

**COURSE OVERVIEW:**

Microbial Genetics and Genomics  
11:680:480  
Spring Semester

**CONTACT INFORMATION:**

Instructor(s): Dr. Gerben Zylstra  
Office Location: Foran, Room 322  
Email: [zylstra@sebs.rutgers.edu](mailto:zylstra@sebs.rutgers.edu)  
Office Hours: By arrangement

**COURSE WEBSITE, RESOURCES AND MATERIALS:**

- Canvas

**COURSE DESCRIPTION:**

Genetics of bacteria and phage, focusing on replication, repair, transcription, translation, gene regulation, genetic networks, plasmids, conjugation, transformation, microbial and phage interactions, and different types of phage and their lifestyles.

**LEARNING GOALS:**

Understand the biochemical mechanisms underpinning replication, transcription, and translation  
Appreciate the diversity of mechanisms used by bacteria to regulate gene expression  
Demonstrate knowledge of the biochemistry behind conjugation and transformation  
Recognize the diverse types and lifestyles of phage

**ASSIGNMENTS/RESPONSIBILITIES, GRADING & ASSESSMENT:**

Three exams each covering one third of the course (100 points each) and repeated questions from exam 1 and 2 on the third exam (40 points)

**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**

If you miss class please check with other students about what you missed. All lecture notes and all important announcements will be posted on Canvas. If you arrive late for class please come in quietly and find an open seat.

### **COURSE SCHEDULE:**

The course will cover these topics in order:

DNA structure and replication  
DNA mutagenesis and repair  
Transposition and recombination  
Transcription  
Translation  
Attenuation and riboswitches  
Transcription Regulation  
Catabolite Regulation  
Two Component Regulation  
Plasmids  
Conjugation  
Transformation  
Phage  
Lambda Phage

### **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/](http://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/](http://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.