STAT 250 **INTRODUCTION TO BIOSTATISTICS**

> *"This course will cover statistical analysis and interpretation of data in the biological sciences; probability; distributions and statistical inference for one- and two-sample problems."* 3 credits

Prerequisite: 3 credits in mathematics

Objectives:

In this course you will gain problem solving skills that will allow you to decide for yourself if research involving data is trustworthy or not. Mathematical calculations are necessary but more important is interpreting the values computed. At the end of the semester you will be able to organize data using numerical and graphical summaries, apply properties to data based on the distribution that it follows, make calculations that prove or disprove a hypothesis, interpret the trend in new data compared to a previous standard, diagnose the trustworthiness of inference, collect data without bias and diagnose bias in collected data.

Faculty Contact:
Jenny Shook
416 Thomas
(814) 865-6164
Email: Use ANGEL

Office hours:
Monday 10-11am
Thursday 11am-12noon
Friday 1-2pm

TA information:
Zhe Chen
316 Thomas
(814) 863-3238
Email: Use ANGEL

Office hours:
Wednesday 12:15-2:15pm

Materials:

Textbook: Marcello Pagano and Kimberlee Gauvreau's *Principles of Biostatistics* Second Edition, Duxbury.

Calculator: Any kind that can compute a square root (graphing ok) – cell phones prohibited.

Vocabulary Journal: A journal in which you can log vocabulary terms and their definitions, by hand, from the textbook as you read (loose leaf paper is acceptable).

Essentials: Notebook or paper to take notes on lectures, to work out problems in class; pen, pencil, eraser, etc.

Computer: One day each week you will have the use of a computer in class (lab). Outside of class, any computer on campus can provide the same information as do the ones in class. You will need to access ANGEL regularly for all course information.

Course Format:

You are encouraged to travel through the world of biostatistics with your classmates. Each week, you will receive a reading assignment to complete before the first lecture. The lecture will present examples that illustrate the concepts in the reading assignment. The following class will be time for the teacher and classmates to work together through examples illustrating concepts from the reading, adding to the first lecture. The lab class similarly is a time for the teacher and classmates to work together on examples but using statistical software to solve the problems instead of working by hand. A brief quiz will be administered online in each lab. Homework is checked weekly by a homework quiz. After two or three lectures, you will be tested on your understanding of the material during an out-of class quiz at the e-testing center. A short project is due after each lecture quiz, with some class time devoted to working on such. A cumulative final exam will be given as scheduled by the University during finals week.

STAT 250 **INTRODUCTION TO BIOSTATISTICS**

Course Policies:

Reading assignments, lectures, and study guides will be posted in a timely manner on ANGEL. I encourage you to print out and review each lecture before it is presented in class, bringing a printout to the lecture to assist you in following along.

Homework is assigned weekly but is not turned in. Online quizzes will assess the completeness and correctness of each assignment. All homework quizzes will be due on Wednesday by 11pm.

Lab quizzes are to be taken during the scheduled lab time, in the lab classroom, only. Late or missed lab quizzes, and those taken outside the lab classroom will be scored as a zero. When taking each quiz on ANGEL, be sure to only press the SUBMIT button when you are completely finished taking the quiz. Lab quizzes are open notes, book, and open for discussion among classmates. Missed lab quizzes, excused or not, cannot be made up.

Lecture quizzes given in the e-testing lab may not be made up. If you know ahead of time that you will miss a lecture quiz, you must notify Mrs. Shook prior to the quiz and you may take it early, but not later than the original scheduled time. More information is available at http://www.testing.psu.edu/students.html.

Projects must be turned in on the Friday due date by 11pm in the drop box on Angel, one per group member. Group members not submitting a file will get no score. Late projects are not accepted.

All projects and the vocabulary journal will be hand-graded for accuracy and completion and returned in a timely manner. Lab quizzes will be graded by ANGEL for immediate feedback. Lecture quizzes are graded online for immediate feedback. The final exam will be graded by Schreyer. All grades will be updated weekly on ANGEL.

You are expected to complete all your own work in a collaborative setting. Please remember that copying anyone else's work is considered cheating. As a reminder, the University has a policy on academic honesty. You are expected to abide by the procedures set forth in the University's document at http://www.psu.edu/dept/ufs/policies/47-00.html#49-20 .

Any student in this course who has a disability that may prevent him or her from fully demonstrating his or her abilities should contact us personally as soon as possible, so we can discuss accommodations necessary to ensure full participation and facilitate your educational opportunity.

Work load:

Please check ANGEL regularly for new information, announcements and course emails. Each week you will have a reading assignment and a set of problems to work on in class and finish outside of class if you need more time. Projects are to be completed outside of class with the possibility of class time for discussion of ideas. Because the problems and projects may be worked on in class, I expect you to work together with your classmates while maintaining your own individuality in your work.

STAT 250 **INTRODUCTION TO BIOSTATISTICS**

Requirements:

Homework Quizzes (15)

One quiz is given for each chapter, available on ANGEL and due on Wednesdays. Please complete each homework assignment and have your work ready before you start the quiz. Answer quiz questions based on your completed assignment. 30%

Lab quizzes (10)

A brief 10 question quiz taken through ANGEL in lab on Wednesdays. Lab quizzes are open notes, open book, open discussion. Lab quizzes reflect lab attendance. 10%

Lecture Quizzes (5)

After two or three lectures, a multiple choice quiz is administered in class. Tentative dates are Feb 4, 25, Mar 24, Apr 14, and 28. All tables needed will be provided. A front of one 8.5"X11" sheet of handwritten notes is allowed for each quiz. 20%

Projects (5)

After each lecture quiz, a brief project is assigned and is worked on in and outside of class; each group member must turned in a copy to the drop box on ANGEL. Tentative due dates are Feb 8, 29, Mar 28, Apr 25 and 30. 20%

Vocabulary Journal updated weekly due upon completion

During each reading assignment, you will define vocabulary from the reading, labeled by chapter and numbered by word, kept together in a journal, handwritten, to be handed in at the last lecture. Typed journals receive no credit. 10%

Final exam

Cumulative, multiple-choice exam scheduled by the University during finals week. All tables will be provided. Two 8.5"X11" sheets of handwritten notes are allowed (front and back). 10%

Grading Tables:

What?	*Percentage*	*Points*
Homework Quizzes	30%	300
Lab Quizzes	10%	100
Lecture Quizzes	20%	200
Projects	20%	200
Vocabulary Journal	10%	100
Final Exam	10%	100
Total	**100%**	**1000**

Total Points	*Letter Grade*
930 and above	A
900-929	A-
870-899	B+
830-869	B
800-829	B-
770-799	C+
700-769	C
600-699	D
Below 600	F

STAT 250 **INTRODUCTION TO BIOSTATISTICS**

Semester Schedule:

Monday	Wednesday	Friday
Jan 14	Jan 16	Jan 18
Syllabus Lecture Ch 1	HW Quiz Ch 1 due Lecture Ch 2 Lab Survey 1	Lecture Ch 3
Jan 21	Jan 23	Jan 25
No Classes	HW Quiz Ch 2, Ch 3 due Lab Ch 1-3 Lab Quiz 1	Lecture Ch 6
Jan 28	Jan 30	Feb 1
Examples Ch 6	HW Quiz Ch 6 due Lab Ch 6 Lab Quiz 2	Review Ch 1-3, 6
Feb 4	Feb 6	Feb 8
Lecture Quiz Ch 1-3, 6	Project 1 Lab Survey 2	Lecture Ch 7-8 Project 1 due
Feb 11	Feb 13	Feb 15
Examples Ch 7-8	HW Quiz Ch 7, Ch 8 due Lab Ch 7-8 Lab Quiz 3	Lecture Ch 9
Feb 18	Feb 20	Feb 22
Examples Ch 9	HW Quiz Ch 9 due Lab Ch 9 Lab Quiz 4	Lecture Ch 10
Feb 25	Feb 27	Feb 29
Lecture Quiz Ch 7-9	Project 2 Lab Survey 3	Lecture Ch 11 Project 2 due
Mar 3	Mar 5	Mar 7
Examples Ch 10-11	HW Quiz Ch 10, Ch 11 due Lab Ch 10-11 Lab Quiz 5	Review Ch 10-11
Mar 17	Mar 19	Mar 21
Lecture Ch 13	HW Quiz Ch 13 due Lab Ch 13 Lab Quiz 6	Lecture Ch 14
Mar 24	Mar 26	Mar 28
Lecture Quiz Ch 10, 11, 13	Project 3 Lab Survey 4	Lecture Ch 15-16.1 Project 3 due
Mar 31	Apr 2	Apr 4
Examples Ch 14-16.1	HW Quiz Ch 14, Ch 15 due Lab Ch 14-16.1 Lab Quiz 7	Lecture Ch 17
Apr 7	Apr 9	Apr 11
Examples Ch 17 Project 4 Introduction	HW Quiz Ch 17 due Lab Ch 17, Project 4 Lab Quiz 8	Lecture Ch 18
Apr 14	Apr 16	Apr 18
Lecture Quiz Ch 14-16	HW Quiz Ch 18 due Lab Ch 18, Project 4 Lab Quiz 9	Vocabulary Journal Due Lecture Ch 22
Apr 21	Apr 23	Apr 25
Examples Ch 22	HW Quiz Ch 22 due Lab Ch 22, Project 4 Lab Quiz 10	Review – Discrete and Continuous Data Project 4 due
Apr 28	Apr 30	May 2
Lecture Quiz Ch 17, 18, 22	Project 5 due Lab Survey 5	Review – Nominal and Ordinal Data