

GENE:6234 - Basic Biostatistical Methods with Genetics Applications - Spring, 2022

Purpose: To introduce the terminology, fundamental concepts, and methods of biostatistics as they are applied to genetic research. Examples drawn from various areas of genetic investigation will be used to illustrate statistical approaches. Applications to be considered will include Hardy-Weinberg evaluation, assessment of linkage-disequilibrium, case-control designs, transmission disequilibrium testing, statistical testing for categorical data, regression, and meta-analysis studies. Special attention will be given to the problems of multiple testing, false discovery, and ascertainment bias. More advanced topics will be introduced, emphasizing concept and interpretation. The primary objective of this course is to enable the student to understand basic statistical principles, to gain fluency with selected statistical methodology, and to become an informed reader of the scientific literature.

Instructor: Collin Nolte
Office hours by apt.
collin-nolte@uiowa.edu

Text: None required.

Class Schedule: Tuesdays from 10:30 – 11:20 a.m. Room 5-664 Bowen Science Building

Please notify the instructor in advance of any planned absences, including absences for professional travel, and religious holidays, so appropriate arrangements can be made.

Assignments: There will be regular homework assignments on the topics covered focusing on conceptual understanding and applications in the R language. Collaboration is permitted and encouraged, but each must be written up individually. Assignments will be graded as pass/fail, with pass being greater than 80%. Failed assignments may be resubmitted. The midterm will be a take-home exam, based on the content that has been covered to that point. Final presentations will be scheduled at the end of the semester, either as a single presentation or in pairs.

Examinations: There will be one take-home examination during the semester. The **final examination** will consist of presentations; the date will be set in March. *All students should plan to be present.*

Evaluation: Course grades will be made up of three parts, a take-home midterm (40%), a final presentation (30%) and weekly assignments and discussion (30%).

Web Course: <https://myweb.uiowa.edu/collin/teaching/2022/gene6234.html>

Any student who has a disability that may require some accommodation, such as modification of seating, testing or other class requirements should contact the instructor and/or the Assistant Dean for Student Affairs. Please see the instructor after class or at her office. For more information: <https://sds.studentlife.uiowa.edu>

This course is given by the Graduate College. This means that class policies on matters such as requirements, grading, and sanctions for academic dishonesty are governed by the Graduate College. Students wishing to add or drop this course after the official deadline must receive the approval of the Dean of the Graduate College.

Details of the University policy of course enrollments may be found at:

<https://clas.uiowa.edu/students/students-academic-policies/registration-policies> .