

COURSE OVERVIEW:

Living in a Microbial World

11:680:101

Fall Semester

Tuesday, Thursday 7:15-8:35pm.

Online Meetings (Canvas, Zoom)

CONTACT INFORMATION:

Instructor(s): Dr. Ramaydalis Keddiss

Office Location: Lipman Hall, Room 215

Phone: 848.932.4113

Email: rcruz1@sebs.rutgers.edu

Office Hours: By appointment through Canvas



COURSE WEBSITE, RESOURCES AND MATERIALS:

Top Hat: We will be using the program Top Hat to interact and do in class assignments/ activities throughout the semester. It will account for 5% of your grade. The fee for using this is 20 dollars for the semester. You only have to pay 20 dollars per semester no matter how many courses are utilizing it. If you have any questions or concerns about this, do not hesitate to contact me.

COURSE DESCRIPTION:

Living in the Microbial World is a lecture course for undergraduates with little or no science background. There are no prerequisites for the course.

Course Summary

This course examines the major impact of the microbial world on humankind – as is clearly apparent in the middle of a pandemic. Students will be introduced to microorganisms from the beginning of life on a young and very different earth than we see today and follow the evolutionary journey that has shaped the modern world. The course is divided into three general areas of microbial impact:

1. The diversity of the microbial world.
2. The impact of microbes on human health.
3. The economic impact of microbial products and processes.

Students will assess news media coverage of current issues in microbiology and from insights gained in the course be able to evaluate future issues using a critical scientific approach. Through lecture, cases studies and panel discussion students will probe social issues and concerns relevant to the field of microbiology including disease, antibiotic resistance, the ubiquity of microbial products, the value of probiotics, and man-made microorganisms. The course considers humankind's exploitation of the microbial world including production of microbial food products, antibiotic/drug production, agriculture, bioremediation, and bioterrorism.

LEARNING GOALS:

I: Our Common Future

1. Analyze the relationship that science and technology have to contemporary social issues.

II: Areas of Inquiry

A: Natural Sciences

1. Understand and apply basic principles and concepts in the physical and biological sciences.



Course Learning Outcome Goals

Students in this course will:

1. Understand the diversity of microbial communities and how they impact humans and the environment.
2. Develop scientific literacy and learn conversational microbiology so students may critically analyze and discuss current issues in microbiology knowledgeably.
3. Evaluate media coverage of events germane to microbiology using the scientific method and critical scientific analysis.

ASSIGNMENTS/RESPONSIBILITIES, GRADING & ASSESSMENT: Grading Requirement: The course grade will be based on three exam and three assignments as follows:

1. Portfolio of weekly newspaper periodical reports:
2 submissions (5 each) 10 @ 10 pts each 100 PTS
2. Position paper 1 @ 50 pts 50
3. In class assignments (5 % weight)
3. Exams (drop lowest - no make ups) 3 @ 100 pts 200

Assignments

It is required that your work be in line with Rutgers University standards of academic integrity (<http://academicintegrity.rutgers.edu/academic-integrity-policy>). Citations and references must be used appropriately. I recommend that you use the APA format. Use the link provided to the Purdue University Online Writing Lab (OWL) for guidance: <https://owl.english.purdue.edu/owl/section/2/>. All assignments will be submitted through Canvas using Turnitin.com, a plagiarism check.

Exam Make Up Policy: *For absence due to an extenuating circumstance (with documentation), arrangements to take a make up exam within one week must be made with the course coordinator within 24 hours of the missed exam, otherwise a zero is given. The date for the make up exam is at the discretion of the coordinator.*

Course Policies (In alphabetical order)

This syllabus contains the policies and expectations that have been established for this course. These policies and expectations are intended to create a productive learning atmosphere for all students. Please bring any concerns you may have to our attention.

Academic Integrity

All members of the Rutgers community are expected to adhere to the Code of Conduct and Academic Integrity Policies, which can be found at <http://studentconduct.rutgers.edu>.

Exams: *If you are caught with your phone or any other electronic device during any exam period, no matter the reason, you will receive a zero for that exam.*

Portfolio of weekly newspaper periodical reports:

Each news media article critique included in the portfolio will follow the template questions provided on Canvas. If you catch this sentence it means you've read a lot! Send me a picture of what you think is a product of a microbe for 3 bonus points in your first exam. Topics of articles critiqued should represent at least 5 different course topic areas shown below.

1. **Evolution & Microbial Diversity**
2. **Microbial Communities & The Human Microbiome**
3. **Microbes in the Environment**
4. **Infectious Disease & Prevention**
5. **Dual Use & Bioweapons**
6. **Microbial Products**

No more than three articles from a single course topic area may be included. **Article critiques will be due in two sets of 5 articles.**

Position paper:

The position paper will be a 2-4 page paper addressing a statement related to what we discussed in class. Consider the question/statement provided on each topic, choose one and **take a position**. The topics listed below are supported with readings in the "Resources Folder" on Canvas & lecture notes. Specifically appropriate references may be found in the **"Position Paper" assignment**. You are required to find at least one more appropriate support document independently. Your position must be supported by appropriate and carefully cited references.

Email Policy

According to Rutgers Email and Calendaring policy *"All email and calendaring used to conduct University Business at Rutgers must be created, stored, processed, and transmitted via the approved procedures and using the official Rutgers University Email and Calendaring systems."*

Please use CANVAS or your Scarletmail for any communication in this course. I will not be answering your emails if sent with an email account other than your Scarletmail.

ACCOMODATIONS FOR STUDENTS WITH DISABILITIES

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>

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 SCHEDULE:

Lecture	Activities
Introduction to the Course – Overview	Read Syllabus before class Trivia Game Activity: What would you like to learn in this class?
Microbes and the microbial world	<u>A world without microbes</u> <u>Seeing the invisible</u> Before class: Intro module Activity; Microbial Products
Cell Structure and Function	Activity- Eukaryotes vs Prokaryotes
Flow of Genetic Information	Background info #1, Web #1 Activity: Central Dogma
Bioinformatics, Biotechnology	Supplementary: Evolution and Microbial Diversity Readings
Evolution and Phylogeny of Life on Earth	
Origin of life	
Viruses	Activity: Coronavirus vs the flu (Pandemic!)

	How viruses infect: https://www.youtube.com/watch?v=Rpj0emEGShQ
Spillover: Ebola, Zika and Beyond	Homework: View documentary and answer questions
Microbial Diversity	Activity: Microbial Diversity, Muddiest Point Supplement : Microbes in the Environment Module
Microbial Communities	<u>How Bacteria Communicate - Bonnie Bassler</u> Exam Review Trivia Game
Exam I (Lecture 1-9)	
Human Microbiome: Microbes and You Portfolio 1 due (see Modules for instructions)	Human Microbiome supplementary readings 1. <u>The Human Microbiome</u> 2. <u>The healing power of poop</u> Exam review
Replenishing the Microbiome: Loading up on the good guys to help us!	<u>Built Environment</u> Activity: Jessica green analysis
The Built Environment	NYC Subway microbiome
Controlling Microbial Growth	
Controlling Microbial Growth	
Biofilms and Quorum Sensing	Activity: Biofilm Jigsaw
SuperBugs	
Pathogenesis and the Immune System	Review
Exam 2	
Immune System	Post Exam Review
Vaccines	Vaccine wars documentary Activity: Documentary analysis
Epidemiology	CDC activity

Person to Person Transmission	Activity: Quarantine vs social distancing
Never Underestimate the Power of Microbes: Pandemic!	
STIs	
Foodborne Diseases: Is this still good?	Activity: Raw milk
Insect and Vectorborne Diseases	
Bioterrorism and topics in Applied Microbiology	Activity: Microbial Products
Review	
Exam 3	
End of the semester Position Paper	

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.

STUDENT WELLNESS SERVICES

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/>

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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.