

01:694:412 Proteomics and Functional Genomics

Semester: Spring | **Credits:** 3

Course URL: canvas

Prerequisites: Foundational courses in Molecular Biology and Biochemistry (01:694:407 or 01:694:301) and Genetics (01:447:380).

Course Description: Embark on an exploratory path through the intricate world of proteins and genes. This course is designed to navigate the contemporary landscape of protein biochemistry, bioinformatics, proteomics, and functional genomics. Engage with the elemental facets of protein architecture, the art of protein purification, the kinetics of enzymes, the revolutionary realm of genome editing, and the vast spectrum of genomics. Prepare to delve into:

- The fusion of genomics and proteomics: A comprehensive introduction.
- Innovations in DNA sequencing: Expanding the frontiers of knowledge.
- DNA sequencing technologies: Mastering current applications.
- Chromatin and genome: The blueprint of life.
- The alchemy of proteins: From analytical to preparative techniques.
- Mass Spectrometry in Proteomics: Deciphering protein mysteries.
- The enigma of protein folding: Investigating the choreography of molecules.
- The dance of proteins: Exploring interactions and macromolecular assemblies.
- CRISPR: Editing the code of life.
- Next-Generation Sequencing: The gateway to future discoveries.
- Student-led Presentations

A detailed course schedule will be posted based on the number of students enrolled in the class.

Course Satisfies Learning Goals

1. Students should demonstrate an understanding of the knowledge that is needed to begin biomedical research in the areas of proteomics and functional genomics. They will learn the theory and practice of key methods needed for postgraduate studies in these fields.

2. Students should demonstrate the ability to work independently to find and evaluate information about specific biological systems or problems.


Exams, Assignments, and Grading Policy

Take-home Exams I & II will each count for 30% of your grade. The Student Presentation counts for 25% of your grade. Take-home Exam III counts for 15% of your grade. We also take into account class participation, especially in the Student Presentation part of the course. There will be no final exam.

Course Materials

Instructors will supply the necessary readings. For conducting next-generation sequencing analysis, students must have access to a personal computer with a physical keyboard and an internet connection.

Course Closed?

This course is by special permission only, with priority given to MBB majors. The majority of the class will be juniors and seniors. To obtain a special permission number or to get on the waiting list if you are not an MBB major, CALL 848-445-2075. If the course is closed, please use the following link: [Wait List Sign Up for Spring 2023 Courses](#) If you have any questions, please contact the Division of Life Sciences - Office of Undergraduate Instruction at 848-445-2075  or visit our office at Nelson Biological Laboratories B112, Busch Campus.

Faculty

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CABM305

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Student Support Services:

- Student Success Essentials: <https://success.rutgers.edu>
- Student Support Services: <https://www.rutgers.edu/academics/student-support>
- The Learning Centers: <https://rlc.rutgers.edu/>
- Rutgers Libraries: <https://www.libraries.rutgers.edu/>
- Bias Incident Reporting: <https://studentaffairs.rutgers.edu/bias-incident-reporting>

- Dean of Students – Student Support Office:
<https://success.rutgers.edu/resource/dean-students-student-support-office>
- Office of Veteran and Military Programs and Services:
<https://veterans.rutgers.edu>
- Student Health Services: <http://health.rutgers.edu/>
- Counseling, Alcohol and Other Drug Assistance Program & Psychiatric Services (CAPS): <http://health.rutgers.edu/medical-counseling-services/counseling/>
- UWill: free immediate access to teletherapy; you can choose a therapist based on your preferences including issue, gender, language, ethnicity.
<http://health.rutgers.edu/uwill/>
- Office for Violence Prevention and Victim Assistance: www.vpva.rutgers.edu/
- Office of Disability Services: <https://ods.rutgers.edu/>
- Basic Needs Assistance (food, housing, and other essentials): <https://ruoffcampus.rutgers.edu/basic-needs>
- Rutgers Student Food Pantry: <https://ruoffcampus.rutgers.edu/food-pantry>

** All information is subject to change at the discretion of the course coordinator.