

Genetics—01:447:380, Spring 2019  
Dr. Mai Soliman

**I) Contact Information and Schedule**

My Email: [solimanm1419@gmail.com](mailto:solimanm1419@gmail.com)

My Office: Center of Advanced Biotechnology and Medicine Room 224 Busch Campus

Lecture Schedule: ?

Face-To-Face/In My Office—?

**II) Important Note--**This course is not for Genetics majors. Genetics majors must take Genetic Analysis I and II. This class will not count toward the credits you need to accumulate for the degree in Genetics.

**III) Your Responsibilities**

Your responsibility this semester is to be self-reliant enough to use the resources you have available to you, rather than just reflexively email me with questions like “What’s covered on the next exam?” Please note that I do not do this in an effort to keep students from asking me questions. I do this because experience has taught me that some students still need help developing their attention to resources and self-reliance. Some students have still not developed the understanding that, in order to be a successful member of any professional workgroup, you must be able to receive a set of instructions once and understand what actions are expected of you. This rule is intended to help those who need help to be more thoughtful, attentive to instructions and self-reliant—all important qualities for success in any professional environment.

This also extends to the emails I send the class. I will send out both individual and group emails regularly. Therefore, it is your responsibility to either maintain your campus email account active, arrange for campus emails to be forwarded to an email address you check regularly, or have someone in the class who is aware that, when I send a group email, he/she needs to share it with you.

I consider these sorts of performance items indications of how mature you are, how well you organize yourself professionally, and how much attention you paid to your responsibility while you were a student in my class. This will strongly influence whether I feel you gave the class your best effort, and whether you are someone I could recommend for a job or admission to a higher education program. I will keep a record of incidents in which people ask me questions that have already been answered in the syllabus or in an email I sent out. If, at the end of the semester, I see you have asked me one or more questions over the course of the semester that I have already answered in the syllabus or in one of my emails, this will reduce the probability that I will be willing to give you any special consideration at the end of the semester if you are close to the next grade level, or agree to write you a letter of recommendation if you ask me for one later on.

*Free University Tutoring:* Please take advantage of this free university resource at the Rutgers Learning Center. You can get more information at <http://rlc.rutgers.edu>. The tutoring is drop-in group tutoring. It is free and no appointment is necessary during the scheduled hours.

#### **IV) Recitation Information**

##### A. Recitation Instructors

a. ?

##### B. Recitation Schedule Sec Room Day/Time

a. ?

##### C. Recitation Schedule

a.	Recitation 1	Nucleic Acids, Chromosomes And Genome
b.	Recitation 2	The Process Whereby Genes Make Proteins
c.	Recitation 3	Gene Regulation In Prokaryotes And Eukaryotes
d.	Recitation 4	DNA Mutation And Repair; Cytogenetics
e.	Recitation 5	Chromatin and Chromosomes
f.	Recitation 6	Principles Of Heredity; Pedigree Analysis For Single-Gene Disorders
g.	Recitation 7	Sex Determination And Sex-Linked Traits
h.	Recitation 8	Linkage Part 1
i.	Recitation 9	Multifactorial Disorders/Quantitative Genetics
j.	Recitation 10	Nonmendelian Inheritance
k.	Recitation 11	Biotechnology
l.	No Recitation	

#### **V) Course Description and Learning Objectives**

This course is intended to provide you with a thorough review of Genetics. This includes the terms, concepts, theories and technologies that are pertinent to Genetics, as well as some of the

ways in which we use genetic principles in research and medicine. Our level of analysis will range from molecular biology to population genetics, touching on many points in between. We will discuss genetics as it pertains to all life forms, but we will focus primarily on eukaryotic organisms.

## VI) Course Materials

Required Textbook: Genetics: A Conceptual Approach, 5<sup>th</sup> ed., by Benjamin A. Pierce ISBN 978-1-4641-0946-1 (Note—you can use an older edition, but the page numbers for the readings will be different, and some of the problems at the end of the chapters will have different numbers. You will also miss out on the changes made in the new edition, so check with someone who has a new edition to see what they are (they are listed in the textbook's frontmatter).

Note that it is not necessary to have access to the online resources that accompany the textbook. Many students will find these resources helpful, but I will not assign any readings or derive any assignments from these resources.

There is a solution manual available that provides answers to all the questions in the textbook. It is helpful, but not necessary. I will give you a set of suggested problems from the textbook chapters. The textbook provides answers to some of these problems. I will provide the answers to the questions the textbook does not provide answers for on the slides.

In addition, the PowerPoint files I will use for my lectures and the problem sets for recitations will be posted on the Resources page of the course's Sakai website. Many students find it useful to print the slides before lecture or have them open on a laptop, so they can take notes on them, and have pictures and notes together in one place.

## VII) Lecture Schedule (May change as needs arise)

Date	Topic	Reading
	■ Syllabus review	Ch 10
	■ Structure and function of Nucleic acids	Ch 13 pgs 358-360
	■ DNA Replication	Ch 11 pgs 314-318 Ch 12 pgs 325-346
	■ The Process Whereby Genes Make Proteins	Ch 13 pgs 360-375
	Transcription and translation	Ch 14 pgs 384-401
	RNA Processing	Ch 15
	■ Gene regulation in Prokaryotes	Ch 16
	■ Gene Regulation in Eukaryotes	Ch 17; Ch 21
	■ DNA mutation and Repair	Ch 14 pgs 402-405 Ch 18

■ Exam 1	
■ Chromatin and Chromosomes	Ch 11 pgs 299-308
■ Cytogenetics	Ch 8
■ Cell Cycle, Mitosis, Meiosis	Ch 2 pgs 17-36 Ch 12 pgs 346-349
■ Mendel's Laws and The Principles of Heredity	Ch 3
■ Pedigree Analysis For Single-Gene (Mendelian) Disorders and Traits	Ch 6 pgs 139-147
■ Sex Determination And Sex-Linked Traits And Disorders	Ch 4
■ Linkage Produces Non-Mendelian Phenotype Ratios And Is Used To Map Genes	Ch 7
■ Exam 2	
■ Multifactorial Traits And Disorders, Interaction Between Genetic And Nongenetic Factors, and Quantitative Genetics	Ch 24 Ch 3 pg 53
■ Other Mechanisms For Nonmendelian Inheritance	Ch 5; Ch 11 pgs 311-314
■ Population Genetics	Ch 25
■ Molecular Genetics and Biotechnology 1	Ch 19
■ Molecular Genetics and Biotechnology 2	
■ Genomics and Evolution	Ch 20 pgs 579-582, 589-602 Ch 11 pgs 308-309 Ch 8 pg 221
■ Final	

## VII) Grading Plan

**Exams:** Exams will include a variable combination of multiple-choice, true-false, matching, short answer, analytical problems and essay questions. Each exam will be worth 100 points and will last about 1.5 hours. A 15-minute break will follow the exams and then we will start the lecture. You will still be required to complete a recitation on days you have exams. Although this sounds like cruel and unusual punishment, with a genetics course meeting only 11 times (final on the 12<sup>th</sup> meeting) we need to take advantage of every minute.

**Recitation:** Recitation will take place during class, in the lecture hall. For each recitation session, a set of questions/problems will be posted on the course website. Students will be required to print out the problem set prior to coming to class. When recitation begins at 7pm students will split up into groups of 5 and begin working on the recitation problem set. The TA and myself will walk around the room and answer any questions you may have. After completing the recitation, you will return to your seat and I will project 1 or 2 questions just like the ones you worked on during recitation. You will work on this question(s) independently and it will be graded. You will not know in advance which questions from the problem set I will use as an assessment.

Each recitation can receive a total of 5 points for a total of 55 (11 recitations x 5 points each) points for the class. The TA or myself will be allowed to deduct points from your recitation grade for disruptive behavior or any other behavior we deem inappropriate.

**Warm-up Quiz:** I will start each lecture with a short warm-up quiz. This is for multiple reasons, 1) I want to ensure that you will arrive on time to lecture. We have a lot of material to cover in a short period of time and I need to make sure you guys are on task. Also, it's very disruptive to myself and other students when a student walks into the lecture hall mid-lecture. 2) I want to make sure that you're reviewing the material daily instead of studying all the material a day before the exam.

Each quiz will be worth 5 points, and will be added to your recitation grade for a total of 10 points possible (5 points for quiz, and 5 points for recitation) per lecture.

**Participation:** I think students learn much more, and retain the material much more effectively, if they take an active role in the class. In most of my classes, I require everyone to read the preparatory readings and come to class prepared to answer questions and participate in discussions. I call on people every day to speak in class. Students not only learn more when they come to class prepared, but many students learn valuable things when their classmates answer questions. Even answers that are incorrect help other students recognize the mistakes they, too, are making in thinking about the material.

Even more importantly, I think this it is essential that anyone who wants to go into any kind of rigorous biomedical science/health care career get as much practice as possible verbalizing their understanding of the course material. So often a student feels he/she knows a concept, but when asked to verbalize it, cannot phrase the description/explanation/argument properly. It is important for you to be able to phrase things properly, so you sound like you know what you are talking about if you are ever called upon to discuss these concepts in a job interview or a medical school/graduate school interview.

In-class participation will be worth a total of 50 points for class. If I call on you and you do not know the answer to the question, you can simply say "pass". But you will loss the opportunity to earn participation points. With the class meeting only 12 times, you will only be called on a handful of times so I encourage you to be prepared and offer an answer to the best of your ability.

**Genetics Writing Assignment:** This short, 2-page writing assignment will offer you the opportunity to do some research into a genetics topic that you find interesting and write a fact sheet about that topic. It is critical that this is a topic that you are interested in and want to learn more about. The best writing typically comes from passion about the topic so this will make my life much easier as a reader. Some ideas include, human genome project, cancer genetics, genetic engineering, genetics testing, gene therapy, patenting human genes, a specific genetic disorder, forensic tests, etc. Select a specific element of that topic for example, if I pick genetic testing I might want to explore a test done during pregnancy, how it's performed and why? Sometimes delving into the details of one topic is much more interesting and informative.

The TA and myself will grade this writing assignment and you will have the potential of earning 40 points.

**Appealing Grades:** You will have 1 week to appeal any grades, including recitation, quiz, exams, and papers. I personally don't like the idea of students lining up to beg for points so your appeal needs to be something significant otherwise I reserve the right to deduct points for you wasting my time.

### Grading overview

Exams	100 x 3 = 300 points
Recitation	10 x 11 = 110 points
In-Class participation	50 points
Writing assignment	40 points
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Total	500 points

### Grading Scale

A	90-100%	450-500
B+	85-89%	425-449
B	80-84%	400-424
C+	75-79%	375-399
C	70-74%	350-374
D	60-69%	300-349
F	<60%	300

## VIII) Other Administrative Issues

### A) Attendance

You are expected to attend every class unless you have a valid excuse. If you want an absence excused (I call on you in class), you must contact me on or before the day the class meets. **Note that I will require documentation for every absence you ask me to excuse. There will be no exceptions to this. Do not use the Rutgers Self-Reporting Absence Website to report your absences.** I do not read those emails; you must contact me yourself.

In all cases, all students are responsible for all material, assignments and announcements made in class, whether they were present in that class or not. It is the student's responsibility to keep abreast of any changes in exam dates, due dates for assignments, and changes in assigned course material implemented during his/her absence.

#### B) Academic Integrity Policy

Anything any student submits for a grade must reflect that student's own independent work.

The full Rutgers University Academic Integrity Policy can be found at

[http://academicintegrity.rutgers.edu/files/documents/AI\\_Policy\\_9\\_01\\_2011.pdf](http://academicintegrity.rutgers.edu/files/documents/AI_Policy_9_01_2011.pdf).

Violations include: cheating, fabrication, plagiarism, denying others access to information or material, and facilitating violations of academic integrity. All suspected violations of the policy will be reported to the Office of Student Conduct.

#### C) In-Class Behavior

Students are expected to conduct themselves with the appropriate scholarly and professional attitude in class. Failure to do so will result in points being deducted from your overall point total. Penalties will be decided on a case-by-case basis.

Cell phones should be turned Off before you get to class--not set on Silent--turned Off. The first violation of this policy will be forgiven, but any subsequent violations will reduce your grade one level on the grading scale.

Use of laptops during lecture is hard to avoid but please be an adult and avoid social media and other disruptive sites.

Come to class well rested and ready to party. It's a long lecture and I will embarrass you if you fall asleep. Bring water, coffee, gum and anything that you need to keep awake.

Please cover your mouth when you yawn in class. It is not only rude, but extremely unattractive.