Master Syllabus

**Course Title:** *Genetics*

**Course Number:** PCB 3063

**Pre-requisites:**

Eight credits of general biology (BSC 1010/1010L and BSC 1011/1011L), eight credits of general chemistry (CHM 2045/2045L and CHM 2046/2046L) and *Organic Chemistry 1* with lab (CHM 2010/2010L). The minimum grade for each prerequisite course is “C-”.

**Instructors:** Dr.s David Binninger, Jay Baldwin, and Colin Hughes.

**Required Text Book:**

*Genetics: A Conceptual Approach* (Fourth Edition due in late 2010) by Benjamin Pierce.

**Course description, purpose, and objectives**

This course is a core requirement for the undergraduate degree - both BS and BA - in biological sciences. Our goal is to introduce undergraduates to thinking about the genetic basis of heredity, to build their understanding of why inheritance works as it does, and to excite their interest in the usefulness of this area of science. The course objectives include problem-based learning in a variety of topics related to Mendelian genetics including bacterial, viral and eukaryotic model systems. A second group of objectives focuses on molecular genetics and the basis of inheritance and expression of appropriate phenotypes. The course also includes introductions to current molecular techniques, genomics, bioinformatics and applications of these technologies.

**Topics**

1. Chromosomes and Cellular Reproduction
2. Basic Principles of Heredity
3. Sex Determination and Sex-Linked Characteristics
4. Extensions and Modifications of Basic Principles
5. Pedigree Analysis, Applications and Genetic Testing
6. Linkage, Recombination and Eukaryotic Gene Mapping
7. Bacterial and Viral Genetic Systems
8. Chromosome Variation
9. DNA: The Chemical Nature of the Gene
10. Chromosome Structure and Transposable Elements
11. DNA Replication and Recombination
12. Transcription
13. RNA Molecules and RNA Processing
14. The Genetic Code and Translation
15. Control of Gene Expression
16. Gene Mutations and DNA Repair
17. Molecular Genetic Analysis and Biotechnology
18. Genomics
19. Developmental Genetics, Immunogenetics and Cancer Genetics

**Assessment Procedures, Grading Criteria, Class Policies**

Course grade is based on the average of four in-class exams and a final. The final may be an optional cumulative final exam that can be used to replace either a missed regular exam or the lowest regular exam score. Online quizzes administered on BlackBoard, and in-class questions and problem solving using the iClicker student response system are also used.

While each instructor may use slightly different assessment procedures, to ensure similarity of grading among campuses and instructors, a series of anchor questions are embedded in tests. The students scores on anchor questions are then compared; discrepancies in grading are resolved according to the grading criteria below.

A 94-100%

A- 90-93%

B+ 86-90%

B 82-86%

B- 78-82%

C+ 74-78%

C 70-74%

C- 66-70%

D+ 62-66%

D 58-62%

D- 54-58%

F <54%

**Withdrawal From The Course**

The student is responsible for withdrawing from the class. An incomplete (“I”) will be considered in exceptional cases including serious illness or unforeseen personal circumstances. To be considered for an incomplete grade, the student must have a passing (C- or better) at the time the decision is made. An incomplete grade will not be used to prevent a student from receiving a non-passing (“ D or F”) grade.

**Attendance**

Students are expected to attend all scheduled classes. Each student is responsible for ***all*** of the material covered during that class.

**Accommodations For Students With Disabilities**.

In compliance with the Americans with Disabilities Act (ADA), students who require special accommodations due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) located in Boca Raton - SU 133 (561-297-3880), in Davie - MOD I (954-236-1222), in Jupiter - SR 117 (561-799-8585), or at the Treasure Coast - CO 128 (772-873-3305), and follow all OSD procedures.

**Honor Code**

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty, including cheating and plagiarism, is considered a serious breach of these ethical standards, because it interferes with the University mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the University community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see <http://www.fau.edu/regulations/chapter4/4.001_Honor_Code.pdf>.