BIOL3303.001 Syllabus

Course	BIOL3303.001
Course Title	Introduction to Microbiology
Professor	Dr. Stefanie D. Boyd
Term	Summer 2023
Meetings	10:00am-12:15pm Monday and Wednesday In-person Instruction: JSOM 2.106

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 12:30-2:30pm or by appointment
Teaching Assistant Information	Bei Zhang bei.zhang@utdallas.edu, Jiahe Zhi jiahe.zhi@utdallas.edu, and Chahat Upreti chahat.upreti@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. 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 Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility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.

Assignments & Academic Calendar

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

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.

#	Dates	Reading	Topics
1	Wednesday, March 24	Chapter 1 and 14	L1. Introduction to class: A Microbial Planet L2. Microbial Diversity
2	Monday, May 29	Chapter 2	L3. Prokaryotic Cell Exterior: Envelopes L4. Prokaryotic Cell Exterior: Appendages
3	Wednesday, May 31	Chapter 3 and 17	L5. Prokaryotic Cell Interior L6. Viruses
4	Monday, June 5	Chapter 15	L7. Fungi, Exam review and discussion
5	**Wednesday, June 7**	**EXAM 1**	**(Lectures 1-7)**
6	Monday, June 12	Chapter 16 and 4	L8. Protists L9. Microbial Growth and Division
7	Wednesday, June 14	Chapter 5 and 7	L10. Microbial Metabolism L11. Synthesis of Building Blocks ****Class project will be discussed in class****
8	Monday, June 19	Chapter 8	L12. Central Dogma I L13. Central Dogma II
9	**Wednesday, June 21**	**EXAM 2**	**(Lectures 8-13)**
10	Monday, June 26	Chapter 10 and 9	L14. Mutations and genetic exchange L15. Secretion
11	Wednesday, June 28	Chapter 12	L16. Microbial stress responses L17. Motility and chemotaxis; Exam review
12	Monday, July 3	Chapter 22	L18. Microbiomes L19. Infection: the vertebrate host
13	Wednesday, July 5	Chapter 22	L20. Adaptive immunity and vaccination, Exam Review
14	**Monday, July 10**	**EXAM 3**	**(Lectures 14-20)**
15	Wednesday, July 12	Chapter 23 and 24	L21. Opportunistic infections: MRSA L22. Intracellular pathogens
16	Monday, July 17	Chapter 26	L23. Bacterial toxins L24. Malaria
17	Wednesday, July 19		L25. Viral pathogens: Herpes and Polio L26. Viral pathogens: Coronaviruses; Exam review **** Class project due****
18	**Monday, July 24**	**EXAM 4**	**(Lectures 21-26)**
19	Wednesday, July 26		**Project Presentations**
20	Monday, July 31		**Project Presentations**
21	Wednesday, August 2		**Project Presentations**
22	Monday, August 7		**Project Presentations**

Course Policies

Grading (credit) Criteria

4 Exams: Each worth 25% of final grade with one exam dropped
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).

1 class project: Worth 25% 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.

Make-up Exams
Make-up exams are not allowed. If a student misses an exam, that exam grade will be dropped. 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.

Grades
Letter grades are distributed according to the class average. The midterm letter grades are determined based on the class average from the exam scores available at the time of midterm grade posting. Final letter grade distribution at the end of the semester may be different since final letter grade distribution is determined based on the overall class average from all exams and the project in the course. Typically, class average determines the median of the grade curve, and final letter grades are distributed accordingly.

If the overall average numerical score is fractional, it will be rounded off to the nearest integer value, i.e., 0.5 - 0.9 will be rounded up to the next highest whole number. For example, 84.5 would be rounded to 85 and the student would receive the letter grade corresponding to 85; but 84.4 would be rounded to 84 and the student would receive the letter grade corresponding to 84. Do not ask special consideration as grades are

distributed fairly and generously for all students and I do not make individual adjustments.

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.