

Dr. James Watrous Rm. 220 Sci Ctr (Office) X1829 Rm. 111A Sci Ctr (Lab) X1083 jwatrous@sju.edu

Office Hours: On my office door and by appointment

Course learning objectives: To introduce students to data analysis, experimental design and some of the common techniques used in laboratory research. Approximately 75% of the course will deal with statistics and the use of SPSS and Sigma Plot; the remainder will concentrate on instrumentation and techniques & the primary literature.

Text: Introductory Biological Statistics, Raymond E. Hampton., 2nd edition

The two basic guides to using SPSS are located on the P(ublic) drive, in the jwatrous folder. There are numerous other sources for SPSS that can be located using an internet search engine.

Other useful items: Scientific calculator with statistical capabilities, backup computer storage devices of your choosing.

Most Probable Syllabus; modifications will be made as needed throughout the semester.

- 9/08 Meet the faculty; rotations for MS candidates. What is a graduate student?
 - 9/15 Intro to the biological literature; literature searching, **meet in library @ 4:30 PM**
 - 9/22 Data description and distribution models. H 1, 2, 3, 4, 5, 6
 - 9/29 Using SPSS and Sigma Plot for analysis and presentation
 - 10/06 Statistical inference and two population analysis H 7, 8, 9
 - 10/13 Inference continued H 7, 8, 9
 - 10/20 "Fall Break" and catch-up time
 - 10/27 Mid-term examination (20%)
 - 11/03 Analysis of variance H 10, 11
 - 11/10 Regression and Correlation H 12, 13
 - 11/17 Student Presentations
 - 11/24 Student presentations
 - 12/01 Student presentations
 - 12/08 Student presentations
- Scheduled Final Examination (40%)
- Occasional written assignments (10%)

Student seminar (30%): one 30 min presentation by each student covering the following:

1. the principles of operation/theory of the technique or instrument (10-12 min)
2. the type of data generated and the statistics used to analyze (2-3 min)
3. a paper from the primary literature illustrating the use of the instrument/technique (15 min)

The paper you select must be approved at least two weeks in advance of your presentation.

A one to two page summary of critical information you want everyone to know is to be given out after your presentation. This becomes subject matter for the final examination.

Transmission & Scanning electron microscopy
Electrophoresis
Spectroscopy (vis, UV,)
Microarray analysis
Radioactive isotope methodology
Confocal microscopy

Biochemical assay methods (FPC)
Blotting methodology (N, W, S)
Bioinformatics (Blast analysis)
Electrophysiological techniques
Cell biology and flow cytometry
Fluorescence spectroscopy