MICR 2020-01 (Microbiology Laboratory for Health-Related Sciences) Spring 2023

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Course** | **Section** | **Class #** | **Day** | **Time/Room** | **Instructor** | **Email** | **Office hours** |
| **MICR 2020**  **MICR 2020** | **01**  **03** | **32268**  **32872** | **Mon**  **Fri** | **10:55 AM- 1:25 PM**  **ASCL 226-Lab Room**  **10:55 AM- 1:25 PM**  **ASCL 226-Lab Room** | **M.Maged Youssef** | [myousse7@calstatela.edu](mailto:myousse7@calstatela.edu)  **(It’s better to contact me via canvas inbox messaging system)** | **Mon/Fri 9:40 am - 10:40 am in the office (Bios 262)**  Students can ask for a private zoom meeting and are welcome to directly talk to me in person after the class about any question or concern. |

**Course description:**

* Laboratory methods used in studying microorganisms; aseptic techniques, environmental influences on microorganisms, microbial interrelationships; water microbiology and sanitation; immunology and infectious disease diagnosis. Laboratory 3 hours (virtual lab and some hands on at home exercises).
* This laboratory course is designed for students majoring in a health-related field and, in conjunction with the lecture course Microbiology 2010, fulfills the microbiology requirement of the California State University, Los Angeles nursing program.

**Corequisite:**

* MICR 2010

**Student learning outcomes:** This course will provide a basic understanding of:

* The morphology of fungi and bacteria
* The procedures used to grow and study bacteria
* How bacterial growth is controlled
* How the effectiveness of antibiotics, disinfectants, and antiseptics is evaluated
* How bacterial contamination of water is evaluated
* The procedures used in clinical laboratories to isolate and identify bacteria that are pathogenic to humans

**Required material:**

* **MICROBIOLOGY: LABORATORY THEORY AND APPLICATIONS, BRIEF (LL), 3RD EDITION; Author: LEBOFFE; Publisher: MORTON; ISBN: 9781617314773. You can also use the e-book version ISBN: 9781617315602. This lab manual will be used to record your observations and results. You must have the manual with you at every lab session.**
* **You are required to purchase a designated liquid particle protection lab coat (Keyguard A4) for this laboratory class (around $8.00).** The lab coat will be stored in the lab when not in use and safely discarded upon completion of the course. The lab coat can be purchased from the University Bookstore. **Pending tear and wear, you may have to re-purchase a lab coat more than once.**  Please

email Dr. Porter at [eporter@calstatela.edu](mailto:eporter@calstatela.edu) if you have any questions.

**Course related materials:**

* This course will be administered through **CANVAS.**
* You must have an NIS account and calstatela.edu email address to be added to the course CANVAS shell.

**Course policies:**

* **Regular attendance is required and Mandatory.** You will work through the standard curriculum of this course by reading the lab manual in advance of the lab meeting times. You will receive critical instructions for successful execution of the exercises by your lab instructor and you will learn how to critically analyze the data. In addition, demonstration videos to enhance your learning experience will be made available.
* **No make-up examinations will be possible. Missed exams will be set as “0 points” unless satisfactorily justified with supporting documentation, for example, a doctor’s note. No course credit can be given for more than two absences.**
* The Drop/Incomplete and Academic/Honesty policies explained in the University General Catalogue will be strictly followed. Students are expected to read and abide by the University’s Academic Honesty Policy (https://www.calstatela.edu/sites/default/files/groups/Judicial%20Affairs/Docs/academic\_honesty.pdf). Students who violate this policy will be subject to disciplinary action, and they may receive a failing grade in the course for a single violation.
* ADA Policy: Reasonable accommodation will be provided to any student who is registered with the Office of Students with Disabilities and requests needed accommodation.
* **Students are strongly encouraged to work with the instructor throughout the course.**

## Study suggestions:

* Always carefully read the relevant exercises and make sure you understand them before taking the prelab quizzes
* Take very good notes during the lab sessions.
* REVIEW YOUR NOTES OFTEN!! Form study groups and be able to explain the material you have learned to your peers!
* Learn to recognize when you need help, and to get help in a timely manner (visit student office hours or email the instructor).
* Students in distress may seek services provided by the health center (https://www.calstatela.edu/studenthealthcenter/caps), Dean of Students (http://www.calstatela.edu/deanofstudents), and the University (<http://www.calstatela.edu/healthwatch>).

**Performance evaluation: 400 points total**

**150 points: Introduction Response and Pre and Post Lab quizzes**

**100 points: Midterm Exam**

**150 points: Final Exam with a practical component (streak plate)**

* CANVAS prelab (the first one is a post lab) quizzes are multiple choice questions that can be answered by reading the lab manual. There will be two attempts allowed and the score recorded will be the highest of the scores from the two attempts.
* There will be one lab midterm in the classroom.
* The lab final will include a practical component that will allow you to demonstrate the skills you have gained. Instructions will be given in the lab sessions and posted on CANVAS.

Grades: Based on the % points achieved out of the *total achievable points (400 Points) the students can earn:*

|  |  |  |  |
| --- | --- | --- | --- |
|  | *B+: ≥ 86 % (344 pts)* | *C+: ≥ 76 % (304 pts)* | *D+: ≥ 66 % (264 pts)* |
| *A: ≥ 92 % (368 pts)* | *B: ≥ 82 % (328 pts)* | ***C: ≥ 72 % (288pts)*** | *D: ≥ 62 % (248 pts)* |
| *A-: ≥ 89 % (356 pts)* | *B-: ≥ 79 % (316 pts)* | *C-: ≥ 69 % (276 pts)* | *D-: ≥ 60 % (240 pts)*  *F : < 60%* |

**Class schedule:**

|  |  |
| --- | --- |
| **Week** | **Exercise** |
| 1 | Introduction: Safety and Laboratory Rules  2-1: Ubiquity of Microorganisms  1-2: A Comparison of Hand-Cleansing Agents |
| 2 | 1-4: Common Aseptic Transfers and Inoculation Methods  1-5: Streak Plate Methods of Isolation  1-6: Spread Plate Method of Isolation **– just discuss this** |
| 3 | 2-5: Evaluation of Media  2-6: Fluid Thioglycollate Medium |
| 4 | 2-8: The Effect of Temperature on Microbial Growth  2-9: The Effect of pH on Microbial Growth  2-10:The Effect of Osmotic Pressure on Microbial Growth -just discuss this |
| 5 | 2-12: The Effect of Ultraviolet Radiation on Microbial Growth  2-13: Effectiveness of Chemical Germicides: The Use-Dilution Test for Disinfectants and Antiseptics use (**use alcohol only**, just discuss others) |
| 6 | 3-1: Introduction to the Light Microscope  3-4: Simple Stains |
| 7 | 3-6: Gram Stain  3-7: Acid-Fast Stains – virtual lab and discuss  3-8: Capsule Stain – virtual lab and discuss  3-9: Endospore Stain– virtual lab and discuss |
| 8 | **Lab Midterm (in person)**  5-21: Blood Agar |
| 9 | 4-3: Mannitol Salt Agar  5-4: Catalase Test  5-5: Oxidase Test  5-20: Bacitracin, Novobiocin, and Optochin Susceptibility Tests  5-23: Coagulase and Clumping Factor Tests |
| 10 | 4-4: MacConkey Agar  5-19: Triple Sugar Iron Agar  5-24: Motility Test |
| 11 | 5-18: Indole test  5-3: Methyl Red and Voges-Proskauer Tests  5-7: Citrate Utilization Test  5-15: Urea Hydrolysis (Urease Test) |
| 12 | 7-2: Antimicrobial Susceptibility Test: Disk Diffusion (Kirby-Bauer) Method |
| 13 | 6-2: Standard Plate Count (Viable Count)  6-3: Urine Culture |
| 14 | 6-5: Differential Blood Cell Count  8-5: Blood Typing |
| 15 | ELISA Immuno Explorer Kit (1662400EDU)  7-4: Epidemic Simulation (Edvotek Kit) |
| **16** | **Lab Final Exam with Practical Component (**streak plate) |

**\*Note: The schedule may be changed during the course based on the circumstances.**

**I hope you enjoy this class and please remember to contact me via email or during my office hours if you have any questions!**

**Good Luck**