



## **EAST TEXAS A&M**

2600 S. Neal St, Commerce, TX 75429-3011  
Biological and Environmental Sciences  
Tel) 903-886-5378 Fax) 903-886-5997

### **BIOL 2420 – General Microbiology 01B – Hybrid course for Nursing Majors** Syllabus (Summer 2026; June 1st – August 6th)

Instructor: Archana Srinivas, PhD

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Office Hours: 3:30 PM - 4:30 PM, Tuesday

Classroom: N/A - Lectures are online

Lecture discussion: 2:00 PM to 3:30 PM in STC 123

#### University Statements

**Academic integrity:** As members of Texas A&M University-Commerce academic community, we all are responsible to underpin the principles of academic integrity expressed by this community. We are expected to watch these principles to be kept and appreciated by others.

- The first instance of cheating will result in an automatic Zero on the exam. A second instance will result in Zero course grade (automatic F). **Cheating** is defined as:
  - Copying another's test, assignment, or lecture slides
  - Communication with another during an exam (i.e. written, oral or otherwise)
  - Giving or seeking aid from another
  - Possessing or using unauthorized materials during the test
  - Buying, using, stealing, transporting, or soliciting a test, draft of a test, or answer key
- Plagiarism is a serious academic criminal activity. You must cite all sources of information with properly accredited. Copying material, whether parts or whole, will result in Zero for your term paper and can incur in further University disciplinary consequences.

**Nondiscrimination Notice:** Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

**Campus Concealed Carry Statement:** Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations. For a list of locations, please refer to the Carrying Concealed Handguns On Campus document and/or consult your event organizer; found at <http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedure/s/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

**Accommodations:** The American with Disability Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other aspects, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have disability requiring accommodation, please contact:

Office of Student Disability Resources or Services  
Texas A&M University-Commerce  
Gee Library, Room 162  
Tel) 903-886-5150, 903-886-5835 Fax) 903-468-8148  
Email) [StudentDisabilityService@tamuc.edu](mailto:StudentDisabilityService@tamuc.edu)

**Access to student work:** Copies of your work in this course including copies of any submitted papers and your portfolios may be kept on file storage for institutional research, assessment, and accreditation purposes. All work used for these purposes will remain anonymous.

**The Counseling Center** at A&M-Commerce, located in the Halladay Building, Room 203, offers counseling services, educational programming, and connection to community resources for students. Students have 24/7 access to the Counseling Center's crisis assessment services by calling 903-886-5145. For more information regarding Counseling Center events and confidential services, please visit [www.tamuc.edu/counsel](http://www.tamuc.edu/counsel)

### Course Description

Biol 2420 is a course for non-biology majoring undergraduate students designed to provide basic principles of microbial life. Biol 2420 is not interchangeable with BSC 306, Applied microbiology. Although relatively simple and primitive, microorganisms are considered as the most successful form of life. They are virtually everywhere and they are in tight relationship with other forms of life on earth. Unlike macroorganisms (i.e. animals, plants, insects, etc), microorganisms carry out their life processes such as energy metabolism, growth, and reproduction independently from other cells. This unique feature makes microorganisms a great tool to study the nature of life. The course will cover eukaryotic and prokaryotic microbes and viruses, with major emphasis on bacteria.

### **REQUIRED textbook:**

Madigan, Martinko, Dunlab, Clark. 2009. **Brock Biology of Microorganisms**. Pearson Benjamin Cummings. ISBN: 978-0-13-232460-1. Newer editions are acceptable.

### Student learning outcomes for lecture and lab

Upon completion of this course, you should be able to;

## Lecture outcomes for BIOL - (Biology) BIOL 2420 Microbiology for Non-Science Majors

- Describe distinctive characteristics and diverse growth requirements of prokaryotic organisms compared to eukaryotic organisms. Describe evidence for the evolution of cells, organelles, and major metabolic pathways from early prokaryotes and how phylogenetic trees reflect evolutionary relationships.
- Explain the unique characteristics of bacterial metabolism and bacterial genetics. Compare and contrast major pathways of biosynthesis and list the key products of each pathway.
- Draw a typical microbial growth curve, and predict the effect of different environmental conditions on microbial growth.
- Distinguish between mechanisms of physical and chemical agents to control microbial populations. Summarize common features of microbial pathogens, with emphasis on bacterial pathogens.
- Compare characteristics and replication of acellular infectious agents (viruses and prions) with characteristics and reproduction of cellular infectious agents (prokaryotes and eukaryotes). . Compare and contrast eukaryotic and prokaryotic genomes, and gene expression in each group.
- Explain transmission and virulence mechanisms of cellular and acellular infectious agents.
- Describe functions of host defenses and the immune system in combating infectious diseases and explain how immunizations protect against specific diseases.
- Provide examples of the impact of microorganisms on agriculture, environment, ecosystem, energy, and human health, including biofilms.

## Lab outcomes for BIOL - (Biology) BIOL 2420 L 01L Microbiology for Non-Science Majors

Upon successful completion of this course, students will:

- Use and comply with laboratory safety rules, procedures, and universal precautions.
- Demonstrate proficient use of a compound light microscope.
- Describe and prepare widely used stains and wet mounts, and discuss their significance in identification of microorganisms.
- Perform basic microbiology procedures using aseptic techniques for transfer, isolation and observation of commonly encountered, clinically significant bacteria.
- Use different types of bacterial culture media to grow, isolate, and identify microorganisms.
- Perform basic bacterial identification procedures using biochemical tests.
- Estimate the number of microorganisms in a sample using methods such as direct counts, viable plate counts, or spectrophotometric measurements.
- Demonstrate basic identification protocols based on microscopic morphology of some common fungi and parasites.

## TECHNOLOGY REQUIREMENTS

### Browser support

D2L is committed to performing key application testing when new browser versions are released. New and updated functionality is also tested against the latest version of supported browsers. However, due to the frequency of some browser releases, D2L cannot guarantee that each browser version will perform as expected. If you encounter any issues with any of the browser versions listed in the tables below, contact D2L Support, who will determine the best course of action for resolution. Reported issues are prioritized by supported browsers and then maintenance browsers.

Supported browsers are the latest or most recent browser versions that are tested against new versions of D2L products. Customers can report problems and receive support for issues. For an optimal experience, D2L recommends using supported browsers with D2L products.

Maintenance browsers are older browser versions that are not tested extensively against new versions of D2L products. Customers can still report problems and receive support for critical issues; however, D2L does not guarantee all issues will be addressed. A maintenance browser becomes officially unsupported after one year.

Note the following:

- Ensure that your browser has JavaScript and Cookies enabled.
- For desktop systems, you must have Adobe Flash Player 10.1 or greater.
- The Brightspace Support features are now optimized for production environments when using the Google Chrome browser, Apple Safari browser, Microsoft Edge browser, Microsoft Internet Explorer browser, and Mozilla Firefox browsers.

### Desktop Support

Browser	Supported Browser Version(s)	Maintenance Browser Version(s)
Microsoft® Edge	Latest	N/A
Microsoft® Internet Explorer®	N/A	11
Mozilla® Firefox®	Latest, ESR	N/A
Google® Chrome™	Latest	N/A
Apple® Safari®	Latest	N/A

### Tablet and Mobile Support

Device	Operating System	Browser	Supported Browser Version(s)
Android™	Android 4.4+	Chrome	Latest
Apple	iOS®	Safari, Chrome	The current major version of iOS (the latest minor or <b>point</b> release of that major version) and the previous major version of iOS (the latest minor or <b>point</b> release of that major version). For example, as of
Device	Operating System	Browser	Supported Browser Version(s)
			June 7, 2017, D2L supports iOS 10.3.2 and iOS 9.3.5, but not iOS 10.2.1, 9.0.2, or any other version.  Chrome: Latest version for the iOS browser.
Windows	Windows 10	Edge, Chrome, Firefox	Latest of all browsers, and Firefox ESR.

- You will need regular access to a computer with a broadband Internet connection. The minimum computer requirements are:
    - 512 MB of RAM, 1 GB or more preferred
    - Broadband connection required courses are heavily video intensive o Video display capable of high-color 16-bit display 1024 x 768 or higher resolution
  - You must have a:
    - Sound card, which is usually integrated into your desktop or laptop computer o Speakers or headphones.
    - \*For courses utilizing video-conferencing tools and/or an online proctoring solution, a webcam and microphone are required.
  - Both versions of Java (32 bit and 64 bit) must be installed and up to date on your machine. At a minimum Java 7, update 51, is required to support the learning management system. The most current version of Java can be downloaded at: [JAVA web site http://www.java.com/en/download/manual.jsp](http://www.java.com/en/download/manual.jsp)
  - Current anti-virus software must be installed and kept up to date.
- Running the browser check will ensure your internet browser is supported.

Pop-ups are allowed.

JavaScript is enabled.

Cookies are enabled.

- You will need some additional free software (plug-ins) for enhanced web browsing. Ensure that you download the free versions of the following software:
  - o [Adobe Reader](https://get.adobe.com/reader/) <https://get.adobe.com/reader/>
  - o [Adobe Flash Player \(version 17 or later\)](https://get.adobe.com/flashplayer/) <https://get.adobe.com/flashplayer/>
  - o [Adobe Shockwave Player](https://get.adobe.com/shockwave/) <https://get.adobe.com/shockwave/> o [Apple Quick Time](http://www.apple.com/quicktime/download/) <http://www.apple.com/quicktime/download/>
- At a minimum, you must have Microsoft Office 2013, 2010, 2007 or Open Office. Microsoft Office is the standard office productivity software utilized by faculty, students, and staff. Microsoft Word is the standard word processing software, Microsoft Excel is the standard spreadsheet software, and Microsoft PowerPoint is the standard presentation software. Copying and pasting, along with attaching/uploading documents for assignment submission, will also be required. If you do not have Microsoft Office, you can check with the bookstore to see if they have any student copies.

### ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or [helpdesk@tamuc.edu](mailto:helpdesk@tamuc.edu).

**Note:** Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

### Student Support

If you have questions or have difficulties with the course material, please contact your Instructor.

### Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778 or click on the **Live** click on the words “[click here](#)” to submit an issue via email.



contact  
**Chat** or

### System Maintenance

Please note that on the 4th Sunday of each month there will be System Maintenance which means the system will not be available 12 pm-6 am CST.

### Grading Policy

The final course evaluation will be comprised of the lecture grade portion (75%; 600 pts total) and the laboratory grade portion (25%; 200 pts total). Lecture grade portion consists as below.

Term paper (see details below)	= 50 points
3 Mid-term exams (100 pts. each)	= 300 points
Comprehensive Final	= 150 points
10 quizzes (10 pts. each)	= 100 points
Laboratory grade portion (25% of Total)	= 200 pts
Total	<u>=800 points</u>

### **Grading Scale**

The final course grade will be assigned based on the following break-down;

90 – 100%	= A
80 – 89%	= B
70 – 79%	= C
60 – 69%	= D
59% and below	= F

### **Teaching Methodology**

**Lab Attendance** is mandatory.

**Term paper** Write a synopsis about one recent research article related to microbiology. Topic selection (10pts) before the Exam 1 (due by week 2), and the paper (40pts) is due by Week 9.

- **Topic selection:** Choose a topic relevant to microbiology. To complete the topic selection, you have to find one **Full** research article (published in a peer-reviewed scientific journal) covering your topic and upload to the **topic selection Dropbox** of the eCollege course shell. The full research article **must** be a **PDF format**.
- **Contents of the paper:** Discuss your chosen “general topic” related to microbiology, with sufficient discussion of background information to allow anyone taking the class to understand the significance. Research approaches and future directions may also be briefly discussed. The length of the paper is about 2-3 pages of single-spaced text. You can provide figures but figures need to be thoroughly explained in the text. Write with your classmates as the targeted readers. You should not “reuse” a topic used for other courses.
- **Sources and their use:** In recent years there has been a tendency to rely more heavily on web pages as sources. Students are warned that plagiarizing any source is a serious violation of academic standards—credit and use your sources properly. A definition of plagiarism can be found in the section of University Statement. **\*\*Note:** I allow the use of some figures downloaded from the web, but you should cite the reference or give the website. Figure legends should be your own with succinct and clear information. Do not use AI to generate text. Use of Grammarly to proof read text is acceptable.
- **Style:** Papers will be judged on their organization and the clarity of writing. Papers that have numerous misspellings or grammatical errors will be rated poorly and this rating will seriously impact the grade. Proofread carefully. Use spelling checkers. Have others read the paper both for clarity and content. The paper should follow a review paper writing style with citation systems of either Citation-Sequence or Name-Year.

## ***Exams***

No exam grades will be dropped. Any student caught cheating on an exam will receive a zero for that exam. **Cheating** is defined as:

- Copying another's test, assignment, or lecture slides
- Communication with another during an exam (i.e. written, oral or otherwise)
- Giving or seeking aid from another
- Possessing or using unauthorized materials during the test
- Buying, using, stealing, transporting, or soliciting a test, draft of a test, or answer key
- Use of AI to generate text

**Term Exams** There will be 3 exams. The exams will consist of multiple choices, short answer questions, and short essay-type questions. Essay-type questions will ask bigger picture of class lecture topics. Exams will be taken in class hours.

**Comprehensive Final** The final exam will consist of multiple choices and short answer questions, as well as essay-type questions. The exam will cover all class materials covered through the semester.

**Quizzes** There will be 10 quizzes given during the semester. Quiz schedule will be announced during class hours one week prior to the quiz. A typical quiz comprises seven 1-point questions. You will get 30% automatic point value (equivalent to 1.5 points) by simply taking the quiz.

**Makeup** The student is responsible for requesting a makeup when they are unable to take the regularly scheduled exams. The request should be made within 3 days of the absence. Makeup exams will be scheduled only in the event of EXCUSED absence (as defined in the Student's Guidebook). If the test is not made-up, the student will receive Zero for that exam. **No make-ups for quizzes.** Excused absences include;

- Verified illness (with Doctor's note)
- Death in a student's immediate family
- Obligation of student at a legal proceedings in fulfilling responsibility as a citizen
- Elective TAMUC activities (with the activity director's note)

## **Class Schedule (Lectures via Zoom)**

### ***Lecture Discussions on Tuesdays - 2:00 PM to 3:30 PM at STC 123***

Week 1

- Chapter 1 &2, Introduction and Microscopy and Microbial Diversity

Week 2

- Chapter 2 contd. and Chapter 3, Cellular Components
- **Week 2 (Topic Selection Due Date: June 12th)**

Week 3

- Chapter 3 contd., Chapter 4, Cellular Structure and Functions
- **Exam 1 (Chapters 1-3; Due Date: June 19<sup>th</sup>)**

Week 4

- Chapter 4 contd., and Chapter 5, Nutrition and Metabolism

Week 5

- Chapter 5 contd., and Chapter 6, Microbial Growth
- Week 6
- Chapter 6 contd. Chapter 7, Essentials-Molecular biology
  - **Exam 2 (Chapters 4-5; Due Date: July 10th)**
- Week 7
- Chapter 7, Essentials-Molecular biology
- Week 8
- Chapter 10, Virus and Bacteriophage
  - **Exam 3 (Chapters 6-7; Due Date: July 24th)**
- Week 9
- Chapter 28, Microbial Interactions with Humans
  - **(Term paper Due Date: July 27th)**
- Week 10**
- Chapter 28, Microbial Interactions with Humans
  - **Comprehensive Final Exam (Due Date: August 6th)**

*All dates and assignments are tentative and subject to change.*