COLLIN COUNTY COMMUNITY COLLEGE DISTRICT
LABORATORY SECTION SYLLABUS

COURSE NUMBER: BIOL 2420

COURSE TITLE: Microbiology

COURSE DESCRIPTION

Classification, cell structure, metabolism, and historical concepts of microorganisms including bacteria, viruses, fungi, protozoa, Chlamydia and Rickettsia. Infectious diseases and immunology will be emphasized. Practical microbiology will include diagnostic microbiology of water, food, sewage, soil, and industrial applications. Laboratory methods are stressed, and experimentation with pure cultures of medical, environmental, and industrial importance is used extensively. Lab required.

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

PRE-REQUISITE: BIOL 2401 within the last 5 years with a grade of "C" or higher, or consent of department chair or associate dean.

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

CO-REQUISITE: BIOL 2420 lecture

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

SUPPLIES
Lab coat, exam gloves, goggles
Permanent marker (e.g. sharpie) for labeling tape for test tubes and use on Petri dish plastic

STUDENT LEARNING OUTCOMES

1. Demonstrate a working knowledge of appropriate biosafety procedures and proper aseptic technique.
2. Effectively use a compound light microscope, including correctly setting up and focusing the microscope; proper handling, cleaning, and storage of the microscope; and correct use of all lenses, including the oil immersion lens.
3. Perform a Gram-stain, recognize and describe the differences between Gram-positive and Gram-negative cells. (*Communication Skills*)
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. *(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 make-up the 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 grade of "F". **Religious Holy Days:** please refer to the current Collin Student Handbook. The last day to withdraw is **3/22/19**.

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.

ACADEMIC ETHICS

The College District 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 (1) or more of the following acts: cheating, plagiarism, collusion, use of annotated texts or teacher's editions, and/or falsifying academic records.

Plagiarism is the use of an author's words or ideas as if they were one's own without giving credit to the source, including, but not limited to, failure to acknowledge a direct quotation.

Cheating is the willful giving or receiving of information in an unauthorized manner during an examination, illicitly obtaining examination questions in advance, copying computer or Internet files, using someone else's work for assignments as if it were one's own, or any other dishonest means of attempting to fulfill the requirements of a course.

Collusion is intentionally aiding or attempting to aid another in an act of scholastic dishonesty, including but not limited to, providing a paper or project to another student; providing an inappropriate level of assistance; communicating answers to a classmate during an examination; removing tests or answer sheets from a test site, and allowing a classmate to copy answers.

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

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. Continuance 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 at your campus for an appointment with the academic dean.

INSTRUCTOR ADDENDUM

Please read and review the instructor addendum regarding specific course information, schedule, and contact information

HTTP://FACULTY.COLLIN.EDU/MWEIS/MICROBIOLOGY/MICROBIOLOGY%20MAIN%20PAGES/MICRO_MAIN_NAVIGATION.HTM

BIOLOGY 2420 – MICROBIOLOGY LABORATORY
TENTATIVE COURSE CALENDAR : SPRING for Dr. Weis

WEEK	TOPICS	EXPERIMENTS
1	*** MLK Holiday***	(pp. 4-6)
	Course Introduction and Bio-safety	1
	Microscopy	
2	Staining Specimens and Smear Preparation	(pp. 8-9)
	Gram Stain & Capsule Stain	2,3
	Acid Fast Stain & Endospore Stain	4,5
3	Culture Transfer Techniques	6
	Isolation of Pure Cultures	7
	Viable Plate Counts	8
4	Effect of Temperature on Microbial Growth	9
	Atmospheric Oxygen Requirements	10
	Cultivation of Anaerobic Organisms	11
5	Use of Selective, Differential, & Enriched Media	12
	Chemical Control of Microorganisms	13
	Chemotherapeutic Agents	14
	Additive and Synergistic Effects of Antibiotics	15
6	Microbial Flora of the Mouth	16
	Normal Flora of the Throat and Skin	17
	Cultivation of Urine Specimens	18
7	Review for Practical	
	Lab Practical I	
***** SPRING BREAK *****		
8	Identification of *Bacillus* species	19
	Transformation	20
	Last Day to Withdraw 03/22	
9	Catalase Test	21
	Identification of *Streptococcus* species	22
	Rapid Strep Tests	23
	Identification of *Staphylococcus* species	24
	Coagulase Test	25
	Rapid Staph Tests	26
10	Identification of Gram-negative species	27
11	Unknowns	Appendix A
12	Unknowns	Appendix A
13	Epidemiology	28
	ELISA	29
	Parasitology	Handouts
	Finish Unknowns	See website for report format
14	Yogurt Production	30
	Water Microbiology	31
	Food Microbiology	32
15	Review for Practical	
	Lab Practical II	