

**COLLIN COUNTY COMMUNITY COLLEGE DISTRICT
LABORATORY SECTION SYLLABUS**

COURSE NUMBER: BIOL 2420

COURSE TITLE: Microbiology

COURSE DESCRIPTION

Study of the morphology, physiology, and taxonomy of representative groups of pathogenic and nonpathogenic microorganisms. Pure cultures of microorganisms grown on selected media are used in learning laboratory techniques. Includes a brief preview of food microbes, public health, and immunology.

Lab required.

CREDIT HOURS: 4 LECTURE HOURS: 3 LAB HOURS: 4

PRE-REQUISITE: BIOL 2401 within the last 3 years with a grade of "C" or higher, or consent of department chair.

PRE or CO-REQUISITE: BIOL 2402 (Lecture and Lab)

CO-REQUISITE: BIOL 2420 lab

COLLEGE REPEAT POLICY: A student may repeat this course only once without special permission after receiving a grade, including "W".

COURSE DELIVERY METHOD

Laboratory experiments will be mainly student participation, with some instructor demonstrations. Discussions of material covered in lab will precede or follow the lab topics. Films and other audio-visual materials may be used.

TEXTBOOK

Microbiology Laboratory Manual, Cain et al., available online: faculty.collin.edu/dcain/CCCCD Micro/index.htm

Optional supplement: *Microbiology – A Photographic Atlas for the Laboratory*, Alexander and Strete (Lab copy is available)

SUPPLIES

Lab coat, exam gloves, goggles

Permanent marker for labeling test tubes and Petri dishes

STUDENT LEARNING OUTCOMES

1. Demonstrate a working knowledge of appropriate biosafety procedures and proper aseptic technique.
2. Effectively use a compound light microscope as outlined in the lab microscope use form regarding storage, set up, focusing, handling, cleaning and correct use of all microscopic lenses.
3. Perform a Gram-stain, describe the differences between Gram-positive and Gram-negative cells.
4. Obtain single, isolated colonies of bacteria using a streak plate method.
5. Correctly perform serial dilutions and plate counts to estimate the number of microbes in a sample. (*Empirical and Quantitative Skills*)
6. Describe the major oxygen classes of bacteria, and explain how to grow bacteria in anaerobic environments. (*Critical Thinking Skills*)
7. Measure the efficacy of antibiotics and antimicrobial chemicals using a disk diffusion assay. (*Empirical and Quantitative Skills*)
8. Demonstrate the ability to apply laboratory skills to identify bacterial unknowns and communicate the results in a scientific paper. (*Teamwork skills, Critical Thinking Skills, Communication skills, Empirical and Quantitative Skills*)
9. Work effectively in teams to conduct laboratory experiments and cooperatively analyze results to develop meaningful conclusions. (*Teamwork skills, Critical Thinking Skills, Communication skills, Empirical and Quantitative Skills*)

COURSE REQUIREMENTS

The laboratory will have two comprehensive practical examinations to assess student understanding of lab materials and methods, in addition to weekly or biweekly lab quizzes and formal typed lab reports as required by the lab instructor.

METHOD OF EVALUATION

Overall course grade: Lecture 65% Lab 35%

Overall Lab grade: Lab quizzes – 20%, Practical I and II – 30% each, Unknown report/ Lab reports – 20%

ATTENDANCE POLICY

Laboratory attendance is mandatory. **Lab make-ups are only possible the week of the lab** and the student must have permission to attend another lab. If a student misses one of the practical exams, they must have a verifiable medical reason to request a make-up practical exam. Instructors cannot count one practical exam grade twice. Contact your instructor immediately if you fail to take one of the practical exams. Students who stop attending class and do not officially withdraw from the course will be assigned a course grade of "F".

Religious Holy Days: please refer to the current Collin Student Handbook. The last day to withdraw is **10/19/2018**.

AMERICAN DISABILITIES ACT STATEMENT

It is the policy of Collin County Community College to provide reasonable accommodations for qualified individuals who are students with disabilities. This College will adhere to all applicable federal, state and local laws, regulations and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student's responsibility to contact the ACCESS office, SCC-D140 or 972.881.5898 (V/TTD: 972.881.5950) in a timely manner to arrange for appropriate accommodations.

COLLIN COLLEGE ACADEMIC POLICIES: See the current *Collin Student Handbook* and instructor addendum.

Every member of the Collin College community is expected to maintain the highest standards of academic integrity. All work submitted for credit is expected to be the student's own work. Collin College may initiate disciplinary proceedings against a student accused of scholastic dishonesty. Scholastic dishonesty includes, but is not limited to, statements, acts, or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work material that is not one's own. Scholastic dishonesty may involve, but is not limited to, one or more of the following acts: cheating, plagiarism, collusion, use of annotated texts or teacher's editions, use of information about exams posted on the Internet or electronic medium, and/or falsifying academic records. While specific examples are listed below, this is not an exhaustive list and scholastic dishonesty may encompass other conduct, including any conduct through electronic or computerized means.

General Scholastic Dishonesty includes, but is not limited to, statements, acts, or omissions related to applications for enrollment, credit or class work, research, or the award of a degree; and/or falsifying academic records or documents. Students are expected to record honestly and accurately the results of all their research. Falsification of research results shall include misrepresentations, distortions, or omissions in data or reports on research.

Plagiarism includes, but is not limited to, intentionally or unintentionally failing to quote and cite an author's words, information, and/or ideas in accordance with American Psychological Association (APA) Style, Modern Language Association (MLA) Style, The Chicago Manual of Style (Chicago Style), or another citation style approved by the professor. In cases where an incident report has been filed for an alleged violation of scholastic dishonesty, the faculty member shall delay posting a grade for the academic work in question

Cheating includes, but is not limited to, having access to unauthorized materials or electronic, digital media, telecommunication, and/or wearable devices (i.e., phones, smart watches, Fitbits, Bluetooth devices, tablets, etc.) during an examination; the giving or receiving of information in an unauthorized manner during an examination or to complete an assignment; using, buying, selling, soliciting, stealing, or otherwise obtaining course assignments and/or examination questions in advance; using someone else's work for an assignment as if it were one's own; submitting or resubmitting an assignment in whole or in part (i.e., recycling an assignment) for more than one (1) class or institution without permission from each of the professors; using annotated texts or teacher's editions; using information about exams posted on the Internet or in any electronic medium; leaving a test site without authority; failing to secure test materials; removing tests or answer sheets from a test site; and any other dishonest means of attempting to fulfill the requirements of a course.

Collusion includes, but is not limited to, intentionally or unintentionally aiding or attempting to aid another in an act of scholastic dishonesty; failing to secure academic work; providing a paper or project to another student; providing an inappropriate level of assistance; unauthorized collaboration or communicating answers to a classmate about an examination or course assignment; and allowing a classmate to copy answers.

In cases where an incident report has been filed for alleged violation of scholastic dishonesty, faculty are requested to delay posting a grade, for the academic work in question, until the Dean of Students Office renders an administrative decision of the case. Students found responsible for scholastic dishonesty offenses will receive an authorized disciplinary penalty from the Dean of Students Office. The student may also receive an academic penalty in the course where the scholastic dishonesty took place. The faculty member shall determine the appropriate academic penalty, which may range from a grade of zero (0) on the assignment to failing the course.

Contact the Dean of Students for the student disciplinary process and procedures or consult the *Collin Student Handbook* for additional information.

STUDENT CONDUCT

The college expects students to conduct themselves in class in such a way as to not interfere with or disrupt the educational process. Students are to speak and act in a respectful manner toward their fellow students and the professor. Those who participate in inappropriate behavior such as, excessive talking, cell phone or pager use, verbal altercations, or blatantly disregarding instructor's directions will be asked to leave the class. Continuation of such behavior will result in permanent removal.

LATERAL TRANSFER POLICY

Lateral transfers will not be granted after the 4th week of class or after the first lecture exam, whichever comes first. Exceptions to this are for documented changes in work schedule or family emergencies. If a student does transfer to another section, all previous grades will accompany the student. However, the new instructor can require the student to retake any exam or quiz. For questions concerning this policy, contact the Biology Department Chair.

WITHDRAWAL POLICY - Course Drop Limit Provisions

Students who enroll as an entering freshman or a first-time college student in undergraduate courses at any Texas public community college, technical institute, health sciences institution, or any public university offering undergraduate courses must comply with the legislation of TEC51.907. TEC51.907 states that students who enroll for the first time during the fall 2007 semester or any subsequent semester are subject to the course drop limit of six course drops. This includes any course a transfer student has dropped at another institution. Collin College will not begin to count dropped courses until the fall 2008 semester.

NOTE: You will not be allowed to withdraw from classes at Collin if your official transcripts (required for admission) are not on file. For more information go to <http://www.collin.edu/aro/withdrawal.htm>.

LAB POLICIES AND PROCEDURES

No eating or drinking of any kind is allowed in the lab. Proper dress is required at all times. This includes no open toed shoes. An instructor has the right to ask a student that is improperly dressed to leave the lab or modify how they are dressed.

IF YOU HAVE DIFFICULTIES

First contact your instructor. If you are unable to resolve the problem, contact the divisional secretary for the associate dean at your campus.

INSTRUCTOR ADDENDUM

Please read and review the instructor addendum for the course regarding specific information, schedule, and additional contact information. Instructor website: faculty.collin.edu/mweiss

BIOLOGY 2420 - MICROBIOLOGY LABORATORY

TENTATIVE FALL COURSE CALENDAR

DATE	TOPICS	EXPERIMENTS
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WEEK 1 AUGUST	Course Introduction and Bio-safety Microscopy	(pp. 4-6) 1
WEEK 2 SEPTEMBER 3-7	***Labor Day Holiday 9/3*** Staining Specimens and Smear Preparation Gram Stain & Capsule Stain Acid Fast Stain & Endospore Stain	(pp. 8-9) 2,3 4,5
WEEK 3 SEPTEMBER 10-14	Culture Transfer Techniques Isolation of Pure Cultures Viable Plate Counts Colony broth and Cultural Characteristics	6 7 8 9
WEEK 4 SEPTEMBER 17-21	Effect of Temperature on Microbial Growth Atmospheric Oxygen Requirements Cultivation of Anaerobic Organisms	10 11 12
WEEK 5 SEPTEMBER 24-28	Use of Selective, Differential, & Enriched Media Chemical Control of Microorganisms Chemotherapeutic Agents Additive and Synergistic Effects of Antibiotics	13 14 15 16
WEEK 6 OCTOBER 1-6	Microbial Flora of the Mouth Normal Flora of the Throat and Skin Cultivation of Urine Specimens	17 18 19
WEEK 7 OCTOBER	Review for Practical 10/9 Lab Practical I 10/11	
WEEK 8 OCT 15-19	Identification of <i>Bacillus</i> species Transformation	20 21
	Last Day to Withdraw 10/19	
WEEK 9 OCTOBER 22-26	Catalase Test Identification of <i>Streptococcus</i> species Rapid Strep Tests Identification of <i>Staphylococcus</i> species Coagulase Test DEMO Rapid Staph Tests	22 23 24 25 26 27
WEEK 10 OCT/NOV	Identification of Gram-negative species 10/30 and 11/1	28
WEEK 11 NOVEMBER	Unknowns 11/6 and 11/8	Appendix A
WEEK 12 NOVEMBER	Unknowns 11/13 and 11/15	Appendix A
WEEK 13 NOVEMBER 20	Epidemiology ELISA Parasitology ***Thanksgiving Holiday 11/21-11/26***	29 30 Lab Manual and Handouts
WEEK 14 NOVEMBER 26-30	Yogurt Production Water Microbiology Food Microbiology	31 32 33
WEEK 15 DECEMBER	Review for Practical 12/4 Lab Practical II 12/6	