Centro Universitario Internacional

INNOVATION FOR A HEALTHIER PLANET

BIO 242E Applied Microbiology

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Office Hours: Mondays and Wednesdays, 10:30-11:30 AM (by E-mail appointment)

Course Information:
Fall 2016
Lectures: Mondays and Wednesdays,
Labs: Wednesdays

Course Description

This course is an introduction for students to basic concepts and unifying principles of Microbiology, with strong emphasis on the roles of microbes as disease-causing agents. It provides general information on the biology of microorganisms, and the most relevant clinical aspects of infectious diseases, and the impact of microbes on the environment.

Prerequisites

A previous course in general Biology is recommended

Course Goals and Methodology

The goals of this course are to provide the student with an understanding of basic bacterial laboratory techniques and the general concepts in Microbiology, as well as inform about the general practices used to identify and treat the most common infectious agents. The course is oriented towards the clinical aspects of Microbiology, but does introduce significant discoveries to convey important topics. The labs are designed to familiarize students with aseptic methods of microbiological techniques and with their applications in clinical and environmental Microbiology. The course is structured in lecture and lab sessions. Prior to each session, students are expected to have read the textbook chapters and lab protocols before the corresponding lectures and labs. Powerpoint presentations, lab protocols and other course materials will be posted on Blackboard at least one day prior to the lectures and labs.
Lecture sessions will include lecturing and discussion. Homework assignments will include the discussion of case studies and problems on the Blackboard discussion forums and an online quiz per lecture on Blackboard.
Lab sessions will include the discussion of the results from the previous session, presentation of the experimental procedures and experimental work. General lab safety rules must be kept at all
times. A quiz per 2-3 lab sessions will be posted on Blackboard.

Learning objectives

Upon successful completion of the course students will be able to:
1. Define basic structure/function of microorganisms, with emphasis on their relationships to human disease and treatment of such disease.
2. Identify bacterial/fungal toxic and invasive factors and their relationship to disease.

3. Describe the clinical manifestations associated with common bacterial, viral, fungal, and parasitic diseases.
4. Classify the mechanisms of antibiotic (antibacterial/antifungal) and antiviral activity, as well
as resistance strategies employed by target microorganisms.
5. Successfully use basic bacteriological skills in a laboratory or clinical setting.

Required Texts
Microbiology: A Systems Approach. Marjorie Kelly Cowan, 3rd edition. 2012. McGraw-Hill Publishing.

General course policies
Use of cell phones, pagers, MP3 players, headphones, texting, etc. is prohibited during class time. Please turn all of these devices to vibrate or off upon entering the classroom. If emergency communications are required, please excuse yourself from lecture/lab. Eating or drinking is strictly forbidden during lecture and lab sessions.

Course requirements and grading:
Four in-class exams (the lowest score of the four is dropped) will be held during the semester, and a final cumulative exam will be held on the final week of the program. A final lab exam will be held on the last lab session.
Lecture and lab quizzes will be graded automatically and the highest grade of two attempts will count towards the students' grade.
Participation will be evaluated on the basis of the students' contribution to in class and online discussion of the proposed topics and case studies.
Grading will be as follows:

Each in-class exam	15% (drop lowest score)
Final exam (cumulative)	20%
Lecture quizzes	10%
Active participation in classroom and online discussions	10%
Laboratory quizzes	5%
Laboratory exam (cumulative)	10%
Total	**100%**

Grade Conversion scale:

Spanish grade	10	9.5-9.9	9.0-9.4	8.5-8.9	8.0-8.4	7.5-7.9	7.0-7.4	6.5-6.9	6.0-6.4	5.5-5.9	5.0-5.4	0.0-4.9
U.S. grade	A+	A	A-	B+	B	B	B-	C+	C	C	C-	F

- There will be no extra credit work to improve your grade.
- There will be no make up labs or practical. Any medical emergency excuse must be followed by a detail written explanation of the problem from a health care professional. All documents must be presented to me on the day of your return to class.
- Late assignments are not accepted for grades in this course. Any medical emergency excuse must be followed by a detail written explanation of the problem from a health care professional. All documents must be presented to me on the day of your return to class.

Exams missed due to an excused (medical) absence must be made up within a week of returning to classes.

It is each student's responsibility to be informed of exam dates, paper due dates, required course activities, etc. before making any travel plans during the semester.

Attendance and punctuality
Attendance is mandatory. More than 3 unexcused absences will result in the lowering of the final grade. 6 unexcused absences will result in a failing grade in the course. Punctuality is required – lateness will be penalized by 0.5 (over 15 min) or 1 absence (over 30 min).

Missed or Late Work
All homework assignments will be due by the prescribed dates. Incomplete or late homework may receive no credit. A single opportunity for making up up to two missed assignments will be provided at the end of the semester. Exams missed due to an excused (medical) absence must be made up within a week of returning to classes. Exams missed due to unexcused absence will not be made up. It is each student's responsibility to be informed of exam dates, paper due dates, required course activities, etc. before making any travel plans during the semester.

Academic Dishonesty
Academic integrity is a guiding principle for all academic activity at Pablo de Olavide University. Cheating on exams and plagiarism (which includes copying from the internet) are clear violations of academic honesty. A student is guilty of plagiarism when he or she presents another person's intellectual property as his or her own. The penalty for plagiarism and cheating is a failing grade for the assignment/exam and a failing grade for the course. Avoid plagiarism by citing sources properly (using footnotes or endnotes and a bibliography).

Students with Disabilities
If you have a disability that requires special academic accommodation, please speak to your professor within the first three (3) weeks of the semester in order to discuss any adjustments. It is the student's responsibility to provide the International Center with documentation confirming the disability and the accommodations required (if you have provided this to your study abroad organization, they have most likely informed the International Center already but please confirm).

Behavior Policy
Students are expected to show integrity and act in a professional and respectful manner at all times. A student's attitude in class may influence his/her participation grade. The professor has a right to ask a student to leave the classroom if the student is unruly or appears intoxicated. If a student is asked to leave the classroom, that day will count as an absence regardless of how long the student has been in class.

Class schedule and calendar

Lecture sessions

Week	Day of the week	Date	Lecture #	Topic	Textbook
1	**Wednesday**	**14-sep**	1	Main themes of Microbiology	1
2	**Monday**	**19-sep**	2	Methods for studying microorganisms	3
	Wednesday	**21-sep**	3	The Bacteria and Archaea (I)	4
3	**Monday**	**26-sep**	4	The Bacteria and Archaea (II)	4
	Wednesday	**28-sep**	5	Eukaryotic cells and microorganisms	5
4	**Monday**	**03-oct**	6	**EXAM I**	**1 to 5**
	Wednesday	**05-oct**	7	An introduction to the viruses	6
5	**Monday**	**10-oct**	8	Microbial nutrition, ecology and growth	7
	Wednesday	**12-oct**	**-**	**Holiday. No lecture**	
6	**Monday**	**17-oct**	9	Microbial metabolism (I)	8
	Wednesday	**19-oct**	10	Microbial metabolism (II)	8
7	**Monday**	**24-oct**	11	Microbial genetics	9
	Wednesday	**26-oct**	12	**EXAM II**	**7 to 9**
8	**Monday**	**31oct**	13	Physical and chemical control of microbes	1
	Wednesday	**02-nov**	14	Elements of chemotherapy	1
9	**Monday**	**07-nov**	15	Microbe-human interactions	1
	Wednesday	**09-nov**	16	Host defenses I: non-specific defenses	1
10	**Monday**	**14-nov**	17	Host defenses II: specific immunity and immunization	15
	Wednesday	**16-nov**	18	**EXAM III**	**11 to 15**
11	**Monday**	**21-nov**	19	Infectious diseases affecting the skin and eyes	18
	Wednesday	**23-nov**	20	Infectious diseases affecting nervous system	19
12	**Monday**	**28-nov**	21	Infectious diseases affecting the cardiovascular and lymphatic systems	20
	Wednesday	**30-nov**	22	Infectious diseases affecting the respiratory system	21
13	**Monday**	**05-dic**	23	Infectious diseases affecting the gastrointestinal tract	22
	Wednesday	**07-dic**	24	Infectious diseases affecting the genitourinary system	23
14	**Monday**	**12-dic**	25	**EXAM IV**	**18 to 23**
	Wednesday	**14-dic**	26	Final review session	-

Lab Sessions

Week	Day of the week	Date	Lab #	Topic
2	**Wednesday**	**21-sep**	1	Lab safety lecture
3	**Wednesday**	**28-sep**	2	Microbiological methods (I)
4	**Wednesday**	**05-oct**	3	Microbiological methods (II)
5	**Wednesday**	**12-oct**	**-**	**Holiday. No lab session**
6	**Wednesday**	**19-oct**	4	Microbiological methods (III)
7	**Wednesday**	**26-oct**	5	Measuring microbial growth
8	**Wednesday**	**02-nov**	6	Mock exam labs 1-5
9	**Wednesday**	**09-nov**	7	Microbial genetics (I)
10	**Wednesday**	**16-nov**	8	Microbial genetics (II)
11	**Wednesday**	**23-nov**	9	Testing antimicrobial susceptibility
12	**Wednesday**	**30-nov**	10	Identification of microorganisms
13	**Wednesday**	**07-dic**	11	Mock exam labs 7-10
14	**Wednesday**	**14-dic**	12	**LAB EXAM**