2014

201-01/02/03/05 Microbiology Lab

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Biology 201 Microbiology Lab Syllabus/Course Requirements  
Spring 2014  Albers 207

<table>
<thead>
<tr>
<th>Section</th>
<th>Day and Time</th>
<th>Instructor</th>
<th>Office</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>T 9:00 – 10:50 am</td>
<td>Dr. Pam Roy</td>
<td>Albers 112</td>
<td>745-3806</td>
</tr>
<tr>
<td>02</td>
<td>T 4:00 - 5:50 pm</td>
<td>Roy</td>
<td>Albers 112</td>
<td>745-3806</td>
</tr>
<tr>
<td>03</td>
<td>W 4:30 - 6:20 pm</td>
<td>Roy</td>
<td>Albers 112</td>
<td>745-3806</td>
</tr>
<tr>
<td>04</td>
<td>R 9:00 – 10:50 am</td>
<td>Dr. Jen Robbins</td>
<td>Albers 2</td>
<td>745-3624</td>
</tr>
<tr>
<td>05</td>
<td>R 4:00 – 5:50 pm</td>
<td>Roy</td>
<td>Albers 112</td>
<td>745-3806</td>
</tr>
</tbody>
</table>

Required Text: Microbiology for Allied Health by Pamela W. Roy, Ph.D., available in the bookstore

Course Goals:
1. Master the correct use of a compound microscope.
2. Identify the morphology and staining characteristics of microorganisms.
3. Learn to aseptically transfer bacteria from one culture medium to another.
4. Isolate and maintain a pure culture.
5. Understand the different growth requirements of bacteria, including carbohydrate catabolism, carbohydrate fermentation, protein catabolism, fat catabolism, and aerobic and anaerobic respiration.
6. Contrast rapid identification of an unknown to traditional tubes and plates.
7. Study the bacteria of the skin, respiratory tract, mouth, gastrointestinal tract, and urogenital tract.
8. Especially understand the bacteria that we have on our hands, what various chemical treatments do to those bacteria, and how easy it is to unknowingly spread those bacteria.
9. Learn how to control microbial growth using physical and chemical means.
10. Understand how diseases are spread in a clinic, a hospital, across the country, and around the world.

When you have worked your way through the activities designed to meet the course goals above, you will come to understand that bacteria have a preferred environment. When we provide that environment in a hospital or clinic, they grow. It is not the fault of the bacteria. It is our fault.

Attendance/Lab Responsibility: Class attendance is mandatory; attendance will be taken at each class. Each time we meet, we will be doing new exercises and recording results from previous exercises. In contrast to Anatomy and Physiology, where you could come in on Friday or Saturday to make up a missed lab, there is no way to make up a Microbiology lab outside of class time because there will be no unsupervised use of live bacteria. Attending each lab will enable you to stay organized and learn the material in a logical progression. Much of the work is a group activity, and if you are not there to do the experiment or record the experiment, your group will have more work to do. Since all five labs are the same, in rare cases, with the permission of your instructor, you may be able to attend another lab if you miss a lab. You will have to notify your instructor and get permission to attend a different lab since materials are prepared specifically for each class and there are no extra cultures available.

You must inform your instructor in advance if you will miss class due to a university-approved function and arrange to make up the class in another section.

Cleaning up after each lab is your responsibility. You must clear your workbench, put all materials away in your cupboard, place all new plates and tubes in the designated area to be incubated, place all used plates and tubes in the designated area to be autoclaved, and clean your workspace with Lysol. All glassware to be autoclaved must have labels removed.
Quizzes and Tests are given at the start of class. Quiz questions are handed out at the start of class and will take the first five minutes, so be on time, as quizzes cannot be taken later. Yes, this is a way to get you to read the material and get to class on time. The same test is given in all five sections with tables, photos, or other test question materials changed for each class or day. Because the tests are the same for each class, once the first section has taken a test, your instructor will not answer any questions that you have about the material, so students in all five sections should review the material before the tests start in case there are questions.

Leaving a test for any reason once the test has started will result in a zero for that test. Bathroom breaks and water breaks should be taken care of before the test begins.

Before you come to class each week: The class schedule attached below indicates the laboratory exercises that we will be doing each week. You need to read all of the indicated exercises before you come to class. Since this lab is nearly two hours long, you should be spending three to four hours a week studying outside of class, reinforcing the long-term memory of what you have already learned and reading the new material so that the learning process can begin with that material when you come to class.

Grading opportunities/standards: There will be three exams (300 points) and three quizzes (30 points). Due to the laboratory nature of the exams and quizzes, absolutely no make-ups will be given. Absolutely no late assignments will be accepted. Grades assigned in this class will be: A= 305-330, A-= 295-304, B+= 272-284, B= 262-271, C+= 252-261, C= 239-251, C-= 229-238, D+= 219-228, D= 206-218, D-= 196-205, F= <196.

Snow Days: If class is cancelled because of snow, you will need to make up the work in another lab. You can attend any of the remaining labs that week or attend a make-up lab from 2 to 4pm on Sunday.

Academic Misconduct: The Xavier University Handbook states “...violations of certain standards of ethical behavior will not be tolerated at Xavier University. These include theft, cheating, plagiarism, unauthorized assistance in assignments and tests, unauthorized copying of computer software, the falsification of results and material submitted in reports...”. In Microbiology 201, academic misconduct is defined as cheating, plagiarism, or helping someone cheat or plagiarize.

Cheating includes:
1. the use of handheld electronic devices during a quiz or test. Handheld devices include calculators, cell phones, computers, or pagers. These devices must be completely put away in your backpack. You cannot have them physically on your person during an exam or quiz.
2. the use of notes during a quiz or test
3. asking (verbally, electronically, or in writing) another student to tell you the questions or answers to a question on a quiz or test
4. giving/telling (verbally, electronically, or in writing) another student the questions or answers to a question on a quiz or test

The first incidence of academic misconduct will result in a zero for the assignment/test/quiz. The second incidence will result in failure of the course. When the misconduct involves two or more students, all students involved will receive a zero the first time and an F for the course the second time. It does not matter if you copied the work or allowed it to be copied. Both are academic misconduct, and will receive the same treatment.

Schedule of Labs
<table>
<thead>
<tr>
<th>Date</th>
<th>Lab</th>
<th>Specific Activities for Today</th>
<th>Finish from last lab</th>
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</table>
| Jan 14, 15, 16 | #1  | Syllabus  
|             |     | Introduction/precautions  
|             |     | Exercise 1: Solid and Liquid Culture Media  
|             |     | Exercise 2: Microscope Use and Care  
|             |     | Exercise 3: Microscopic Examination of Human Parasites  
| Jan 21, 22, 23 | #2  | Exercise 4: Microscopic Examination of More Human Parasites  
|             |     | Exercise 5: Animal Cell Model  
| Jan 28, 29, 30 | #3  | Exercise 6: Staphylococcus Bacteria Project and Nosocomial Infections  
|             |     | Exercise 7: Sterile Technique and Aseptic Transfer  
|             |     | Exercise 8: Streak Plate Technique  
| Feb 4, 5, 6 | #4  | Quiz  
|             |     | Continue Exercise 6 with soap  
|             |     | Exercise 9: Gram Stain  
|             |     | Exercise 10: More Stains  
|             |     | Exercise 15: Clinical Identification Project Explained  
| Feb 8       |     | **Saturday Review** Time TBA  
| Feb 11, 12, 13 | #5  | **EXAM #1 (Exercises 1-10)**  
|             |     | Continue Exercise 6 with antibacterial soap  
|             |     | Continue Exercise 15: Proposal for testing clinical equipment due  
| Feb 18, 19, 20 | #6  | Continue Exercise 6 with hand gel  
|             |     | Exercise 11: Carbohydrate Catabolism  
|             |     | Exercise 12: Protein Catabolism  
|             |     | Exercise 13: Lipid Catabolism  
|             |     | Exercise 14: Oxygen Use  
|             |     | Exercise 15: Growing a Clinical Unknown  
| Feb 25, 26, 27 | #7  | Exercise 16: Enterotube® Multitest  
|             |     | Exercise 17: CHROMagar MRSA  
| Mar 3-7     |     | **Spring Break: No lab March 4, 5, 6**  
| Mar 11, 12, 13 | #8  | Exercise 18: Heat as a Physical Method of Control  
|             |     | Exercise 19: UV as a Physical Method of Control  
|             |     | Exercise 20: Disinfectants and Antiseptics as Chemical Methods of Control  
|             |     | Handouts: *Clostridium difficile*  
| Mar 18, 19, 20 | #9  | Quiz  
|             |     | Exercises 22 and 23 done today are not on Exam 2  
|             |     | Exercise 21: Handwashing Summary  
|             |     | Exercise 22: Chemical Methods of Control: Antibiotics  
|             |     | Exercise 23: Epidemiology  
| Mar 22      |     | **Saturday Review** Time TBA  
| Mar 25, 26, 27 | #10 | **EXAM #2 (Exercises 11-21)**  
| April 1, #11 |     | Exercise 24: Blood Typing  
|               |     | Results Exercise 22  
|               |     | Results Exercise 1 water  
|               |     | Results Exercise 16, 17  
|               |     | Results Exercise 19, 20  
|               |     | Results Exercise 6 soap  
|               |     | Results Exercise 6 hand gel  
|               |     | Results Exercise 11-15  
|               |     | Results Exercise 6, 7, and 8  

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>April 8, 9, 10</td>
<td>Exercise 25: ELISA&lt;br&gt;Exercise 26: CBC Differential&lt;br&gt;#12 Exercise 27: Skin&lt;br&gt;Exercise 28: Mouth&lt;br&gt;Exercise 29: Throat&lt;br&gt;Exercise 30: GI&lt;br&gt;Exercise 31: Urogenital</td>
</tr>
<tr>
<td>April 17-21</td>
<td><strong>Easter Break: no lab April 15, 16, 17</strong></td>
</tr>
<tr>
<td>Apr 22, 23, 24</td>
<td>#13 Quiz&lt;br&gt;Exercise 32: Handout for Strep A Dipstick Test&lt;br&gt;Results Exercise 27, 28, 29, 30, 31</td>
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<td>Apr 26</td>
<td><strong>Saturday Review Time TBA</strong></td>
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<tr>
<td>Apr 29, 30, May 1</td>
<td>#14 <strong>EXAM #3 (Exercises 21-32)</strong></td>
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