

SYLLABUS - PRINCIPLES OF GENETICS - BSC 324 - Spring 2012

INSTRUCTOR:

DR. (PATRICK) SIMON COLLIER

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Office Hours: Due to research commitments (and the distance between my office and lab) I operate an 'open door' policy rather than 'office hours'. Students are welcome to contact me through email or phone to arrange a time to discuss matters relating to the course. Students may also drop by my office or lab at anytime although I cannot guarantee to be able to spend substantial time with students who call without prior arrangement.

N.B. Students are also encouraged to visit my research lab to see how developmental genetic research is undertaken and to discuss ways in which they can become actively involved in my research.

Course Description: The fundamental principles and mechanisms of inheritance.

Course prerequisite: BSC 120 and 121 minimum grade C and CHM212 minimum grade C.

Lecture Specific objectives: To understand the biochemical structure and activity of genes, the organization of genes in genomes, the nature and consequences of gene mutation and the segregation of genes in families and populations.

Overall objective: To appreciate the complex relationship between gene variation (genotype) and character variation (phenotype).

Laboratory Specific objectives: To become familiar with the fruit fly *Drosophila melanogaster* as a model organism in the study of Genetics. To gain hands-on experience of traditional and molecular approaches to genetic analysis.

Overall objective: To learn to hypothesize (make informed guesses) based upon your own observations.

LECTURE: 2:00-3.15 - Tuesday and Thursday - room S376

LABORATORY: - room S 381

Section 101: 9:00-11:50 Monday

Section 102: 9:00-11:50 Tuesday

Section 103: 9:00-11:50 Wednesday

TEXTBOOK: Essentials of Genetics, Klug and Cummings. 6th or 7th. Edition; Pearson/Prentice Hall.

COURSE WEB SITE: <http://www.marshall.edu/muonline/>

LAB MANUAL: There is no lab manual, but individual lab exercises will be posted to the Blackboard/Vista site prior to each lab. **Students are responsible for downloading their own copies of the exercises for laboratory sessions.** As well as the laboratory protocols; lecture notes, handouts etc. will be posted on the BSC324 Blackboard/Vista site. Students should check this site for additional information and updates to the course throughout the semester. Also, students should regularly check their **Marshall email account**, as important information about the class may be sent to the class list.

COURSE POLICIES

Please note:

University Policies are available at:

http://www.marshall.edu/academic-affairs/?page_id=802

1. Attendance in lectures is strongly encouraged. You are responsible for identifying material missed by being absent. **Attendance in laboratory sessions is mandatory** since they can only be done the week the exercise is scheduled. **Absences from exams or quizzes due to illness, death in the family, or institutional activities will be excused with the appropriate written notification to the instructor. In the case of illness, you must provide a physicians' note stating that you could not be present during the exam period for medical reasons.** Until final grades have been submitted you are expected to keep copies of all submitted and graded work (quizzes, papers etc). **No makeup exams or quizzes will be permitted without written excuse and prior notification.**

2. Academic dishonesty in any form will not be tolerated. All written assignments, quizzes, and exams are to be independent efforts of each student. **Plagiarism is unacceptable and will earn you an F grade.** Refer to Undergraduate Catalogue for guidelines.

3. Academic accommodation: If you have a learning disability, contact either the Help Center, Myers Hall (this is expensive), or Mrs. Sandra Clements PH 117 (this service is free). If you present a diagnosis of the learning disability they have the authority to send a statement of your needed accommodation to the instructor via campus mail. **No accommodation can be allowed until this documentation is received and it must be received several days in advance of the first exam to allow the instructors time to make any necessary arrangements.**

4. Withdrawal: If you are not happy with your academic performance in this class please see the instructor. The Biology department also has graduate students available for tutoring. However, students should keep the Withdrawal date for this semester clearly in mind. **Do not just stop attending.** This will result in an F grade on your transcripts.

5. Grades will not be e-mailed or given over the phone. You must be present during lecture or lab to collect graded exams and papers. Alternatively, grades will be available directly from the instructor **after** they have been returned to the class. **Please do not request grades from the instructor before they have been returned to the class.**

6. Students are responsible for reading the textbook to help understand the material covered during lecture time. Practice problems are provided in the textbook. Questions about the reading material should be addressed to the instructor so it can be reviewed in class. There will be four lecture exams which will generate **70%** of final grade. You will be tested on lecture notes and assigned readings from text chapters. Format for the exams will be multiple-choice questions and some short answer essays. Laboratory performance will contribute the other **30%** of your course grade. Lab grades will consist of weekly quizzes and a group project. **No 'Extra Credit' is available.**

GRADING SCALE: <59%= F; 60-69%=D; 70-79%=C; 80-89%=B; 90-100%=A.

Tentative syllabus and exam schedule:

Date			Text Chapters
1/10 - 1/12	Introduction to Genetics;	No labs this week.	1
1/17 – 1/19	Mitosis and Meiosis	No labs this week.	2
1/24 – 1/26	DNA Structure	Lab 1	9
1/31 - 2/2	DNA Replication	Lab 2	10
2/7	Chromosome Structure		11
2/9	*EXAM I*	No labs this week.	
2/14 – 2/16	Genetic Code; Transcription	Lab 3	12
2/21 - 2/23	Translation & Proteins	Lab 4	13
2/28	Gene Mutation, DNA Repair		14
3/1	*EXAM II*	No labs this week.	
3/6 - 3/8	Gene Expression	Lab 5	15
3/13 - 3/15	Mendelian Genetics	Lab 6	3/4
3/16	Last day to drop class		
3/18 – 3/25	Spring Break		
3/27 - 3/29	Sex Determination	Lab 7	5
4/3	Chromosome Mutations		6
4/4	Assessment Day		
4/5	*EXAM III*	No labs this week.	
4/10 - 4/12	Cancer/Developmental Genetics	Lab 8	16, 20
4/17 - 4/19	Genomics, Proteomics	Lab 9	17/18
4/24 – 4/26	Catch up		
5/3	FINAL EXAM 12:45pm- 2:45pm		

* Exams I-III will be given back during lecture time. **We do not e-mail or phone grades.** If you are not present in class to receive your grade, or have a question regarding your academic performance, please come to instructor's office.

Principles of Genetics Laboratory

Teaching Assistant: Whitney Kroschel (kroschel@live.marshall.edu)

The laboratory portion of this course will contribute **30%** of your total grade for the semester. This will be determined from weekly quizzes, and writing assignments.

Quizzes (10 points each x 8 quizzes) = **80** points

End of semester (group) report on *Drosophila* crosses = **40**

Quizzes will be given within the **first 20 minutes of lab**. If you are absent there is **no make-up**.

Tentative Laboratory Schedule

- lab 1** **Mitosis and Cytokinesis; Meiosis**
- lab 2** **Introduction to *Drosophila* life cycle and mutants**
- lab 3** **Set up *Drosophila* crosses***
- lab 4** **Characterization of DNA and Introduction to Gel Electrophoresis**
- lab 5** **Analysis of a Mutant Hemoglobin Gene**
- lab 6** **Chromatography of *Drosophila* Eye Pigments**
- lab 7** **Alu Genotype and Population Genetics I**
- lab 8** **Alu Genotype and Population Genetics II**
- lab 9** **Analyses of *Drosophila* crosses**

* for the remaining weeks of laboratory exercises lab groups are responsible for counting offspring and generating subsequent generations.