

COURSE SYLLABUS FORM

**American University of Beirut
Faculty of Arts and Sciences
Department BIOLOGY**

**Course Number and Title: 224 MICROBIOLOGY
Semester: Spring 2009-2010
Dr. Mike Osta**

1. Course Description

The microbiology course provides a basic understanding of the large and diverse group of microscopic organisms, and the viruses, which are microscopic but non cellular. The course focuses particularly on the biology of bacteria including their cell structure, metabolism, reproduction, communication and in certain cases their pathogenicity. The contribution of research to our current understanding of these microbial processes is stressed throughout, to familiarize students with the research tools used in the field in addition to the importance of model organisms. Throughout the course several aspects of microbiology are highlighted including the impact of microbial life (focusing mainly on bacteria) on the environment and man (human diseases). Classes are centered on discussion oriented lectures to encourage critical and analytical thinking. The laboratory part exposes students to several techniques used in classical bacteriology.

2. Course Learning Outcomes

Students completing the course should be able to demonstrate their knowledge of:

- 1- Cell structure-function relationships in bacteria
- 2- Major concepts of bacterial metabolism
- 3- Bacterial cell division and growth
- 4- The different methods applied for controlling bacterial growth
- 5- Mechanisms of replication of RNA viruses
- 6- Microbe-host interactions and mechanisms of disease

Assessment of CLOs:

- Outcomes 1-3 are assessed 6 weeks after the start of the semester in a written exam
- Outcomes 4-5 are assessed 11 weeks after the start of the semester in a written exam
- Outcome 6 is assessed at the end of the semester in a written exam

Students completing the laboratory work should be able to:

- 1- Apply specific staining methods to identify Gram-type and bacterial morphology
- 2- Apply specific staining methods to identify bacterial structures
- 3- Cultivate bacteria in liquid and solid media and isolation of pure colonies
- 4- Monitor bacterial growth using different approaches
- 5- Assess antibiotic susceptibility of bacteria
- 6- Assess the efficiency of disinfectants, antiseptics and sanitizers in controlling bacterial growth
- 7- Assess pollution of municipal water using bacterial coliforms as indicators
- 8- Distinguish between different bacterial species using a panel of metabolic tests
- 9- Identify the different blood stages of the protozoan parasite, *Plasmodium*

Assessment of laboratory CLO:

- Each learning outcome is assessed independently through a written report in which the student describes the experimental work performed, presents and comments his results (reports are delivered on weekly basis)

3. Resources Available to Students

Text book	Title:	Brock Biology of Microorganisms
	Authors:	Michael T Madigan, John M Martinko
	Edition:	Latest
	Publisher:	Pearson Education, Inc.

Laboratory notes Available on electronic reserve in AUB library

4. Grading Criteria

4.1. Course theory

First Exam	20%
Second Exam	20%
Final Exam	30%

4.2. Laboratory

Lab. Reports	70 %
Drop Quizzes	25 %
Evaluation	5%

4.3 Course Evaluation 5%

5. Schedule

5.1. Course Schedule

Week	Topic	Activities
1	Introduction to Microbiology	Lectures
1-2	Bacterial cell Structure/function	Lectures
2-3	Nutrition, culture and metabolism	
3-4	Microbial Growth	Lectures
4-6	Microbial growth control	Lectures
7-8	Bacterial Genetics	Lectures
9-11	Replication of Viruses	Lectures
11-13	Microbial interactions with humans	Lectures

6. Course Policy

- 6.1.** Students missing more than 1/5 of lectures or laboratory sessions are subject to being dropped out of the course (see AUB catalogue, FAS attendance)

- 6.2.** There will be no make-up exams as a matter of policy. Any missed exam will be added to the final exam (i.e. final exam will become 50%). If you miss both exams you will get 0% on one of the exams and the other added on to the final exam.