Instructor: Dr. Ã‰adaoin (â€œAy-Deenâ€) Harney â€“ Email: harney@g.harvard.edu

Time and Location: M/W 9-10:15am in MCZ MCZ 529 (Devore conference room)

Office Hours: Monday 10:30-11:30 in MCZ 539 and by appointment (email me to request a meeting)

Course Objectives:

- Gain an understanding of and appreciation for the amount of information that can be gleaned about individuals solely through the study of their genomes.
- Learn to conduct population genetic analyses using a variety of computational tools.
- Learn to write a report in the style of an academic journal article.

Course Structure: In general, each week will consist of one lecture style course during which a new topic will be introduced and one day that is dedicated to an in-class practical during which students will learn to perform a genetic analysis related to the topic discussed in the previous lecture. Each student will perform their genetic analyses on a different, de-identified human genome (i.e. their â€œmystery genomeâ€) that is randomly assigned at the beginning of the course. Following each practical, students will be expected to prepare a brief report about the analyses they performed that week (typically due the following week). These short reports will eventually be integrated into the final project report, written in the style of an academic journal article.

Policies

Grading (Provisional Breakdown - Subject to change):

Attendance and Participation:	25%
Practical Reports (x8):	40%
Final Project Proposal:	5%
Final Project Presentation:	10%
Final Project Report:	20%

Attendance and Participation: This is a research intensive course, therefore regular attendance, active participation and collaboration is critical to your success and that of your classmates. If a situation arises that prevents you from attending class, please check in with your instructor at the earliest opportunity to discuss how to prepare for your absence or to catch up on any missed work. In recognition that unavoidable or unpredictable situations may arise that disrupt your schedule, all students will be permitted one â€œunexplainedâ€ absence for you which you do not need to provide a justification (although you are still strongly encouraged to contact your instructor to discuss what content will be covered on the day that you miss). Beyond this, you must contact your instructor to discuss whether your absence can be considered excused due to a valid reason (e.g. illness, family emergency, religious holidays, or a meeting that is critical to your academic success). Extenuating circumstances that result in repeated absences will be considered on a case-by-case basis.

Deadlines and Late Assignments: All deadlines are listed in the schedule at the end of this syllabus. Unless otherwise noted, assignments are due at the beginning of class on the day listed and should be uploaded to the class Canvas site. In most cases, short extensions (1-3 days) in advance will be granted, while longer extensions may be considered on a case-by-case basis. Late submissions that did not receive prior approval may be penalized.

Collaboration and use of Generative Artificial Intelligence (AI): Students are encouraged to work with their classmates to complete practicals and other assignments and may use generative AI based tools, such as ChatGPT, to assist with their analyses (e.g., for generating code used in plotting). However, all of the written content included in practical reports and final project materials must have been written by students on their own, and not by other students or generative AI based tools. This policy is in place as the purpose of these assignments is for students to demonstrate that they fully understand the subject matter covered each week.

Accessibility (from the Disability Access Office): Harvard University values inclusive excellence and providing equal educational opportunities for all students. Our goal is to remove barriers for disabled students related to inaccessible elements of instruction or design in this course. If reasonable

accommodations are necessary to provide access, please contact the Disability Access Office (DAO) (https://dao.fas.harvard.edu/). Accommodations do not alter fundamental requirements of the course and are not retroactive. Students should request accommodations as early as possible, since they may take time to implement. Students should notify DAO at any time during the semester if adjustments to their communicated accommodation plan are needed.

Resources

Each week, readings will be posted on the class Canvas page that provide additional information about that weekâ€™s topic. These readings may fall into one of the following categories:

- Documentation describing the topics, tools or analytical approaches discussed in class.
- Documents that discuss how particular analyses can or should be interpreted or discussed.
- Examples of journal articles in which the analyses discussed in class have been applied to study the genomes of one or more individuals.

Schedule

While the week-by-week schedule is not yet finalized, here is an example schedule from the last time this course was taught.