

BIOL371: Microbiology

Fall 2021 • Monday and Wednesday 2:45-4:00 • HU 125 (Applied Science Hub)
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Course Description: We live in a microbial world. There are billions of times more microbes on Earth than stars in the universe and microbial metabolisms are critical to the maintenance of life on our planet. The objective of this course is to provide an overview of microbial diversity from the scale of genomes to ecosystems. This is an introductory course designed to provide students with an appreciation for microbial life.

Midterm exams will be administered as quizzes on Moodle. **The midterm exams must be written during the scheduled course period on Oct 6 and Nov 10.** Students are fully expected to write the exams individually and without communication between fellow students. A student may opt out of writing **one** of the two midterms, and the exam value will be added to the final exam. A student **cannot** opt out of an exam after opening it on Moodle.

Textbook and course material: Brock Biology of Microorganisms 15th edition by MT Madigan, *et al.* (ISBN# 978-0-13-426192-8). The course will follow the textbook, but is also partly developed from the primary scientific literature. Lecture material (*i.e.* power point slides) will be made available on Moodle prior to each lecture. Lectures will be recorded and made available through Moodle for students unable to attend class in person.

Office Hours: Office hours with Dr. Walsh will take place on Wednesday at 12:00-2:00 pm. Office hours can be attended in person or through a Zoom link available at Moodle (Biol 371 Remote Course Meetings/Dr. Walsh's office hours). The Waiting Room feature will be used to control personal student access to Dr. Walsh. Alternatively, please schedule an appointment if you wish to discuss the course outside of this time.

Student Evaluation

25%	Midterm exam I (lectures 1-7)
25%	Midterm exam II (lectures 8-14)
10%	Moodle Quizzes (10 quizzes, each worth 1%)
40%	Final exam (cumulative)

Examination format: The midterms exams and the final exam will all be administered through Moodle. A variety of multiple-choice and short answer questions will be used. Additional information on exam format will be provided during class.

Quizzes: Short weekly quizzes will be made available on Moodle every Thursday at 9:00 am and must be submitted for credit no later than the following Monday at 9:00 am.

Prerequisites to the course: Six credits chosen from BIOL 226 (Biodiversity and Ecology), BIOL 261 (Molecular and General Genetics), CHEM 271 (Introductory Biochemistry).

NOTE: It is strongly recommended to have all three pre-requisites.

Course topics and tentative lecture schedule:

Lecture	Date	Topic	Moodle quiz	Relevant sections in Brock (v15)
01	Sep 08	Introduction to microbiology	How-to quiz	Ch. 1: 1.1-1.4, 1.9-1.14
02	Sep 13	Microbial cell structure and function		Ch. 2: 2.1-2.13
03	Sep 15	Microbial metabolism I	1	Ch. 3: 3.1-3.12
04	Sep 20	Microbial metabolism II		
05	Sep 22	Growth and control I	2	Ch. 5: 5.1-5.14
06	Sep 27	Growth and control II		
07	Sep 29	Molecular biology of growth	3	Ch. 7: 7.1-7.5, 7.9-7-11
08	Oct 04	Microbial evolution and genomics I		Ch. 13/9: 13.1-13.9, 9.1, 9.3, 9.5-9.8
	Oct 06	Midterm exam I (lectures 1-7)		
09	Oct 13	Microbial evolution and genomics II		
10	Oct 18	Metabolic diversity I	4	Ch. 14/15: 14.1-14.5, 15.1-15.7
11	Oct 20	Metabolic diversity II		Ch. 14: 14.7-14.17
12	Oct 25	Metabolic diversity III	5	Ch. 14: 14.19-14.23
13	Oct 27	Methods in microbial ecology I		Ch. 19: 19.1-19.12
14	Nov 01	Methods in microbial ecology II	6	
15	Nov 03	Microbial ecosystems		Ch. 20: 20.1-20.14
16	Nov 08	Nutrient cycles	7	Ch. 21: 21.1-21.3
17	Nov 10	Midterm exam II (lectures 8-14)		
18	Nov 15	The built environment		Ch. 22: 22.1-22.7
19	Nov 17	Microbial symbioses I	8	Ch. 23: 23.1-23.4
20	Nov 22	Microbial symbioses II		Ch. 23: 23.6-23.9, 23.12-23.13
21	Nov 24	Microbial symbioses with humans	9	Ch. 24: 24.1-24.11
22	Nov 29	Infection and pathogenesis		
23	Dec 01	Antibiotics and resistance	10	Ch. 25: 25.1-25.8
24	Dec 06	Course review		Ch. 28: 28.9-28.12

Marking scheme:

A+ = 91 A = 85-90 A- = 80-84 B+ = 77-79 B = 74-76 B- = 70-73 C+ = 67-69
 C = 64-66 C- = 60-63 D+ = 57-59 D = 54-56 D- = 50-53 F = <50

Plagiarism: The most common offense under the Academic Code of Conduct is plagiarism, which the Code defines as “**the presentation of the work of another person as one’s own or without proper acknowledgement.**” This could be material copied word for word from books, journals, internet sites, professor’s course notes, etc. It could be material that is paraphrased but closely resembles the original source. It could be the work of a fellow student, for example, an

answer on a quiz, data for a lab report, a paper or assignment completed by another student. It might be a paper purchased through one of the many available sources. Plagiarism does not refer to words alone - it can also refer to copying images, graphs, tables, and ideas. "Presentation" is not limited to written work. It also includes oral presentations, computer assignments and artistic works. Finally, if you translate the work of another person into French or English and do not cite the source, this is also plagiarism. In Simple Words: ***Do not copy, paraphrase or translate anything from anywhere without saying where you obtained it!***