

STAT 2480: Statistics for the Life Sciences
Hitchcock Hall 131
WF 12:40 – 1:35
The Ohio State University, Spring 2017

Instructor: Kevin Donges
212B Cockins Hall
614.292.2866
donges.2@osu.edu

Office Hours: M 1:00 – 3:00, WF 2:00 – 3:00, or by appointment

Course Description: Calculus-based introduction to the statistical analysis of biological data, including probability, common discrete and continuous distributions, experimental design, hypothesis testing, linear regression and correlation.

General Education (GE) Requirement: This course satisfies the GE requirement in Data Analysis.

- Goals: Students develop skills in drawing conclusions and critically evaluating results based on data.
- Expected Learning Outcomes: Students understand basic concepts of statistics and probability, comprehend methods needed to analyze and critically evaluate statistical arguments, and recognize the importance of statistical ideas.

Prerequisite: MATH 1131, 1151 (152), 1156, 1161.xx, or 1181H, or equivalent, or permission of the instructor. Not open to students with credit for 2450 (245) or 218.

Textbook: *The Analysis of Biological Data*, 2nd Edition, by Whitlock and Schluter

Topics: We will be covering all or parts of chapters 1 – 3, 5, 7 – 12, 14, 16, and 17.

Website: The course website is carmen.osu.edu; please check it regularly. On the site you will find announcements, the syllabus, homework assignments, and solutions.

Important Dates: The last day to drop a course is Friday, February 3rd. The last day to withdraw from a course without petitioning is Friday, March 24th. There will be no class Monday, January 16th (MLK Day) and Monday, March 13th through Friday, March 17th (Spring Break).

Attendance: While I will not be taking attendance, you are expected to attend every class session. If you miss class then it is your responsibility to get any and all material covered from a classmate. Arriving late or leaving early is distracting to you, your classmates, and me and will not be tolerated.

Email Correspondence: In order to protect your privacy all email correspondence must be done through a valid OSU name.# account. Please make sure “STAT 2480” is in the subject line.

Electronic devices: Use of communication devices and technology for activities other than class work disrupt the learning process for you and others in the class and is not permitted. Cell phones and other electronic devices should be turned off or silenced during class.

Extra Help: The Mathematics and Statistics Learning Center provides group tutoring in Cockins Hall 132 from 9:10 – 6:20 (MTWR) and 9:10 – 1:40 (F) beginning January 17th. More information can be found at <https://mslc.osu.edu/mslc-free-tutoring>.

Evaluation:

Homework	25%
Lab Participation	15%
Exam 1 (Friday, February 17 th)	20%
Exam 2 (Friday, March 31 st)	20%
Final Exam (Tuesday, May 2 nd , 12:00 – 1:45)	20%

There will be approximately 6 homework assignments; each of them will be equally weighted and the average will comprise your homework score. The dates for the exams are tentative and I reserve the rate to change the dates of any and all assessments; at least one week of notice will be provided in case of a change. All assessments must be completed in pencil. Late homework will not be accepted and no makeup exams will be given. Please note that solutions, not answers, will be graded; a correct answer alone will not get full credit if the steps leading to it are not clear and/or correct. The grading scale will be no harsher than the following scale (please note that I reserve the right to give +/- as justified.):

A	B	C	D	E
≥ 90%	80% – 89%	70% – 79%	60% – 69%	< 60%

Calculators: At my discretion, students may be prohibited from using calculators on some assessments. Please note that at no time will you be permitted to use a calculator with a CAS.

Accommodation: The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. You are also welcome to register with Student Life Disability Services to establish reasonable accommodations. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. (**SLDS contact information:** slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.)

Academic Misconduct: Please help us to maintain an academic environment of mutual respect, fair treatment, and personal growth. You are expected to produce original and independent work for exams and homework. Although students are often encouraged to work together on homework assignments, all students must submit their own written work in their own words. It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct at <http://studentlife.osu.edu/csc/>.

Final Comment: It is crucial that we have a mutual respect for one another as members of the OSU community and that we conduct ourselves accordingly. My responsibilities include coming to class prepared to teach you statistics, giving clear lectures, assigning carefully chosen homework problems that are relevant to our course, and carefully preparing homework and exam questions that accurately measure your progress in the course. Additionally, I am responsible to be available to you outside of class for consultation in office hours and by appointment. Likewise, I expect you to come to class motivated to learn the material. This involves reading the material ahead of time, promptly starting the homework assignments, and seeking additional help before it is too late. Ultimately, you are responsible for your university education and what you take from it.

Tentative Schedule:

Date	Topic	Reading
1/11	Introduction/Displaying Data	Ch. 1, 2
1/13	Descriptive Statistics	Ch. 3
1/18	Probability	5.1 – 5.7
1/20	Probability	5.1 – 5.7
1/25	Bayes' Theorem	5.7 – 5.9
1/27	Probability Distributions	5.4
2/1	Binomial Distribution	7.1 – 7.4
2/3	Testing a Proportion	7.1 – 7.4
2/8	Discrete Data, Chi-Squared Test	8.1 – 8.5
2/10	Poisson Distribution	8.6
2/15	Review	
2/17	Exam 1	
2/22	Odds Ratio	9.1, 9.2
2/24	Contingency Tables	9.3, 9.4
3/1	Normal Distribution	10.1 – 10.5
3/3	Sampling Distributions	10.6
3/8	Estimating Means, Confidence Intervals	11.1, 11.2
3/10	Hypothesis Test for a Single Mean	11.3, 11.4
3/22	Hypothesis Test for a Single Variance	11.5
3/24	Comparing Two Means	12.1 – 12.3
3/29	Review	
3/31	Exam 2	
4/5	Comparing Two Variances	12.4 – 12.7
4/7	Experimental Design	Ch. 14
4/12	Correlation and Regression	Ch. 16
4/14	Linear Regression	17.1 – 17.3
4/19	Linear Regression	Ch. 17
4/21	Course Summary and Review	
5/2	Final Exam 12:00 – 1:45	