

MONTGOMERY COUNTY COMMUNITY COLLEGE  
Department of Math/Science

<b><u>COURSE TITLE:</u></b>	BIO 140 - Microbiology and Immunology
<b><u>COURSE CREDIT:</u></b>	<b>Four Credits:</b> <b>Lecture</b> - Approximately 1 $\frac{3}{4}$ hours/day. Room 304 <b>Laboratory</b> - $\frac{1}{2}$ -1 hour/day. Room 305
<b><u>PREREQUISITES:</u></b>	Students MUST possess an elementary knowledge of biology and chemistry with a <b>RECENT</b> Biology course (within the past 5 years). <b>This course may not be taken concurrently with ESL courses.</b> Please see the instructor if you do not have the proper prerequisites. <b>NOTE:</b> Before students repeat this course, they are advised to meet with a counselor and/or advisor to determine if they are academically prepared to accomplish the course learning goals.
<b><u>SERVICES FOR STUDENTS WITH DISABILITIES:</u></b>	Students with learning, physical, sensory, and/or psychological disabilities may be eligible for accommodations in this course. Please contact the Director of Services for Students with Disabilities in the Disability Services Center, College Hall 302, 215-641-6575, for more information or visit the College's website at <a href="http://www.mc3.edu/campusLife/student-resources/disabilities/">http://www.mc3.edu/campusLife/student-resources/disabilities/</a> . At the West Campus, contact the Coordinator of Disability Services in the Student Success Center at 610-718-1853.
<b><u>VETERANS:</u></b>	Student veterans may be eligible for benefits and services related to military service. At Central Campus, contact the Military and Veterans Affairs Advisor in College Hall 122 or at 215-641-6581 to learn about education benefits and healthcare entitlements. At the West Campus, contact Michael Ondo in South Hall 151 or at 610-718-1857 for the veteran's resources. <a href="http://www.mc3.edu/campusLife/student-resources/veterans/">http://www.mc3.edu/campusLife/student-resources/veterans/</a>
<b><u>ACADEMIC SUPPORT:</u></b>	Free subject-area tutoring, academic workshops, and academic coaching are available at the Central Campus Learning Assistance Lab (LAL) in CH 320, and at the West Campus LAL in South Hall 159 (inside library). The LAL helps students develop learning strategies based on their unique learning styles with the goal of creating successful students and independent learners.
<b><u>COURSE SCHEDULE:</u></b>	Fall 2010: September 1 – December 13, 2010 Departmental Exams week of December 15-21, 2010 Class Days: <b>Tuesday-Thursday</b> Class Sections/Times: Section IC, 9:00 a.m.-12:05 p.m., Section KC, 1:00-4:05 p.m. This class may not be taken if it overlaps with another course (even if it is only 5 minutes).

**PROFESSOR:**

**Microbiology Department**

**Ms. Judy Earl, MS, MT(ASCP)**

**Phone #:** 215-641-6446; **e-mail:** [jearl@mc3.edu](mailto:jearl@mc3.edu)

**Ms. Earl's Office Hours:**

Tuesday & Thursday: 12:05-12:35 p.m.,  
4:05-4:35 p.m.,  
or by appointment

**REQUIRED TEXT:**

**Title:** *Microbiology, An Introduction*  
**Author:** Tortora, Funke, and Case  
**Edition:** Tenth, 2010 (No other Editions are acceptable)  
**Publisher:** Pearson Benjamin Cummings Publishing Company, Inc.

**REQUIRED LAB MANUAL:**

**Title:** *BIO140: Microbiology Laboratory Manual*  
**Author:** Judy Earl

**OPTIONAL TEXT:**

**Title:** *A Photographic Atlas for the Microbiology Laboratory*  
**Author:** Leboffe & Pierce  
**Edition:** Fifth, 2005 (ISBN #0-89582-656-9)  
**Publisher:** Morton Publishing Company

**COURSE DESCRIPTION:**

**Microbiology:** Examines the microbial world, its members, their biological properties, and their relationship to man. Enables the student to understand how infectious disease is spread in the local community, as well as the world community, and in healthcare settings. Both prevention and control of infectious diseases is stressed.

**LEARNING GOALS:**

**A. LECTURE**

1. To acquire a knowledge and understanding of the basic nature and replication mechanisms of microorganisms including bacteria, fungi, parasites, and viruses.
2. To become acquainted with the basic principles of host defense mechanisms including the principles of immunology.
3. To understand the diversity of diseases caused by microorganisms on a world-wide basis.
4. To be able to describe how pathogens are transmitted.
5. To be able to select appropriate infection control methodologies pertinent to the student's health care occupation as well as their own personal health.
6. To be able to briefly discuss laboratory methods for diagnosis of infectious diseases.

## LEARNING GOALS:

### B. LABORATORY

At the end of the course the student shall:

1. Be able to use the binocular microscope to identify microorganisms.
2. Be able to perform all steps of a Gram stain resulting in the correct identification of bacteria.
3. Be able to use diagnostic media and other laboratory tests to differentiate Gram positive and negative bacteria.
4. Perform sensitivity testing of bacteria.

## COURSE REQUIREMENTS:

### A. LECTURE

1. A lecture format will be employed with some class discussions, and open question and answer format.
2. Students are responsible for all reading assignments in the textbook as well as all lecture material, A-V presentations and supplemental material. Information literacy may contribute to academic success. Lecture outlines will be provided.
3. Attendance at all lectures is **mandatory**; an excused absence may be granted for serious problems IF PRIOR notification is given to the lecturer. **Five absences** (excused or unexcused) will result in a grade of F (59). An unexcused absence for a test will result in a grade of zero.
4. Chapter tests will be given weekly at the beginning of the class; therefore, it is imperative that you arrive on time in order to have the maximum amount of time to complete the test. **Make-up tests** will **not** be given under any circumstances. Recognizing that emergencies do occur, one test may be missed with no penalty. Additional missed tests will result in a score of zero. If no tests are missed the lowest test grade will be dropped. Again, make-up tests will NOT be given regardless of circumstances. Tests are the property of the instructor and are to be turned in after review in class. Missing tests will be graded as zero. If you are not present the day a test is returned, you may review that test after class.

**COURSE REQUIREMENTS:**  
(continued)

**A. LECTURE**  
(continued)

5. If you arrive late for a test you will not be permitted to take the test if any student has already completed the test. If you start the test late you will still need to turn it in at the specified time.
6. A Midterm Exam is given about halfway through the course. A make-up exam for excused absences will be given sometime other than the regular lecture time; one that is mutually agreeable to both the student and the lecturer.
7. Extra credit is not permitted.
8. All cell phones and pagers **MUST** be turned off before entering the classroom or laboratory. Cell phones and pagers left on in the classroom and laboratory are disruptive and may result in the student's dismissal. Conversations with your peers during the lecture are distracting to others and may result in your dismissal from class or the laboratory that day.
9. A student may **withdraw** from the course **NO LATER** than one week after the Midterm Exam, with a grade of W. A withdrawal form must be submitted to the registrar. It is the student's responsibility to deliver the signed form to the registrar. Failure to attend class is **NOT** an official withdrawal and will result in a final grade of F.
10. A student may change from credit to audit with permission of the instructor **NO LATER** than one week after the midterm. If a student completes the audit form and then stops attending class, the student will receive an F for the course.
11. College policy including the Academic Student Code of Ethics is followed regarding cheating and plagiarism as described in the Code of Ethics in the College Catalog, Student Handbook, or on line at <http://www.mc3.edu/aboutus/policies/aa-3/ethics.aspx>. Cheating on a test or an exam will result in an automatic zero on the test (or exam). Further disciplinary action may be taken including a grade of XF.

**COURSE REQUIREMENTS:**  
(continued)

**A. LECTURE**  
(continued)

12. Students are expected to treat all members of the College community with dignity, respect, fairness, and civility and to behave in a responsible manner as described in the Student Code of Conduct/Civility in the Student Handbook or online at <http://www.mc3.edu/aboutus/policies/sa-4/conduct.aspx>. Disruptive or disrespectful behavior will result in your dismissal from class or the laboratory that day and the loss of points for attendance and course work.

**COURSE REQUIREMENTS:**

**B. LABORATORY**

1. A combined lecture and lab format will be employed; worksheets will be collected. Worksheets that are **xeroxed are not acceptable**. Each student is required to have their own lab manual.
2. Students should prepare for the laboratory by reading the daily lab assignment in advance; make notes of questions you wish to ask during the lecture portion of lab. Worksheets should be completed as much as possible prior to class.
3. Since **LAB sessions CANNOT be made up**, five absences (excused or unexcused) will result in an automatic grade of F (59).
4. Technique will be observed by the lecturer and includes use and care of the microscope and other equipment, observation of lab rules, ability to isolate organisms, ability to perform and read Gram stains, and completeness of lab worksheets. Worksheets will be corrected. Failure to follow the laboratory rules and maintain the care of the microscope will result in a downward adjustment of the student's lab grade.
5. **A lab coat is required.** Students without a lab coat may be dismissed from lab for that period and/or lose points for the lab that day.
6. Early dismissal from the laboratory (to attend another class) is not permitted. Do not schedule overlapping classes.
7. The length of the laboratory will vary each week and is dependent on many factors including student preparedness. Students should read ahead and have an understanding of the procedure prior to starting the laboratory experiments.

## **STUDENT EVALUATIONS:**

All students are encouraged to complete an online faculty evaluation form before the end of the course. At approximately week 8 of this course, you will receive an e-mail through your College e-mail account with directions and a link to the student evaluation form. Please be assured that it is not possible to identify a specific student's response to the survey. In addition, faculty will not receive survey results until after grades have been posted. Your input is important.

## **GRADING POLICY:**

**Written lecture tests/examinations:** All or some of the following: definitions, multiple choice, fill-in-the-blanks, true or false, matching and short essays. To achieve good grades in this course you should plan on spending **a minimum of two hours study time for each hour of class time**. The focus of the tests and exams will be on the lecture/lab material; however, you ARE responsible for all assigned readings, handouts, etc.

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|-----------------------------------|-----|
| 1. Tests                          | 40% |
| 2. Midterm                        | 12% |
| 3. Final Exam (Cumulative)<br>TBA | 23% |

The Final Exam is a departmental exam. It will be given on a specified day and time. **No one** will be allowed to take the Final Exam early.

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| 4. Laboratory Practical Exam | 15% |
|------------------------------|-----|

**Laboratory Practical:** Microscopic and macroscopic specimens presented for identification, description or discussion of principle of test, or actual identification of an organism or interpretation of a test result. This is given the last day of regularly scheduled classes.

**Exams (Final and Lab Practical) must be taken on the day they have been scheduled.**

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| 5. Lab Grade | 10% |
|--------------|-----|

Lab technique, attendance, completing labs in the allotted time, worksheets, writing assignments, demonstration of knowledge of lab rules, lab quizzes and unknowns (2).

## **GRADE CRITERIA:**

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|-----|-----------|
| A   | = 93 -100 |
| A - | = 90 - 92 |
| B + | = 87 - 89 |
| B   | = 84 - 86 |
| B - | = 80 - 83 |
| C + | = 77 - 79 |
| C   | = 70 - 76 |
| D   | = 60 - 69 |
| F   | = 0 - 59  |

## **ADDITIONAL RESOURCES:**

Go to mc3.edu; Faculty; Math/Science/Technology Division; Judy Y. Earl.

<http://faculty.mc3.edu/jearl/webpage.htm>

The Web Site has a section named Laboratory Experiments 1-15 which includes Gram Stains, Laboratory Tests, and pictures of Biochemicals. It is a color supplementation for the Lab Manual.

The section named Outlines includes a few practice lecture tests as well as outlines.

Some of you may find the practice tests on the textbook's interactive web site helpful. The virus chapter and the immune response chapter are excellent.

The Blackboard may be used to supplement lecture. Go to:

mc3.edu; Current Students; Log In to the MyMC3 Portal; Blackboard  
<https://my.mc3.edu/default.aspx>

The School Closing # is:     320 – Day  
                                      2320 – Evening

If there is a weather emergency and the classes are delayed in starting, you are expected to **report to class** at 10:00 a.m. Please call the College's main number at 215-641-6300 or check the College's web site at <http://www.mc3.edu>. You may also opt to have emergency notification sent via email or text messaging. To enroll visit <http://www.mc3.edu/txt/>.

rev. 7/10

MICROBIOLOGY DEPARTMENT LECTURE SCHEDULE

2010 – Fall

Tues. - Thurs.

<u>SUBJECT</u>		<u>DAY &amp; DATE</u>	
	Review course syllabus	TH	9/2
Chapters 1. & 10.	Introduction to Microbiology; Classification of Microbes	TH	9/2
Chapter 2.	Chemical Principles	T	9/7
Chapter 3.	Microscopy	TH	9/9
Chapter 4.	Prokaryotic and Eukaryotic Cells	T	9/14
Chapter 5.	Complete 4; Chapter 5 – Microbial Metabolism	TH	9/16
Chapter 6.	Microbial Growth	T	9/21
Chapter 7.	Control of Microbial Growth	TH	9/23
Chapter 10.	Identification of Microbes	T	9/28
Chapter 11.	Bacteria	TH	9/30
Chapter 11.	Bacteria (cont'd.)	T	10/5
Chapter 12.	Fungi; Algae (optional)	TH	10/7
Chapter 12.	Fungi (cont'd.); Protozoa	T	10/12
Chapters 12. & 25.	Helminths	TH	10/14
Chapter 13.	Viruses	T	10/19
Chapters 14. & 15.	Epidemiology; Mechanisms of Pathogenicity	TH	10/21
Chapter 16.	Nonspecific Defense of the Host	T	10/26
Chapter 17.	Specific Defenses of the Host: The Immune Response	TH	10/28
Chapter 17.	Specific Defenses of the Host: The Immune Response (cont'd.)	T	11/2
Chapter 18.	Practical Applications of Immunology - Vaccines	TH	11/4
Chapter 19.	Hypersensitivity Type I & IV; AIDS	T	11/9
Chapter 20.	Antimicrobial Drugs	TH	11/11
Chapter 20.	Antimicrobial Drugs (cont'd.)	T	11/16
Chapter 24.	Microbial Diseases of the Respiratory System (Review)	TH	11/18
Chapter 26.	Microbial Diseases of the Urinary & Reproductive Systems (Review)	T	11/23
	<b>HAPPY THANKSGIVING</b>		11/24 – 11/28
Chapter 25.	Microbial Diseases of the Digestive System (Review)	T	11/30
Chapter 25.	Microbial Diseases of the Digestive System (cont'd)	TH	12/2
Chapters 21., 22.	Microbial Diseases of the Skin & Eyes: Selected Microbial Diseases of the Nervous System	T	12/7
Chapter 23.	Selected Diseases of the Cardiovascular & Lymphatic System (Review)	TH	12/9
<b>Lab Practical</b>	<b>The Lab Practical cannot be made up, taken early, or taken late. No exceptions will be made to this departmental policy.</b>	<b>TH</b>	<b>12/9</b>
<b>Departmental Final Exam</b>	<b>The Final Exam must be taken on the day it is scheduled. Departmental exams supersede individual class exams.</b>		<b>12/15 – 12/21</b>

**THIS CLASS SCHEDULE IS SUBJECT TO CHANGE!**

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MICROBIOLOGY DEPARTMENT LABORATORY SCHEDULE

2010 – Fall

Tues. - Thurs.

<u>SUBJECT</u>		<u>DAY &amp; DATE</u>	
M.L.-1	Rules of the Microbiology Lab	TH	9/2
M.L.-2	The Microscope	TH	9/2
M.L.-3	Organisms in the Environment; Environmental Cultures	T	9/7
M.L.-2	Use of the Microscope (continued)	T	9/7
M.L.-3	Environmental Cultures (continued)	TH	9/9
M.L.-4	Bacterial Morphology: The Simple Stain	T	9/14
M.L.-4	Bacterial Morphology: The Simple Stain (continued)	TH	9/16
M.L.-5	The Gram Stain	T	9/21
M.L.-5	The Gram Stain (continued)	TH	9/23
M.L.-7	Wet Mounts – Bacteria (Demonstration); Complete Gram Stains if required	T	9/28
M.L.-7	Wet Mounts – Protozoa and Algae	TH	9/30
M.L.-8 & 9	Bacteriological Media; Aseptic Technique & Isolation	T	10/5
M.L.-8 & 9	Bacteriological Media; Aseptic Technique & Isolation (cont'd.)	TH	10/7
M.L.-10	Growing and Identifying Staphylococcus	T	10/12
M.L.-10	Growing and Identifying Staphylococcus (cont'd.)	TH	10/14
M.L.-13	Disinfectant; <b>Receive Unknown #1</b> for culture	T	10/19
M.L.-13	Disinfectants; Identify Unknown #1	TH	10/21
M.L.-11	Growing and Identifying Streptococci	T	10/26
M.L.-11	Growing and Identifying Streptococci (cont'd.)	TH	10/28
M.L.-12	Gram Negative Bacilli	T	11/2
M.L.-12	Gram Negative Bacilli (cont'd.)	TH	11/4
M.L.-14	Kirby-Bauer Susceptibility Testing (Antibiotics)	T	11/9
M.L.-14	Kirby-Bauer Susceptibility Testing (Antibiotics) (cont'd.)	TH	11/11
	<b>REVIEW LABS 8, 9, 10, 11 and 12; Culture Unknown #2</b>	T	11/16
M.L. 15	Identify Unknown #2; perform colony count & biochemicals	TH	11/18
M.L.-15	Complete Unknown Cultures	T	11/23
	<b>HAPPY THANKSGIVING</b>		11/24 – 11/28
M.L.-6	Acid Fast Stain (Demonstration)	T	11/30
	<b>LAB CLOSED</b>	T	12/7
<b>Lab Practical</b>	<b>Please Note: The Lab Practical is given the last day of class. This is an exam that will be given in the laboratory and will cover all Lab Experiments. You are required to take the Lab Practical on the scheduled day in order to complete the BIO 140 course requirements.</b>	<b>TH</b>	<b>12/9</b>
	<b>The Lab Practical cannot be made up, taken early, or taken late. Please adjust your schedule accordingly. No exceptions will be made to this departmental policy.</b>		
	<b>THE SCHEDULE IS SUBJECT TO CHANGE DEPENDING ON THE AVAILABILITY OF ORGANISMS, MATERIAL, AND WEATHER EMERGENCIES.</b>		

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## SIGNATURE FORM

I verify, by signing this form, that I have received and read the syllabus for BIO 140; that I understand the attendance and withdrawal policies. I also understand the policy regarding tests/quizzes and exams.

I also verify, by signing this form, that I have successfully completed all prerequisites as detailed in the syllabus.

I, the undersigned, have received a copy of the Laboratory Rules and Guidelines which I have read, understood, and agree to abide by.

NAME: \_\_\_\_\_

STUDENT ID #: \_\_\_\_\_

CLASS DAY and TIME: \_\_\_\_\_

DATE: \_\_\_\_\_