

COURSE OVERVIEW

Introduction to Microbiology

11:680:201

Spring Semester

Meeting times TBD

Meeting Location TBD

CONTACT INFORMATION:

Instructor(s): Dr. Ines Rauschenbach

Office Location: Lipman Hall, Room 215

Phone: 848-932-5635

Email: inesrau@sebs.rutgers.edu

Office Hours: By Appointment

COURSE WEBSITE, RESOURCES AND MATERIALS:

- Canvas

COURSE DESCRIPTION:

Introduction to Microbiology is appropriate for students with some background in biology and chemistry whose career path intersects the study of microbes or simply have an interest in microbiology. This course introduces the basic principles of microbiology examining the microbes that inhabit our planet and their effect on the biosphere. Introduction to Microbiology explores this impact through the lens of all areas of microbiology. Students will assess the influence of microbiology and 21st century challenges and opportunities that arise from our changing relationship with and understanding of microbes. Through short lectures, cases studies, in-class group work, and homework projects, students will probe the science of microbes and the social issues and concerns relevant to the field of microbiology including emerging infectious disease, antibiotic resistance, the anti-vaccine movement, and dual-use biological research. Class participation using an electronic device with internet-connection will be a component of the course grade and used in every lecture to encourage participation and interaction.

LEARNING GOALS:

After completion this course, successful students will:

1. Outline the structural and functional differences among all microbes.
2. Apply the fundamentals of the chemistry of life to microbial metabolism and physiology.
3. Assess the influence of microbes in their natural environments on maintenance of the biosphere.
4. Compare and contrast microbial interactions with hosts in health and disease.
5. Identify major microbial interactions and illustrate how these interactions affect the well-being of plants and animals.
6. Explain the underlying principles of the methods used to control microbial growth.
7. Describe the flow and control of genetic information and its influence on the evolution of life on earth.
8. Examine the application of microbes to water safety and food production.

ASSIGNMENTS/RESPONSIBILITIES, GRADING & ASSESSMENT:

The course grade will be based on exams, in-class participation & group work and homework assignments as follows:

11 Weekly, cumulative online quizzes (one lowest dropped) = 60%

Cumulative midterm and final exam = 20%

In-class assignments & homework (two lowest dropped) = 20 %

Grading Scale for Final Course Grades:

A	90 - 100%	C	70 – 75%
B+	86 – 89%	D	60 – 69%
B	80 – 85%	F	0 – 59%
C+	76 – 79%		

In-class Assignments:

In-class assignments will be offered throughout the semester and include a variety of activities, including Kahoots, Jigsaws, Case Studies, and other critical thinking questions. They are designed to help you retrieve prior learned knowledge and apply it to other course concepts. The dates these are offered are indicated in the syllabus. In-class assignments are finished in class - no make ups will be available. I will drop two missed assignments.

KWL Assignments

For each topic, you will be asked to submit a K-W-L journal - "K"now, "W"ant to Know, "L"earned. This strategy will help you to first think about the unit ahead and monitor your understanding of the material. The follow up writing assignment will help you to prepare a study guide, review the material and assess how much you have learned.

Quizzes

Weekly quizzes will be posted on Canvas. This will allow you to assess how much you have already learned and their comprehensive nature will allow you to keep the material that was covered throughout the semester “fresh so that the cumulative exam at the end of the course will be a breeze!

Midterm and Final Exams

The midterm and final exams contain multiple choice questions and 8 short answers for a total of 100 points. Each exam average will be curved to 72% (unless the average is above 72 in which case it will remain unchanged). There are no make ups available, missing any exam will result in 0 points. No exception.

Extra Credit

Extra Credit is included on both exams, all quizzes, and also occasionally in lecture.

ACCOMODATIONS FOR STUDENTS WITH DISABILITIES

Please follow the procedures outlined at <https://ods.rutgers.edu/students/registration-form>. Full policies and procedures are at <https://ods.rutgers.edu/>

ABSENCE POLICY

Students are expected to attend all classes; if you expect to miss one or two classes, please use the University absence reporting website <https://sims.rutgers.edu/ssra/> to indicate the date and reason for your absence. An email is automatically sent to me.

COURSE TOPICS:

Introduction and brief History of Microbiology
Structure and Function
Microbial Metabolism
Microbial Growth and Biofilms
Genetics – Overview
Replication, Transcription, Translation
Mutations and Genetic Control
Applications of Microbial Genetics
Microbial Evolution and Taxonomy
Microbial Ecosystems
Microbial Interactions – The Built Environment, The Human Microbiome
Microbial Diversity – Prokaryotes and Eukaryotes
Microbial Diversity – Viruses
Epidemiology
Pathogenicity, Immunity, Immune disorders
Control of Microbes
Clinical Microbiology
Food Microbiology

FINAL EXAM/PAPER DATE AND TIME

Online Final exam Schedule: <http://finalexams.rutgers.edu/>

ACADEMIC INTEGRITY

The university's policy on Academic Integrity is available at <http://academicintegrity.rutgers.edu/academic-integrity-policy>. The principles of academic integrity require that a student:

- properly acknowledge and cite all use of the ideas, results, or words of others.
- properly acknowledge all contributors to a given piece of work.
- make sure that all work submitted as his or her own in a course or other academic activity is produced without the aid of impermissible materials or impermissible collaboration.
- obtain all data or results by ethical means and report them accurately without suppressing any results inconsistent with his or her interpretation or conclusions.
- treat all other students in an ethical manner, respecting their integrity and right to pursue their educational goals without interference. This requires that a student neither facilitate academic dishonesty by others nor obstruct their academic progress.
- uphold the canons of the ethical or professional code of the profession for which he or she is preparing.

Adherence to these principles is necessary in order to ensure that

- everyone is given proper credit for his or her ideas, words, results, and other scholarly accomplishments.
- all student work is fairly evaluated and no student has an inappropriate advantage over others.
- the academic and ethical development of all students is fostered.
- the reputation of the University for integrity in its teaching, research, and scholarship is maintained and enhanced.

Failure to uphold these principles of academic integrity threatens both the reputation of the University and the value of the degrees awarded to its students. Every member of the University community therefore bears a responsibility for ensuring that the highest standards of academic integrity are upheld.

Just In Case Web App <http://codu.co/cee05e>

Access helpful mental health information and resources for yourself or a friend in a mental health crisis on your smartphone or tablet and easily contact CAPS or RUPD.

Counseling, ADAP & Psychiatric Services (CAPS)

(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901 / www.rhscaps.rutgers.edu/

CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

Violence Prevention & Victim Assistance (VPVA)

(848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901 / www.vpva.rutgers.edu/

The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

Disability Services

(848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / <https://ods.rutgers.edu/>

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.

Scarlet Listeners

(732) 247-5555 / <https://rutgers.campuslabs.com/engage/organization/scarletlisteners>

Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.