

TRIDENT TECHNICAL COLLEGE

MICROBIOLOGY

COURSE PREFIX & NUMBER:

BIO 225

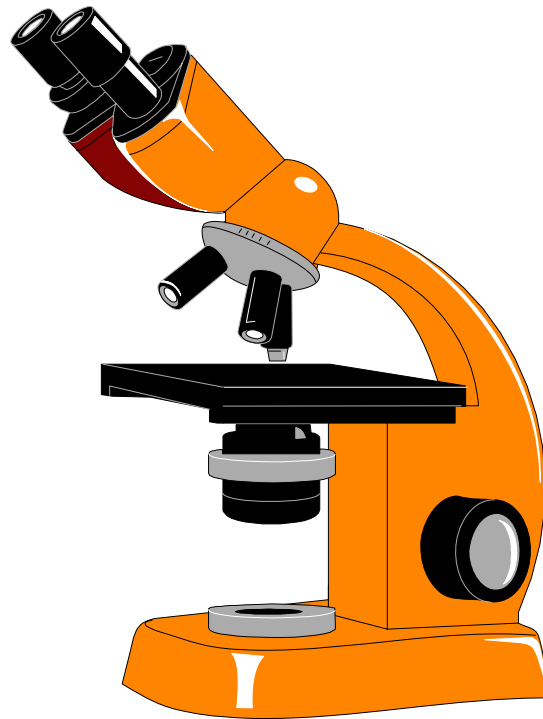
INSTRUCTOR:

OFFICE:

OFFICE TELEPHONE:

OFFICE HOURS:

CLASS SCHEDULE:



COURSE SYLLABUS

COURSE TITLE:	<u>Microbiology</u>	PREFIX & NUMBER:	<u>BIO 225</u>
LECTURE HOURS:	<u>3.0 per week (Fall & Spring) 4.5 per week (Summer)</u>	LAB HOURS:	<u>3.0 per week 4.5 per week</u>
CONTACT HOURS:	<u>6.0 per week (Fall & Spring) 9.0 per week (Summer)</u>	CREDIT HOURS:	<u>4.0 Semester Hrs.</u>

CATALOG DESCRIPTION:

This is a lecture and laboratory course which introduces the student to the bacteria, rickettsia, viruses, and fungi. The course emphasizes the morphology, physiology, genetics, identification, cultivation and control of microbes. In addition a survey is made of pathogenic microorganisms, and their effects on the human body.

Co-requisite: BIO 211 or equivalent

TEXTBOOKS AND OTHER REQUIRED MATERIALS:

Tortora, Gerald J., Berdell R. Funke and Christine L. Case. (2001). Microbiology: An Introduction (9th ed.) Benjamin/Cumming Publishing Co.

Cappuccino, James G., and Natalie, Sherman. (2002). Microbiology: Laboratory Manual (7th ed.). Benjamin/Cumming Publishing Co.

A clean **LAB COAT - THIS IS MANDATORY.**

Students Will Not Be Allowed To Attend Lab Without One.

Eye Goggles or Safety Glasses (for certain lab exercises)

IMPORTANT: Due to the fact that we are working with microbiological organisms, students will not be allowed to attend lab in sandals or open-toed shoes. It is suggested that, if necessary, students bring a second pair of shoes that can be worn in lab.

GRADING SYSTEM AND POLICY:

Final course grades will be determined according to the following grading scale.	TESTS:
91 – 100 = A	Three 100-point lecture tests and one 150-point comprehensive final examination will be administered in this course. In addition two 50-point lab practical examinations will be administered in the laboratory portion of the course.
81 – 90 = B	
71 – 80 = C	
65 – 70 = D	
Below 65 = F	
	During Summer sessions, one 100-point laboratory practical examination will be administered.

The grade of Incomplete (I) represents incomplete work and is a temporary grade that must be approved by the instructor. In the rare instances where a grade of I may be requested, two conditions must be met. One is documented evidence of medical or family emergency at the end of the course. The other is that the student must have a passing grade in the course. The student must satisfactorily complete course requirements by the following midterm or the grade will be changed to an F.

QUIZZES:

The number of quizzes given will be left to individual instructors and will be administered at the beginning of lectures or labs. Each will be worth a total possible 10 points and will be based upon either reading assignments for that day or material presented at the previous lecture. **MAKE-UPS ARE NOT ALLOWED ON QUIZZES MISSED DUE TO ABSENCES OR TARDINESS.**

MAKE-UPS:

These are strongly discouraged and will not generally be allowed unless the student can properly justify his/her absence with **WRITTEN JUSTIFICATION**. No more than one make-up is allowed for any student (all further missed tests accrue an automatic zero). There are **NO MAKE-UPS** for the laboratory practical and there is **NO EXTRA CREDIT** in this course. It is the student's responsibility to seek out the instructor to attempt a justified make-up within 1 week of the original test date.

PREPARATION:

The student is expected to come to lecture and lab prepared (having read the assigned material) to discuss test material and perform assigned labs.

GRADING:

This is accomplished by dividing the points accumulated in both lecture and laboratory by the total possible points.

FALL AND SPRING SEMESTERS		SUMMER SESSION	
Lecture tests (3).....	300 points	Lecture tests (3)	300 points
Comprehensive final (1).....	150 points	Comprehensive final (1)	150 points
Laboratory Points		Laboratory Points	
Lab practicals (2)	100 points	Lab practical (1)	100 points
Unknown organism report (1).....	50 points	Unknown organism report (1).....	50 points
Quizzes	<u>100 points</u>	Quizzes	100 points
TOTAL	700 points	TOTAL	700 points

SPECIAL CLASS OR LABORATORY PROCEDURES:

Lectures and laboratories will, due to the large amount of material to be covered, begin exactly on time and will last for full duration of the period. Students will be asked to select a lab partner and may be required to come into lab **ON THEIR OWN TIME** to examine cultures and complete biochemical tests and record results.

Proper care of equipment is essential in the Department of Biological Sciences. The equipment may be expensive or difficult to replace. Students who fail to take care of equipment may be subject to disciplinary action and/or be barred from participation in the laboratory.

The final laboratory exercise will require each student to independently identify an unknown bacterial culture to species level and complete a report of procedures and test results.

SAFETY:

For your safety, if you have a medical condition that results in seizures, blackouts, etc. (e.g., from epilepsy, diabetes) please inform your instructor before the first laboratory session. This information will be kept confidential. If you wish to seek accommodations due to a disability, please contact Services for Students with Disabilities, Building 410, Room 210.

ELECTRONIC COMMUNICATION DEVICES IN CLASSROOMS:

To minimize classroom disruptions and protect the integrity of test-taking situations, activated electronic communication devices such as pagers and telephones are generally not permitted in classrooms at Trident Technical College. The only exception to this policy will be for on-call emergency personnel (police, fire, EMS), who will be required to notify their classroom instructor of their need for such devices at the beginning of the term and provide documentation verifying their occupation. However, on-call emergency personnel may not leave a testing situation; communicate by electronic means and return to complete an examination. In these cases, instructors should make arrangements for re-testing.

ACCOMMODATIONS FOR STUDENTS WITH SPECIAL NEEDS:

The College will make reasonable accommodations for persons with documented disabilities. Students should notify the Counselor for Students with Disabilities (located in Counseling and Career Development, Building 410, Room 210) and their instructors of any special needs. Instructors should be notified on the first day of classes.

FOR STUDENTS ENROLLED IN ONLINE OR OTHER DISTANCE-LEARNING SECTIONS:

To confirm that you are actively involved in this course you need to contact the instructor at least once per week. Forms of contact can include (but are not limited to) posting/receiving e-mails, participating in online class discussions or chat rooms, and completing and submitting course assignments. Please see the instructor's addendum for any additional instructions.

ATTENDANCE POLICY:

Before attending classes, you must meet all prerequisites and officially register for all courses. Prompt and regular attendance is your responsibility. You are responsible for all material covered and all assignments made in class. Any time you are absent from a class, laboratory or other scheduled events, it is your responsibility to make satisfactory arrangements for any make-up work permitted by the instructor.

An absence is defined as nonattendance for any reason, including illness, emergency or official leave. If you arrive late to class, you may not be allowed into the classroom and may be considered absent for that period. If you leave before the instructor dismisses class, you may also be considered absent. All class sessions are important. Any time you miss a class you increase your risk of making a failing grade. For example, some departments or individual instructors will count your class participation as a substantial percentage of your grade. Of course, if you are not in class, you will not get the necessary points for your class participation.

If you quit coming or participating in the course and do not officially withdraw by the withdrawal date for each semester, you will receive a grade of F or U. Your instructor cannot assign a grade of W. If you receive financial aid or veterans' aid, your aid may be revised as a result of any changes in your course schedule.

DEPARTMENTAL ATTENDANCE POLICY:

Regular attendance in lecture and lab is mandatory. Although students will not be graded on their attendance directly, class attendance and punctuality are vital both for better comprehension of the material and for participation in class activities. You should attend every lecture and lab session and plan to remain for the full duration of the period. Arriving late to class may constitute an absence; however, this determination will be left to the discretion of the instructor.

Each student is responsible for any and all materials covered in class, including lecture notes, quizzes or assignments that are missed if absent. Quizzes given during the lab or lecture may not be made up if missed.

In accordance with college policy, the final course grade for any student whose absences exceed 20% of the scheduled meeting time (17 hours) for this course may be reduced by one letter grade.

Student receiving veteran benefits should refer to the Student Handbook for the Veterans Attendance Policy.

INSTRUCTOR AVAILABILITY:

Your instructor is available to you outside of class for academic assistance. Full-time faculty maintain and post regularly scheduled office hours. Part-time faculty are accessible in a variety of ways, which may include conferences before and after class or by appointment, telephone conferences, and E-mail.

ADDENDUM
LECTURE SCHEDULE - 14-WEEK SESSION

WEEK	LECTURE CHAPTER	LAB EXERCISES
1	Introduction to the Course 1 The Microbial World and You 3 Observing Microorganisms Through a Microscope	Introduction to the Laboratory Microscopy Microbes in the Environment
2	4 Functional Anatomy of Prokaryotic and Eucaryotic Cells	Culture Transfer Techniques Techniques for the Isolation of Pure Cultures Simple Stain
3	4 Functional Anatomy of Prokaryotic and Eucaryotic Cells 6 Microbial Growth	Differential Stains: The Gram Stain Corynebacterium The Acid Fast Stain The Capsule Stain Endospore Stain (optional)
4	13 Viruses, Viroids and Prions	Selective, Differential and Enriched Media Serial Dilution Agar Plating Procedure for Population Counting
5	EXAM I 12 The Eukaryotes: Fungi, Algae Protozoans and Helminths	Anaerobic Growth Methods Osmosis (demo)
6	8 Microbial Genetics	Chemical Agents of Control: Chemotherapeutic Agents Disinfectants and Antiseptics Review for Lab Practical I
7	8 Microbial Genetics 7 The Control of Microbial Growth	LAB PRACTICAL I
8	20 Antimicrobial Drugs	The Staphylococci The Streptococci The Catalase Test
9	EXAM II 14 Principles of Disease and Epidemiology	Biochemical Tests: Starch, Gelatin Hydrolysis Lipid, Casein Hydrolysis Oxidase Test Carbohydrate Fermentation Triple Sugar Iron IMViC Hydrogen Sulfide Urease Test Phenylalanine Deaminase Test Nitrate Reduction Test Litmus Milk Test
10	15 Microbial Mechanisms of Pathogenicity 16 Non Specific Defenses of the Host	Discussion of Biochemical Test Results Identification of Enteric Microorganisms using Multi-test Microsystems
11	17 Specific Defenses of the Host: The Immune System	The Fungi Protozoans and Parasites

LECTURE SCHEDULE - 14-WEEK SESSION (cont.)

WEEK	LECTURE CHAPTER	LAB EXERCISES
12	EXAM III 24 Microbial Diseases of the Respiratory System	Fungi (continued) Introduction to the Unknown Organism Review for Lab Practical II
13	25 Microbial Diseases of the Digestive System	LAB PRACTICAL II
14	26 Microbial Diseases of the Urinary/Reproductive System	Laboratory Open for Independent Work on the Unknown Organism Report Due at the End of the Week
15	FINAL EXAMS	

LECTURE AND LAB SCHEDULES ARE TENTATIVE AND SUBJECT TO CHANGE WITH THE APPROVAL OF THE HEAD OF THE DEPARTMENT OF BIOLOGICAL SCIENCES

**ADDENDUM
LECTURE SCHEDULE - 10-WEEK SESSION**

WEEK	LECTURE CHAPTER	
1	Introduction to the Course 1 The Microbial World and You 3 Observing Microorganisms Through a Microscope 4 Functional Anatomy of Prokaryotic and Eucaryotic Cells	Introduction to the Laboratory Microscopy Microbes in the Environment Microscopy Culture Transfer Techniques Techniques for the Isolation of Pure Cultures
2	4 Functional Anatomy of Prokaryotic and Eucaryotic Cells 6 Microbial Growth 13 Viruses, Viroids and Prions	Simple Stain Differential Stains: The Gram Stain Corynebacterium The Acid Fast Stain The Capsule Stain Endospore Stain Corynebacterium
3	13 Viruses, Viroids and Prions EXAM I 12 The Eukaryotes: Fungi, Algae Protozoans and Helminths	Selective, Differential and Enriched Media Serial Dilution Agar Plating Procedure for Population Counting
4	8 Microbial Genetics 7 Control of Microbial Growth	Anaerobic Growth Methods
5	20 Antimicrobial Drugs EXAM II	Chemical Agents of Control: Chemotherapeutic Agents Disinfectants and Antiseptics The Staphylococci The Catalase Test
6	14 Principles of Disease and Epidemiology 15 Microbial Mechanisms of Pathogenicity	The Streptococci Biochemical Tests: Start, Gelatin Hydrolysis Lipid, Casein Hydrolysis Oxidase Test Carbohydrate Fermentation Triple Sugar Iron IMViC Hydrogen Sulfide Urease Test Phenylalanine Deaminase Test Nitrate Reduction Test Litmus Milk Test
7	15 Microbial Mechanisms of Pathogenicity 16 Non Specific Defenses of the Host	Discussion of Biochemical Test Results Identification of Enteric Microorganisms using Multi-test Microsystems Introduction to the Unknown Organism
8	17 Specific Defenses of the Host: The Immune System EXAM III 24 Microbial Diseases - Respiratory	Fungi Work on the Unknown Organism The Protozoans and Parasites
9	25 Microbial Diseases - Digestive 26 Microbial Diseases - Urinary/Reproductive System	Review for Lab Practical Work on Unknown Organism Lab Practical Laboratory Report Due This Week
FINAL EXAMS		

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