

**Syllabus: PCB 3063 Genetics; Term: Fall 2016**  
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**Objective:** The objective is to expand your basic knowledge and understanding of genetics. This course will cover critical thinking skills, the basic principles DNA replication, recombination, chromosomal variations, heredity and population genetics by introducing concepts from viral, prokaryotic and eukaryotic model systems.

**WHY should YOU care about learning genetics?** Your DNA defines what you look like, what your children will inherit (genetically) from you (...they can argue later over your will!!). It defines the food you eat, what colored flowers you see, **EVERYTHING is based in genetics!!!** Those basic mechanisms apply to **ALL** organisms, whether a bacterium or an elephant! **Learning how these mechanisms normally work and the consequences when they do not work correctly**, are the basis for medicine, genetic research, drug development, and on a grander scale, lead to speciation and evolution. At a **personal** level, genetics and genetic mutations will determine your health, whether you will develop cancer, can fight off a pathogen or live to be 105 years old. It will determine the predisposition of your children to genetic diseases, abnormalities and their future health. The interactions and controls at the DNA, RNA and protein level all are relevant to your every day life and future generations.

**The goal is to develop a learning community within the class.** Therefore, more emphasis will be placed on the **individual student's responsibility to read the material, watch the mini-lectures before coming to class, do the homework assignments, REVIEW** basic concepts that you have been taught previously and **UNDERSTAND** them **ON YOUR OWN**. These will be discussed in class and applied in an active learning setting so please come prepared to support the group learning. **ALL basic concepts assigned for you to study on your own are also EXAM material so make sure you review and understand them!!!** Less lecture time will be used to review concepts that you have learned in previous classes so more active learning can take place in the classroom and the latest information can be presented. **Pre-recorded lectures** will be posted that will also cover the information that **you will need to know for the exams and are EXAM material**; therefore, you should also watch them before coming to class so they will support your active learning work in class. **PREPARE for daily quizzes at the beginning of each class over the material you should have read or mini-lectures you should have watched. These quizzes are similar questions and format that you will see on the exams!**

This class will be presented as modules of information. Pre- and post- self-assessments will be taken at the beginning and end of each module. The pre-assessments will be part of the attendance grade; **the post-assessments will be graded** and be part of your participation grade. **Pop quizzes can be given at any time during any lecture and will count toward your attendance grade.**

**BOOK and active learning:**

BOOK: Genetics, a Conceptual approach by Benjamin Pierce, 5<sup>th</sup> edition, ISBN-13-978-1-4641-0946-1; (4<sup>th</sup> edition is probably OK). **The text book is REQUIRED. You will be responsible for reading the material assigned before class in order to participate in the active learning sessions. There will be quizzes over the required reading book chapters that will be part of your participation grade.** The textbook should be considered your primary reference book **but there will be additional REQUIRED READINGS posted on Blackboard. The REQUIRED reading posted can also be on the exam so make sure you understand the general concepts of what you are reading.** In addition, a supplementary reading folder will be posted that will help you understand the concepts and it is highly recommended you read those as well.

**The information you will need for tests will come from the in class and posted mini-lecture, your book, active learning materials or other required readings.**

**REQUIRED:** You will be required to do homework as it is assigned/posted. In addition, all active learning sessions IN CLASS are required and CANNOT BE MADE UP AFTER CLASS! So it is imperative you be in class to participate. These will be both individual and team learning activities.

**Homework and active learning assignments will be part of the 40% participation grade. NO LATE ASSIGNMENTS will be graded.** The purpose of these assignments is to improve your genetic knowledge and awareness.

**EXAMS:** You will have three in-semester exams and one mandatory FINAL exam. All three in-semester exams WILL COUNT!!! NO MAKE UP EXAMS are given. If your final exam grade is higher than the lowest in-semester exam, I will substitute the higher grade before averaging and weighting the in-semester grades when calculating your overall final grade for the class.

**GOAL:** To teach critical thinking using a conceptual approach to learning. Emphasis will not be based on memorization but teaching the student to tie the overall genetic concepts and detailed facts together as they are intimately related to each other. **NOTE: NOT ALL material will be covered in every chapter. Lecture material may come from multiple chapters. So LOOK at the topics to be covered and plan your reading/studying accordingly! IF you are NOT using the 5<sup>th</sup> edition, the chapter numbers may vary with older editions. LOOK at the topic being covered and find that section in your book and read it.**

**TENTATIVE Syllabus/UPDATES may occur throughout the semester.**

Since this semester will integrate active learning into the class, this syllabus is tentative as far as the topics we will cover on any specific date; however, the EXAM DATES ARE FIXED. If we haven't covered everything listed in the syllabus for that module before the exam date, the exam material will be modified to cover only what we have covered in class. This will be announced in class. Any major changes to the syllabus during the semester will be posted on Blackboard.

**TENTATIVE SYLLABUS (subject to change)**

Week of: Dates	General Subject Area and Topics	Assigned reading Chapters:
Week 1: Aug 23-25	Syllabus, grading, etc.; <i>Module I: REVIEW:</i> introduction to genetics; <b>Active learning module: CRITICAL THINKING! WHAT IS IT? HOW DO YOU USE IT?</b>	READ CHAPTER 23.1-2.23.5; Chapter 1.1, 1.3 <b>review</b> of cell biology & structure <b>Homework #1 and #2 assigned</b>
	Review: Cell cycle, cell structure, <b>mitosis only</b> (mini-lectures on line)	Chapter 2 (sections 2.1 -2.2)
Week 2: Aug 30-Sept 1	<i>Team assignments</i> <i>Module II: DNA: a review;</i> genetic code, chromosomes (mini-lectures online)	Chap 8 (8.1-4); 11.1-2 <b>Homework #2 due by class time</b>
	<b>CASE STUDY #1: READ Baby Jason and be ready to discuss &amp; answer questions in class</b>	Please complete the survey sent from <a href="http://salgsite.org/">http://salgsite.org/</a>
Week 3: Sept 6-8	DNA, DNA replication; DNA repair mechanisms (mini-lectures online)	Chap 10 (all), Chap 12 (12.1-12.4); Chap 18.5; <b>Homework #3 due by noon, Sept 10th</b>
Week 4: Sept 13-15	<i>Putting the Pieces together, active learning</i> <b>National Assessment (15<sup>th</sup>)</b>	Please complete the survey sent from <a href="http://salgsite.org/">http://salgsite.org/</a> <b>DUE by 15 SEPT.</b>
Week 5: Sept 20 <b>Sept 22th</b>	<i>Finish up discussions/ questions about exam?</i> <b>Exam 1: covers Module I &amp; II including required reading articles</b>	<b>Required reading articles; don't forget to review for the exam! There will be 1-2 questions from the readings</b>

Week of: Dates	General Subject Area and Topics	Assigned reading Chapters:
	<b>Module III: RNA, Proteins, Expression</b>	
Week 6: Sept 27-29	RNA, transcription (YOU ARE EXPECTED TO REVIEW THESE CONCEPTS ON YOUR OWN!!) Mini-lectures posted	Read all of Chapters 13 (Transcription), 14 (RNA molecules and processing),
	<b>BROCHURE ASSIGNMENT</b>	
Week 7: Oct 4-6	<b>Active learning</b> ; Translation, proteins (YOU ARE EXPECTED TO REVIEW THESE CONCEPTS ON YOUR OWN!!)	Chapter 15 (Genetic code and translation)
Week 8: Oct 11-13	Gene Expression, prokaryotes	Chap 16 (all); review Chapter 14 (RNAi, etc.)
	Gene Expression, eukaryotes	Chapter 17 (all)
Week 9: Oct 18-20	Mutation and gene repair; <b>Active learning</b>	Chapter 18 (all); review Chapter 23
<b>Oct 20th</b>	<b>Exam 2: Module III (RNA, transcription, translation, pre-mRNA processing)</b>	<b>including required readings</b>
	<b>Module IV: Gene expression, Meiosis, Transmission genetics</b>	
Week 10: Oct 25-27	Gene Expression, prokaryotes; <b>work on draft brochure in class on 29<sup>th</sup>; bring your laptops and your part of the research to class that day.</b>	Chap 16 (all); review Chapter 14 (RNAi, etc.)
	Gene Expression, eukaryotes	Chapter 17 (all)
Week 11: Nov 1-3	Finish up gene expression; review Mutation and gene repair;	Chapter 18 (all); review Chapter 23
Week 12: Nov 8-10	Mendelian genetics; Punnett Squares; pedigrees (YOU ARE EXPECTED TO REVIEW THESE CONCEPTS ON YOUR OWN!!) <b>BROCHURE DUE Nov 10<sup>th</sup> in class; bring one printed copy for me to review!</b>	Chapter 2 (meiosis); Chap 3 (all) Chapters 4, 5 and 6 (all)
	Chi Square problems; <b>active learning</b>	
Week 13: Nov 15-17	Extension of Mendelian genetics; Pedigrees; <b>if time, populations genetics intro</b>	Chapters 4, 5 and 6 (all); Chapter 25 (all);
<b>Nov 17<sup>h</sup></b>	<b>Third exam: Module IV</b>	
Week 14: Nov 22	<b>Brochure presentations</b>	
<b>Nov 24</b>	<b>Thanksgiving, no class!!</b>	
Week 15: Nov 29-Dec 1	<b>Brochure presentations; review for final?</b>	
<b>Week 16:</b>	<b>FINAL EXAM: Mandatory!</b>	<b>12/6/2015 1200(noon) to 2pm; NOTE TIME CHANGE!!</b>

This will be a Web-assisted course using **FIU's Blackboard interface**. Various materials will be posted throughout the semester. Quizzes will be given at the beginning of any lecture class to insure (a) you have read the materials assigned and (b) to take attendance. Other reading assignments and homework will be given periodically and will count toward the participation grade.

This class will be present modules of information. Pre- and post- self-assessments will be taken at the beginning and end of each module. The self-assessments will be part of the quiz and attendance grade.

**Exams & grading**

Three exams of equal value and a cumulative final exam (required) will be given throughout the semester.

**ALL EXAMS WILL COUNT**

No make-up exams will be given unless an excused absence with documentation is presented (if at all possible before your absence) as defined in FIU catalog.

**FINAL IS NOT OPTIONAL and is cumulative**

**Grades will be weighted as follows:**

Three in-semester Exams	50%
Final Exam (required)	10%

**Class participation:**

**Self-assessments, Post-assessments, Quizzes, attendance, other assignments and IN CLASS ACTIVE LEARNING** 40%

The final grade will be calculated based on the following scale:

93-100	A
90-92	A-
88-89	B+
83-87	B
80-82	B-
78-79	C+
73-77	C (grade needed to pass for biology major)
70-72	C-
68-69	D+
63-67	D
60-62	D-
59 or below	F

**Link to the 2015-2016 calendar: Pay close attention to the drop dates and holiday closures.**

<http://onestop.fiu.edu/academic-calendar/fall/index.html>

*For example:*

Aug 29, Monday	Last day to add/drop
Aug 30 Tuesday	Fall semester Payment Due Date
September 5 Monday	Labor Day Holiday (University Closed)

**Students should sign up for FIU's emergency alert system in case of hurricanes or other scenarios that may close the campus.**

[dem.fiu.edu/fiu-alert/](http://dem.fiu.edu/fiu-alert/)

**Academic conduct:**

*Florida International University is a community dedicated to generating and imparting knowledge through excellent teaching and research, the rigorous and respectful exchange of ideas, and community service. All students should respect the right of others to have an equitable opportunity to learn and honestly demonstrate the quality of their learning. Therefore, all students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational mission of the University. All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the **Academic Misconduct procedures and sanctions, as outlined in the Student Handbook.***

**Academic Misconduct: Full handbook and information can be found at:**

**<http://www.fiu.edu/~oabp/misconductweb/1acmisconductproc.htm>**

**DEFINITION OF ACADEMIC MISCONDUCT:** Academic Misconduct is defined as the following intentional acts or omissions committed by any FIU student:

**1.01 Cheating:** The unauthorized use of books, notes, aids, electronic sources; or assistance from another person with respect to examinations, course assignments, field service reports, class recitations; or the unauthorized possession of examination papers or course materials, whether originally authorized or not. Any student helping another cheat may be found guilty of academic misconduct.

**1.02 Plagiarism:** The deliberate use and appropriation of another's work without any indication of the source and the representation of such work as the student's own. Any student who fails to give credit for ideas, expressions or materials taken from another source, including internet sources, is guilty of plagiarism. Any student helping another to plagiarize may be found guilty of academic misconduct.

1.08 *Academic Dishonesty:* In general, by any act or omission not specifically mentioned above and which is outside the customary scope of preparing and completing academic assignments and/or contrary to the above stated policies concerning academic integrity.

**If found cheating, YOU WILL RECEIVE AN "F" FOR THE CLASS, NO EXCEPTIONS.**