Course Syllabus

Jump to Today ✎ Edit

Updated 8 February 2022

Chaminade University OF HONOLULU

BI480 - Special topics: Personal genomics and ancestry

Department of Biology, School of Natural Sciences & Mathematics
Spring Semester 2022
Credits: 3

Meeting times & location:
Section 2: Tues & Thurs 1:00pm – 2:20 PM
Location: Room 102 Behavioral Science Building

Instructor: Michael Dohm PhD
Office: WSC 108
Office phone: (808) 739-8543
Office Hours: Monday 1:30pm - 5pm or by appointment (via CANVAS Messaging best option)
E-mail: mdohm [at] chaminade.edu (current students, please use CANVAS messaging)

A pdf version of the syllabus is available from the **Syllabus Archive (https://syllabus.chaminade.edu/)**

Required textbook:

No required textbook. Selected **readings provided by instructor**

Recommended textbooks:

Concepts of Genetics, 12th edition, by Klug et al. (ISBN: 978-0-321-94891-5); *Genome: The autobiography of a species in 23 chapters*, by Matt Ridley (ISBN: 978-0060894085).

Access to course website:

BI480 Special Topics: Personal Genomics & Ancestry is a web-enhanced course. All lecture slides, course handouts, including the syllabus, will be made available through our CANVAS course website. Assignments typically will also be handled via the CANVAS website although other arrangements are available to the student upon request.

You may access the CANVAS site directly at https:/chaminade.instructure.com. Select BI308 Genomics & Epigenetics Lecture from the welcome screen and logon to the course. Use your CUH ID and password. Access to CANVAS is maintained by the IT department -- send access questions to **helpdesk@chaminade.edu (mailto:helpdesk@chaminade.edu)** . All course content and assignments are maintained by Dr Dohm and are not affiliated nor supported by Chaminade Information technology. You are not required to use the site; it is there for your convenience and to support your learning and my teaching of the course.

Course description:

Personal Genomics & Epigenetics is a one semester introduction to the study of genomes (the entirety of an organism's heredity information) and epigenetics, the heritable changes in gene expression as a result of changes other than DNA sequence alterations in biological organisms. Since the late 1990s, the discipline of genomics has witnessed a revolution in methods and discovery. The impact of this revolution can be seen in the food we purchase, the way our diseases are diagnosed, and perhaps even how we view ourselves.

Through lecture and discussion, we will explore these topics and reflect upon how the technology and discovery in genomics impacts the environment and human society. We will discuss genome structure and how to locate elements like a specific gene to a particular region of the genome, incorporating use of new technologies like genome wide mutant screens and RNA interference, and non-Mendelian inheritance as a result of epigenetic changes to DNA. Students will be introduced and gain experience with software tools to interrogate genomic data.

Catalog: BI 480 Special topics

New course

Course learning outcomes:

This course will introduce students to the foundational concepts of molecular genetics, genomics, and bioinformatics. Students will enhance abilities to discuss potential benefits and risks of genetic technology to the environment and or to human health and society.

Student learning outcomes and linkages to Program Learning Outcomes (PLO)*:

Draft: Students will be expected to demonstrate an understanding of

1. Organization of genomes (PLO: #1, #2. #3, #4, #5, #6, #7).
2. How sequencing technologies, software, and prior knowledge is incorporated into a genome assembly (PLO: #1, #2. #3, #4)
3. How to locate a gene (or other element) by molecular genetic and bioinformatic approaches (PLO: #1, #2. #3, #4).
4. Local and genomic control of gene expression (PLO: #2. #3, #4, #5, #6).
5. The role of sequence and imprinting on allele-specific patterns of inheritance (PLO: #1, #2. #3, #4, #5, #6).

Biology Program Learning Outcomes (PLO)

Upon completion of the B.S. degree program in Biology the student will demonstrate the following:

1. Apply the scientific method in the design and testing of hypotheses
2. Transform and display, statistically evaluate, validate, and interpret scientific data and communicate the results of such analyses effectively both orally and in writing
3. Acquire, summarize, and synthesize information from published scientific literature, databases and bioinformatics software to extract and interpret biological data
4. Recognize the chemical and physical principles that underlie all life forms, and the biological organization at the molecular, cellular, tissue, organ, organism, and system levels that emerge from these principles
5. Define the components and processes of genetic and epigenetic information transmission, and their determinant effects on the adaptive and evolutionary processes that they drive
6. Evaluate the etiology of major human disease burden in terms of, pathophysiological mechanisms, epidemiology within populations and possible therapeutic approaches

7. Integrate an awareness of bioethical issues to positively influence the application of science to service, justice and peace in the solution of societal problems

* See Chaminade University Undergraduate Catalog

Course assessment:

Your grade will be the result of points earned from attendance and participation, worksheets, and an independent project.

Worksheets consist of testing of concepts (multiple choice) and from case studies with instructions on a particular genomics or bioinformatics problem. Work will include: use of online databases and bioinformatics tools and will be supported by work in-class exercises.

Attendance: Employers emphasize showing up for work, on time; reliability is a key characteristic of successful employment. Therefore, and in keeping with your Biology program, attendance is expected. For REMOTE students, attendance is recorded based on CANVAS activity -- the minimum expectation for REMOTE attendance is 3 hours logged on to CANVAS and a minimum of two page views. In-person attendance will be taken at random during the semester (i.e., the instructor won't take daily roll call). If you miss more than one lecture for any unexcused absence this will be included as a note in my grade book. Continued absence puts the student at risk of administrative withdrawal from the course (see Student Handbook). If you know you will miss class, please contact Dr Dohm via CANVAS messaging in advance.

Participation. You are assigned readings, you are expected to read and be able to discuss the works prior to our meetings.

Project. A project based on student's interest and in consultation with instructor. The project will be described in more detail during the first month of the semester. The project will be an ongoing activity throughout the semester. Items to be assigned include

- Proposal: includes title, one paragraph to describe purpose and expected results
- Draft: Draft work will be submitted weekly beginning in mid-February. Drafts will include updated title, revised proposal, outline of topics with supporting references, notes from references, lists of images, and related.
- Poster: Once project is in place, a finished poster will be produced
- Video presentation: student will produce a video presentation of the poster as a slide show with audio narration

- Peer evaluation: Students will assist each other during the project period to improve content and presentation.

Final grade:

A total of 400 points may be earned throughout the semester; each item has the following value.

Item	*How many?*	*How often?*	*How many points?*	*Total points towards final grade*
Attendance & participation	throughout semester	every week	10	100
Worksheet	8	every 1-2 weeks	10	100
Project	1	end of semester	200	200

Your letter grade will be based on the following point distribution out of 400 points possible.

Points earned	*Percent of total*	*Letter grade*
360-400	90-100%	A
320-359	80-89%	B
280-319	70-79%	C
240-279	60-69%	D
239 or fewer	< 60%	F

Course and University Policy, Reminders, and Notices:

1. **Class begins each time exactly at the time scheduled (check your section number) – please be on time**. Chronic tardiness will be viewed as absence from class. If you miss or are tardy for class, please note that we will proceed without you and you will miss material; I cannot re-teach the class -- it is your responsibility to obtain missed lecture topics from your classmates who were in attendance.
2. **You are expected to attend class and to come prepared**: Read assigned and suggested readings before the material is to be presented in class; Do ask questions if you are unsure of material: I highly recommend that you ask in class or via the course forum.
3. **Do more than the minimum required!** I will suggest problems or questions from your readings as part of your worksheets; these will not be graded, nor are they required. However, the more you do, the more practice and exposure you get to the material, the

better you will do int the course. I encourage you to discuss them with me in class or via the course forum.

4. **If a student cannot attend a class in which presentations have been scheduled, the student must notify the instructor in person no later than the class prior to the scheduled date**. Notification does not include phone calls or by email. Student athletes need to provide the instructor with a schedule of all travel during the semester, in addition to providing a letter from the Athletics Department prior to travel. In the event of an emergency or an illness, a Doctor's note will be expected and accommodations will be made on a case-by-case basis. Lacking an authorized excuse, you may still be allowed to take the exam at a later time, but you will not be able to earn full credit for the assignment, in fairness to those students who took the exam on time. Same day, but at later time: maximum points possible 95% one day late: maximum points possible 85% two to three days late: maximum points possible 70% More than three days, you will not be permitted to take the exam and a score of "0" will be assigned.
5. **Return of graded material will generally be within two weeks after you take the graded assignment**.
6. **Use of music devices and cell phones is prohibited during all Natural Science and Mathematics classes at Chaminade, unless specifically permitted by your instructor**. Use of cellphones and music devices in laboratories is a safety issue. In addition, use of cellphones and music devices in any class is discourteous and may lead to suspicion of academic misconduct. Students who cannot comply with this rule will be asked to leave class and may be subject to laboratory safety violation fines. Please refer any questions to the Dean of Natural Sciences and Mathematics.
7. **You may not record by camera or video or audio recording device any lecture or other class activity without prior permission from the instructor.**
8. **I encourage you to bring and use your laptops and tablets in class**. However, use of these devices is conditional -- nonacademic activity during class hours is disruptive to the class and everyone around. Mute the sound and avoid "low-battery" emergencies -- electrical outlets are generally not available for student use during class hours.
9. Chaminade University recognizes the inherent dignity of all individuals and promotes respect for all people. Sexual misconduct will NOT be tolerated at Chaminade. If you have been the victim of sexual misconduct, we encourage you to report this matter promptly. As a faculty member, I am interested in promoting a safe and healthy environment, and should I learn of any sexual misconduct, I must report the matter to the Title IX Coordinator. **Should you want to report to a confidential source you may contact the following:**
   - Counseling Center (phone 808-735-4845).

- Any priest serving as a sacramental confessor or any ordained religious leader serving in the sacred confidence role (Fr. George Cerniglia, Rector; phone 808-739-8399 or Campus Ministry; 808-735-4774).

10. **Chaminade University abides by all aspects of the Family Educational Rights and Privacy Act (http://www2.ed.gov/policy/gen/guid/fpco/ferpa/index.html) (FERPA)**. FERPA is a Federal law that protects the privacy of student education records. Details of Chaminade's implementation of FERPA are provided in your **Chaminade University Student Handbook and Academic Planner (https://chaminade.edu/wp-content/uploads/2019/08/NEW-STUDENT-HANDBOOK-19-20-Final-8.20.19.pdf)** .
11. Chaminade University is committed to making reasonable accommodations to assist individuals with disabilities in reaching their academic potential (**Americans with Disabilities Act (http://www.ada.gov/2010_regs.htm)**). **If you have a disability which may impact your performance, attendance, or grades in this course and require accommodations, you must first must obtain written documentation of the need for accommodations from the Chaminade University Counseling Center** (phone 808-735-4845) as soon as possible in order for the instructor to plan accordingly. Failure to provide written documentation will prevent your instructor from making the necessary accommodations. Please refer any questions to the Dean of Students and review the procedures at **https://chaminade.edu/student-life/counseling-services/ (https://chaminade.edu/student-life/counseling-services/)** .
12. **You are also expected to have read and to abide by the "Student Rules of Conduct" (p. 25 - 29)** **Chaminade University's Student Handbook and Academic Planner (http://www.chaminade.edu/student_life/handbook.php)** . The handbook is available from the Bookstore or online at **http://www.chaminade.edu/student_life/handbook.php (http://www.chaminade.edu/student_life/handbook.php)** . Please note standards of academic honesty expected of you. If you are unsure what your responsibilities are, please ask and I will be happy to help you or get you contact information if I cannot help.

Project Schedule

Item	Date
Proposal	Friday, 21 January
Draft	Fridays, 11 February through 18 March
Poster	Friday, 8 April

Video presentation	Friday, 22 April
Peer evaluation	Friday, 29 April

For Lecture schedule, go to BI480 Lecture Schedule

/MD

Course Summary:

Date	Details	Due
Wed Jan 19, 2022	**Claim your topic** (https://chaminade.instructure.com/courses/17341/assignments/224028	due by 11:59pm
Wed Feb 2, 2022	**Matching HLA assignment** (https://chaminade.instructure.com/courses/17341/assignments/224899	due by 11:59pm