



WACO, TEXAS

**COURSE SYLLABUS
AND
INSTRUCTOR PLAN**

**MICROBIOLOGY FOR NON-SCIENCE MAJORS
(LECTURE + LAB)
BIOL 2420_01**

BRADLEY W. CHRISTIAN, Ph.D.

MICROBIOLOGY FOR NON-SCIENCE MAJORS

BIOL 2420 SECTION 01

Course Description:

This course covers basic microbiology and immunology and is primarily directed at pre-nursing, pre-allied health, and non-science majors. It provides an introduction to historical concepts of the nature of microorganisms, microbial diversity, the importance of microorganisms and acellular agents in the biosphere, and their roles in human and animal diseases. Major topics include bacterial structure as well as growth, physiology, genetics, and biochemistry of microorganisms. Emphasis is on medical microbiology, infectious diseases, and public health.

Prerequisites and/or Corequisites:

BIOL 1406, 1408, 1409, 2401 or 2404 with a grade of C or better. Semester Hours 4 (3 lec/3 lab).

Course Notes and Instructor Recommendations:

You will use Blackboard in this course to access the following: 1) Day-to-Day Course Calendar; 2) Supplemental Laboratory Materials and Videos; 3) Online Chapter Quizzes; 4) Test Review Questions; and 5) Grades. You are required to access Blackboard regularly to complete and/or view these materials.

Make all effort to purchase the textbook and Class Notes/Lab Manual as soon as possible. You **must** bring the Class Notes/Lab Manual to class **every day**. The Class Notes contains the lecture notes where you will fill in blanks with additional material and terminology from lectures. The Lab Manual contains the information and worksheets for the Laboratory Assignments. Using or distributing photocopies of the Class Notes/Lab Manual is **not** allowed and is considered a **serious** copyright violation. Only the MCC bookstore sells the Class Notes/Laboratory Manual, and no used copies will be available. Also, I will **not** provide hard copies of any materials contained the Class Notes/Lab Manual, no exceptions. If you need to fill in the notes from a day you were absent, you will need to get them from a classmate.

Important: Do not rely on the Blackboard Mobile Device App when calculating your grade average. It is not accurate! Also, any online quizzes and assignments should be completed on a desktop or laptop computer, **not** on a tablet or mobile device, because they often will not submit or grade correctly on such devices. Because of this, I will not be responsible for any technical issues on quizzes and assignments taken with a tablet or mobile device. Check your grades regularly on Blackboard and bring any grade issues or discrepancies to the attention of

MICROBIOLOGY FOR NON-SCIENCE MAJORS

BIOL 2420 SECTION 01

the instructor as soon as there is an issue, **not** at the end of the semester. I will **not** address grade issues more than two weeks after a grade is posted. Lastly, please send emails to me directly, not via Blackboard message center, because I will not receive them through Blackboard. Because of spam filters, I highly suggest that you send/receive emails using your MCC email account, **not** your personal Gmail, Yahoo, Hotmail, etc. Check your MCC email account daily.

Instructor Information:

Instructor Name: Bradley W. Christian, Ph.D.

MCC E-mail: bchristian@mclennan.edu

Office Phone Number: 254-299-8179

Office Location: S 322

Office/Teacher Conference Hours: Monday thru Thursday 2:30pm – 3:30pm

Other Instruction Information: If I am not in my office, check the classroom (S 317) or laboratory (S 325). I will gladly meet outside scheduled office hours via appointment/drop in.

Required Text & Materials:

Title: Microbiology: An Introduction

Author: Tortora, Funke, and Case

Edition: 12th

Publisher: Pearson

ISBN: 9780321929150

Title: Biology 2420: Laboratory Manual and Class Notes

Author: Christian

Edition: 1st

Publisher: Bluedoor

ISBN: 9781599849133

[MCC Bookstore Website](#)

- Scantron Form 882-E or 882-E-LOVAS required for all exams (5 total). I will **not** provide Scantrons.
- A fine or medium point Sharpie of any color.

MICROBIOLOGY FOR NON-SCIENCE MAJORS

BIOL 2420 SECTION 01

Methods of Teaching and Learning:

Teaching methods will include formal lectures, group discussions, classroom demonstrations, internet assignments, and hands-on laboratory activities as appropriate. Assessment of the material will be given via in-class exams, online quizzes, and laboratory assignments.

Each instructor will design and implement their own teaching and learning methods. In addition all BIOL 2420 sections will utilize various internal and/or external assessments to measure the required core objectives of critical thinking, communications, empirical/quantitative, and teamwork. Rubrics or common assessment criteria may be used to assess core objectives.

Course Objectives and/or Competencies:

Core Objectives:

1. Critical Thinking Skills: Creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information. Assessed via class discussions, laboratory exercises, lecture quizzes and/or examinations.
2. Communication Skills: Effective development, interpretation and expression of ideas through written, oral and visual communication. Assessed via class/lab exercises or presentations, either individually or in small groups, using oral, written, and visual components.
3. Empirical and Quantitative Skills: Manipulation and analysis of numerical data or observable facts resulting in informed conclusions. Assessed via lecture quizzes and/or examinations, laboratory exercises, and written homework assignments.
4. Teamwork: Ability to consider different points of view and to work effectively with others to support a shared purpose or goal. Assessed via group discussions, group laboratory activities, or group presentations.

In addition to the above listed competencies, upon successful completion of this course, students will:

1. Describe distinctive characteristics and diverse growth requirements of prokaryotic organisms compared to eukaryotic organisms.

MICROBIOLOGY FOR NON-SCIENCE MAJORS

BIOL 2420 SECTION 01

2. Provide examples of the impact of microorganisms on agriculture, environment, ecosystem, energy, and human health, including biofilms.
3. Distinguish between mechanisms of physical and chemical agents to control microbial populations.
4. Explain the unique characteristics of bacterial metabolism and bacterial genetics.
5. Describe evidence for the evolution of cells, organelles, and major metabolic pathways from early prokaryotes and how phylogenetic trees reflect evolutionary relationships.
6. Compare characteristics and replication of acellular infectious agents (viruses and prions) with characteristics and reproduction of cellular infectious agents (prokaryotes and eukaryotes).
7. Describe functions of host defenses and the immune system in combating infectious diseases and explain how immunizations protect against specific diseases.
8. Explain transmission and virulence mechanisms of cellular and acellular infectious agents.
9. Use and comply with laboratory safety rules, procedures, and universal precautions.
10. Demonstrate proficient use of a compound microscope.
11. Describe and prepare widely used stains and wet mounts, and discuss their significance in identification of microorganisms.
12. Perform basic microbiology procedures using aseptic techniques for transfer, isolation and observation of commonly encountered, clinically significant bacteria.
13. Use different types of bacterial culture media to grow, isolate, and identify microorganisms.
14. Perform basic bacterial identification procedures using biochemical tests.
15. Estimate the number of microorganisms in a sample using methods such as direct counts, viable plate counts, or spectrophotometric methods.
16. Demonstrate basic identification protocols based on microscopy morphology of some common fungi and parasites.

MICROBIOLOGY FOR NON-SCIENCE MAJORS

BIOL 2420 SECTION 01

Course Outline or Schedule:

| <u>Week</u> | <u>Dates</u> | | <u>Lecture Topic</u> | <u>Chapter</u> | <u>Lab Activity</u> |
|-------------|--------------|----|---|----------------|---------------------|
| 1 | January | 11 | M Introduction/The Microbial World and You | Ch. 1 | |
| | | 13 | W Chemical Principles | Ch. 2 | |
| 2 | | 18 | M Martin Luther King Day | | |
| | | 20 | W Chemical Principles | Ch. 2 | Lab 1 |
| 3 | | 25 | M Functional Anatomy of Prokaryotes and Eukaryotes | Ch. 4 | Lab 2 |
| | | 27 | W Functional Anatomy of Prokaryotes and Eukaryotes | Ch. 4 | Lab 2 |
| 4 | February | 1 | M Exam 1 (Chapters 1, 2, 4) | | |
| | | 3 | W Microbial Metabolism | Ch. 5 | |
| 5 | | 8 | M Microbial Metabolism | Ch. 5 | Lab 3 |
| | | 10 | W Microbial Growth | Ch. 6 | Lab 3 |
| 6 | | 15 | M Microbial Genetics | Ch. 8 | Lab 4 |
| | | 17 | W Microbial Genetics | Ch. 8 | Lab 4 |
| 7 | | 22 | M Exam 2 (Chapters 5, 6, 8) | | |
| | | 24 | W The Eukaryotes: Fungi, Algae, Protozoa, and Helminths | Ch. 12 | |
| 8 | | 29 | M Viruses, Viroids, and Prions | Ch. 13 | Lab 5 |
| | March | 2 | W Viruses, Viroids, and Prions | Ch. 13 | Lab 5 |
| 9 | | 7 | M Spring Break | | |
| | | 9 | W Spring Break | | |
| 10 | | 14 | M Principles of Disease & Epidemiology/Pathogenicity | Ch. 14, 15 | Lab 6 |
| | | 16 | W Innate Immunity: Nonspecific Defenses of the Host | Ch. 16 | Lab 6 |
| 11 | | 21 | M Exam 3 (Chapters 12, 13, 14, 15, 16) | | |
| | | 23 | W Microbial Diseases of the Skin and Eyes | Ch. 21 | |
| 12 | | 28 | M Microbial Diseases of the Skin and Eyes | Ch. 21 | |
| | | 30 | W Catch up and Review Day | | |
| 13 | April | 4 | M Microbial Diseases of the Nervous System | Ch. 22 | Lab 7 |
| | | 6 | W Microbial Cardiovascular and Lymphatic Systems | Ch. 23 | Lab 7 |
| 14 | | 11 | M Exam 4 (Chapters 21, 22, 23) | | |
| | | 13 | W Microbial Diseases of the Respiratory System | Ch. 24 | |
| 15 | | 18 | M Microbial Diseases of the Respiratory System | Ch. 24 | Lab 8 |
| | | 20 | W Microbial Diseases of the Digestive System | Ch. 25 | Lab 8 |
| 16 | | 25 | M Microbial Diseases of the Digestive System | Ch. 25 | Lab 9 |
| | | 27 | W Microbial Diseases of the Urinary and Reprod. Systems | Ch. 26 | |
| 17 | May | 2 | M Final Exam (Regular Class Time) | | |

MICROBIOLOGY FOR NON-SCIENCE MAJORS

BIOL 2420 SECTION 01

Course Grading Information:

Your grade will be based on a total of:

- 4 Unit Exams (48%)
- A comprehensive Final Exam (20%)
- Best 12 (out of 16) Online (Blackboard) Chapter Quizzes (12%)
- Best 7 (out of 9) Lab Assignments (20%)

Each Unit Exam is worth 12% of your final grade and will consist of 50 multiple choice questions. The comprehensive Final Exam is worth 20% of your final grade and will consist of 100 multiple choice questions, with 50 of the questions consisting of Unit 5 material and the remaining 50 questions over material from Units 1 – 4.

Sixteen Online Chapter Quizzes will be administered via Blackboard (see Blackboard and/or course calendar for due dates). Each Chapter Quiz consists of 20 random, untimed multiple choice questions that can be answered with the assistance of your textbook. At the end of the semester, your 4 lowest Chapter Quiz grades will be dropped, and the remaining 12 Chapter Quizzes will be averaged to comprise 12% of your final grade.

Nine Lab Assignments will be given (see the Syllabus and/or Blackboard for exact dates). For each Lab Assignment you will use worksheets from your Laboratory Manual to carry out an experiment in the lab, collect and analyze data, answer questions, and solve problems. Lab Assignments may also consist of articles, videos, additional readings, and/or online activities administered via Blackboard (found in the Supplemental Lab Materials folder). Most Lab Assignments take more than one day to complete in the laboratory and require your physical presence and active participation. Various Lab Assignments will be graded based on written, visual, and communicated results to fulfill common core requirements. At the end of the semester, your lowest 2 Lab Assignment grades will be dropped, and the remaining 7 will be averaged to comprise 20% of your final grade.

MICROBIOLOGY FOR NON-SCIENCE MAJORS

BIOL 2420 SECTION 01

The following grading scheme is used to calculate your final grade:

| | | | |
|--|----------------|-------|---------------------------|
| Exam 1 (12%) | _____ x 0.12 = | _____ | <u>Final Grade</u> |
| Exam 2 (12%) | _____ x 0.12 = | _____ | A = 90.0 – 100 |
| Exam 3 (12%) | _____ x 0.12 = | _____ | B = 80.0 – 89.9 |
| Exam 4 (12%) | _____ x 0.12 = | _____ | C = 70.0 – 79.9 |
| Final Exam (20%) | _____ x 0.20 = | _____ | D = 60.0 – 69.9 |
| Online Quizzes (Avg. Best 12) | _____ x 0.12 = | _____ | F < 59.9 |
| Lab Assignments (Avg. Best 7) | _____ x 0.20 = | _____ | |
| Final Average (add the numbers calculated above) | | _____ | |

Late Work, Attendance, and Make Up Work Policies:

Students will be permitted to make up exams missed due to absences caused by (1) authorized participation in official College functions, (2) documented personal illness, (3) an illness or a death in the immediate family, or (4) the observance of a religious holy day. Exams that are allowed to be made up due to these reasons must be made up within **3 weekdays** (Monday thru Friday) of returning to class. Also, the instructor has the prerogative of determining whether a student may make up exams missed due to absences for other reasons. Being absent for exams due to conflicting work schedules or 'forgetting the exam' is **not** an excuse! Because you have chosen to register for the course at this time, it should take precedence over work-related matters at that time. It is the student's responsibility to inform the instructor of the reason for an absence as soon as practically and reasonably possible.

Unless otherwise stated, Lab Assignments and all associated work are due **one week** from the day the assignment is completed in lab. For each weekday (Monday thru Friday) a Lab Assignment is late, a 10% grade penalty will be imposed. Thus no Lab Assignments will be accepted more than ten weekdays (i.e. two weeks) after the due date, no exceptions. Because labs require a great deal of set-up and hands-on work, no missed labs can be made up. Missed labs will count as a 'dropped' Lab Assignment. You have two 'drops' for Lab Assignments without penalty, so use them wisely! Any more than two dropped Lab Assignments will be recorded as a zero.

Chapter Quizzes are taken online, thus no extensions will be granted for quizzes, no exceptions. It is your responsibility to keep up with the due dates/times of the quizzes. Quizzes not completed and submitted to Blackboard by the due date and time will count as a 'dropped'

MICROBIOLOGY FOR NON-SCIENCE MAJORS

BIOL 2420 SECTION 01

Quiz. You have four 'drops' for Chapter Quizzes without penalty, so use them wisely! Any more than four dropped Chapter Quizzes will be recorded as a zero.

Absence from more than 25 percent of scheduled lecture and/or laboratory meetings will be taken as evidence that a student does not intend to complete the course. For this course, **7.5 absences = 25%**. If the student's 25% absences are reached before the official drop date (March 28), the student will be withdrawn from the course with a grade of W. If the student's 25% absences are reached after the official drop date (March 28), the instructor may assign a W, if the student is passing and requests to be withdrawn. However, if a student who is not passing reaches the 25 percent point after the official drop date, the student will receive an F.

Each absence will count toward attendance requirements in the course, including the first class day.

In order to be counted present for a class, you must stay until the instructor gives permission to leave. If lab is conducted in addition to lecture, you must be present for both lecture and lab in order to be counted present. The instructor will take attendance during both lecture and lab. If an exam is given on the same day as lecture and/or lab, you must be present for both. Leaving class or lab before the instructor gives permission, or arriving 15 minutes or more after class begins, will be considered a full day's absence. If you know in advance that you must leave early, or that you will arrive late, please notify the instructor.

At the end of the semester, a bonus may be earned by having good attendance and being on time for class. If you have four or fewer absences (any absences, any reason, excused or unexcused) and do not have excessive tardiness, and your final exam grade is higher than your lowest unit exam grade, then the grade on the final exam will replace the single lowest unit exam grade. **Do not ask about any other curves or extra/bonus credit on exams or your final grade!!!** Extra credit and bonus work are rarely if ever given, and is completely and solely at the instructor's discretion. Note: If more than one exam is missed at its regularly scheduled time, for any reason, then you are no longer eligible for having your final exam grade replace your lowest unit exam grade, even if you have four or fewer absences.

Student Behavioral Expectations or Conduct Policy:

Each student is expected to behave in a civil and respectful manner toward the instructor and other students. This includes refraining from talking, texting, surfing the web, listening to music, etc. while in lecture or in the lab. **Please turn off all cell phones and put them away** so that the

MICROBIOLOGY FOR NON-SCIENCE MAJORS

BIOL 2420 SECTION 01

classroom and lab will not be disturbed. If you are required to carry a cell phone or have extenuating circumstances, please inform the instructor. Disturbances such as cell phones ringing will be counted as an absence from class on that day. Cell phones ringing during an exam will result in the exam being immediately taken up by the instructor and a grade of zero recorded.

Lab behavior is particularly important since we will be dealing with living bacterial cultures. No eating or drinking is allowed in the laboratory. Wash your hands whenever you leave the laboratory. Children will not be allowed to accompany parents into the classroom or laboratory under any circumstances. The classroom is not a substitute for a baby sitter.

MCC Academic Integrity Statement:

The Center for Academic Integrity defines academic integrity as “a commitment, even in the face of adversity, to five fundamental values: honesty, trust, fairness, respect, and responsibility. From these values flow principles of behavior that enable academic communities to translate ideals into action.” Individual faculty members determine their class policies and behavioral expectations for students. Students who commit violations of academic integrity should expect serious consequences. For further information about student rights, responsibilities and academic integrity definitions, please consult the *General Conduct Policy* in the [Highlander Guide](#).

Academic Integrity Statement:

Cheating is not tolerated in this class. Cheating includes but is not limited to: copying answers from another student's Laboratory Assignment (even if you worked together in lab!!), turning in work that is not your own, turning in a Lab Assignment for a lab that you were not present for, copying anything from another source without appropriate credit given to the author by including quotation marks and references, or using unauthorized aid on an exam. Suspected cheating on a class or lab assignment or exam will result in an appropriate disciplinary action including, but not limited to receiving a zero on that assignment/exam and written notification of the infraction submitted to the division director. Further disciplinary action may be taken by the college.

MICROBIOLOGY FOR NON-SCIENCE MAJORS

BIOL 2420 SECTION 01

MCC Attendance Policy:

Regular and punctual attendance is expected of all students, and each instructor will maintain a complete record of attendance for the entire length of each course, including online and hybrid courses. Students will be counted absent from class meetings missed, beginning with the first official day of classes. Students, whether present or absent, are responsible for all material presented or assigned for a course and will be held accountable for such materials in the determination of course grades.

Please refer to the [Highlander Guide](#) for the complete policy.

ADA Statement:

In accordance with the requirements of the Americans with Disabilities Act (ADA), and the regulations published by the United States Department of Justice 28 C.F.R. 35.107(a), MCC's designated ADA coordinators, Dr. Drew Canham – Vice President, Student Success and Mr. Gene Gooch - Vice President, Finance and Administration shall be responsible for coordinating the College's efforts to comply with and carry out its responsibilities under ADA. Students with disabilities requiring physical, classroom, or testing accommodations should contact the Accommodations Specialist at the Completion Center in the Student Services Center, Room 211 or at 299-8122 or disabilities@mclennan.edu

TITLE IX

"No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance."

Legal Citation: Title IX of the Education Amendments of 1972, and its implementing regulation at 34 C. F. R. Part 106 (Title IX)

In accordance with the requirements of the Title IX Education Amendments of 1972 MCC's designated Title IX Coordinator, Drew Canham – Vice President, Student Success and Deputy Coordinator, Melissa (Missy) Kittner – Director, Human Resources shall be responsible for coordinating the College's effort to comply with and carry out its responsibilities under Title IX.

MICROBIOLOGY FOR NON-SCIENCE MAJORS

BIOL 2420 SECTION 01

Contact information

Drew Canham, Title IX Coordinator
Vice President, Student Success
McLennan Community College
Administration Building, Room 408
1400 College Drive
254-299-8645
FAX 254-299-8654
dcanham@mclennan.edu

Melissa (Missy) Kittner, Title IX Deputy Coordinator
Director, Human Resources
McLennan Community College
Administration Building, Room 104
1400 College Drive
254-299-8514
FAX 254-299-8592
mkittner@mclennan.edu