BIOL3303.001 Syllabus

Course	BIOL3303.001
Course Title	Introduction to Microbiology
Professor	Dr. Stefanie D. Boyd
Term	Spring 2023
Meetings	11:30am-12:45pm Tuesday and Thursday In-person Instruction: JO 4.102

Professor's Contact Information

Office Phone	972-883-3588
Office Location	FO 3.704B
Email Address	stefanie.boyd@utdallas.edu
Office Hours	Monday and Wednesday from 10:00-11:00am or by appointment
Teaching Assistant Information	Braden Shipman braden.shipman@utdallas.edu

Course Modality and Expectations

In-person instruction with attendance strongly encouraged

Class Attendance

Regular and punctual class attendance is expected. Students who are unable to attend must notify the Professor and TAs. Due to the breadth of the material, students who fail to attend class regularly are inviting scholastic difficulty.

Class Participation

Regular class participation is expected. Participation also includes engaging in group or other activities during class or office hours that solicit your feedback on homework assignments, readings, or materials covered in the lectures. Class participation will be documented by your TAs. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus.

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student Accessibility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Materials

The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course; however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

BIOL 3303.001 General Course Information

Pre-requisites, Co-requisites, & other restrictions

BIOL 2281 (Introductory Biology Laboratory) and BIOL 2311 (Introduction to Modern Biology I) and BIOL 2312 (Introduction to Modern Biology II) or their equivalents.

Course Description

Microbes (i.e. bacteria, fungi, archaea, protists, viruses) represent the most diverse and abundant set of living (and non-living) organisms on the planet. Microbes contribute to major biogeochemical processes, live in environments inhospitable to other organisms, and may comprise the majority of biomass on Earth. They can form beneficial symbioses with multicellular organisms, including humans, where they play critical roles in development, metabolism, and immunity. In contrast, many microbes adopt pathogenic lifestyles where they thrive at the expense of their multicellular hosts. Consequently, some of these microbes have become global public health concerns. This course surveys the form and function of the microbial world focusing on examples of microbes from all domains of life.

Learning Outcomes

In this course students will learn the basic principles of microbiology, including microbial cell structure and function, growth, metabolic processes, genetics, and how microbes interact with multicellular hosts. The course will emphasize modern problems and applications related to human health, including mechanisms of microbial pathogenesis, antibiotic resistance and microbiome research. The goal is for students to acquire basic knowledge about microbial structure and function and to understand how microbes affect human health and society. Learning will be assessed through exam questions utilizing various formats (for example, multiple choice, fill in the blank, short answer, essay), problem sets, and a class project.
Upon completion of this course, students should be able to:

1. Describe and analyze the following principles of microbiology: microbial cell structure and function, growth, metabolism, genetics, and interaction with multicellular hosts.
2. Apply this knowledge to design experiments and formulate hypotheses.
3. Apply this knowledge to interpret and critique primary scientific literature.

Required Text

Microbe 2nd edition. Michele Swanson, Gemma Reguera, Moselio Schaechter, and Frederick C. Neidhardt. ASM Press [ISBN: 9781555819132]. eText and rental options available on Amazon.

Supplemental videos and readings will accompany some lectures. These materials will be posted on eLearning in advance of lecture. Slides will be posted on eLearning.

Assignments & Academic Calendar

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

Date	Topic	Chapters
Jan. 17-20	L1. Introduction to class: A Microbial Planet	Ch. 1
	L2. Microbial Diversity	Ch. 14
Jan. 23-27	L3. Prokaryotic Cell Exterior: Envelopes	Ch. 2
	L4. Prokaryotic Cell Exterior: Appendages	Ch. 2
Jan. 30-Feb.3	L5. Prokaryotic Cell Interior	Ch. 3
	L6. Viruses; **Problem Set #1 due (5pm)**	Ch. 17
Feb. 6-10	L7. Fungi	Ch. 15
	L8. Protists; Exam review and discussion	Ch. 16
Feb. 14	**Exam 1**	
Feb. 13-17	L9. Microbial Growth and Division	Ch. 4
Feb. 20-24	L10. Microbial Metabolism	Ch. 5
	L11. Synthesis of Building Blocks	Ch. 7
****Class project will be discussed in class****		
Feb. 27-Mar.3	L12. Central Dogma I	Ch. 8
	L13. Central Dogma II; **Problem Set #2 due (5pm)**	Ch. 8
Mar. 6-10	L14. Mutations and genetic exchange	Ch. 10
	L15. Secretion	Ch. 9
Mar. 13-17	**Spring Break**	
Mar. 20-24	L16. Microbial stress responses	Ch. 12
	L17. Motility and chemotaxis; Exam review	Ch. 12
Mar. 28	**Exam 2**	
Mar. 27-31	L18. Microbiomes	TBA
Apr. 3-7	L19. Infection: the vertebrate host	Ch. 22
	L20. Adaptive immunity and vaccination	Ch. 22

Date	Topic	Chapters
Apr. 10-14	L21. Opportunistic infections: MRSA (election day)	Ch. 23
	L22. Intracellular pathogens; **Problem Set #3 due**	Ch. 24
Apr. 17-21	L23. Bacterial toxins	Ch. 26
	L24. Malaria	TBA
****Apr. 25: Class project due****		
Apr. 24-28	L25. Viral pathogens: Herpes and Polio	Ch. 26
	L26. Viral pathogens: Coronaviruses; Exam review	TBA
May. 2	**Exam 3**	

Course Policies

Grading (credit) Criteria

3 Exams: Each worth 20% of final grade (60% total)
Content and format of exams: Each exam is cumulative but will focus primarily on the most recently covered material. Exam material will derive from course lectures and slides, class discussions, and assigned readings posted on eLearning. Exams will be given in class during our scheduled class time. Exams are timed (75 minutes) and questions will be of multiple formats (e.g. multiple choice, fill in the blank, short answer, True/False).

3 problem sets: Each worth 10% of final grade (30% total)
Problem sets will be assigned at least two class periods before their due date on eLearning. Problem sets will give students an opportunity to apply knowledge learned in class and prepare students for exam questions. Questions in problems sets will be in various formats but the majority of questions will be free response.

1 class project: Worth 10% of final grade
The class project will ask you to think critically about primary scientific literature and to apply knowledge you have learned from the lectures and course readings. Additional information about the class project will be disseminated in class and posted on eLearning.

How to submit assignments. Problem sets **must be uploaded to eLearning** so that plagiarism checks can be performed. Turnitin links for assignment submission can be found in the Homework folder on eLearning. If drawings/diagrams are required, generate a digital image using PowerPoint or another program and include it in the Turnitin assignment.

Can students work together on the assignments? Yes, you may discuss the assignment; however, each of you will be graded individually, and **I expect each of you to write your own answers.**

Good writing practices. Some general rules to remember are: (1) Don't copy your classmates' writing. (2) Don't copy/paste directly from sources. Instead, synthesize information in your own words. (3) Direct quotes are not allowed, and points will be taken off if direct quotes are used. I encourage you to consult this resource: https://www.utdallas.edu/library/plagiarism/index.html.

Make-up Exams
Exams must be completed within the 24-hour period of exam day. Make-up exams are not allowed unless there is a documented emergency or religious holiday. Students with exam date conflicts must notify the Professor and TAs immediately.

Late Work
No late assignments will be accepted. You are expected to manage your time effectively and turn the assignment in on time. Late assignments will receive a zero grade.

Special Assignments
A detailed description of the class project will be posted on eLearning and discussed in class. There are no additional special assignments available.

Class Attendance
Students are expected to be punctual and attend the in-person lecture on time. If you must miss lecture due to an excused reason (e.g. religious holiday, medical school interview) please notify the Professor and TAs prior to your absence.

Classroom Citizenship
Your phone should always be muted during lecture. If you have a question, please email and the Professor or TAs will answer it.

Comet Creed
This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:
"As a Comet, I pledge honesty, integrity, and service in all that I do."

Academic Support Resources
The information contained in the following link lists the University's academic support resources for all students.
Please go to http://go.utdallas.edu/academic-support-resources.

UT Dallas Syllabus Policies and Procedures
The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.
Please go to http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.