

Eastfield College
Science and PE Department
Biology 2421
Microbiology for Science Majors
Standard Course Syllabus

Class Time and Location:

Lecture
Lab

Instructor:

Name:
Location:
Office Hours:
Office Phone:
E-mail Address:

Course Description (4 Credit Hours) :

A study of the morphology, physiology, and taxonomy of representative groups of pathogenic and non-pathogenic organisms. Emphasis is placed on relationships that influence humans: public health, infectious diseases, and immunology, biotechnology, and environmental and industrial applications. Lab experimentation with pure cultures and selected media will be used to study extensively the medical, environmental, and industrial importance of these microbes. Designed for students in science or pre-professional programs. (3 Lec., 4 Lab.) Coordinating Board Academic Approval Number 2605035103

Prerequisites:

Biology 1406, Biology 1407 and Chemistry 1411. One of the following must be met: (1) Developmental Reading 0093 AND Developmental Writing 0093; (2) English as a Second Language (ESOL) 0044 AND 0054; or (3) have met Texas Success Initiative (TSI) in Reading and Writing standards AND DCCCD Writing score prerequisite requirement. Student cannot take both BIOL 2420 and BIOL 2421 to satisfy the core science credit.

Textbooks :

Required:

Microbiology: An Evolving Science, 2nd edition, Sloanczewski, Joan, I. and Foster, John, W. W. Norton & Company, 2011, New York, NY. ISBN 9780393934472.

Microbiology: Laboratory Theory and Application, 3rd edition, Leboffe, Michael, J. and Pierce, Burton, E., Morton Publishing Company, 2010, Englewood, CO. ISBN 9780895828309.

Course Objectives:

To provide an understanding of the life processes, using microorganisms as the prototype of living things. Provide a foundation for future courses in biology, especially advanced microbiology and a background for the professions such as agriculture, food science, public health and medicine. Provide a background for an understanding of the scientific method and the knowledge to understand the scope of ecology and environmental science.

Student Learning Outcomes:

Students who have completed Biology 2421 should be able to do the following:

1. Compare and contrast the cellular components of prokaryotic and eukaryotic cells.
2. Demonstrate an understanding cellular respiration as it relates to both prokaryotic and eukaryotic cells and its effect on life.
3. Define the components of a compound microscope.
4. Operate a compound microscope.
5. Evaluate the biochemical reactions and hypothesize the identification of an unknown microorganism.

Exemplary Educational Objectives

1. To understand and apply method and appropriate technology to the study of natural sciences.
2. To recognize scientific and quantitative methods and the differences between these approaches and other methods of inquiry and to communicate findings, analyses, and interpretation both orally and in writing.
3. To identify and recognize the differences among competing scientific theories.
4. To demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics, values, and public policies.
5. To demonstrate knowledge of the interdependence of science and technology and their influence on, and contribution to, modern culture.

Core Curriculum Intellectual Competencies (CCIC)

This course reinforces all 6 of the Core Curriculum Intellectual Competencies defined by the Texas Higher Education Coordinating Board.

1. **READING:** Reading at the college level means the ability to analyze and interpret a variety of printed materials--books, articles and documents. A core curriculum should offer students the opportunity to master both general methods of analyzing printed materials and specific methods for analyzing the subject matter of individual disciplines.
2. **WRITING:** Competency in writing is the ability to produce clear, correct and coherent prose adapted to purpose, occasion, and audience. Although correct grammar, spelling and punctuation are each a sine qua non in any composition, they do not automatically ensure that the composition itself makes sense or that the writer has much of anything to say. Students need to be familiar with the writing process including how to discover a topic and how to develop and organize it, how to phrase it effectively for their audience. These abilities can be acquired only through practice and reflection.
3. **SPEAKING:** Competence in speaking is the ability to communicate orally in clear, coherent and persuasive language appropriate to purpose, occasion and audience. Developing this competency includes acquiring poise and developing control of the language through experience in making presentations to small groups, to large groups and through the media.
4. **LISTENING:** Listening at the college level means the ability to analyze and interpret various forms of spoken communication.
5. **CRITICAL THINKING:** Critical thinking embraces methods of applying both qualitative and quantitative skills analytically and creatively to subject matter in order to evaluate arguments and to construct alternative strategies. Problem solving is one of the applications of critical thinking, used to address an identified task.
6. **COMPUTER LITERACY:** Computer Literacy at the college level means the ability to use

computer-based technology in communicating, solving problems and acquiring information. Core-educated students should have an understanding of the limits, problems and possibilities associated with the use of technology and should have the tools necessary to evaluate and learn new technologies as they become available.

Each instructor must indicate which course activities assess the CCIC's and EEO's(below are some examples that pertain to all instructors)

CCIC and EEO Activities

1. Four lecture exams will be given covering the content of the textbook and classroom lectures. The format of the exams may contain a combination of true/false, multiple choice, matching, short answer and essay questions. Satisfies CCIC 1, 2, 4, 5 and EEO 1, 3, 4, 5.
2. Three laboratory practicals will be given covering the content and experimental procedures of the laboratory. Students will be required to recall detail and interpret any collect data on each exam. Satisfies CCIC 1, 2, 4, 5 and EEO 1, 2, 3, 4, 5.
3. Students are required to participate in daily laboratory and classroom discussions. Satisfies CCIC 1, 3, 4, 5 and EEO 1, 2, 3, 4, 5.
4. Each week students will perform laboratory experiments and answer questions in the lab manual to demonstrate an understanding of the material and techniques used. Satisfies CCIC 1, 2, 4, 5 and EEO 1, 2, 3, 4, 5.
5. Each student will use microbiology techniques to identify two unknown microorganisms. The students will evaluate laboratory results and write a paper that discusses laboratory procedures, experimental results and research used to identify the organisms. Satisfies CCIC 1, 2, 3, 4, 5, 6 and EEO 1, 2, 3, 4, 5.

Evaluation Procedures:

Exams

4 Major lecture exams* – 100 points each = 400 points

3 Laboratory exams – 100 points each = 300 points

A Laboratory report based on the identification of unknown bacteria – 100 points.

Instructor evaluation of student performance including attendance – 100 points.

***Make – up Exams**

A comprehensive final will be given for lecture exam missed.

If a laboratory practical is missed, you will receive a grade of **ZERO** for the exam. There are no make-up laboratory practicals.

Final grade

810 – 900pts	=	90 – 100%	=	A
720 – 809pts	=	80 – 89%	=	B
630 – 719pts	=	70 – 79%	=	C
540– 629pts	=	60 – 69%	=	D
0 - 539pts	=	0 - 59%	=	F

Writing Across the Curriculum:

Science courses at Eastfield College follow a principle of “Writing Across the Curriculum.” Each course incorporates a writing element. Writing is a critical part of communication of ideas, and is important in the synthesis and analysis of scientific concepts. Writing in this course is accomplished through completion of essay questions on the lecture exams. Each question must be answered in complete sentences, using proper grammar, correct spellings, giving examples and details to support the statement.

Obtaining Final Course Grades Using eConnect:

Final Grade Reports are no longer mailed. Convenient access is available online at www.econnect.dcccd.edu. Use your identification number when you log onto eConnect, an online system developed by the DCCCD to provide you with timely information regarding your college record. Your grades will also be printed on your **Student Advising Report**, which is available in the Admissions Office.

Eastfield College Email Policy:

Faculty and students must have and use a DCCCD account for all correspondence relating to academic coursework. For information on setting up a DCCCD student email account go to: <http://www.dcccd.edu/netmail/home.html>

Course Outline:

Dates	Topic	Chapters
1.	Microbial Life: Origin and Discovery	1
	Observing the Microbial Cell	2
2.	Cell Structure and Function	3
	Bacterial Culture, Growth, and Development	4
3.	Environmental Influence and Control of Microbial Growth	5
4.	Virus Structure and Function	6
	Genomes and Chromosomes	7
5.	Transcription, Translation, and Bioinformatics	8
	Gene Transfer, Mutations, and Genome Evolution	9
6.	Molecular Regulation	10
	Viral Molecular Biology	11
7.	Molecular Techniques and Biotechnology	12
	Energetics and Catabolism	13
8.	Respiration, Lithotrophy, and Photolysis	14
	Biosynthesis	15
9.	Food and Industrial Microbiology	16
	Origins and Evolution	17
10.	Bacterial Diversity	18
	Archaeal Diversity	19

11.	Eukaryotic Diversity	20
	Microbial Habitats and Communities	21
12.	Microbes and the Global Environment	22
	Human Microflora and Nonspecific Host Defenses	23
	The Adaptive Immune Response	24
13.	Microbial Pathogenesis	25
14.	Microbial Diseases	26
	Antimicrobial Chemotherapy and Resistance	27
15.	Clinical Microbiology and Epidemiology	28

Attendance Policy:

***Instructors state your expectations and specify exactly how you calculate your attendance grade.**

Below is one example that should be included

There are no make-up classes for laboratory exercises that are missed. You cannot attend another laboratory with another instructor to make-up the work.

Emergency/Inclement Weather Procedure:

In case of emergency or inclement weather conditions, Eastfield students should listen to KEOM-FM Radio Station (88.5) as the primary media source. In partnership with the Mesquite Independent School District, Eastfield College Administration will notify KEOM immediately after a decision is made to cancel classes on any given day of inclement weather or for emergency purposes. Students may also monitor other local radio and television stations. The earliest an announcement may be broadcast on KEOM Radio is 6 a.m. Students may also refer to the Eastfield College web page www.eastfieldcollege.com for the Inclement Weather announcement under the Features area of the front page. The announcement will be posted immediately following the decision to close the college.

Financial Aid Statement:

Students who are receiving any form of financial aid should check with the Financial Aid Office prior to withdrawing from classes. Withdrawals may affect your eligibility to receive further aid and could cause you to be in a position of repayment for the current semester. Students who fail to attend or participate after the drop date are also subject to this policy.

Repeating This Course: (Third Attempt to Enroll in a Course):

Effective for Fall Semester 2005, the Dallas County Community Colleges will charge additional tuition to students registering the third or subsequent time for a course. All third and subsequent attempts of the majority of credit and Continuing Education/Workforce Training courses will result in additional tuition to be charged. Developmental Studies and some other courses will not be charged a higher tuition rate. Third attempts include courses taken at any of the Dallas County Community Colleges since the Fall 2002 Semester. See *Third Attempt to Enroll in a Course at:* <http://www.dcccd.edu/thirdcourseattempt/>

Academic Honesty:

Scholastic dishonesty is a violation of the Code of Student Conduct. Scholastic dishonesty includes, but is not limited to, cheating on a test, plagiarism, and collusion.

As a college student, you are considered a responsible adult. Your enrollment indicates acceptance of the DCCCD Code of Student Conduct published in the *DCCCD Catalog* at <http://www1.dcccd.edu/cat0506/ss/code.cfm>

Academic dishonesty includes, but is not limited to, cheating on tests, plagiarism and collusion. *Cheating* includes copying from another student's test or homework paper, using materials not authorized, collaborating with or seeking aid from another student during a test, knowingly using, buying, selling, stealing, or soliciting the contents of an unadministered test, and substituting for another person to take a test. *Plagiarism* is the appropriating, buying, receiving as a gift, or obtaining by any means another's work and the unacknowledged submission or incorporation of it in one's own written work. *Collusion* is the unauthorized collaboration with another person in preparing written work for fulfillment of course requirements. Academic dishonesty is a serious offense in college. You can be given a failing grade on an assignment or test, can be failed for the class, or you can even be suspended from college.

***Instructors include specific consequences should academic dishonesty occur.**

Food and Drink Policy:

Food, drinks, and tobacco products are prohibited in Eastfield College classrooms.

***Instructors, if you are teaching in a non-lab classroom, you may allow for food and drink, but you must comply with college requirement of a statement of responsibility from each student. See "Food and Drink Policy"**

Food and Drink Policy Statement

We the undersigned understand that bringing drinks and food into the college classroom is a privilege and a responsibility. Out of respect for other members of the Eastfield College community, we agree to take full responsibility for our actions. This includes but is not limited to removing cans, bottles, trash, etc. from the classroom when we leave, and depositing our trash in appropriate receptacles outside the classrooms. Also, we agree to clean up spills and, if special cleaning is needed, to contact appropriate college personnel immediately."

[Faculty may add wording regarding the prohibition of certain kinds of foods, such as foods with strong odors, etc.]

The right and responsibility for setting classroom food and drink policy does not extend to classrooms or other areas where students and faculty are working directly with or around college property such as computers, lab materials, equipment, and/or college-owned books. Classroom and other spaces such as these will be restricted from the use of food and drink at all times for students and college personnel. In addition, the right and responsibility for setting classroom food and drink policy does not extend to items that are generally prohibited from the campus (e.g. alcohol, tobacco products).

ADA Statement:

Students with a physical, mental or learning disability who require accommodations should contact the college Disability Services Office in C237. Call 972.860.8348 or email efcdso@dcccd.edu. For more information: <http://www.eastfieldcollege.edu/SSI/DSO/index.html>

Religious Holidays:

Absences for observance of a religious holy day are excused. Notification of the absence must be given to the instructor in writing at least two weeks prior to the date of the holy day. A student whose absence is excused to observe a religious holy day is allowed to contract with the instructor to take a make-up examination or complete an assignment within a mutually agreed upon time after the absence.

Withdrawal Policy:

If you are unable to complete this course, it is your responsibility to withdraw formally. The withdrawal request must be received in the Registrar's Office by **INSERT WITHDRAWAL DATE**. Failure to do so will result in your receiving a performance grade, usually an "F." If you drop a class or withdraw from the college before the official drop/withdrawal deadline, you will receive a "W" (Withdraw) in each class dropped. For more information about drop deadlines, refer to the current printed Credit Class Schedule, contact the Admissions/Registrar's Office at 972-860-7167 (Room C119), or contact the division office.

If you drop a class via eConnect, make sure to print a copy of the confirmation and keep the copy. In the event of a discrepancy it will be the responsibility of the student to provide documentation of having dropped the class.

STOP BEFORE YOU DROP:

For students who enrolled in college level courses for the first time in the fall of 2007, Texas Education Code 51.907 limits the number of courses a student may drop.

You may drop no more than 6 courses during your entire undergraduate career unless the drop qualifies as an exception. Your campus counseling/advising center will give you more information on the allowable exceptions.

Remember that once you have accumulated 6 non-exempt drops, you cannot drop any other courses with a "W". Therefore, please exercise caution when dropping courses in any Texas public institution of higher learning, including all seven of the Dallas County Community Colleges. For more information, you may access:

<https://www1.dcccd.edu/coursedrops>

Family Educational Rights and Privacy Act of 1974 (FERPA):

In compliance with the Family Educational Rights and Privacy Act of 1974 (FERPA), the College may release information classified as "directory information" to the general public without the written consent of the student. Directory information includes: (1) student name, (2) student address, (3) telephone numbers, (4) date and place of birth, (5) weight and height of members of athletic teams, (6) participation in officially recognized activities and sports, (7) dates of attendance, (8) educational institution most recently attended, and (9) other similar information, including major field of student and degrees and awards received. Students may protect their directory information at any time during the academic year. If no request is filed, directory information is released upon written inquiry. No telephone inquiries are acknowledged. No transcript or academic record is released without written consent from the student, except as specified by law.

Classroom Etiquette:

***Instructors include statements about classroom behavior, cell phones, etc.**

Children on Campus:

The institution strives to protect an environment most conducive to teaching and learning for all enrolled students. Children who are taking part in organized scheduled activities or who are enrolled in specific classes are welcomed. Minor children, however, should not be brought to the institution unless closely supervised by their parent. Minor children should not be brought into classrooms, laboratories or other facilities of the college. This practice is disruptive to the learning process. In the case of an emergency where the student-parent has no alternative but to bring the child to campus, classroom faculty or the administrative heads of other units have full discretion as to whether a child may be allowed to quietly stay in the location. These individuals may require that children be removed by the student-parent from the setting if, in their opinion, the presence of the child is deemed to be disruptive to the learning process. For reasons of security and child welfare the institution will not permit unattended children to be left anywhere on the premises. Parents who have problems with childcare should visit the Counseling and/or Advisement Center to receive referrals to childcare services in the area.

The instructor reserves the right to amend this syllabus as necessary.