

GENERAL INFORMATION			
Name: Edwin Ginés-Candelaria	Phone #: (305) 237-3396		
Course Prefix/Number: MCB2010L	Course Title: Microbiology Laboratory		
Number of Credits:			
Degree Type:	<input type="checkbox"/> B.A. <input checked="" type="checkbox"/> B.S. <input type="checkbox"/> B.A.S <input checked="" type="checkbox"/> A.A. <input checked="" type="checkbox"/> A.S. <input type="checkbox"/> A.A.S. <input type="checkbox"/> C.C.C. <input type="checkbox"/> A.T.C. <input type="checkbox"/> V.C.C		
Date Submitted/Revised:	Effective Year/Term:		
<input type="checkbox"/> New Course Competency <input checked="" type="checkbox"/> Revised Course Competency			
Course to be designated as a General Education course (part of the 36 hours of A.A. Gen. Ed. coursework): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
The above course links to the following outcome(s): <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Communication <input checked="" type="checkbox"/> Numbers / Data <input checked="" type="checkbox"/> Critical thinking <input checked="" type="checkbox"/> Formulation of strategies <input type="checkbox"/> Cultural / Global Perspective </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Social Responsibility <input type="checkbox"/> Ethical Issues <input checked="" type="checkbox"/> Computer / Technology Usage <input type="checkbox"/> Aesthetic / Creative Activities <input checked="" type="checkbox"/> Environmental Responsibility </td> </tr> </table>		<input type="checkbox"/> Communication <input checked="" type="checkbox"/> Numbers / Data <input checked="" type="checkbox"/> Critical thinking <input checked="" type="checkbox"/> Formulation of strategies <input type="checkbox"/> Cultural / Global Perspective	<input type="checkbox"/> Social Responsibility <input type="checkbox"/> Ethical Issues <input checked="" type="checkbox"/> Computer / Technology Usage <input type="checkbox"/> Aesthetic / Creative Activities <input checked="" type="checkbox"/> Environmental Responsibility
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Course Description (limit to 50 words or less, must correspond with course description on Form 102): This Laboratory course to accompany MCB-2010 complements lecture topics. Students will learn and have direct experience with fundamental techniques for observation, isolation, cultivation, counting, identification, and control of microbes.			
Prerequisite(s): BSC 2010/L or BSC 2085/L; CHM 1033/L or CHM 1045/L	Corequisite(s): MCB 2010		

Course Competencies:
Competency 1: The student will differentiate among groups of eukaryotic microorganisms by:

1. Listing the major distinguishing characteristics of the various types of eukaryotic microorganisms.
2. Observing the major types of common protozoans including amoebas, flagellates, ciliates and sporozoans.
3. Identifying the morphology and structural components of fungi including asexual and sexual spores.

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Competency 2: The student will demonstrate competence in staining and examining of microorganisms by:

1. Identifying and describing the functions of the major parts of the microscope.
2. Calculating total magnification of each of the lens of the microscope.
3. Demonstrating the correct and safe use of the microscope.
4. Demonstrating the correct use of the oil immersion objective.
5. Defining and explaining resolving power, parfocal, working distance, and magnification.
6. Listing and explaining the various types of stains and their uses.
7. Demonstrating the correct procedures for the following stains: simple, Gram, acid-fast, endospore and negative stain.
8. Preparing slides for the studying living microorganisms and their motility.

Competency 3: The student will demonstrate mastery of techniques for isolating and culturing microorganisms by:

1. Demonstrating aseptic techniques for transferring bacterial cultures.
2. Demonstrating techniques for isolation of pure cultures.
3. Listing and explaining methods for sterilizing materials.
4. Explaining the procedures for making serial dilutions.
5. Performing serial dilution for plating and counting viable cells.
6. Demonstrating the use of a colony counter.
7. Demonstrating the use of spectrophotometer to measure bacterial growth.
8. Demonstrating the use of selective, differential and enrichment media.
9. Differentiating microorganisms based on their ability to use oxygen for growth.
10. Demonstrating the effects of temperature on bacterial growth.
11. Demonstrating techniques for cultivation and enumeration of bacteriophages.

Competency 4: The student will understand the basic physical and chemical methods, and their modes of action for control of microbial growth by:

1. Explaining the effect of heat on the control of bacterial growth.

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2. Demonstrating the effect of ultraviolet irradiation on bacterial growth.
3. Evaluating the activity of various disinfectants and antiseptics on microbial growth.
4. Evaluating the effects of various antibiotics and chemotherapeutic agents on microbial growth.

Competency 5: The student will demonstrate knowledge of various biochemical testing procedures for identification of bacteria by:

1. Demonstrating the differences in carbohydrate metabolism by different microorganisms.
2. Demonstrating the use of biochemical tests to assess the presence of enzymes and metabolic pathways in bacteria.
3. Explaining the use of different media to test metabolic activity of unknown bacteria.
4. Demonstrating the use of commercial rapid test tools for identification of unknown bacteria.
5. Demonstrating the use of selective media and procedures for testing microbial contamination of water.

Competency 6: The student will demonstrate the presence of microorganisms in the environment and in their use in industry by:

1. Demonstrating the presence of microorganism in various environments.
2. Demonstrating the use of hand scrubbing to control bacterial concentration on skin surface.
3. Demonstrating the use of serial dilutions and standard plate count to enumerate viable bacteria in a food or soil sample.
4. Demonstrating the principle and practice of food production using microorganisms including Yogurt and wine fermentation.

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