

**Human Genetics—01:119:155, Spring 2018**  
**Online--Sakai Site Human Genetics 90 Sp18**

**I) Contact Information**

**My Email:** [michaelis@dls.rutgers.edu](mailto:michaelis@dls.rutgers.edu) (This is the best way to contact me)

**My Office:** B426 Nelson Biological Laboratories, Busch Campus

**My Office Phone:** 848-445-9628

**My Office Hours:**

**Online Through The Meetings Tool**—Email me and we can find a time to meet for a voice-to-voice chat.

**Face-To-Face In My Office**—Monday and Wednesday 4:00 – 6:00 pm

**II) Important Notes About Your Responsibilities**

Please read this entire document carefully. Because we will not spend several class periods per week face-to-face, when I could repeat instructions and remind people of the important deadlines, you often have only one chance to get the instructions I send out to you. **In an online course like this one, the student bears much more responsibility for making sure that the important information has not slipped through the cracks than in the traditional classroom setting. Each student is expected to understand all the details that are communicated below, and to follow the procedures outlined.**

**Please keep in mind that an online course is not a self-paced course.** In fact, it requires an extra measure of discipline to keep up with the schedule when you aren't assigned to be in a classroom at a particular time. The Course Schedule below illustrates the topics we will cover and the timeframe in which we will cover them. You can get ahead of the requirements and submit assignments early if you wish, but **no late homework or exam submissions will be accepted except under extraordinary circumstances beyond the student's control.** I will judge each situation on a case-by-case basis, and will only accept the most extraordinary circumstances as excuses for late submissions.

**Your first assignment** is to submit a statement asserting that you have read this syllabus, that you understand all the points in it, and that you agree to abide by the terms specified herein. All you need to do is read this syllabus and listen to the syllabus review podcast, go to the Assignments page of the course's website, click on the Syllabus Assignment, write "Syllabus OK" in the submission box, and submit the assignment. Please note that I will not actually read your submission; I will just check to see who has submitted anything and who has not. So if there is anything you need to communicate with me about, do not put it in with your syllabus assignment submission. Send me an email instead. **Please note that, as with all assignments, the submission window closes at 11:55:00 pm on the day the assignment is due (see Course Schedule below for due dates).** Also please note that, although the Syllabus Assignment is not graded, you will not be able to earn any points toward your grade through homework assignments or exams until you have submitted the Syllabus Assignment.

Your other important 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 their 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 send out both individual and group emails regularly, and I expect you to follow all the instructions in those emails. Therefore, it is your responsibility to either maintain your Sakai email account active, arrange for Sakai 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.

This also applies to any questions you have over the course of the semester regarding any of your graded assignments. If you have a question about a grade, you must address the issue with me within one week of the day the grade was put on the Sakai website.

There will be no consequences to your grade for failing to uphold these responsibilities, but 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. If, at the end of the semester, 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.

### III) Course Description and Learning Objectives

Human Genetics (01:119:155) is intended to enable the student to understand the means by which the principles of genetics (and several other biological sciences) underlie our development and health, and how the principles of these biological sciences are applied to identify individuals, track human migrations in the past, personalize our health care, develop new cures for diseases, and assist couples who have difficulty having children. We will cover material ranging from molecular biology to political debates. All the biological and biotechnical material is presented in a manner that assumes the student has no background in biology.



This course meets the **NS** (Areas of Inquiry; Natural Science) and **21C** (21<sup>st</sup> Century Challenges) Core Curriculum Learning Goals of the School of Arts and Sciences

### IV) Required Course Materials

#### A) For Course Content

There is no book necessary for this class. The lecture notes and any other readings I post on the Course Materials page of the Sakai site constitute all the required readings for this class. There is also a set of podcasts, each of which is a narrated PowerPoint presentation, just like I would use if we were in a face-to-face lecture.

Lecture notes are entitled “LECNOTES...”, while podcasts are entitled “...PCAST.” There will be one set of lecture notes and one podcast for each lecture unit, except as otherwise noted on the Course Materials page (All units have lecture notes, most have podcasts, but some units do not have podcasts). There will be an assortment of other readings for some lecture units. The

Course Schedule portion of the syllabus lists all the readings for each lecture unit, and all readings and podcasts for any given lecture unit are listed together in the Course Materials page of the Sakai site.

#### B) Hardware And Software Required

You'll need speakers and microphone (you can use a headset or just your computer's microphone and speakers) so you can participate in the Discussion/Review sessions. **When you attend a Discussion/Review session, you must be somewhere quiet, so we will not hear a lot of background noise from your environment if you want to speak to the group.**

You'll need Adobe Acrobat Reader downloaded on your computer so you can read the lecture notes that are in PDF format. You can download this for free from the Adobe website, <http://www.adobe.com>.

You'll need the Adobe Flash Player multimedia player—you can download this for free at <https://get.adobe.com/flashplayer/>

If you do not have them already, you may want to download either Google Chrome or the Mozilla Firefox web browser (optional but may be desirable). All online course management systems have odd quirks with certain browsers, and Internet Explorer has more quirks than Mozilla Firefox or Google Chrome. You can download these browsers free at their websites. Whatever browser you use, do a trial run to be sure you can do everything you need to do (ex. download course materials, upload assignments).

Please note that I do not know much about computers and computer systems. If you encounter problems with anything IT-related, contact the support group for the Sakai system at the number you see when you get into Sakai.

### V) The Means By Which You Will Access And Discuss The Course Material

#### A) Accessing The Course Material

The Course Materials page of the course's Sakai website contains the following types of files. All the files you need for any given lecture unit will be grouped together on the Course Materials page. Just click on the file you want in the Course Materials list, and the file should open.

1. Podcasts--I will provide you with a set of podcasts (narrated PowerPoint presentations), which are intended to present the course content in a manner that is similar to the way I would present the course material if we were in a face-to-face lecture. Each "PCAST" entry on the Course Materials page will either contain the podcast itself or an Internet URL that takes you to the recorded podcast. Students often find it useful to print the podcast slides, then have them in front of them while they listen to the podcast, so they can write down notes on the slides. This way, you have your words and pictures together in one place—makes a good study guide for exams.

2. Readings--For each lecture unit there will be a file that contain my lecture notes for that lecture unit (file name will begin with "LECNOTES"), and also possibly one or more other readings. All readings for any lecture unit will be grouped together on the Course Materials page of the Sakai site. The lecture notes cover the same material, but are usually more detailed than, their associated podcasts. **Please note that some readings are long and contain technical**

**material that may take you a little time to digest.** Manage your time responsibly. Stay ahead of your assignments' due dates. **Do not plan to do all the reading, thinking and answering questions for a given lecture unit on the day that assignment is due.**

## **B) Group Discussions—Forums And Discussion/Review Sessions**

You have three options for asking me questions and/or discussing the content material: You can email me, you can post your questions and comments in the Forums, or you can ask your question during the Discussion/Review sessions. You are always welcome to email me with questions, but it is often beneficial to your classmates for you to post your questions on the Forum or ask them during the Discussion/Review sessions, because then everyone who has the same question can benefit from my answer.

1. There will be a set of **Forums** posted on the Sakai website. A Forum is a public discussion board, where anyone can post questions and answers. I will monitor the Forums daily, and respond to posts when someone needs help with something. There will be a separate Forum for each lecture unit, plus one for general administrative issues and one for each exam. The questions and answers that get posted in the Forums will be available to everyone. The Forums are there purely for your benefit; posting to the Forums is not required of any student. You can get a little extra credit, though, by being especially helpful answering your classmates' questions that get posted on the Forum (if you get to them before I do).

2. **Discussion/Review Sessions**—Notice in the Course Schedule below that we will have Discussion/Review sessions before each exam. I can schedule other sessions besides these, too, if anyone wants me to; just send me an email and we'll set up a time. For these Discussion/Review sessions, I will use the Meetings tool on the Sakai website to conduct voice-to-voice meetings, during which we will discuss and review the course material, and you can ask questions just as if we were in a face-to-face class.

You are not required to attend these Discussion/Review sessions. I will record these sessions, and you can access the recordings through the Meetings tool. If you cannot attend the session, send me an email with any questions you want me to discuss during the review. Your grade will not be affected by whether or not you attend these Discussion/Review sessions, nor will it be affected by any questions you ask or answers you give during the sessions. These sessions are purely for your benefit; many students will find that these discussion sessions help them understand some of the more complex biological and biotechnological material.

At this time these sessions' times are TBA. If nobody shows up for a scheduled session, or sends me questions by email, that is not a problem. If that happens I will not give a lecture-type review—that would only replicate the podcasts you already have. I'll just wait a few minutes, then close the meeting and send an email out informing everyone that there will be no recording for that session.

### To Get Into The Online Meeting Using The Meetings Tool

Click on the Meetings tool on the Sakai site. You will see a list of the meetings that are available. Click on the meeting you want. On the next page, where it says Status, click on Join Meeting. If you are asked to choose between having a microphone versus listen only, choose listen only (otherwise your microphone will put feedback into our audio). If you need to speak, I can activate your microphone.

When you first get into the meeting, run whatever audio tests the program offers, to be sure your speakers and microphone are working properly.

Once you are in the meeting, text questions into the chat window at bottom right.

#### To Access The Recording

Click on the Meetings tool on the Sakai site. You will see a list of the meetings that are available. Click on the meeting you want. On the next page, where it says Recordings, click on the recording.

Alternatively, click on the Meetings tool on the Sakai site. You will see a Meetings tab and a Recordings tab at the top.

Click on the Recordings tab, which will give you a list of the recordings that are available. Click on the desired one.

#### C) Private Conversations

Use the email address at the beginning of the syllabus for any private communications. While you are welcome to email me, if you have a question about the course material or administrative issues related to the class in general, it is better to post your question in the appropriate Forum. Very often others have the same question you do, and other students will benefit from the exchange. I get email alerts whenever anyone posts something on the Forum, so I respond to Forum posts as quickly as I respond to regular emails.

### VI) The Means By Which You Will Demonstrate Your Understanding Of The Material (The Course Schedule below gives you the official deadlines for all assignments, including exams.)

#### A) Homework Assignments

Each set of lecture notes contains a set of homework questions at the end. Your homework assignments involve answering the homework questions from each set of lecture notes. All your homework assignments will be posted in the Assignments tool on the course's Sakai website. The assignments are listed in the righthand column of the Course Schedule below. When I ask a question that requires an essay-type answer, please give me a complete, well-thought-out answer, written in complete sentences, like an essay question from an exam.

Assignments are due by 11:55:00 pm on the day that is listed in the Course Schedule below. Please note that no late submissions will be accepted except under extraordinary circumstances. If you try to submit anything after the deadline, you will find that the link has disappeared. You will have to submit it to me by email.

**Important Procedural Note--** Please submit your homework assignments by writing, or cutting and pasting, your submission into the assignment window's submission box. Please do not attach your answers as a separate file. In addition, please **do not submit your answers as a formatted, numbered list**. Number each answer, but do it yourself, rather than use the formatting tools to make a numbered list for you. If you use a formatting tool to make a numbered list, it interferes with my effort to give you feedback on your answers.

Please note that the Sakai website tells you when you have successfully submitted an assignment. It is the responsibility of the students to be sure that their assignments are received by the Sakai website.

## B) The First Three Exams Are “Open-Book” Exams; The Final Exam Is In Person

The exams will be posted in the Tests And Quizzes tool of the Sakai website.

The first three exams are “open-book” exam. The exam will be posted in the Tests And Quizzes tool approximately 48 hours before your answers are due. You can take the exam any time you want to before the submission deadline, but note that you will be given a time limit. You can only open the exam once, and once you open the exam, you will have a specified amount of time in which to submit your answers.

I strongly advise you to be well prepared for the open-book exams, just as they would be for an in-class exam, because the time limit will not allow an unprepared student to look up all the answers necessary to perform well on the exam, plus write a completely detailed answer to the essay question(s) that will be on the exam.

**The final exam will not be open-book.** The final exam will not be cumulative, but I will expect you to be able to apply the foundational biological principles we discuss in the earlier lecture units to the topics we discuss in the later lecture units. The time and place of the final exam are given in the Course Schedule below. Note that **you must show up in person to take the final exam (the School of Arts and Sciences requires this). You must present your RUID card or you will not be allowed to take the exam. There will be no exceptions to this.**

**\*\*\*Please check very soon to be sure you do not have a time conflict with our final exam. Also note that the university may have put an erroneous day and time for the final exam on WebReg. The day and time that you see in the Course Schedule below is the official day and time of the final exam.\*\*\***

## C) Very Important—Read This Carefully

Please note that, in a situation like this, where you are allowed to take "open book" exams and I have provided you with my lecture notes, you must make an extra effort to **use your own words when you write the answers to homework questions and the exams' essay questions.** Copying from my lecture notes, the PowerPoints or any other source as an answer to a study question or exam question, **even if you quote the source,** is unacceptable. **You must find your own way to word things.** Failure to do so is plagiarism--a very serious violation of academic integrity. **The potential consequences include failing the course.**

## VII) Course Schedule (Note—This may change as needs arise)

<u>Date*</u>	<u>Lecture Topic And Assignment Title</u>	<u>Relevant Readings, Podcasts, etc</u>
Jan 17	Confirm Syllabus SYLLABUS ASSIGNMENT	Syllabus And Syllabus Review Podcast
<b>FIRST SOME BASIC PRINCIPLES, AND SOME USEFUL LINKS</b>		
Jan 21	DNA, Genes And Chromosomes DNA GENES CHROMOSOMES ASSIGNMENT	DNA, Genes And Chromosomes

Jan 25	Sexual Reproduction And The Inheritance Of Parental Gene Alleles REPRODUCTION AND INHERITANCE ASSIGNMENT	Sexual Reproduction And Inheritance
Jan 29	A Primer On DNA Testing (with links to many genetic testing companies) DNA TESTING ASSIGNMENT	Primer On Genetic Testing, pg 1-8, 11-12, 19-20; Types Of Genetic Tests
	Optional Lab Exercise--Virtual DNA Extraction Lab/Strawberry DNA Extraction	

### **DNA TESTING IN FORENSICS AND ANTHROPOLOGY**

Feb 2	Forensic Testing—Methods And Interpretation FORENSIC TESTING ASSIGNMENT	Forensic DNA Testing Methods PCR Video
Feb 6	DNA Testing For Anthropology Research And Ancestry Testing ANTHROPOLOGY AND ANCESTRY ASSIGNMENT	Primer On Genetic Testing, pg 25-27; DNA In Anthropology And Ancestry
Feb 9	Ethical, Legal And Social Issues In Forensic And Ancestry Testing ELSI FORENSIC ANTHROPOLOGY TESTING ASSIGNMENT	ELSI Issues Forensic And Ancestry DNA Testing
TBA	Discussion/Review Session	Prepare To Discuss Lecture Material From Previous Units
Feb 13 Website)	Exam 1 (Open-Book, Through The Tests And Quizzes Tool On The Sakai	

### **GENES AND DEVELOPMENT**

Feb 17	The Process Whereby Your Genes Make Your Proteins GENES TO PROTEINS ASSIGNMENT	From Genes To Proteins
Feb 21	Epigenetics And The Regulation Of Gene Activity EPIGENETICS ASSIGNMENT	Epigenetics
Feb 25	Genes And Development GENES AND DEVELOPMENT ASSIGNMENT	Genes And Development

TBA Discussion/Review Session Prepare To Discuss Lecture Material From Previous Units

Mar 9 EXAM 2 (Open-Book, Through The Tests And Quizzes Tool On The Sakai Website)

Mar 10-18 Spring Break

**GENETICS, HEALTH AND PERSONALIZED MEDICINE**

Mar 22 Genetic And Epigenetic Mutations Genetic And Epigenetic Mutations  
GENETIC EPIGENETIC MUTATIONS  
ASSIGNMENT

Mar 26 Cytogenetics-- Numerical And Structural Cytogenetics  
Chromosome Disorders  
CYTOGENETICS ASSIGNMENT

Mar 30 Single-Gene Disorders And Patterns Of Single-Gene Disorders  
Inheritance In Families  
SINGLE GENE DISORDERS ASSIGNMENT

Apr 3 Variability In The Human DNA Sequence, Primer On DNA Testing, pg 15-16;  
Multifactorial Diseases And Personalized Human Variability And  
Medicine Personalized Medicine  
MULTIFACTORIAL DISEASES  
ASSIGNMENT

Apr 7 Other Forms Of Nonmendelian Inheritance Nonmendelian Inheritance  
NONMENDELIAN INHERITANCE  
ASSIGNMENT

Apr 11 The Human Microbiome And Nutrigenics Nutrigenetics  
NUTRIGENETICS ASSIGNMENT

Apr 15 Ethical, Legal And Social Issues In Primer On Genetic Testing, pg 9-10,  
Medical And Personal Genetic Testing 13-14, 18, 21-23;  
ELSI MEDICAL AND PERSONAL ELSI Issues Medical And Personal  
TESTING ASSIGNMENT Genetic Testing;  
Privacy Issues In Genetic Testing;  
Family Physicians Concerned About  
Direct To Consumer Testing

TBA Discussion/Review Session Prepare To Discuss Lecture Material From Previous Units

Apr 19 EXAM 3 (Open-Book, Through The Tests And Quizzes Tool On The Sakai Website)

**APPLYING GENETIC/GENOMIC PRINCIPLES TO DEVELOP MEDICAL TREATMENTS AND ASSIST INFERTILE COUPLES**

Apr 23 Stem Cell Therapy And Gene Therapy Stem Cell Therapy Gene Therapy  
STEM CELL THERAPY GENE  
THERAPY ASSIGNMENT

Apr 27 Assisted Reproductive Technologies Assisted Reproductive Technologies  
ASSISTED REPRODUCTIVE  
TECHNOLOGIES ASSIGNMENT

Apr 30 Ethical, Legal And Social Issues In ELSI Issues Stem Cells, Gene  
Stem Cell Therapy, Gene Therapy And Therapy And ARTs  
Assisted Reproductive Technologies  
ELSI STEM CELLS ARTs ASSIGNMENT

TBA Discussion/Review Session Prepare To Discuss Lecture Material From Previous Units

May 3 EXAM 4 (Not open-book, not cumulative, through the Tests And Quizzes tool on the Sakai Website—a computer will be provided)  
**IN PERSON ON CAMPUS 11:00 – 2:00 pm B127 Nelson Biolabs Busch Campus**  
**YOU MUST BRING YOUR RUID TO THE FINAL EXAM**

\*All homework assignments are due by 11:55 pm on the day indicated. The submission window will close as soon as the clock turns 11:55:00 pm.

**VIII) Grading Plan**

Exams (75 points each)	300 points
<u>Homework Questions (21 sets*, 10 points each)</u>	<u>210 points</u>
Total	510 points

\* The syllabus assignment will not be graded

**Grading Scale:**

A	90-100%	459-510 points
B+	85-89%	434-458 points
B	80-84%	408-433 points
C+	75-79%	383-407 points
C	70-74%	357-382 points
D	60-69%	306-356 points

F < 60% < 306 points

**Exams:** Exams will be administered through the Tests And Quizzes tool on the Sakai website. Exams will include a variable combination of multiple-choice, true-false, matching, short answer, analytical or numerical problems and essay questions. Exams 1, 2 and 3 are “open-book” exams; you can use the lecture notes, PowerPoint slides, or any other resources you want to help you. You will only have a limited time to complete the exam, however. Once I post the exam (approx. 48 hours before answers are due), you can take the exam any time you want to before the submission deadline, but you can only open the exam once, and once you open the exam, you will have a specified amount of time in which to submit your answers. **I advise you to get as well prepared for one of these exams as you would for an exam in a face-to-face class** before you open the exam. The time limit will not allow an unprepared student to look up all the answers, as well as write a proper answer to the essay question(s).

Exam 4 will be much like the other three exams in size and content, but **will NOT be “open-book.” You are required to come to campus to take the final exam (the School of Arts and Sciences requires this). Be sure to bring your RUID with you when you come to take the final exam. If you do not have your RUID, or some other form of photo ID, you will not be allowed to take the exam.**

Students are allowed make-up exams only in response to extremely unusual and unpreventable circumstances. You will be required to submit documentation to verify the reason for missing the exam. Cases will be judged on an individual basis.

Please note that, when you take an open-book test, it is very important that you make a special effort to **always use your own words when answering questions** on the exam. Copying from my lecture notes, the PowerPoints or any other source, **even if you quote the source**, is unacceptable. **You must find your own way to word things.** Failure to do so is plagiarism--a very serious violation of academic integrity. **The potential consequences include failing the course.**

**Homework Questions:** For each lecture unit your homework assignment will be to answer all the homework questions that are at the back of that set of lecture notes. When I ask a question that requires an essay-type answer, please give me a complete, well-thought-out answer, written in complete sentences, like an essay question from an exam. Make your writing concise and to the point. Don't try to write everything you know on that topic. Just completely answer the specific question I ask.

Please note that, in a situation like this where you have access to the PowerPoint slides and lecture notes to help prepare your homework submissions, it is very important that you make a special effort to **always use your own words when answering questions** on the homework assignments. Copying from my lecture notes, the PowerPoints or any other source as an answer to a homework question, **even if you quote the source**, is unacceptable. **You must find your own way to word things.** Failure to do so is plagiarism--a very serious violation of academic integrity. **The potential consequences include failing the course.**

Also, **please do not submit your answers as a formatted, numbered list.** Number the answers, but do it yourself, not by using the formatting tool. Submitting your answers as a numbered list makes it hard for me to give you feedback on your answers.

## **IX) Other Administrative Issues**

## Academic Integrity Policy

Anything any student submits for a grade must reflect that student's own independent work. Violations include not only copying or otherwise unethically obtaining information for your own benefit, but also giving answers to others or allowing others to copy your work. All violations will be dealt with according to the Rutgers University Academic Integrity Policy, and those who are found violating the Policy can expect severe punishments. 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).

Keep in mind that in a situation like this, where you have open-book tests and access to the PowerPoint slides and lecture notes to help prepare your homework submissions, it is very important that you make a special effort to **always use your own words when answering questions** on the exams or the homework assignments. Copying from my lecture notes, the PowerPoints or any other source as an answer to a homework question or exam question, **even if you quote the source**, is unacceptable. **You must find your own way to word things**. Failure to do so is plagiarism--a very serious violation of academic integrity. **The potential consequences include failing the course.**