

**CATALOG YEAR 2006-2007**  
**(Please use separate form for each add/change)**

COLLEGE/SCHOOL : Arts and Sciences

Current Catalog Page(s) Affected 81, 88, 94, 95, 115, 117, 128, 259

**Course: BIOL 4401** Add: \_\_\_\_\_ Delete: \_\_\_\_\_  
(check all that apply) **Change:** Number X Title X SCH \_\_\_\_\_  
Description X 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 3416 Introduction to Biological Statistics. Four semester hours.**

An introduction to statistical methodology applied to biology. Topics covered include the scientific method, biological experimental design, data management, probability distributions, hypothesis testing, analysis of variance, regression analysis, correlation analysis, analysis of frequencies, and an introduction to multivariate analysis. A special emphasis will be given to the application of these techniques for the student's own research. Lecture/laboratory. Prerequisite: BIOL 1406, 1411, 1412 or permission of instructor.

Justification: Avoid confusion with the Master of Science in Biology Biometry course.

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 and Chemistry**

**SYLLABUS**

**BIOL 3416 Introduction to Biological Statistics**

**Class Schedule:**

**Room:**

**Instructor:**

**Office:**

**Telephone:**

**E-mail:**

**Office hours:**

**Course description:**

**BIOL 3416 Introduction to Biological Statistics. Four semester hours.**

**An introduction to statistical methodology applied to biology. Topics covered include the scientific method, biological experimental design, data management, probability distributions, hypothesis testing, analysis of variance, regression analysis, correlation analysis, analysis of frequencies, and an introduction to multivariate analysis. A special emphasis will be given to the application of these techniques for the student's own research. Lecture/laboratory. Prerequisite: BIOL 1406, 1411, 1412 or permission of instructor. Laboratory fee: \$ 30.00.**

**LEARNING OUTCOMES:**

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

- (1) Use of the scientific method to distinguish fact from fiction and faith.**
- (2) The ability to discriminate among different types of biological data.**
- (3) The ability to organize data and effectively communicate scientific understanding graphically.**

**(3) The ability to apply mathematical and statistical approaches to model, analyze and interpret biological information.**

**(4) The ability to use a statistical package to perform statistical analysis.**

**(5) The ability to think critically and to integrate factual and conceptual information into understanding scientific data.**

**(4) The ability to examine, and critique the objectives, data collecting methods, and statistical analysis of scientific articles related to his field of research.**

**Texts:**

**Biometry**  
**Robert R. Sokal/ F. James Rohlf**  
**Third edition, 2003**  
**W.H. Freeman and Company**

**Introductory Biological Statistics**  
**Raymond E. Hampton, John E. Havel**  
**Second edition, 2006**  
**Waveland Press, Inc.**

## **TEACHING METHODS**

**The course will be taught using participative discussions, laboratory sessions, and reading assignments.**

**The student will design a research project, collect proper data, select and perform appropriate statistical analysis, and present the results at the Biology Student Seminar.**

## **COURSE GRADING POLICY**

<b>1.</b>	<b>Research project</b>	<b>400</b>	<b>points</b>
<b>2.</b>	<b>Laboratory reports</b>	<b>200</b>	<b>points</b>
<b>2.</b>	<b>Partial exams</b>		
	<b>Exam 1</b>	<b>50</b>	<b>points</b>
	<b>Exam 2</b>	<b>50</b>	<b>points</b>
	<b>Exam 3</b>	<b>50</b>	<b>points</b>
	<b>Exam 4</b>	<b>50</b>	<b>points</b>
<b>2.</b>	<b>Final Exam</b>	<b>200</b>	<b>points</b>
	<b>Total points</b>	<b>1000</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:** The student is expected to be present and participate in every discussion and laboratory session.

**Important Dates:**

**Tentative discussion and laboratory schedule:**

<b>Day:</b>	<b>Topic:</b>
	<b>The scientific method</b>
	<b>Data in Biology</b>
	<b>Descriptive Statistics</b>
	<b>Probability distributions and applications</b>
	<b>Probability distributions and applications</b>
	<b>First exam</b>
	<b>Probability distributions and applications</b>
	<b>Estimation and sampling distributions</b>
	<b>Estimation and sampling distributions</b>
	<b>Hypothesis testing</b>
	<b>Hypothesis testing</b>
	<b>Non-parametric tests</b>
	<b>Second exam</b>
	<b>ANOVA</b>
	<b>ANOVA</b>
	<b>Spring Break</b>
	<b>Spring Break</b>
	<b>ANOVA</b>
	<b>ANOVA</b>
	<b>Regression analysis</b>
	<b>Regression analysis</b>
	<b>Regression analysis</b>

	<b>Third exam</b>
	<b>Correlation</b>
	<b>Correlation</b>
	<b>Analysis of frequencies</b>
	<b>Analysis of frequencies</b>
	<b>Applications to students' own research</b>
	<b>Applications to students' own research</b>
	<b>Fourth exam</b>
	<b>Review and discussion</b>
	<b>Final Exam</b>

### **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