

## BIOLOGY 211L (formerly Bio 210) - Laboratory course description - Fall 2009

Course Web Site: <http://www.sci.sdsu.edu/classes/biology/bio210/lab/demers/>

**PREREQUISITES:** Will be enforced. Completion Of, or Concurrent Enrollment in Bio 211.

Completed Bio 203 and 203L (Formerly 201A) ; or Bio 100 and Chem 100 or Chem 102 or Chem 130.

**SAFETY:** The laboratory exercises will use chemicals and living microorganisms, both of which could be harmful or infectious if handled improperly. You will be taught how to work in the laboratory properly. **Please follow the instructions that the laboratory instructors provide.** Also, if you have an allergy to fungi or certain chemicals, if you are pregnant, or if you have a compromised immune system, please contact the professor.

**LAB ASSIGNMENTS:** The lab manual is to be used as a workbook and students are required to **complete all of the laboratory exercises** in the lab manual. This includes the "Evaluation of Results" section (Purpose, Data, Conclusions and Discussions), and the questions, as well as the **Case Histories** in the appendix. The student should use lecture notes, lab notes, the textbook, lab manual and other texts to find the answers to the questions and to work on the Case Histories. Additional questions will be added as needed. The lab quizzes will test your knowledge of all of the material. The **manual** will be checked periodically by the TA. Pop quizzes will be given throughout the semester to assure that students are coming to class prepared. Each student will be required to give an **oral presentation (10-15 minutes, with PowerPoint) on a topic in microbiology, to be decided by the student and TA. A general outline of the presentation must be handed in before the day of the oral, and a detailed outline is due on the day of the presentation.** Students are required to **write two lab reports, following scientific format, on unknown microorganisms. Students are required to turn in both a hard copy and an electronic copy of both lab reports and both outlines for the orals.** If plagiarism is discovered, students are liable to be expelled, suspended or placed on probation, according to Section 41301 of the California Code of Regulations. *Plagiarism is formal work publicly misrepresented as original; it is any activity wherein one person knowingly, directly, and for lucre, status, recognition, or any public gain resorts to the published or unpublished work of another in order to represent it as one's own* (Lindey, Alexander. Plagiarism and Originality, 1952).

**EXAMINATIONS:** There will be five lab quizzes, worth 40 points each, spread over the 15 week semester. They might include practical lab questions. These will be given during the laboratory portion of the course to individual sections, on the dates listed in the syllabus. The lowest quiz grade will be discarded and **there will be no makeup's.** A missed quiz will count as the lowest grade to be dropped. Please do not discuss the quiz material with other sections of the class, this will only lower your grade. **There will be no changes to an assignment 's grade later than two periods after it is returned.**

**GRADING:** Based on a total of 300 points: (There is no extra credit)

160	Lab quizzes; 5 (40 pt. each), drop one	20	Performance evaluation
5	Unknown take home	20	Lab Manual
15	Lab Report # 1 (First Unknown)	15	Case Histories (5 x 3 points each)
30	Lab Report # 2 (Second Unknown)	15	Pop quizzes; (3 X 5 points each)
20	Oral report		

**ATTENDANCE:** Laboratory attendance is mandatory. If you are absent or late, or leave before the assigned work is completed, you are letting your lab partners down and compromising your own grade, by losing performance evaluation points. . You **WILL NOT PASS** the course if you miss more than 2 periods without a valid medical excuse. Arriving late (more than 15 minutes) consistently (more than 2) or leaving early before the lab work is completed will be counted as an unexcused absence.

**REPORTS: take home quizzes, written reports, etc.** All written reports are due on the dates listed in the syllabus. The oral reports are due on the date decided between you and your TA. Points will be lost for handing in late work. **The penalty for late work will be 10% per lab day.**

**LAB PERFORMANCE:** This grade is determined by attendance, ability to master the technical skills, preparation before coming to class, professionalism, your ability to accept responsibility and work well with your partners, and your attitude and cooperation in class. Lab checks (pop quizzes ) will be instituted to enforce your preparation before lab.

**FINAL GRADES:** An independent letter grade will be assigned for both lab (Bio 211L) and lecture (Bio 211).

**Final grades cannot be changed after they are submitted to the registrar.**

August 2009

## BIO 211L (formerly Bio 210) Fall 2009 LABORATORY SCHEDULE (Tentative)

Prepared by Marlene DeMers

**You are required to read the Assigned Readings listed below in your lab manual and textbook, before coming to each class. Laboratory Manuals (required):** *Fundamentals of Microbiology*, 7<sup>th</sup> edition revised, DeMers *A photographic Atlas for the Microbiology Laboratory*; 3<sup>rd</sup> edition; Leboffe & Pierce  
**Lecture Text (required):** Tortora, et al; *Microbiology An Introduction*, Ninth Edition  
**Please note** exercise numbers and Appendices refer to the Laboratory Manual by DeMers. Use the Atlas by Leboffe to find references to the lab exercises. Use the Tortora index (and other textbooks) to find references to the lab exercises.

### Bio 211L LAB SECTION MEETING TIMES [all labs meet in NLS 416] {Last day to add or drop is Monday, September 14, before 6 PM}

Bio 211 LECTURE (20421) (GMCS 333)	Friday 1100 - 1250
SECTION 1 (20422)	MW 0900 - 1140
SECTION 2 (20423)	MW 1200 - 1440
SECTION 3 (20424)	MW 1500 - 1740
SECTION 4 (20425)	MW 1800 - 2040
SECTION 5 (20426)	TTH 0800 - 1040
SECTION 6 (20427)	TTH 1100 - 1340
SECTION 7 (20428)	TTH 1400 - 1640
SECTION 8 (20429)	TTH 1700 - 1940

**Note: Due to the current CSU Budget Crisis, Faculty and Staff must take two Furlough days off per month without pay. The Prep Room will be closed on the Furlough dates that are listed below.**

**TENTATIVE**

**READINGS:**

**LAB # DATE**

**EXERCISE**

**Lab Manual**

LAB #	DATE	EXERCISE	Lab Manual
1	8/31 Mon 9/1 Tues	<b>First Day of classes:</b> <b>Labs begin:</b> Crash Lists, Introduction, Laboratory description, Overview of course (Includes Microbiology oral topics discussion); Necessary supplies, Lab Safety. Video: "Unseen life on Earth" (The Microbial Universe) Review of calculations	Handouts  Safety DVD & vi-ix  Video Handout
2	9/2, 3 W, Th	<b>Check in (keys, lockers &amp; drawers) for enrolled students and crashers with add codes</b> Enrollment continued, add codes, etc. Digital Video: Lab Safety continued 1: Brightfield microscopy (prepared slides) Troubleshooting the microscope, con't. Digital Video (lab manual): Using the Microscope 2: Other Microscopes; (darkfield, phase) 3: Observing Protozoa, Hay Infusion, Cyanobacteria	DVD & Safety; vi-ix Ex. 1 Microscope DVD  DVD Ex. 2 Ex. 3
3	9/7, 8 M, T	<b>Labor Day Laboratory closed Monday &amp; Tuesday September 8 Furlough day - Preproom closed</b>	
4	9/9, 10 W, Th	1, con't: Brightfield microscopy, con't. 2: Other Microscopes, con't. (stereo) 4: Observing Fungi and Yeast 5: Observing Bacteria; Gallery of microorganisms; cell shape & arrangement	Ex. 1, con't. Ex. 2, con't. Ex. 4 Ex. 5
5	9/14, 15 M, T	4, con't.: Fungi con't. 5: Observing Bacteria; Gallery continued 6: Aseptic Technique (inoculations) <b>Introduction to Case Histories (practice with #1)</b> <b>Note: Mon, Sept 14 is last day to drop classes &amp; Wed, Sept 16 is last day to add classes Both before 6:00 PM</b>	Ex. 4, con't Ex. 5, con't. Ex. 6 (DVD) Appendix N

**TENTATIVE  
LAB # DATE**

**EXERCISE**

**SUGGESTED READINGS:  
Lab Manual Atlas**

<b>6</b>	9/16, 17 W, Th	6: Aseptic Technique (smears from inoculations) 7: Smear preparation 8: Simple staining 11: Culture media preparation <b>Case History # 6 Due</b>	Ex. 6, con't. Ex. 7 (DVD) Ex. 8 (DVD) Ex. 11, Appendix L <b>Web site</b>
<b>7</b>	9/21, 22 M, T	<b>QUIZ # 1 (Exercises; 1,2,3,4,5,6,7,8)</b> 7: Smear preparation, continued 8: Simple staining, continued 9: The Gram Stain (start) Appendix B: Troubleshooting the Gram Stain 11, con't: Culture media preparation con't	Ex. 7, con't. Ex. 8, con't Ex. 9 Appendix B Ex. 11, con't
<b>8</b>	9/23, 24 W, Th  Fri, 9/25 Furlough Preproom Closed	9, con't: Gram staining, con't. 10: Miscellaneous staining: Acid-Fast staining, Capsule 12: Streak Plate Technique (day 1) 13: Specimen transport (collection) 14: Hand Washing	Ex. 9, con't. Ex. 10 Ex. 12 Ex. 13. Ex. 14
<b>9</b>	9/28, 29 M, T	9, con't: Gram staining, con't. 10: Miscellaneous staining, continued, Endospore 12 con't: Culture techniques con't. (day 2) 13, con't: Specimen Transport (inoculation) 14, con't: Hand Washing con't. 15: Bacterial plate counts Appendix C: Dilutions	Ex. 9, con't Ex. 10, con't Ex. 12, con't Ex. 13, con't Ex. 14, con't Ex. 15 App. C
<b>10</b>	9/30, 10/1 W, Th	12 con't: Culture techniques con't. (day 3) 13, con't: Specimen transport con't. (results) 15, con't. Bacterial counts con't. (results) Appendix C: Dilution's 16: Bacterial Growth Characteristics: Osmotic Pressure, Oxygen, Pigment production, pH, Temperature (A-E) (Day 1: Inoculations)	Ex. 12, con't. Ex. 13, con't Ex. 15, con't App. C Ex. 16 A - E
<b>11</b>	10/5, 6 M, T	12, con't: Culture techniques, con't. (day 4)(Gram stain) 16, con't: Bacterial Growth Characteristics con't. (A-E) (Results and Interpretations) 18: Staphylococci (day 1)	Ex. 12, con't Ex. 16, con't.  Ex. 18
<b>12</b>	10/7, 8 W, Th  Fri, 10/9 Furlough Preproom Closed	<b>QUIZ # 2 (Exercises; 9,10,11,12,13,14,15,16)</b> 17: Selected Physiological and Biochemical Tests Introduction to Gram Negative Rods, (B-E) (Gram stain) 18, con't: Staphylococci, con't. (day 2) (Gram stain)	Ex. 17 A - E  Ex. 18, con't
<b>13</b>	10/12, 13 M, T	17, B-E con't: Physiological and Biochemical tests 17, F-K start: Physiological and Biochemical tests 18, con't: Staphylococci, con't. (day 3) 24: <b>Take home unknown quiz available on line</b> <b>Case History # 2 Due</b>	Ex. 17, con't Ex. 17 F-K Ex. 18, con't Web Site / Blackboard Appendix N

**TENTATIVE  
LAB # DATE**

**EXERCISE**

**SUGGESTED READINGS:  
Lab Manual Atlas**

TENTATIVE LAB # DATE	EXERCISE	SUGGESTED READINGS: Lab Manual Atlas
14 10/14, 15 W, Th	17, con't: Physiological and Biochemical tests, con't. B-K 18, con't: Staphylococci, con't. (day 4) 21: Antiseptics & Disinfectants 22: Antibiotic sensitivity testing <b>24: Unknown #1 – (day 1) (streak plates)</b>	Ex. 17, con't Ex. 18, con't Ex. 21 Ex. 22 Ex. 24, App. D - I
15 10/19, 20 M, T	19: Streptococci (day 1)(throat cultures) 21, con't: Antiseptics & Disinfectants, day 2 22, con't: Antibiotic's day 2 23: Isolation of Antibiotic Resistant Mutants (day 1) 24: <b>Unknown #1, con't. – (day 2) (Gram stain &amp; inoculations)</b> 30: Isolation of antibiotic producer from soil; collection <b>Unknown take home quiz Due</b>	Ex. 19 Ex. 21, con't Ex. 22, con't Ex. 23 Ex. 24, con't Ex. 30
16 10/21, 22 W, Th  Fri, 10/23 Furlough Preproom Closed	19: Streptococci, con't. (day 2) 23: Isolation of Antibiotic Resistant Mutants (day 2) 24: <b>Unknown # 1, con't. – (day 3)</b> 30: Isolation of antibiotic producer from soil, day 1 <b>Choice of Microbiology oral topic &amp; date DUE</b>	Ex. 19, con't Ex. 23, con't Ex. 24, con't Ex. 30, con't
17 10/26, 27 M, T	19, con't: Streptococci, con't. (day 3) <b>24: Unknown #1, con't. – (day 4)(results)</b> <b>Brief Outline of Oral Due</b>	Ex. 19, con't Ex. 24, con't
18 10/28, 29 W, Th	<b>QUIZ # 3 (Exercises; 16,17,18,21,21,22, some24)</b> 19, con't: Streptococci, con't. (day 4) 20: Urine cultures, day 1 24, con't: Unknown #1, con't. How to write the report	Ex. 19, con't Ex. 20 Ex. 24, con't
19 11/2, 3 M, T	20, con't: Urine cultures, day 2 30,con't: Isolation of antibiotic producer from soil, day 2 <b>Case History # 5 Due</b> <b>Begin Oral presentations</b> <b>NOTE: Detailed Outlines Due on the day of oral</b>	Ex. 20, con't Ex. 30, con't Appendix N
20 11/4, 5 W, Th	24: <b>BEGIN UNKNOWN #2 (day 1)(streak plates)</b> 30,con't: Isolation of antibiotic producer from soil, day 3 Video: "The Coming Plague" "Revenge of the Microbes" <b>Case History # 3 Due</b> <b>Oral presentations continued</b>	Ex. 24, con't  Ex. 30, con't Video Appendix N
21 11/9,10 M, T	<b>Lab Report # 1 Due (unknown #1)</b> 24, con't: <b>Unknown #2, con't (day 2)(Gram stains)</b> 30,con't: Isolation of antibiotic producer from soil, day 4 <b>Oral presentations continued</b>	App. D - I Ex. 24, con't Ex. 30, con't
22 11/11, 12 W, Th	<b>Veterans Day observed No Lab Classes Wed &amp; Thurs (Laboratory will be closed)</b> <b>Nov 12 Furlough day - Preproom closed</b>	
23 11/16, 17 M, T	<b>QUIZ # 4 (Exercises; 19, 20, 23, 24, 30)</b> 24, con't: <b>Unknown #2, continued (day 3)</b> 26: Water Microbiology - Presumptive test (day 1), Membrane filter method demonstration 28: Microbiology of Wine Making (day 1)	Ex. 24, con't Ex. 26  Ex. 28

**TENTATIVE  
LAB # DATE**

**EXERCISE**

**SUGGESTED READINGS:  
Lab Manual Atlas**

24	11/18, 19 W, Th	24, con't: <b>Unknown #2, continued (day 4)</b> 25: Immunology: Agglutinations: Slide & Tube agglutinations & demonstrations 26, con't: Water Microbio., con't., Confirmed test (day 2) 27: Spoilage of meat (day 1) (inoculations) <b>Oral presentations continued</b>	Ex. 25  Ex. 26, con't Ex. 27
25	11/23, 24 M, T	25: Immunology: Agglutinations continued 26, con't: Water Microbiology (day 3) 29: Microbiology of Milk(day 1): Standard plate count of milk, Reductase test demonstration, Fermented milk products (yogurt) <b>Case History # 4 Due</b> <b>Oral presentations continued</b> <b>Start Cleanup</b>	Ex. 25, con't Ex. 26, con't Ex. 29  Appendix N
26	11/25, 26 W, Th	Happy Thanksgiving! <b>No Lab Classes Wednesday &amp; Thursday (Laboratory will be closed)</b> <b>Nov 25 Furlough day - Preproom closed</b>	
27	11/30, 12/1 M, T	25: Immunology: Agglutinations continued if necessary 26, con't: Water Microbiology (day 4) 27, con't: Spoilage of Meat, con't. (day 2) 28, con 't: Microbiology of Wine Making, con't. (day 2) 29, con't.: Fermented Milk Products (day 2) (plate counts) (yogurt tasting) <b>Unknown #2 Written Lab Report Due</b> <b>Continue Cleanup</b> <b>Oral presentations continued</b>	Ex. 25, con't Ex. 26, con't Ex. 27, con't Ex. 28, con't Ex. 29, con't  App. D - I
28	12/2, 3 W, Th	<b>Quiz # 5 (Exercises; 24,25,26,27,28,29)</b> <b>Oral presentations continued</b> <b>Finish Cleanup</b>	
29	12/7, 8 M, T	Lab Coats Wrapped and Autoclaved <b>Lab Check Out</b> <b>KEYS DUE! **</b> <b>Oral presentations continued (if necessary)</b>	
30	12/9, 10 W, Th	<b>LAST DAY OF CLASSES</b> <b>Oral presentations continued (if necessary)</b>	
		<b>Bio 211 Lecture Final:</b> Monday, Dec. 15, 1030-1230	

**\*\* You must follow the check out procedure and turn in your lab keys BEFORE Grades are due, Or you will receive an Incomplete!**

**PLEASE NOTE: Lab Coats may be picked up UNTIL the end of finals week ONLY!**

**After finals week, they are considered donated,**

**Thank you! Marlene & Tom, 4th floor prep room**

**Have a great winter break!**

