

COURSE NAME; COURSE NUMBER; SEMESTER; MEETING DAYS, TIMES, AND PLACE:

Molecular Genetics 11:126:481

Fall 2021, Course Index No: 18371

Monday and Wednesday 1:00 PM to 2:20 PM

The course is online hybrid asynchronous/synchronous, and uses ZOOM video conferencing

CONTACT INFORMATION:

Instructor: Thomas Leustek

Office Location: 109 Martin Hall

Phone (text): 908-451-3266 Email: Leustek@sebs.rutgers.edu

Office Hours: By Arrangement, for individuals or groups, please email for an appointment

COURSE WEBSITE, RESOURCES AND MATERIALS:

- See CANVAS for all course information and resources. If you are registered for MolGen you should have access to the MolGen CANVAS site.

COURSE DESCRIPTION:

Molecular Genetics is a challenging course that covers a range of basic topics in molecular genetics and molecular biology including the concept of the gene, transcription, translation, regulation of gene expression and replication. The course takes a genomics-centered approach and covers many of the latest methodologies used in genomics analysis. The course delves into both prokaryotic and eukaryotic systems, taking a historical and methodological approach with the aim of providing insight into how understanding was obtained through experimentation and discovery. The prerequisite for this course is Genetics (01:447:380 OR 11:776:305) with a minimum grade of C. Although, Molecular Genetics is open to all Rutgers students, it is part of the major in Biotechnology and fulfills the first Biotechnology program learning goal:

“Biotechnology Majors will be able to describe the basic molecular concepts essential for understanding the field of biotechnology and the applications of biotechnology.”

COURSE LEARNING GOALS:

- See individual modules

ASSIGNMENTS, RESPONSIBILITIES & ASSESSMENT:

EQUIPMENT- Laptop computer equipped with a video camera and good internet connection.

GRADING- The bulk of the course grade will come from thirteen weekly quizzes valued at 78% of the course grade. Each quiz contributes 6 points to the course grade and consists of approximately 12-15 choice questions. In addition, there are four reading assignments

valued at 22% of the course grade. An assigned literature paper is read, and then a quiz is taken on the concepts in the paper. Each literature paper quiz has about 10 multiple choice questions and is valued at 5.5 points each toward the course grade.

All quizzes are closed notebook, and are taken after pledging that the answers are the students own and that no outside help was solicited or used to complete the quiz. For those who fail to take a quiz by the due date, and who have not made a prior request for accommodation, there are no make-ups ***NO EXCEPTIONS***. If you know that you will be unable to take a quiz, it is your responsibility to email the instructor to arrange for an alternative date and time to take the quiz.

Grading Scheme out of a total 100 points

A= >89.5 points

B+= 84.5 to 89.4 points

B= 79.5 to 84.4 points

C+= 74.5 to 79.4 points

C= 69.5 to 74.4 points

D= 59.5 to 69.4 points

F= <59.4 points

EXAM GRADING AND GRIEVANCE POLICY- If you have a concern about grading please write to leustek@sebs.rutgers.edu and explain your concern. Write MolGen Exam Concern in the subject line of the email.

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/>.

RESPONSIBILITY TO BE INFORMED- Students are responsible to keep informed about all course matters including changes to the syllabus, course policies, exam and due dates. Keeping informed depends on checking your email regularly and visiting the CANVAS course site regularly. Performing well in an online course is largely a matter of mindfulness to the course schedule and attentiveness to due dates. For this reason, a missed due data cannot be made up ***NO EXCEPTIONS***

WHAT TO EXPECT THIS SEMESTER:

- Molecular Genetics (11:126:481) is usually taught in person during the Fall semester. Due to uncertainties about the COVID-19 pandemic the course was reformatted for remote teaching in 2020. The format used is called “reverse classroom.” The online version of the course is being taught again this semester. Last year, the students gave excellent reviews of the online course.
- What is “reverse classroom”? Unlike an in-person course, where class meetings focus on delivering course content, in the reverse classroom, it is each students’ responsibility to review and understand content, provided in a series of online tutorials, also called modules. This part of the course is asynchronous, because you complete the modules whenever you can during the two-week period leading up to a quiz.
- The class then meets synchronously on ZOOM in an online recitation in which the modules are reviewed and discussed. Think of this as your opportunity ask questions about what you need clarification on. Each recitation will be framed around an experimental model to which we apply the lessons in the module. Recitation periods will be held during the scheduled class meeting times, Monday and Wednesday from 1:00 to 2:20 PM. Attendance at only one recitation period is required each week. Those with Rutgers student number ending in an even number attend recitation on Monday, and those ending in an odd number will meet on Wednesday.
- Attendance at recitation is voluntary. And it is necessary to only participate in one recitation each week. But, be aware that topics discussed in recitation will be covered in quizzes. Recitations will be recorded and will be made available on CANVAS for those who are unable to attend. However, there is no substitute for being able to ask your own questions, so recitation attendance is highly advised.
- Modules will be made available on Monday of the week before the modules will be discussed at recitation.
- Quiz schedule- quizzes are given on Monday of the week after the modules are discussed in recitation, the only exceptions being the quizzes for Modules 13 and 14 which are taken three weeks after publication.
- Quiz grading- all quizzes are closed notebook and will be taken on the honor system, meaning that students must pledge that the quiz is their own work, and outside help was not solicited or used. All quizzes will be taken any time on the indicated dates from 12:01 AM to 11:59 PM. The quizzes are timed to 45 minutes, which should not be necessary because there will be only 12-15 questions. Last semester, when students rushed at the last moment to take a quiz, the CANVAS system ran more

slowly, and some students could not submit their quiz. So, it is advised that you plan ahead and take your quizzes early on the due date.

- Four reading assignments, followed by a quiz, a similar schedule is followed, but on a shorter schedule. Reading assignments are released on a Wednesday, and 8 (eight) days later the quiz is taken.
- The sequence of events for this semester in Molecular Genetics should be clear from the WEEKLY COURSE SCHEDULE below.
- In order to help you with planning your schedule, an EVENT CHECK-LIST is provided in the second table, which details when you should expect modules to be published on CANVAS, when discussions will take place, when quizzes will take place, and when reading assignments are published and concluded. Note that every week there are multiple events related to this course. There are up to 3 events on some days. From last years' experience, poor performance was the result of not keeping up with the schedule. So, I am hopeful that the EVENT CHECK-LIST will help you to perform your best in Molecular Genetics.
- When planning your study, it is important to keep in mind that during any week, there will be two modules available for review, one set of modules will be the topic of that weeks' recitation and the upcoming quiz, and the second will be the topic of discussion the following week and the quiz scheduled two weeks ahead. To help keep them straight in your mind, I have numbered the modules with the week number. For example, Modules 12.X are discussed during week 12 of the semester.
- If you have any questions about how the class will progress this semester, please do not hesitate to ask.

WEEKLY COURSE SCHEDULE:

Week [module publish date]	Module and Topics	Module Recitation Dates	Module Quiz Date	Reading Assignment and Due Date
Week 1 [8/30]	1.1 Introduction to Molecular Genetics 1.2 How to be successful in an online course	9/1	None	
Week 2 [8/30]	2.1 Strategies for sequencing genomes 2.2 Genomic libraries	9/8	9/13	

Week 3 [9/6]	3.1 DNA polymerase and polymerase chain reaction 3.2 Genomic Physical Mapping techniques	9/13 or 9/15	9/20	Reading 1 9/8, quiz date 9/16
Week 4 [9/13]	4.1 DNA sequencing technologies 4.2 History of shotgun sequencing	9/20 or 9/22	9/27	
Week 5 [9/20]	5.1 Interpreting a Genome Sequence- Part 1 5.2 Interpreting a Genome Sequence- Part 2 5.3 Discovery of Gene Function	9/27 or 9/29	10/4	Reading 2 9/22, quiz date 9/30
Week 6 [9/27]	6.1 Omics, Systems Biology 6.2 Omics, System-Wide Interactions	10/4 or 10/6	10/11	
Week 7 [10/4]	7.1 Eukaryotic Nuclear Genomes Part 1 7.2 Eukaryotic Nuclear Genomes Part 2 7.3 Genome Structure of Prokaryotes and Eukaryotic Organelles	10/11 or 10/13	10/18	
Week 8 [10/11]	8.1 Accessing the Genome 8.2 Interaction between DNA and Binding Proteins	10/18 or 10/20	10/25	Reading 3 10/13, quiz date 10/21
Week 9 [10/18]	9.1 Transcription Initiation Control Prokaryotic 9.2 Transcription Initiation Control Eukaryotic 9.3 Transcription Termination and Control of Gene Expression	10/25 or 10/27	11/1	
Week 10 [10/25]	10.1 RNA Processing 10.2 RNA Splicing 10.3 RNA Degradation	11/1 or 11/3	11/8	Reading 4 11/3, quiz date 11/11
Week 11 [11/1]	11.1 Genetic Code, tRNA, Ribosomes 11.2 Translational Initiation, and Elongation	11/8 or 11/10	11/15	

	11.2 Termination, Autoregulation, Frameshifting, Termination			
Week 12 [11/8]	12.1 Signal Transduction 12.2 Signal Transduction and Permanent Changes to Genome 12.3 Developmental Control	11/15 or 11/17	11/22	
No Modules	Thanksgiving week	None	None	
Week 13 [11/15]	13.1 Genome Replication Initiation and Elongation 13.2 Genome Replication Termination and Regulation	11/29 or 12/1	12/6	
Week 14 [11/22]	14.1 Mutations 14.2 DNA Repair	12/6 or 12/8	12/13	

EVENT CHECK LIST:

Check-Off	Date	What to Expect, or What is Due
x	8/30 Monday	Module 1.X published
x	8/30 Monday	Module 2.X published
x	9/1 Wednesday	Course Intro ZOOM recitation 1:00-2:20 PM
x	9/6 Monday	Module 3.X published
x	9/8 Wednesday	Module 2.X ZOOM recitation 1:00-2:20 PM
x	9/8 Wednesday	Reading 1 published
x	9/13 Monday	Module 2.X quiz
x	9/13 Monday	Module 3.X ZOOM recitation
x	9/13 Monday	Module 4.X published
x	9/15 Wednesday	Module 3.X ZOOM recitation 1:00-2:20PM
	9/16 Thursday	Reading 1 quiz
	9/20 Monday	Module 3.X quiz
	9/20 Monday	Module 4.X ZOOM recitation 1:00-2:20PM
	9/20 Monday	Module 5.X published
	9/22 Wednesday	Module 4.X ZOOM recitation 1:00-2:20PM
	9/22 Wednesday	Reading 2 published
	9/27 Monday	Module 4.X quiz
	9/27 Monday	Module 5.X ZOOM recitation 1:00-2:20 PM
	9/27 Monday	Module 6.X published
	9/29 Wednesday	Module 5.X ZOOM recitation 1:00-2:20 PM
	9/30 Thursday	Reading 2 quiz
	10/4 Monday	Module 5.X quiz
	10/4 Monday	Module 6.X ZOOM recitation 1:00-2:20 PM
	10/4 Monday	Module 7.X published
	10/6 Wednesday	Module 6.X ZOOM recitation 1:00-2:20 PM
	10/11 Monday	Module 6.X quiz
	10/11 Monday	Module 7.X ZOOM recitation 1:00-2:20 PM
	10/11 Monday	Module 8.X published
	10/13 Wednesday	Module 7.X ZOOM recitation 1:00-2:20 PM
	10/13 Wednesday	Reading 3 published
	10/18 Monday	Module 7.X quiz
	10/18 Monday	Module 8.X ZOOM recitation 1:00-2:20 PM

	10/18 Monday	Module 9.X published
	10/20 Wednesday	Module 8.X ZOOM recitation 1:00-2:20 PM
	10/21 Thursday	Reading quiz 3
	10/25 Monday	Module 8.X quiz
	10/25 Monday	Module 9.X ZOOM recitation 1:00-2:20 PM
	10/25 Monday	Module 10.X published
	10/27 Wednesday	Module 9.X ZOOM recitation 1:00-2:20 PM
	11/1 Monday	Module 9.X quiz
	11/1 Monday	Module 10.X ZOOM recitation 1:00-2:20 PM
	11/1 Monday	Module 11.X published
	11/3 Wednesday	Module 10.X ZOOM recitation 1:00-2:20 PM
	11/3 Wednesday	Reading 4 published
	11/8 Monday	Module 10.X quiz
	11/8 Monday	Module 11.X ZOOM recitation 1:00-2:20 PM
	11/8 Monday	Module 12.X published
	11/10 Wednesday	Module 11.X ZOOM recitation 1:00-2:20 PM
	11/11 Thursday	Reading 4 quiz
	11/15 Monday	Module 11.X quiz
	11/15 Monday	Module 12.X ZOOM recitation 1:00-2:20 PM
	11/15 Monday	Module 13.X published
	11/17 Wednesday	Module 12.X ZOOM recitation 1:00-2:20 PM
	11/22 Monday	Module 12.X quiz
	11/22 Monday	Module 14.X published
	11/29 Monday	Module 13.X ZOOM recitation 1:00-2:20 PM
	12/1 Wednesday	Module 13.X ZOOM recitation 1:00-2:20 PM
	12/6 Monday	Module 13.X quiz
	12/6 Monday	Module 14.X ZOOM recitation 1:00-2:20 PM
	12/8 Wednesday	Module 14.X ZOOM recitation 1:00-2:20 PM
	12/13 Monday	Module 14.X quiz

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/>

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 / <http://www.scarletlisteners.com/>

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