

**BIO 5040: BIOMETRY
FALL SEMESTER, 2018
SYLLABUS**

Instructor: Dr. Chris Steiner
Biological Sciences Building, Office #3121
email: csteiner@wayne.edu

LECTURE LOCATION/TIME

113 State Hall
Tuesday and Thursday 11:30 am-12:45 pm

LAB LOCATION/TIME

309 Shapero Hall
Monday 10:30 am-12:20 pm

OFFICE HOURS

Tuesday 10:00-11:00 am, Thursday 10:00-11:00 am (or by appointment)

COURSE PREREQUISITES

([BIO 3070 with a minimum grade of C-] OR [BIO 4130 with a minimum grade of C-]) AND
([MAT 1800 with a minimum grade of C-])

COURSE DESCRIPTION & OBJECTIVES

This course will provide practical tools for the design of experiments, data exploration and statistical analysis of data. My intent with this course is to provide you a toolbox with which you can begin to design scientific studies and experiments, critically evaluate your data and test hypotheses via data analysis. Thus, this course will not emphasize underlying statistical theory but instead provide exposure to and hands-on experience with basic approaches to the analysis of univariate and multivariate data.

Learning objectives for the course:

1. Students will learn to use Excel for general data management (including use of formulas and functions for data manipulation).
2. Students will gain working proficiency with the R statistical platform (including hands-on experience with data management, data manipulation, statistical analyses and data visualization).
3. Students will gain exposure to the design of experiments and observational studies.
4. Students will be able to distinguish among different types of univariate and multivariate data produced by different study/experimental designs and the statistical analyses that can be applied to those data.
5. Students will be able to interpret the results of basic univariate and multivariate statistical analyses.
6. Students will know the assumptions that underlie statistical tests and be able to test those assumptions.

REQUIRED COURSE MATERIALS

Experimental Design and Data Analysis for Biologists. Gerry P. Quinn, Michael J. Keough.

The book is on reserve at the Undergraduate Library (UGL). Additional supplemental readings may be assigned for certain lectures/labs and will be made available on Canvas. The degree to which lectures use materials directly from the textbook will vary greatly, with some lectures drawing more heavily from outside sources. Thus, it is vital that you attend lectures/labs and take notes to do well in this class. **Material that is covered in the textbook but is not covered in lecture or lab will not be on the exams.**

LAB SECTION

Labs meet every Monday and are taught by Dr. Steiner. Most of the lab time will focus on using the R platform to perform data exploration and analysis. There will also be an in-lab assignment during each lab which is to be completed by the end of the lab session. Lab assignments are graded and count towards your course grade.

GRADING

Your grade will be based on points earned from the exams and exercises completed in the lab section. The midterm exam with your lowest grade will count towards fewer points:

Midterm Exam with your highest grade	200
Midterm Exam with your 2 nd highest grade	200
Midterm Exam with your lowest grade	120
Final exam	300
<u>In-lab exercises (12)</u>	<u>180</u>
<i>Total points possible:</i>	<i>1000</i>

You will be graded based on the following scale.

A	93.5 – 100%	C	72.5 – 75.4%
A-	89.5 – 93.4%	C-	69.5 – 72.4%
B+	85.5 – 89.4%	D+	65.5 – 69.4%
B	82.5 – 85.4%	D	62.5 – 65.4%
B-	79.5 – 82.4%	D-	59.5 – 62.4%
C+	75.5 – 79.4%	F	≤ 59.4%

EXAM FORMAT AND DATES

You must bring your student ID (Onecard) to all exams. All exams are closed-book and will be a mix of multiple choice and written questions. Three midterm examinations (scheduled for **September 25, October 16, and November 6**) will be given during the lecture period. A two-hour final will be given during the scheduled final exam period (**Tuesday, December 18, 10:15 am – 12:15 pm**). The final exam will be cumulative. All students are expected to take the exams at these times. Reasonable exceptions will be granted in cases of illness, which will require notification prior to the exam (via email) and must be followed up with an original signed note from a physician on official stationary. Exams will be closed book and held in class. No electronic devices of any kind (including watches) will be allowed and cell phones must be turned off. Anyone who leaves the exam room will not be allowed back in. Late-arriving students should know that admittance into the exam room will not be allowed after the first student has left the room.

MAKE-UP EXAM POLICY

If the student's absence from an exam is a legitimate documented emergency, then the student's score on the cumulative portion of the Final Exam may (at the discretion of the instructor) be pro-rated to cover the missed exam.

EXAM GRADE DISPUTES / CHALLENGE OPTION

Students will have one (1) week after the return of an exam to challenge a grade for any question. Failure to challenge the grade within this period indicates a willingness to accept the grade as is. The challenge should consist of a written description of why the answer is correct based on other published material that you cite.

CHEATING

Cheating is covered in detail in the Wayne State University Code of Conduct, found at <https://doso.wayne.edu/conduct>

Students found to be cheating during an exam (using a "cheat sheet" in physical or electronic form, looking at another's paper, or allowing another to look at yours), will receive a zero for that test with no opportunity to drop or replace that score. A second episode of cheating will result in a grade of F for the course and may also result in initiation of university disciplinary action.

No electronic devices (cell phones, tablets, computers, smart watches, cameras, calculators, etc.) are to be present at an exam. Those present will be confiscated until the exam is completed, and students using such devices to cheat on an exam will receive a zero on the exam.

POSTING OF EXAM GRADES

Exam grades will be posted on Canvas as soon as possible after the exam has been administered.

SPECIAL CONSIDERATIONS FOR INDIVIDUALS WITH DISABILITIES

If you have a documented disability that requires accommodations, you will need to register with Student Disability Services for coordination of your academic accommodations. The Student Disability Services (SDS) office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. The SDS telephone number is 313-577-1851 or 313-202-4216 for videophone use. Once you have met with your disability specialist, I will be glad to meet with you privately during my office hours to discuss your accommodations. Student Disability Services' mission is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University. You can learn more about the disability office at www.studentdisability.wayne.edu.

RELIGIOUS HOLIDAY CONFLICTS

If you have a conflict with any of the scheduled class or exam times due to religious reasons, you must notify Dr. Steiner via email at least two weeks in advance of the date of conflict.

ADD/DROP POLICY

September 12, 2018 is the last day you can drop classes and get your tuition refunded. From September 13, 2018 until the last withdraw date (November 11, 2018), if you withdraw from the course you will receive a WN on your transcript if you never completed any exams; a WP if you have greater than 60% of the points possible at the time of your request on exams; or a WF if you have less than 60% of the points possible at the time of your request. No exams are dropped or replaced in this calculation. You can initiate a withdrawal request in Academica, and the system will contact me. I will respond within five business days. Failure to withdraw before the deadline will result in the student receiving the grade earned in the course. See <https://reg.wayne.edu/students/calendar18-19> for more important dates.

UNEXPECTED UNIVERSITY CLOSURES

If the University is officially closed on an exam day, the exam will be held on the next regularly scheduled class day. Closure of the University is announced by the following mechanisms:

1. the University Newsline (313) 577-5345 *
2. WSU Homepage (www.wayne.edu) *
3. WSU Academica portal (academica.aws.wayne.edu) *
4. WDET-FM (Public Radio 101.9)
5. by other local radio and television stations

* Note: The information on closures and class cancellations is likely to be found at these locations before it is broadcast by local radio and television stations

Any specific issue not covered by this syllabus will be resolved using University policies. Disputes that cannot be resolved following the guidelines present in this syllabus will be resolved by following the guidelines of the University "Student Due Process".