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1-2015

### BIOM 251.04: Microbiology for the Health Sciences - Laboratory

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## **BIOM 251 Microbiology for Health Sciences Laboratory**

**Section 01** – HS 404, MW 1-3pm **Section 02** – HS404, MW 3-5pm

**Section 03** – HS 404 MW 10am – 12pm **Section 04** - HS 405 MW 10am – 12pm

**Instructor:** Dr. Jim Driver. Email - [jim.driver@mso.umt.edu](mailto:jim.driver@mso.umt.edu). Phone – 243-4669

Office: ISB 017, Electron Microscopy Lab. Office Hours: 10 – 11am Tuesdays or by aptmt.

### **Teaching Assistants:**

Lauren Foltz. Email: [lauren.foltz@umconnect.umt.edu](mailto:lauren.foltz@umconnect.umt.edu)

Britney Cheff. Email: [Britney.cheff@umconnect.umt.edu](mailto:Britney.cheff@umconnect.umt.edu)

### **Required items:**

1. Course Pack available at UM Bookstore
2. Bound “composition type” lab notebook
3. Fine-tipped permanent marker
4. Lab coat – worn when performing lab work in lab class.

### **Course Objectives:**

To learn techniques for cultivating microorganisms of interest from the environment.

To learn how to characterize and identify unknown microorganisms.

### **Grades:**

A (100-90%) B (89-80%) C (79-70%) D (69-60%) F (<60%) (+/- grading not used)

### **Grades based on:**

**Lab Notebook (collected twice during the semester).** This will be a journal of everything you do in the laboratory during this class. It should contain enough information so that another student could replicate your experiment and also enough information for that student to understand the results you obtained, positive or negative. The lab notebook will be written in ink. Mistakes can be crossed out. The lab write-up for each exercise should contain the objectives for that lab (introduction), materials you used, the methods you used to perform the lab, the results you obtained, and a short discussion of any problems or negative results and the reasons behind them. The questions in the Discussion section of each lab should be answered also at the end of your write-up. Completeness, not neatness is best. But please make it legible. Include any illustrations that could add to the results.

Each lab write-up will be worth 30 points. **Total; 8 labs x 30 points = 240 points**

**Quizzes.** Three short quizzes will be given before class on February 11<sup>th</sup> (Quiz #1), February 18<sup>th</sup> (Quiz#2), and March 4<sup>th</sup> (Quiz#3). Each quiz will be worth 10 points each. **(30 points total)**

**Bacterial isolate paper.** This will be a research-paper format report describing the isolation, characterization and identification of your Bacterial Isolate from Lab 6. You will use some of the

techniques learned in the first part of the course to isolate in pure culture an unknown organism from a mixed culture provided to the class. You will then characterize it based on use of the previous tests and some new tests run during Labs 7 and 8. You will then attempt to identify your isolate using the key on page 29 of the course pack and one other source. Details on the required format for the paper are listed in Lab 6 of the course pack. This final paper will be worth **100 points (not the 30 points listed in Lab 6)** to allow for more flexibility for grading.

### **Week 1 (1/26, 1/28)**

1/26 – Introduction. Overview of course and requirements

1/28 - Lab safety, tools and techniques.

### **Week 2 (2/2, 2/4)**

2/2 – Exercise 1. Use of microscope, streak plates for unknowns.

2/4 – Exercise 1 (cont.). Observe unknowns from streak plates, characterize.

### **Week 3 (2/9, 2/11)**

2/9 – Exercise 2. Simple stain. Gram stain

2/11 – Exercise 3. Capsule stain. Spore stain. **Lab Quiz #1 at beginning of lab.**

### **Week 4 (2/18 only)**

2/16 – Presidents day, no lab.

2/18 – Exercise 4. Catalase/oxidase/starch hydrolysis. Exercise 5. Carbohydrate fermentation.

2/18 – **Lab Quiz #2 at beginning of lab. Lab Notebooks (#1) turned in at end of class**

### **Week 5. (2/23, 2/25)**

2/23 – Exercise 6. Isolation and pure culture of **Bacterial Isolate**.

2/25 – Exercise 6 (continued). Isolate and preserve **Bacterial Isolate** as pure culture

### **Week 6. (3/2, 3/4)**

3/2 – Exercise 7. Aerobic, micro-aerophilic, and aerobic growth

3/4 – Exercise 8. Antibiotic resistance. **Lab Quiz #3. Lab Notebooks #2.**

### **Week 7. (3/9, 3/11)**

3/9 – Characterization of **Bacterial Isolate** by catalase/oxidase/starch hydrolysis

3/11 – Characterization of **Bacterial Isolate** by carbohydrate fermentation.

3/11 - Finish **Bacterial Isolate** characterization/identification.

**3/16 – Bacterial isolate paper due. Lab notebooks due.**