

**COURSE NAME; NUMBER; SEMESTER; MEETING DAYS, TIMES, AND PLACE.**

Molecular Genetics

11:126:481 Fall 2016, Course Index No: 04470

Tuesday and Friday 12:35 PM to 1:55 PM

Auditorium Food Science Building

**CONTACT INFORMATION:**

Instructor: Thomas Leustek

Office Location: 221 Martin Hall

Phone: 908-451-3266 Email: [Leustek@sebs.rutgers.edu](mailto:Leustek@sebs.rutgers.edu)

Office Hours: By Arrangement, please email for an appointment

**COURSE WEBSITE, RESOURCES AND MATERIALS:**

- See Sakai for all course information and resources. If you are registered for MolGen you should have access to the MolGen Sakai site. Please email [leustek@aesop.rutgers.edu](mailto:leustek@aesop.rutgers.edu) if you cannot access the MolGen Sakai.

**COURSE DESCRIPTION:**

Molecular Genetics is a challenging lecture course that covers a range of basic topics 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 also covers 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 course delves extensively into the intricacies of bacterial virus (bacteriophage) molecular genetics and into eukaryotic chromosome structure. Molecular Genetics 11:126:481 is part of the undergraduate Curriculum in Biotechnology and is open to all students at Rutgers University. Prerequisites are Organic Chemistry and Genetics.

**LEARNING GOALS:**

After completing Molecular Genetics students will be able to:

1. Explain the significance of genomics and the –omics revolution to biomedical research and applications
2. Explain the methodology and principles behind genomic sequencing, interpretation, and analysis
3. Compare and contrast the anatomies of genomes from the taxonomic domains of life
4. Describe how genomes function (expression and heredity) using specific examples to illustrate general themes including:
  - a. how DNA is accessed by molecular complexes
  - b. how molecular complexes act on genomes
  - c. how RNA is produced from the genome and how it is acted upon by molecular complexes
  - d. how molecular complexes act to regulate genome activity
  - e. how molecular complexes mediate communication between cells

**ASSIGNMENTS/RESPONSIBILITIES & ASSESSMENT:**

EQUIPMENT- Book: Genomes 3 by TA Brown and a registered iClicker

GRADING- 4 common hourly exams (including a non-comprehensive exam on the final exam date) . The three highest exam grades will count toward your course grade and each is valued at 20% of the final grade (total=60% of course grade). 20% of the final grade will consist of 4 out-of-class assignments. The remaining 20% of the final grade will be based on class participation using the iClicker system.

**iCLICKER POLICY**- Class participation using the iClicker will begin on class day Friday September 9<sup>th</sup> . There will be a total of 23 class participation days, but only 20 days will count toward your grade; meaning that each participation day is valued at 1 point toward your final grade; and you have the opportunity to miss 3 days due to absence, forgotten iClicker, technical problem, or any other reason. Please do not ask for participation credit based on your presence in class without a working iClicker. You are graded for participating- not on correct responses.

**EXAM GRADING AND GRIEVANCE POLICY**- Although the best possible effort is made to grade exams accurately, mistakes may occur. Please review graded exams carefully and report errors in writing to Dr. Leustek by email. A photocopy of your exam will be consulted to make a judgment on the error and a response will be provided in writing by email. If you have questions or concerns about the quality of exam or quiz questions or grading please ask for clarification via email.

**\*\*Please DO NOT seek a response to a grading question during class or chance encounter\*\***

**RESCHEDULED EXAM POLICY**- Taking an exam at an alternate time is possible if prearranged with the instructor. Make-up exams are not provided. A missed exam will count as the dropped lowest exam grade.

**RESPONSIBILITY TO BE INFORMED**- Students are responsible to keep informed about all course matters including course policies, exam and due dates, accuracy of grading, that your grade has been properly recorded.

### 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 SCHEDULE:

Session	Date	Day	Month	Topic	Chapter
1	6	Tue	Sep	Genome, Transcriptome, Proteome, mutation	1
2	9	Fri		Studying DNA	2
3	13	Tue		Mapping genomes	3
4	16	Fri		“	3
5	20	Tue		Sequencing Genomes	4
6	23	Fri		“	4
7	27	Tue		<b>Exam 1 covers sessions 1, 2, 3, 4, 5, 6 (Chapt 1-4)</b>	
8	30	Fri		Understanding a Genome Sequence	5
9	4	Tue	Oct	“	5
10	7	Fri		Understanding How a Genome Functions	6
11	11	Tue		Eukaryotic Genomes	7
12	14	Fri		“	7
13	18	Tue		Prokaryotic and Organellar Genomes	8
14	21	Fri		Accessing the Genome	10
15	25	Tue		<b>Exam 2 sessions 8, 9, 10, 11, 12, 13 (Chapt 5-8)</b>	
16	28	Fri		Accessing the Genome	10
17	1	Tue	Nov	Assembly of the Transcription Complex	11

18	4	Fri		Class Canceled	
19	8	Tue		Synthesis and Processing of RNA	12
20	11	Fri		“	12
21	15	Tue		Synthesis and Processing of the Proteome	13
22	18	Fri		Exam 3 sessions 14, 16, 17, 18, 19, 20 (Chapt 10-12)	
23	23	Wed		Synthesis and Processing of the Proteome	13
24	29	Tue		Regulation of Genome Activity	14
25	2	Fri	Dec	“	14
26	6	Tue		“	14
27	9	Fri		Genome Replication	15
28	13	Tue		Genome Replication	15
29	22	Thu	Dec	Exam 4 sessions 21, 23, 24, 25, 26, 27, 28 (Chapt 13-15)	

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

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