RESEARCH (OVPR)

OVPR 601. Scientific Integrity. 1 Hour.
Semester course; 1 lecture hour. 1 credit. A survey of contemporary issues relating to responsible conduct in research. Topics include academic integrity, mentoring, authorship and peer review, use of humans and animals in biomedical research, ownership of data, intellectual property, conflict of interest, scientific record keeping, collaborative research, research misconduct, and genetic technology. Graded as pass/fail.

OVPR 602. Responsible Scientific Conduct. 1 Hour.
Semester course; 1 lecture hour. 1 credit. Priority registration to postdoctoral trainees and graduate students; others by permission of instructor. A survey of contemporary issues relating to responsible conduct in research. Topics include research integrity, mentoring, authorship and peer review, use of humans and animals in biomedical research, ownership of data, intellectual property, conflict of interest, scientific record keeping, collaborative research, research misconduct, and genetic technology. Graded pass/fail.

OVPR 603. Responsible Conduct of Research. 1 Hour.
Short course; 1 lecture hour. 1 credit. Restricted to graduate or professional students, with preference given to Preparing Future Faculty students. Registration requires permission of PFF Program office. This course is designed to provide a learning experience that will enable students to develop and refine skills needed to solve problems involving relevant topic areas of responsible scientific conduct and to clearly articulate ethically and legally acceptable solutions to problems posed about scientific conduct. Content of the course includes relevant guidelines, policies and laws bearing on the conduct of scientific research including those dealing with scientific authorship, use of humans and animals in research, conflict of interest, data ownership, scientific record keeping, collaborative research, and ownership, protection and use of intellectual property in the arena of scientific research. Conventions and normative behavior related to responsibilities in the scientific mentor-trainee relationship will also be covered. Graded as pass/fail.

OVPR 611. Data Science I. 3 Hours.
Semester course; 3 lecture hours. 3 credits. This course will introduce students to tools and techniques from the discipline of data science that support efficient and reproducible scientific computing. Students will gain hands-on experience developing complete data analysis projects based on real-world datasets. Lessons will cover the primary tasks that comprise most analyses: data management/acquisition, cleaning, reshaping, manipulation, analysis and visualization, as well as strategies for arranging these constituent parts into cohesive workflows that are verifiable, easily repeatable and consistent with best practices for reproducible computational research. This course will focus on the statistical programming language R but no programming background is necessary. Crosslisted as: HGEN 611.

OVPR 612. Data Science II. 3 Hours.
Semester course; 3 lecture hours. 3 credits. Prerequisite: HGEN 611/OVPR 611. This course builds upon the material introduced in the prerequisite course by providing instruction on advanced techniques for working with data and producing highly reproducible data products. The learning path focuses on the fundamentals of both machine learning and the creation of production-ready web applications as two highly marketable skills for future data scientists. Project-based assignments culminate in students creating their own applications that take advantage of tidymodel principles to automate machine-learning workflows, visually communicate knowledge with interactive graphics and using Git and OSF for project management. The guiding principle of the course is that the these products of research should be open and accessible to all members of a project team for maximum impact. This course will continue the use of the statistical programming language R with a focus on advanced tidyverse functions for data wrangling and statistical model development. Crosslisted as: HGEN 612.