

Microbiology
(Lecture and Laboratory, BIOL 330 and 330L)
Fall 2018

Tue. & Thu. 10:50-12:05, WALL 118 (lecture)
Tue. & Thu. 1:00-2:20 (01) or 2:30-3:50 (02), KESH 235 (lab)

Instructor: Dr. Vlad Gulis

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Office Hours: Tue. & Thu. 4:00-5:30, Wed. 10:00-1:00 or contact me for an appointment (you may expect a reply within 24 hours during the normal working hours).

Prerequisite: BIOL 121 and 122

Textbook: Madigan M.T. et al. Brock Biology of Microorganisms, 14th Edition, Pearson.

Lab Manual: No lab manual required. Handouts will be provided by the instructor. However, you will need a loose-leaf binder in order to keep track of them.

Moodle: [Moodle](#) will be used for this class. A copy of the syllabus, lecture notes, points/grades and other pertinent information (such as special announcements and assignments for extra credit) will be posted here. Check it regularly.

Course description: This course is intended as a general overview of the microbial world, including bacteria, viruses and eukaryotic microorganisms (e.g., fungi, algae). The structure, nutrition, growth, diversity, ecology, etc. will be covered. Some areas of applied microbiology, such as medical and food microbiology will also be introduced to the student. Labs are designed to illustrate topics discussed in lecture.

Course objectives: To ensure that students:

- understand major topics and principles in microbiology
- understand and explain the critical importance of microorganisms in sustaining life on Earth
- have sufficient background to take more advanced courses in the area of microbiology, either as an undergraduate or graduate student or as a student in a medical, dental or other health-related school

Student learning outcomes: By the end of the semester, a student

- will be able to demonstrate a general understanding of major topics and principles of microbiology including
 - prokaryotic and eukaryotic cell structure
 - microbial metabolism
 - bacterial genetics
 - microbial evolution and diversity
 - microbial ecology

- microbial interactions with humans and microbial diseases
- will be able to recall facts, compare, contrast and discuss various organisms, concepts and processes of relevance to modern microbiology
- will master various “hands-on” microbiological techniques
- will be able to interpret data and draw conclusions based on the experiments in the lab

Assessment and Grading: The student’s performance in this course will be assessed *via* a series of quizzes, three exams during the semester as well as a cumulative final exam. The student’s success in learning and applying microbiological techniques, analyzing experimental data and drawing conclusions will be also assessed during the labs.

Students will receive a combined grade for both lecture and lab. If the lab component of the course is taught by another professor, the information about points accumulated will be shared by that professor and the final combined grade will be given by the professor who teaches the lecture portion of the course.

Point distribution

Assignment	Points
Exam 1	150
Exam 2	150
Exam 3	150
Final exam	170
Quizzes	100
Lab midterm	80
Lab final	100
Graded labs	100
Total	1000

Grading scale

Grade	%	Points
A	90-100	900-1000
B+	85-90	850-899
B	80-85	800-849
C+	75-80	750-799
C	70-75	700-749
D+	65-70	650-699
D	60-65	600-649
F	0-60	0-599

Multiple choice questions as well as those that require to define certain terms or provide short answers/essays will be used for lecture exams. Not all topics will be covered in class, so required readings will be assigned. Some exam questions may be based on material from reading assignments. Quizzes will be given, unannounced, every few classes, usually at the beginning of a class.

Both a midterm and final lab exam will include practical exercises that would demonstrate your proficiency with certain techniques and a written portion. In addition, some labs will be graded based on reports/answers to practical questions.

Confirmed cheating or plagiarism on an exam or assignment will result in a grade of “F” for that assignment, the entire course and/or reporting to the university. In general, academic misconduct will not be tolerated. See CCU Student Code of Conduct for details.

Attendance: Attendance is expected and will be monitored *via* a sign-off sheet, which will be passed around at the beginning of each lecture. I will follow the CCU catalog policy that “An instructor is permitted to impose a penalty, including assigning the grade of F, for unexcused absences in excess of 25% of the regularly scheduled class meetings”. If you are absent or late, you may miss unannounced quizzes that will affect your grade. Make-up exams are only given for university-excused absences. See current CCU catalog for details. Lab attendance is mandatory and there are no make-ups for labs.

Smartphones: Use of smartphones during the class is both disruptive and disrespectful to your colleagues. You will be asked to leave the class after the second offense.

Disabilities: Coastal Carolina University is committed to equitable access and inclusion of individuals with disabilities in accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. Individuals seeking reasonable accommodations should contact Accessibility & Disability Services (843-349-2503 or www.coastal.edu/disabilityservices/). Students are also encouraged to see me at the beginning of semester so special arrangements can be made, if necessary.

Tentative Schedule

Date	Lecture Topic*	Readings*	Lab Topic*
Tue, Aug. 21	Introduction to course		No lab
Thu, Aug. 23	Microorganisms and Microbiology	Ch. 1	Lab safety, Microscopy I
Tue, Aug. 28	Microorganisms and Microbiology	Ch. 1, 2	Microscopy II
Thu, Aug. 30	Macromolecules and prokaryotic cell structure I	Ch. 2	Media preparation/Isolation techniques
Tue, Sep. 4	Prokaryotic cell structure II	Ch. 2	Isolation/selective media
Thu, Sep. 6	Nutrition and microbial growth	Ch. 3, 5	Isolation/selective media
Tue, Sep. 11	Exam 1		Gram stain
Thu, Sep. 13	Metabolism I	Ch. 3, 13	Environmental factors
Tue, Sep. 18	Metabolism II	Ch. 13	Environmental factors/ EnteroPluri system
Thu, Sep. 20	Replication, transcription, translation I	Ch. 4	EnteroPluri system
Tue, Sep. 25	Replication, transcription, translation II	Ch. 4, 7	Titer of a bacteriophage
Thu, Sep. 27	Viruses I	Ch. 8	Titer of a bacteriophage
Tue, Oct. 2	Viruses II	Ch. 9	Bacterial transformation
Thu, Oct. 4	Bacterial genetics I	Ch. 10	Bacterial transformation
Tue, Oct. 9	Bacterial genetics II	Ch. 10, 11	Lab midterm (practical)
Thu, Oct. 11	Exam 2		Lab midterm (practical)
Tue, Oct. 16	Microbial evolution and diversity	Ch. 12	Isolation of microorganisms from soil
Thu, Oct. 18	Prokaryotic diversity: Bacteria	Ch. 15	Isolation of microorganisms from soil
Tue, Oct. 23	Prokaryotic diversity: Archaea	Ch. 16	Eukaryotic diversity
Thu, Oct. 25 Last day to drop with a "W"	Eukaryotic microbes	Ch. 17	Synthetic epidemic

Tue, Oct. 30	Microbial Ecology I	Ch. 18, 19	Synthetic epidemic
Thu, Nov. 1	Microbial Ecology II	Ch. 20-22	Antibiotics
Tue, Nov. 6	Election Day – no class		No lab
Thu, Nov. 8	Exam 3		Antibiotics
Tue, Nov. 13	Microbial growth control and antibiotics	Ch. 5, 27	Microbiota of throat/skin/urine
Thu, Nov. 15	Microbial interactions with humans	Ch. 23	Microbiota of throat/skin/urine
Tue, Nov. 20	Thanksgiving Break		No lab
Thu, Nov. 22	Thanksgiving Break		No lab
Tue, Nov. 27	Microbial diseases I	Ch. 28, 29	Lab Final (practical) = Food microbiology
Thu, Nov. 29	Microbial diseases II	Ch. 30, 31	Lab Final (practical) = Food microbiology
Tue, Dec. 4	Microbial diseases III	Ch. 31, 32	Lab make-ups (if required)
Thu, Dec 6	Study day		Lab make-ups (if required)
Thu, Dec. 13	Final Exam (11am)		

*tentative and subject to change at the discretion of the instructor