



Course BIOL3V20-001/2
General Microbiology with lab
Professor Dr. Ernie Hannig
Term Spring 2007
Lecture TTh 4pm-5:15pm
Meetings Lab TTh 6pm-8:30pm (sect. 001)
Lab WF 6pm-8:30pm (sect. 002)

Professor's Contact Information

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Office Hours TTh 5:30pm-6pm; 8pm-10pm
Other Information Please post questions of general interest to WebCT

General Course Information

Pre-requisites, Co-requisites, & other restrictions Intro. Biol. I and II; Intro. Biol lab; General Chem I and II w/labs; Organic Chem. I w/lab

Course Description This is a general microbiology course in which students will learn fundamental principles of microorganisms that include bacteria, viruses, fungi, and protozoans. The laboratory component focuses on developing laboratory skills in classical microbiology, and students will generally work independently. Exercises include various staining and pure culture techniques, biochemical and other in vitro testing, as well as isolation and identification of unknown organisms.

Learning Outcomes

1. Understand the structure and physiology of microorganisms, as well as basic principles of microbial gene expression.
2. Be able to explain various techniques for propagation of microorganisms as well as methods for microbial control
3. Demonstrate the ability to isolate, propagate, and identify microorganisms.
4. Demonstrate and awareness and understanding of current topics in public health microbiology

Required Texts & Materials

(1) Madigan M.T., Martinko, J.M., and Parker, J. (2006) Brock Biology of Microorganisms, 11th ed. Prentice Hall/Pearson Education, Inc., Upper Saddle River, NJ. [ISBN 0-13-144329-1] (lecture)
Note: (2003) 10th edition [ISBN 0-13-066271-2] is equally suitable.
(2) Cappuccino, J.G., and Sherman, N. (2005) Microbiology: A Laboratory Manual, 7th ed. Benjamin Cummings [ISBN 0-8053-2836-X] (lab)

Suggested Texts, Readings, & Materials (1) Alexander, S.K., and Strete, D. (2001) Microbiology: A Photographic Atlas for the Laboratory. Benjamin Cummings [ISBN 0-8053-2732-0]

Recommended (highly) Reading
(2) De Kruif, P. Microbe Hunters.

This book was originally published in 1926, but reprint editions are available.

Assignments & Academic Calendar

[Topics, Reading Assignments, Due Dates, Exam Dates]

**Insert Week Number
OR Range of Dates
for week**

Date	Lecture	Chapter (Brock, 11 th edition) Note: 10 th edition is essentially identical for these chapters	Lab Note: Wed/Fri section (002) same experiments as Tues/Thurs section (001)	Chapter (Cappuccino and Sherman, 7 th edition) [6 th edition chapters in brackets if different]
Jan. 9 (Tues)	Introduction			
Jan. 11 (Thurs.)	Microorganisms and Microbiology An Overview of Microbial life	Ch. 1 Ch. 2		
Jan. 16 (Tues.)	Macromolecules Cell Structure/Function	Ch. 3 (this should be a review) Ch. 4		
Jan. 18 (Thurs.)	Cell Structure/Function	Ch. 4		
Jan. 23 (Tues.)	Cell Structure/Function	Ch. 4		
Jan. 25(Thurs.)	Nutrition, Culture, and Metabolism I	Ch. 5 + handouts	Introduction Lab Safety	pgs. xii- xvi;
Jan. 30(Tues.)	Nutrition, Culture, and Metabolism II	Ch. 5 + handouts	Microscopy: Measurements of microorganisms Bacterial staining: preparation, simple staining	Exp. 4; 6, 8, 9
Feb. 1 (Thurs.)	Nutrition, Culture, and Metabolism III	Ch. 5 (35 pgs) + handouts	Continue and finish Exp. 4; 6, 8, 9	
Feb.6 (Tues.)	Microbial Growth I	Ch. 6	Negative stain; Gram stain	Exp. 10, 11
Feb. 8 (Thurs.)	Microbial Growth II	Ch. 6	Acid-fast stain	Exp.12
Feb. 13 (Tues.)	Exam I	Ch. 1-6	Cultivation and cultural	Exp. 1-3

			characteristics of microorganisms	
Feb. 15 (Thurs.)	Principles of Microbial Molecular Biology I	Ch. 7	Finish Exp. 1-3	
Feb. 20 (Tues.)	Principles of Microbial Molecular Biology II	Ch. 7	Bacterial growth: physical factors (oxygen) Serial dilution: viable cells	Exp. 18-20 [17-19]
Feb. 22 (Thurs.)	Regulation of Gene Expression	Ch. 8	Finish Exp. 18-20	
Feb. 27 (Tues.)	Bacterial Genetics I	Ch. 10	Differential and selective media; Biochemical tests (extracellular enzyme activities for starch, lipid, and protein hydrolysis); IMViC tests (MR/VP)	Exp. 15, 22, 25B, 25C [14, 21, 24B, 24C]
Mar. 1 (Thurs.)	Bacterial Genetics II	Ch. 10	Finish Exp. 15, 22, 25B, 25C	
Mar. 6 (Tues.)	Spring Break			
Mar. 8 (Thurs.)	Spring Break			
Mar. 13 (Tues.)	Microbial Evolution and Systemics	Ch. 11	Biochemical tests (carbohydrate utilization; indole production; citrate and amino acid utilization)	Exp. 23, 24, 25A, 25D, 32 [22, 23, 24A, 24D, 31]
Mar. 15 (Thurs.)	Catch-up		Biochemical tests (litmus milk, catalase, oxidase)	Exp. 28, 30, 31 [27, 29, 30]
Mar. 20 (Tues.)	Exam II	Ch. 7, 8, 10, 11	Biochemical tests (H ₂ S, urease, nitrate reduction); start mixed unknowns	Exp. 26, 27, 29; start 33 (mixed unknowns) [25, 26, 28, 32]

Mar. 22 (Thurs.)	Essentials of Virology I	Ch. 9	Finish Exp. 26, 27, 29; continue exp. 33 (weekly until completed)	
Mar. 27 (Tues.)	Essentials of Virology II	Ch. 9	Bacterial viruses: isolation, cultivation, and enumeration	Exp. 39 [38]
Mar. 29 (Thurs.)	Bacterial, Plant, and Animal Viruses I	Ch.16	Parasitic protozoa	Exp. 35 [34]
Apr. 3 (Tues.)	Bacterial, Plant, and Animal Viruses II	Ch. 16	Growth control: physical agents (moist heat); Growth control: chemical agents (antibiotics and other chemical agents)	41, 44, 46 [40, 43, 45]
Apr. 5 (Thurs.)	Microbial Growth Control I	Ch. 20	Finish Exp. 41, 44, 46	
Apr. 10 (Tues.)	Microbial Growth Control II	Ch. 20	Mycology	Exp. 36 [35]
Apr. 12 (Thurs.)	Human-Microbe Interactions I	Ch. 21	Finish Exp. 36	
Apr. 17 (Tues.)	Human-Microbe Interactions II	Ch. 21	Work on unknowns	
Apr. 19 (Thurs.)	Catch-up		Work on unknowns	
Apr. 26 (Thurs.)	Final Exam 2 pm (note time)	Ch. 9, 16, 20, 21	Lab report on unknowns due	

**Insert Exam Date(s),
Time(s)** See schedule above

Course Policies

<p>Grading (credit) Criteria</p>	<p>Final grades are calculated as follows:</p> <ol style="list-style-type: none"> 1. Written exams. Each exam (3 exams total, each covering lecture and lab material) is worth 25% of your final grade. 2. Lab reports. The average of your lab reports is worth 20% of your final grade. 3. Instructor's discretion. If your grade lies just to the south of the next highest grade, you may be "bumped" up if you have shown improvement throughout the course, were consistently prepared for both lecture and lab, and were an active (and meaningful) participant in lecture and lab discussions. The phrase "good citizen" comes to mind.
<p>Make-up Exams</p>	<p>Written exams. If you cannot be present for an exam, let me know ahead of time (I'll also need a written explanation...and/or other documentation... from you). The preferred option is to arrange with me to take the exam at what I consider to be a reasonable alternative time. Make-up exams will be given (or not) at my discretion and at my convenience, and I will choose the format (essay, oral, etc.).</p> <p>Laboratories. Because of the nature of the lab and lab preparations, there is no way to make up a laboratory. If you miss a lab, you will still be responsible for submitting the lab report; you can use your partner's data if necessary; however, you will receive half credit at most for that laboratory. In other words, for missed labs you will need to learn the theory/technique(s) that you missed.</p>
<p>Extra Credit</p>	<p>none</p>
<p>Late Work</p>	<p>Not accepted unless prior arrangements made with Instructor</p>
<p>Special Assignments</p>	
<p>Class Attendance</p>	<p>required</p>
<p>Classroom Citizenship</p>	
<p>Field Trip Policies</p>	
<p>Student Conduct and Discipline</p>	<p>The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, <i>A to Z Guide</i>, which is provided to all registered students each academic year.</p> <p>The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the <i>Rules and Regulations, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3</i>, and in Title V, Rules on Student Services and Activities of the university's <i>Handbook of Operating Procedures</i>. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391).</p> <p>A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the</p>

	<p>Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.</p>
<p>Academic Integrity</p>	<p>The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.</p> <p>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 or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings.</p> <p>Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.</p>
<p>Email Use</p>	<p>The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.</p>
<p>Withdrawal from Class</p>	<p>The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.</p>
<p>Student Grievance Procedures</p>	<p>Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's <i>Handbook of Operating Procedures</i>.</p> <p>In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not</p>

	<p>resolved by the School Dean’s decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the dean will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.</p> <p>Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.</p>
<p>Incomplete Grades</p>	<p>As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester’s end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of F.</p>
<p>Disability Services</p>	<p>The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Disability Services is located in room 1.610 in the Student Union. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m.</p> <p style="text-align: center;">The contact information for the Office of Disability Services is: The University of Texas at Dallas, SU 22 PO Box 830688 Richardson, Texas 75083-0688 (972) 883-2098 (voice or TTY)</p> <p>Essentially, the law requires that colleges and universities make those reasonable adjustments necessary to eliminate discrimination on the basis of disability. For example, it may be necessary to remove classroom prohibitions against tape recorders or animals (in the case of dog guides) for students who are blind. Occasionally an assignment requirement may be substituted (for example, a research paper versus an oral presentation for a student who is hearing impaired). Classes enrolled students with mobility impairments may have to be rescheduled in accessible facilities. The college or university may need to provide special services such as registration, note-taking, or mobility assistance.</p> <p>It is the student’s responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.</p>
<p>Religious Holy Days</p>	<p>The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.</p> <p>The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any</p>

	<p>missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.</p> <p>If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.</p>
<p>Off-Campus Instruction and Course Activities</p>	<p>Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be found at http://www.utdallas.edu/BusinessAffairs/Travel_Risk_Activities.htm. Additional information is available from the office of the school dean.</p>

These descriptions and timelines are subject to change at the discretion of the Professor.