

**CATALOG YEAR 2006-2007**

**(Please use separate form for each add/change)**

COLLEGE/SCHOOL : Arts and Sciences

Current Catalog Page(s) Affected 260

**Course: BIOL 5415** Add:   X   Delete:         
 (check all that apply) Change: Number        Title   SCH    
 Description    Prerequisite       

If new, provide Course Prefix, Number, Title, SCH Value, Description, prerequisite, and lecture/lab hours if applicable. If in current catalog, copy and paste the text from the and indicate changes in red.

**BIOL 5415 Population Genetics. Four semester hours.**

**A study of population genetics models, including genetic variation, selection, inbreeding, genetic drift, mutation, gene flow, linkage disequilibrium and recombination. Prerequisite: Graduate standing and permission of instructor. Lecture/laboratory.**

Justification: New course for the Master of Science in Biology.

Approvals:	Signature	Date
Chair Department Curriculum Committee	_____	_____
Chair Department	_____	_____
Chair College Curriculum Committee	_____	_____
Dean	_____	_____

**Texas A&M International University  
College of Arts and Sciences  
Department of Biology & Chemistry**

**SYLLABUS**

**BIOL 5415 POPULATION GENETICS**

**Lecture Schedule:**

**Room**

**Instructor:**

**Office:**

**Telephone:**

**E-mail:**

**Office hours:**

**Course description:**

**BIOL 5415 Population Genetics. Four semester hours.**

**A study of population genetics models, including genetic variation, selection, inbreeding, genetic drift, mutation, gene flow, linkage disequilibrium and recombination. Prerequisite: Graduate standing and permission of instructor. Lecture/laboratory.**

**LEARNING OUTCOMES:**

**Upon completion of the course students will have demonstrated:**

- (1) The ability to apply the principles of population genetics: genetic variation, the Hardy-Weinberg principle, selection, mutation, gene flow, genetic drift, inbreeding, and linkage disequilibrium to the study of specific biological populations,**
- (2) The ability to think critically and to integrate factual and conceptual information into understanding of scientific data.**
- (2) The ability to apply statistical and mathematical approaches to model, analyze, and interpret population genetics principles,**
- (2) The ability to formulate computational-mathematical algorithms to study the theoretical effects of the population genetic principles,**
- (3) The ability to examine and analyze the objectives, material, methods, and results of scientific papers related to population genetics principles.**

## **TEACHING METHODS**

The course will be taught using participative discussions and reading assignments.

The student will develop computational-mathematical algorithms to study the theoretical effects of population genetics principles.

The student will examine, analyze, and critique the objectives, material, methods, and results of at least six scientific papers related to population genetics principles.

## **TEXTBOOK:**

**Genetics of Populations**  
**Philip W. Hedrick**  
**Jones and Bartlett Publishers**  
**2005**

## **COURSE GRADING POLICY**

<b>1.</b>	<b>Laboratory assignment reports</b>	<b>20</b>	<b>points</b>
<b>2.</b>	<b>Reading assignment presentations</b>	<b>20</b>	<b>points</b>
<b>2.</b>	<b>Partial exams</b>		
	<b>Exam 1</b>	<b>10</b>	<b>points</b>
	<b>Exam 2</b>	<b>10</b>	<b>points</b>
	<b>Exam 3</b>	<b>10</b>	<b>points</b>
	<b>Exam 4</b>	<b>10</b>	<b>points</b>
<b>2.</b>	<b>Final Exam</b>	<b>20</b>	<b>points</b>

## **GRADING POLICY**

Grades will be recorded from “A” to “F”. Numerical values corresponding to these letters are as follows:

<b>A</b>	<b>90-100 points, excellent</b>
<b>B</b>	<b>80-89 points, good</b>
<b>C</b>	<b>70-79 points, average</b>
<b>D</b>	<b>60-69 points, passing</b>
<b>F</b>	<b>below 60 points, failure</b>

**Note:** You are expected to be present in every discussion and laboratory session

## Important Dates:

## Tentative class schedule:

Date	Topic
1	Discussion; Introduction – Mathematical models
2	Laboratory; Mathematical models
3	Discussion; Genetic variation – Visual polymorphisms
4	Laboratory; Genetic variation models
5	Discussion; Genetic variation – Molecular polymorphisms
6	Laboratory; Genetic variation models
7	Discussion; The Hardy-Weinberg Principle
8	Laboratory; The Hardy Weinberg Principle
9	Discussion; Selection – The basic selection model
10	Laboratory; The basic selection model
11	Discussion; Selection – Other models
12	Laboratory; Selection – Other models
13	Discussion; Mutation 1
14	Laboratory; Mutation models
15	Discussion; Mutation 2
16	Laboratory; Mutation models
17	Discussion; Gene flow - models
18	Laboratory; Gene flow models
19	Discussion; Gene flow - Estimation
20	Laboratory; Gene flow estimation
21	Discussion; Genetic drift – Population size
22	Laboratory; Genetic drift models
23	Discussion; Genetic drift – Effective population size
24	Laboratory; Genetic drift models
25	Discussion; Inbreeding models
26	Laboratory; Inbreeding
27	Discussion; Inbreeding models
28	Laboratory; Inbreeding models
29	Discussion; Linkage disequilibrium 1
30	Laboratory; Linkage disequilibrium models
31	Discussion; Linkage disequilibrium 2
32	Laboratory; Linkage disequilibrium models
33	Discussion; Recombination

**Classroom Behavior**

The College of Arts and Sciences encourages classroom discussion and academic debate as an essential intellectual activity. It is essential that students learn to express and defend their beliefs, but it is also essential that they learn to listen and respond respectfully to others whose beliefs they may not share. The College will always tolerate diverse, unorthodox, and unpopular points of view, but it will not tolerate condescending or insulting remarks. When students verbally abuse or ridicule and intimidate others whose views they do not agree with, they subvert the free exchange of ideas that should characterize a university classroom. If their actions are deemed by the professor to be disruptive, they will be subject to appropriate disciplinary action, which may include being involuntarily withdrawn from the class.

**Copyright Restrictions**

The Copyright Act of 1976 grants to copyright owners the exclusive right to reproduce their works and distribute copies of their work. Works that receive copyright protection include published works such as a textbook. Copying a textbook without permission from the owner of the copyright may constitute copyright infringement. Civil and criminal penalties may be assessed for copyright infringement. Civil penalties include damages up to \$100,000; criminal penalties include a fine up to \$250,000 and imprisonment.

*Copyright laws do allow students and professors to make photocopies of copyrighted materials under strict conditions. You may not copy most, much less all, of a work, but you may copy a limited portion of a work, such as an article from a journal or a chapter from a book. These copies must be for your own personal academic use or, in the case of a professor, for personal, limited classroom use. In general, the extent of your copying should not suggest that the purpose or the effect of your copying is to avoid paying for the materials. And, of course, you may not sell these copies for a profit. Thus, students who copy textbooks to avoid buying them or professors who provide photocopies of textbooks to enable students to save money are both violating the law.*

**Plagiarism and Cheating**

Plagiarism is the presentation of someone else's work as one's own. Recently, the Internet has complicated the picture. Getting something from the Internet and presenting it as one's own is still plagiarism. Copying another student's paper or a portion of the paper - is usually called "copying". Neither plagiarism nor copying will be tolerated. Should a faculty member discover that a student has committed plagiarism, the students will receive a grade of 'F' in that course and the matter will be referred to the Executive Director of Student Life for possible disciplinary action.

**Students with Disabilities**

Texas A&M International University seeks to provide reasonable accommodations for all qualified persons with disabilities. This University will adhere to all applicable federal, state, and local laws, regulations and guidelines with respect to providing reasonable accommodations as required to afford equal education opportunity. It is the student's responsibility to register with the Director of Student Counseling and to contact the faculty member in a timely fashion to arrange for suitable accommodations.

**Incompletes**

Incompletes are discouraged and are assigned only under extenuating circumstances. In fairness to those students who complete the course as scheduled, under no circumstances will an Incomplete ("I") be changed to an "A" unless the student has

experienced a death in the immediate family or has a written medical excuse from a physician.

### **Independent Study Courses**

Independent Study (IS) courses are offered only under exceptional circumstances. Required courses intended to build academic skills may not be taken as IS (e.g., clinical supervision and internships). No student will take more than one IS course per semester. Moreover, IS courses are limited to seniors and graduate students. Summer IS course must continue through both summer sessions.

### **Student Responsibility For Dropping a Course**

"It is the responsibility of the STUDENT to drop the course before the drop date. Faculty are not responsible for dropping students who suspend class attendance".

### **Final Examination**

Final Examinations must be comprehensive and must be given on the day specified.

### **Student E-mail Address**

All students must obtain a TAMIU e-mail address