

GENETICS – FALL 2019
BIOL 310[REMOVED] HONORS [REMOVED]
[REMOVED]

INSTRUCTOR: Fernando Tenjo, Ph.D.

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Hours: [Removed]

TEXTBOOK

- Pierce, Benjamin *Genetics Essentials* 4th edition (Required).
- Launchpad access code (comes with new textbook or can be purchased separately) (Required)

PREREQUISITES:

BIOL and **BIOZ 151** and BIOL and **BIOZ 152**, each with a minimum grade of C;
and **BIOL 200**, **MATH 200**, **MATH 201**, **STAT 210**, **STAT 212**, **STAT 314** or
satisfactory score on the VCU Mathematics Placement Test

OBJECTIVE

Welcome to Genetics, the science of heredity!! Genetics is less than 160 years old, but its fast pace of accomplishments has been astonishing. Genetics is a science that studies biological information and how all-living organisms pass this information on to their progeny and how they use it in their lifetime. The development of genetic concepts and technologies and their applications have a profound impact on agriculture, medicine and the society in general. Thus, the study of Genetics, from the Mendel's laws of transmission of the genetic material to the detailed study of gene function and genomes, are key and essential for any student in the Biological Sciences.

We will explore Mendel's work, evolution and population genetics. We also touch a bit of molecular genetics. I hope I can accomplish most of this broad objective through the semester. Enjoy the class!!

SPECIFIC OBJECTIVES:

At the end of the class I expect that you will

1. Correlate meiosis and Mitosis with Mendel principles.
2. Make predictions of results for genetics crosses using Mendel principles and probability concepts.
3. Use Mendel principles to explain different forms of inheritance: codominance, epistasis, and quantitative traits.
4. Describe the structure and function of nucleic acids.
5. Understand control of gene expression and its role in different biological processes.
6. Explain the inheritance of traits using classical and molecular genetic concepts.
7. Describe the role of genes in the evolution of organisms.
8. Understand the importance of genetics in today's society and be a critical reader of genetic research news.

GRADING

The final course grading will be determined using a ten-point scale and will depend on your overall performance in all the tests, quizzes, Launchpad activities and class participation and attendance. Letter grades will be assigned at the end of the course. Please be aware that I do not curve any exam or final grades. Also, I do not “round” grades. Only changes that are due to mathematical error will be granted.

The grade will be computed using the following criteria:

Exams	60%
(Exam 1:20%; Exam 2: 20%; Exam 3: 20%)	
Quiz Average	20%
Poster	7.5%
Blog	7.5%
Class work, Homework	5%

Final Grade Scale

90-100%=A	70-79% =C	Below 60% =F
80-89% =B	60-69% =D	

Grades will be posted in Blackboard and you have one week to check them and get back to me with any question or concern about them. **No grades will be changed after the one-week period.**

CLASS PARTICIPATION AND ATTENDANCE:

Attendance is expected at all classes. Your class participation grade is determined by your work in class activities and by your contributions to class discussions and group work.

If you miss class, it is your responsibility to obtain notes and material covered in class from another student. If you are late and have a valid excuse please come and see me in case you miss points for participation.

If you know that you will be late, or that you need to leave early, please inform me of the circumstances in advance

BLACKBOARD – [HTTP://BLACKBOARD.VCU.EDU](http://blackboard.vcu.edu)

You can find information for our course on blackboard. I will post announcements, the syllabus, handouts, exam keys, grades, etc. You will need your VCU e-mail address and password to log in. Blackboard will give you instructions if this is your first time using it. You need to register your CPS through Blackboard

EMAIL AND COMMUNICATION

I will use your vcu.edu account to send messages related to material or announcements of the class. I will not answer emails that do not come from your vcu.edu account. In the email include your class in the Subject area, please be courteous and concise. I will reply email during my office hours; messages sent over the weekends will be reply on Monday. Please do not expect reply to messages posted after my office hours.

EXAMS

You will have three examinations given during scheduled class periods. If you miss one exam, you have 24 hours to take it, however this is under my consideration and depending of the circumstances. Be aware that the exam can be harder than the exam given in class. If you have a medical excuse you have 48 hours to take the exam, documentation needs to be provided.

Please make sure that you know exactly when the tests are, I will not give any test before or after the date posted in the Course Schedule under any circumstance.

QUIZZES

We will have quizzes during lectures. Five quizzes will worth 4% each of your final grade. The dates for these quizzes are in the class schedule. Quizzes are intended to make you aware of what you do not know; therefore they will help you to prepare the tests. **There will be unannounced quizzes through the semester and they will count as part of the class participation grade.**

ASSIGNMENTS FOR MATERIAL REVIEW

We will use Launchpad, an interactive resource from the publisher for assignments and review questions during the course. The access code is included with a new book or you can buy an access code from the publisher. I will give more information during the first class and registration instructions.

BLOGS AND POSTERS

Blogs:

Many advances or issues related to Genetics are discussed frequently in the news that may have an impact or are relevant to our lives. For this activity you will look for an article in newspapers, magazines, on-line news and describe the research and importance of the topic. You will work with a classmate in this activity and your group needs to generate a blog with your research and more important with your ideas about your paper. To support your views the group needs to find at least three more sources of information. More details about this activity will be given through the semester. Individually, you will make comments on two blogs posted by your classmates and you will need to read and support your comments by finding a paper in the literature

Posters:

At the end of the semester each group will present a poster on your blog topic. **This poster must be an original work**, you cannot use a poster from a previous class. Your classmates and the instructor will evaluate posters. Poster grades will be determined using the average of student-generated evaluations and the instructor's evaluation. More information will be provided regarding requirements and format. You will have 10 minutes to present the topic, please prepare it for that time.

Important Information from the Provost Office

Students should visit <http://go.vcu.edu/syllabus> and review all syllabus statement information. The full university syllabus statement includes information on safety, registration, the VCU Honor Code, student conduct, withdrawal and more.

IMPORTANT DATES

<u>Date</u>	<u>Event or Notice</u>
Week 2 [Removed]	QUIZ 1, [Removed] [Removed]Last day to provide intent to observe religious holidays
Week 3 [Removed]	QUIZ 2, [Removed]
Week 4 [Removed]	TEST# 1, [Removed] (Material covered until [Removed])
Week 5 [Removed]	[Removed]Blog Update 1 due
Week 6 [Removed]	QUIZ 3, [Removed]
Week 8 [Removed]	TEST # 2 [Removed] (Material covered until [Removed])
Week 9 th [Removed]	[Removed]Blog update due
Week 10 [Removed]	QUIZ 4, [Removed]
Week 11 [Removed]	[Removed]Last day to withdraw from class with a W mark
Week 12 [Removed]	QUIZ 5 [Removed]
Week 13 [Removed]	TEST #3 [Removed] (material covered until [Removed])
Week 14 [Removed]	Last Blog Update, [Removed]
Week 16 [Removed]	[Removed] Poster Presentations [Removed] Poster Presentations [Removed] Poster Presentations

TENTATIVE SCHEDULE OF LECTURES

<u>Date</u>	<u>Topic</u>	<u>Chapters</u>
Week 1	Welcome to Class	
[Removed]	Introduction. Mitosis and Meiosis	1, 2
Week 2	Mendelian Genetics: Segregation and independent assortment	
[Removed]	QUIZ 1, [Removed]	3.1, 3.2, 3.3
[Removed]	Last day to provide advance written notification to instructors of intent to observe religious holidays	
Week 3	Testing Hypothesis	3.4
[Removed]	Pedigree Analysis, applications	3.5
[Removed]	Modification of Mendelian Ratios I	4.1-4.2
Week 4	QUIZ 2, [Removed]	
[Removed]	Modification of Mendelian Ratios I	4.3
[Removed]	TEST# 1, [Removed] (Material covered until [Removed])	
Week 5	Modification of Mendelian Ratios II	
[Removed]	[Removed]Blog Update 1 due	4.4-4.6
Week 6	Linkage, recombination, Mapping	
[Removed]	QUIZ 3 [Removed]	5.1-5.2
Week 7	Linkage, recombination, Mapping	5.3
[Removed]	Chromosome variations	7
Week 8	Chromosome variations	7
[Removed]		
Week 9	DNA: structure and replication	
[Removed]	TEST # 2 [Removed] (Material covered until [Removed])	8
[Removed]	DNA replication	9
[Removed]	Transcription	10
[Removed]	[Removed]	
Week 10	Translation	11
[Removed]	Control of Gene Expression	12
[Removed]	QUIZ 4, [Removed]	
Week 11	Mutations and DNA repair	
[Removed]	Last day to withdraw from class with a W mark	13
Week 12	Cancer Genetics	15
[Removed]	Population and Evolutionary Genetics	17
[Removed]	[Removed]QUIZ 5	
Week 13	Population and Evolutionary Genetics	
[Removed]	TEST #3 [Removed] (material covered until [Removed])	17
Week 14	Introduction to Biotechnology and Genomics	
[Removed]	[Removed]Blog Update 3 due	14
[Removed]		
Week 16	THANKSGIVING NO CLASS	
[Removed]	Poster Presentations	