	Beer Sheva	**Academic year:**	2020
Department:	Chemical Engineering	Type of Course:	Elective
Discipline:	Process industry	Level of Course:	Undergraduate
Year of Study:	Fourth	Mode of Delivery:	Project oriented
Semester:	B	Prerequisites:	
Credit:	3	Co-Requisites:	
ECTS Credit Points:	4.5	Language of Instruction:	English
		Work Placement(s):	
Lecturer(s):	Yoram Shotland *yshotlan@sce.ac.il*	Teaching Assistant(s):	

AIM

Familiarize and extend the knowledge of the fundamental principles of classical and modern microbiology, and their integration into chemical engineering.

LEARNING OUTCOMES

On successful completion of the course, the students will be able to:

1. Describe the various elements in the bacterial cell and their roles in the cell.
2. Implement basic Microbiology principles in an industrial setting.
3. Compute the data indicating the growth rates of bacterial cultures.
4. Examine different solutions for various conditions while controlling bacterial growth.
5. Propose, based on a variety of data, the best method for gathering information on bacterial growth.

COURSE CONTENTS

Week	Subject	Relevant Reading
1	Presenting course logic and main goals, divided the students into groups, assigning the subject and relevant articles to each group.	
2	Learning basic microbiology principles.	[1] Chapters 1 & 10
3	Functional anatomy of prokaryotic cells.	[1] Chapter 4
4	Functional anatomy of prokaryotic cells.	[1] Chapter 4
5	Microbial growth.	[1] Chapter 6
6	Prerequisites for bacteria growth, physical and chemical.	[1] Chapter 6
7	Microbiology quiz.	
8	Submission of project progress report.	
9	Mentors' meetings with the project groups	
10	Mentors' meetings with the project groups	
11	Submit project final report	
12	Individual project defense exams	
13	Hackathon	

RECOMMENDED OR REQUIRED READING

Text book:

1. Tortora, G. J., Funke, B. R., Case, C. L., "Microbiology an Introduction", 8th ed. Benjamin Cummings, 2004.

PLANNED LEARNING ACTIVITIES AND TEACHING METHODS

Lecture hours: 3. The course will be taught in a project oriented manner, which will require team work. During the Semester each group will work on their own filled while guided by the Lecturer. At the end of the course, participating students will have to submit their final project as a group and will have to defense the group project, individually. In addition, a hackathon will be held, during which mixed groups of students from various courses will be required to solve a problem by applying course knowledge.

ASSESSMENT METHODS AND CRITERIA

Criterion	Percentage	Comments
Quizzes:	15%	
Project:	55%	10% project progress report 25% personal project defense 20% final project
Hackathon:	25%	23.06.2020 participation required
Attendance:	5%	23.06.2019 Adama scholarship ceremony