

MICR 3345 (CRN 11351), Fall 2024
Microbial Physiology (3-1)

Lecture Time: Tuesdays and Thursdays at 4:30pm - 5:50pm, College of Business Admin312, In-Person class.

Instructor: Dr. Sangeeta Tiwari, Department of Biological Sciences

Office: Bioscience Research Building, Room 3.148

Phone and Email: Office: 747-6889, stiwari@utep.edu

Office Hours 3:30pm -4:30pm on Tuesday OR appointment by **Email:**
stiwari@utep.edu

Textbook: Microbial Physiology by Moat, Foster, Specter, 4th Edition. **REQUIRED**
iClicker Cloud Polling App or web access
Respondus Lockdown Browser
In-Person class with Blackboard (Under medical conditions) must be approved by CASS).
Reference: Not required
1) The Physiology and Biochemistry of Prokaryotes by White.
2) Stryer's Biochemistry or any Standard Biochemistry Text Book.

COURSE OBJECTIVES

This course is designed to provide the student with a foundation of physiology and biochemistry of bacteria, including the growth, division, adaptation, fermentation, energy production and chemotaxis.

COURSE GOALS

1. Learn the fundamental concepts in microbial physiology
2. Apply the concepts you've learned
3. Extrapolate information and facts from what you already know
4. Communicate your understanding of microbiology
5. Learn to think critically

ACADEMIC DISHONESTY. It is the official policy of the University of Texas at El Paso that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. Scholastic dishonesty includes, but is not limited to cheating, plagiarism, collusion, use of program's as ChatGPT for the submissions for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts. All persons involved in academic dishonesty will be disciplined in accordance with university regulations and procedures. Please see <http://www.studentaffairs.utep.edu> for details

DISABILITIES. If you have or suspect you have a disability and need an accommodation, please contact the Center for Accommodations and Support Services (CASS) at 747-5148, at cass@utep.edu or go to Union Building East, Room 106.

BLACKBOARD. I will post all materials for this course on Blackboard. It is your responsibility to download anything required for the class session and to bring it with you to class. I strongly recommend that you visit the course Blackboard site before each class. iRATs will be given on

Blackboard. I will do all the announcements via blackboard and no individual mails will be send. dates and announcements for posting the exams, quizzes, IRATS and homework will be **announced on the blackboard or on the updated syllabus**. Please check **posted updated syllabus** on the blackboard as I will keep it updating with time.

MISSED EXAMS. If you know ahead of time that you will not be able to take an exam on the scheduled date, notify me and I will allow you to take the **exam before the scheduled exam** date, with no penalty. If you miss an exam and you can provide reasonable PROOF for your absence, the exam will be rescheduled at my convenience but must be taken before the graded exam is distributed to the class. If you miss the exam there will be **NO make-ups!!** All the exams will be online at the scheduled class time 3pm-4:20pm except the final exam.

LATE HOMEWORK. Homework is due at the beginning of class ONLY on the due date WITH NO EXCEPTIONS. LATE homework will NOT be accepted. Failure to turn in an on-time assignment will result in an automatic score of zero.

GRADUATE CREDIT. Please see Dr. Tiwari by October 1 if you wish to take this course for graduate credit. In addition to the class requirements outlined below, you will be assigned a grant on a topic relevant to current problems in pathogenic microbiology. An outline of your paper must be approved by November 6, and the paper is due November 29, together with a copy of the contract reporting form. Students must also earn a grade of B or better to receive graduate credit.

COURTESY. As a courtesy to your classmates, please give your full attention to all speakers and limit your in-class discussions to topics related to pathogenic microbiology. Cellphones and pagers must be turned off during class sessions. The use of laptop or notebook computers or tablets during class sessions is limited to note-taking and coursework only – please refrain from browsing the internet or checking your email during class. Please be on time for class – roll may be taken at the start of each class.

DROP POLICY. As per policy of the College of Science, a student may not take the same course more than three times, including dropped courses. The College of Science aligns with UTEP with respect to the drop date of November 3rd. No requests for a withdrawal will be approved after that date. Students can always petition the Registrar for a complete withdrawal from all courses pending documentation.

GRADING SYSTEM

Grading is NOT based on a curve. You will each EARN a grade that reflects the effort you put into the course and the knowledge you have gained. Your grade will be based on a comprehensive assessment of your skills and their development throughout the course of the semester, using the following criteria.

POLICY ON THE USE OF AI (Chat-GPT): AI allowed only with prior permission from instructor. Use of AI technologies or automated tools, particularly generative AI such as ChatGPT or DALL-E, is ***only allowed with approval from the instructor BEFORE being used.*** Without permission, you will be expected to think creatively and critically to complete assignments without assistance from these tools.

INDIVIDUAL READINESS ASSESSMENT TESTS (iRATs). These will be given on Blackboard and are designed to test your knowledge of the material presented in your reading assignments. The iRATs will ensure that you are keeping up with the class and will help me to focus my lectures on the topics you find most challenging. A total of 13 RATs will be given. Each RAT is worth 20 points. Each RAT must be completed by 1:30 p.m. on class days. You will have 15-30min minutes in which to take each iRAT and will have access to it only once. IRATS will be posted online on blackboard on Friday for the class scheduled on Tuesday at 3.00 pm and on Tuesday for the class scheduled on Thursday at 3.00 pm. iRAT due deadlines are posted in the syllabus. In case of any change, I will do announcement on the blackboard. You may use your class notes and/or textbooks during each iRAT but remember you only have 15-30 minutes as indicated in instructions or announcement of each iRAT to complete the test. **Each student has to submit their own iRAT on the blackboard to be graded.**

2. PRESENTATIONS. Choose an approved topic not covered in class. Some suggested topics will be distributed later. Research your topic and develop a 30minute (20 min presentation and 10 min for Q/A, more details will be mentioned later) presentation about the topic to be presented in class. Be sure to document the role of each group member and turn it into me at the presentation. Presentations will be in late November. Closer to the date we will assign times. Beforehand, please email me a copy of your presentation with your group members' names. Each group will do group presentations.

3. EXAMS. A total of THREE exams will be given during the semester, each worth 100 points. The exams will test your understanding of all of the materials covered in the textbook, in class, and on homework assignments, and your ability to APPLY the concepts you have learned. The FINAL EXAM is of 200 points.

4. HOMEWORK. A total of TWO homework assignments will be given during the semester, each worth 30 points. These assignments are problem-based learning sessions with your small groups. They focus on your ability to integrate basic science and apply the concepts discussed in class and in the reading material. They will encourage you to work together, to develop critical thinking, to improve communication skills, and to get to know one another better. One copy will be turned in from each group at the beginning of class on the due date.

5. IN-CLASS EXERCISES/poll. Various in-class exercises/Poll will be distributed throughout the semester to reinforce the presented topics. These will be due at the end of the class period or by the end of the day of respective class (11:59pm), as time permits and at the professor's discretion. In-class exercises will be done in groups and ONLY those who participate will be given credit for the assignment. In-class interactive questioning system that allows professor to gauge the level of student understanding and students to ask anonymous questions. These will be used throughout the class period and semester. The sum total will be accounted for in the final grade.

IN SUMMARY, grades will be calculated as follows:

iRATs (11)	220 points (20 pts each)
Exams (3)	300 points (each 100) at class time 4:30pm-5:50pm, on blackboard
Final Exam	200 points
Presentation	100 points
Homework (2)	40 points (20 points each)
In-class exercises (2)	40 points (20 points each)
Iclicker poll/attendance	85 points (5 points/lecture, 17 lectures total)
Evaluation etc	15

Totals

1000 points

Where, A = 90 – 100%
B = 80 – 89.9%
C = 70 – 79.9%
D = 60 – 69.9%
F = 59.9% and below

Course Schedule: (subject to change; alterations will be posted on Blackboard)

<u>Date</u>	<u>Lecture</u>	<u>Topic(s)</u>	<u>Deliverables due</u>	<u>Reading Assignment</u>
8/27	Lecture 1	Introduction	Groups/iRATs	1-10
8/29	Lecture 2	Enzymes: Basic concepts and Kinetics	In-class activity, due on 9/3 pm by 11:59pm	Chapter 8 Stryer's
9/03	Lecture 3	Lipids and Sterols	In-class activity 2 available	Chapter 12 Stryer's
9/05	Lecture 4	Carbohydrates	Review Q, In-class activity 2 due 9/17 by 11:59pm	Chapter 11 Stryer's
9/17	Lecture 5	DNA/RNA and protein synthesis		27-74,279-287
9/19		Exam 1		
10/01	Lecture 6	Cell Structure and Function	iRAT1 due	277-322,340-349
10/03	Lecture 7	Locomotion	iRAT2 due, HW1 posted	323-339
10/08	Lecture 8	Protein transport and Secretion	iRAT3 due	382-392
10/10	Lecture 9	Interactions	iRAT4 due, Review Q	648-675
10/15		Exam 2	Presentation Detail	
10/17	Lecture 10	Central pathways of Carbohydrate metabolism (CPCM)- Glycolysis & Gluconeogenesis	iRAT5 due, HW-1 due	350-352,394-411
10/22	Lecture 11	CCPM-Alternate pathways of carbohydrate metabolism	iRAT6 due, HW 2 posted	353-359
10/24	Lecture 12	CCPM-TCA cycle	iRAT7 due,	361-365
10/29	Lecture 13	Energy Production- ATP & Electron transport Chain	iRAT8 due	368-381
10/31	Lecture 14	Fermentation Pathways	iRAT9 due, Review Q	412-433

11/05		Exam 3	Presentation topics due, Homework 2 due	
11/07	Lecture 15	Nitrogen Metabolism- Nitrogen assimilation	No iRAT	475-503
11/12	Lecture 16	Biosynthesis and metabolism of amino acids purines and pyrimidines	No iRAT	503-560
11/14	Lecture 17	Biosynthesis of cell surface structures-LPS and peptidoglycan	iRAT 10 due	
11/19	Lecture 18	Bacterial Cell Growth & Division	iRAT 11 due	561-581
11/21	Group 1,2,3	Presentation		
11/26	Group 4,5,6	Presentation		
11/28-29	Thanksgiving holiday (TG)			
12/03	Group 7,8,9	Presentation		
12/05	Group 10,11,12	Presentation, last day of class	Review Q	
12/09	Final Exam	4:00pm-6pm (Time can change as per university requirement)		Comprehensive