MICR 2020 Microbiology Laboratory for Health Related Sciences Fall 2019

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| **Course** | **Section** | **Class #** | **Day** | **Time** | | **Room** | **Instructor** | **Contact info & student hours** |
| MICR 2020 | 01 | 93752 | M | 9:00 AM | 11:30 AM | ASCL 229 | Robles, Everardo | [**eroble27@calstatela.edu**](mailto:eroble27@calstatela.edu)  OH: Thursday 9:30 to 11:30 am  Room: Palmer Wing 2097  Telephone (in emergency): 323 343 2050 |
| MICR 2020 | 02 | 94238 | W | 9:00 AM | 11:30 AM | ASCL 229 | Robles, Everardo |

**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.
* 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.

**Prerequisites:**

* BIOL 1200 or BIOL 2020; Co-requisite: MICR 2010

**Student learning outcome:** 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 materials**

* MICROBIOLOGY: LABORATORY THEORY AND APPLICATIONS, BRIEF(LL), 3RD EDITION; Author: LEBOFFE; Publisher: MORTON; ISBN: 9781617314773. This lab manual will be used to record your observations and results. You must bring it to class at every lab session. We will mostly exactly follow the described procedures. In some instances, we will use different microorganisms, which will be announced.
* You are required to purchase a designated blood borne pathogen and chemical reagent resistant lab coat (KleenGuard A60) for ONE TERM use which 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 or other sources.

**Course related materials:**

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

**Course policies:**

* Regular attendance is required. No make-up examinations. Missed events 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.
* Academic Honesty: Students are expected to read and abide by the University’s Academic Honesty Policy, which can be found at http://www.calstatela.edu/academicsenate/handbook/ch5a. Students who violate this policy will be subject to disciplinary action, and 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. Please contact the instructor ASAP to arrange appropriate accommodations!
* **Students are strongly encouraged to work with the instructors throughout the course.**

## Study suggestions:

* Always read carefully the relevant exercises and make sure to understand them before taking the prelab quizzes
* Take very good notes during the lab sessions and carefully record your observations. They are essential for the data sheets and answering the questions at the end of each exercise.
* Form study groups and be able to explain the material you have learned to your peers.
* Learn to recognize when you need help, and get help in a timely manner (visit office hour, email instructor).

**Performance evaluation: 500 points total**

|  |  |
| --- | --- |
| 60 | PreLab quizzes (12 x 5 pts) |
| 160 | Weekly data sheets and lab questionnaires |
| 120 | Midterm I, II (2 x 60 pts each) |
| 30 | Solving clinical cases |
| 130 | Final |

* CANVAS prelab quizzes are multiple choice questions that can be answered by reading the lab manual. There will be only one attempt allowed.
* There will be two lab midterms, one online and one in class.
* The weekly data sheets are the observations you make during the exercises and the results that you record. These are part of the lab manual, which you must purchase for this course. The lab questionnaires are found at the end of each lab exercise. Both will be graded after completion of the exercise.
* The report details for “Solving clinical cases” will be posted on CANVAS
* The lab final will include a practical component to demonstrate the skills you have gained.

Grades: Based on the % points achieved out of the *total achievable points (500 Points) the students can earn:*

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| --- | --- | --- | --- |
|  | *B+: ≥ 86 % (430 pts)* | *C+: ≥ 76 % (380 pts)* | *D+: ≥ 66 % (330 pts)* |
| *A : ≥ 92 % ( 460 pts)* | *B : ≥ 82 % (410 pts)* | ***C : ≥ 72 % (360 pts)*** | *D : ≥ 62 % (310 pts)* |
| *A- : ≥ 89 % (445 pts)* | *B- : ≥ 79 % (395 pts)* | *C- : ≥ 69 % (345 pts)* | *D- : ≥ 60 % (300 pts)* |

## Keep track of your points:

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| --- | --- | --- |
| Assignment | Points | Your points |
| Pre-lab quizzes (12 x 5 pts) | 60 |  |
| Weekly data sheets and Questionnaires | 160 |  |
| Midterm I, II (2 x 60 pts) | 120 |  |
| Solving Clinical Cases | 30 |  |
| Final with practical component | 130 |  |
| Total | 500 |  |

**Schedule:**

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| --- | --- | --- |
| **Dates** | **Lab session** | **Exercise** |
| 8.21./19  8/23/19 |  | **No Lab** |
| 8.26.19/  8.28.19 | 1 | Introduction: Safety and Laboratory Rules  1-1: Glo Germ Handwash Education System |
| 1-2: A Comparison of Hand-Cleansing Agents |
| 9.02.19/  9.04.19 |  | **Labor Day**  **No Lab** |
| 9.09.19/  9.11.19 | 2 | 1-4: Common Aseptic Transfers and Inoculation Methods |
| 1-5: Streak Plate Methods of Isolation |
| 1-6: Spread Plate Method of Isolation |
| 2-1: Ubiquity of Microorganisms |
| 9.16.19/  9.18.19 | 3 | 2-5: Evaluation of Media |
| 2-6: Fluid Thioglycollate Medium |
| 2-7: Anaerobic Jar |
| 9.23.19/  9.25.19 | 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 |
| 2-12: The Effect of Ultraviolet Radiation on Microbial Growth |
| 2-13: Effectiveness of Chemical Germicides: The Use-Dilution Test for Disinfectants and Antiseptics |
| 9.30.19  10.02.19 | 5 | 3-1: Introduction to the Light Microscope |
| 3-4: Simple Stains |
| 3-6: Gram Stain |
| 10.07.19/  10.09.19 | 6 | 3-7 Acid-Fast Stain |
| 3-8: Capsule Stain |
| 3-9: Endospore Stain |
| 4-3: Mannitol Salt Agar |
| 4-4: MacConkey Agar |
| 4-5: Eosin Methylene Blue Agar |
| 5-21: Blood Agar |
| **Lab Midterm I (online)** |
| 10.14.19/  10.16.19 | 7 | 5-1: Oxidation-Fermentation (O-F) Test |
| 5-3: Methyl Red and Voges-Proskauer Tests |
| 5-4: Catalase Test |
| 5-5: Oxidase Test |
| 5-7: Citrate Utilization Test |
| 5-18: SIM Medium |
| 10.21.19/  10.23.19 | 8 | 5-11: DNA Hydrolysis (Dnase test) |
| 5-15: Urea Hydrolysis (Urease Test) |
| 5-19: Triple Sugar Iron Agar\* |
| 5-20: Bacitracin, Novobiocin, and Optochin Susceptibility Tests |
| 5-23: Coagulase and Clumping Factor Tests |
| 5-24: Motility Test |

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| **Date** | **Lab session** | **Exercise** |
| 10.28.19/  10.30.19 | 9 | 6-3: Urine Culture |
| 7-2: Antimicrobial Susceptibility Test: Disk Diffusion (Kirby-Bauer) Method |
| 6-2: Standard Plate Count (Viable Count) |
| 11.04.19/  11.06.19 | 10 | 9-5: EnteroPluri-Test ***Demo by instructor only or Video online*** |
| 9-1: Solving clinical cases: Identification of Selected *Enterobacteriaceae\** |
| 9-2: Solving clinical cases: Identification of Selected Gram-Positive Cocci |
| **Lab Midterm II (in class, with practical component)** |
| 11.11.19/  11.13.19 |  | **Veteran’s Day**  **No Labs** |
| 11.18.19/ 11.20.19 | 11 | 7-3: Morbidity and Mortality Weekly Report (MMWR) |
| 7-4: Epidemic Simulation (Edvotek Kit) |
| 6-1: Environmental Sampling: The RODAC Plate |
| 11.25.19/  11.27.19 |  | **Thanksgiving Holiday**  **No Labs** |
| 12.02.19/  12.04.19 | 12 | 6-5 Differential Blood Count  8-5 Blood typing  8-6 ELISA for Detecting Antibodies in Patient’s Sample |
| 12.09.19 |  | **Open lab for review for both lab sections** |
| 12.10 – 12.19 |  | **Lab Final (online)** |
|  |  | *\* You must come to the lab the next week day to view the results.* |