Biology 495 Research I, Fall 2018

Meeting times & Location

We meet each week. First meeting: Wednesday 5:30 – 6:20PM. WSC 120. Subsequent meetings will be determined by poll.

Instructor (Facilitator)

Michael Dohm
Office: Henry 6
E-mail: mdohm@chaminade.edu
Web site: www.letgen.org/chaminade

Office hours

Office hours with Dr Dohm for BI495 are Tuesday & Thursday, 10AM - 12PM or by appointment. Office hours for research mentors should be established individually.

CUH research mentors*

Dr. Wright	Reproductive health	claire.wright [at] chaminade.edu
Dr. Carter	Forensic taphonomy	david.carter [at] chmainade.edu
Dr. Turner	Obesity and immunology	hturner [at] chaminade.edu
Dr. Kawakami	Cancer drug design	jkawakam [at] chaminade.edu
Dr. Perrault	Forensic & bioanalytical chemistry	katelynn.perrault [at] chaminade.edu
Dr. Dohm	Genetics & environmental toxicology	mdohm [at] chaminade.edu
Dr. Weichhaus	Cancer & metabolism	michael.weichhaus [at] chaminade.edu

** Research mentors may or may not be able to accommodate new students in their research for the current semester*

Course overview

Directed Senior Research is a culmination of the course of study in biology. The steps that you follow here are quite similar to steps taken by biologists in a wide variety of research labs, from generating ideas and research proposals to collection and analysis of data and finally to the presentation of results to other scientists (including those at granting agencies) through a written publication and or a public presentation. You will work in a laboratory with a lab mentor; the BI495 instructor serves as facilitator for your experience learning and conducting research. The weekly meetings with the facilitator will be used to review project progress and to perform exercises that aim to increase your knowledge of topical issues in the realms of biological discovery, scientific ethics and recent technical advances.

About you

You should be registered in BI495 if this is your first research semester at Chaminade. You should be registered in BI499 if this is your second research semester at Chaminade. BI495 is a prerequisite for BI499.

Catalog description

BI 495 Research I (3) Weekly seminar course accompanying research project (approximately 10 hours per week) performed in Chaminade or other research laboratory under supervision of a practicing research scientist. *Prerequisites: BI 308 and BI 308L. Materials intensive fee applies.*

Learning Outcomes

Successful completion of this course should provide students with the following learning outcomes:

1. Demonstration of the ability to organize and perform biological research using the scientific method.
2. Demonstration of the ability to complete a library search of biological literature.
3. Demonstration of understanding problems involved in conducting research in biology.
4. Demonstration of the ability to critically analyze data.
5. Demonstration of competency in using biological techniques and instruments
6. Demonstration of ability to conduct peer-evaluation of written materials.
7. Completion of writing up of a review paper on your research topic formatted/edited for submission to a peer- reviewed journal.
8. Completion of writing up of a Research snapshot on your research topic formatted/edited for submission to a peer- reviewed journal.
9. Completion and presentation of a poster documenting the research project for an audience of peers and professional scientists.

The course has four components:

1. Hands-on Laboratory Research Project

You may complete this on or off-campus. Off-campus research internships are typically during the summer prior to your registration in BI495. If you wish to perform on campus research you must be accepted by a research mentor from the list above by the end of week 2 of the semester. You should aim to spend at least 10 hours per week on your research project.

Be aware that “10 hours per week” is a minimum; the nature of scientific inquiry means that it can sometimes be time-consuming and the demands on you can be unpredictable. Stay in communication with the BI495 faculty, work with your research mentor about expectations and discuss how you will be able to meet the expectations of both your research laboratory responsibilities and the requirements to complete this course

2. Weekly class meetings and assignments, including two papers: (1) Research snapshot and (2) a Mini review.

During the semester we will discuss aspects of conducting research, covering both practical and epistemological issues related to scholarship and research participation. Your attendance and participation is essential, required, and you will be expected to be prepared to participate by completing homework exercises before attending class.

Papers. Students will write two papers. Required elements of the **Mini-review** paper and the **Research snapshot** paper will be discussed during the semester.

Type of paper	*Focus*	*Elements*	*Word limit*
Research snapshot	A one page summary that describes why your study was done, key findings, and implications for practice and policy, presented in plain language.	Title page Abstract Text body	500 (±50)
Mini-review	Summarizes the background and important concepts relevant to the research topic. Includes discussion of fundamental concepts, perspectives and or controversies; current knowledge and any research gaps. Must not include unpublished material (i.e., do not present your summer research!)	Title page Abstract Introduction Text body Conclusions (include headers) References Must include tables/ figures (no more than 3 total)	2000 (±200)

Due dates. Both papers must be submitted, first as as draft and then, as a final report after corrections are completed.

Drafts of both papers will be due by 5PM, 19 October (week 9)

Final version of **Research snapshot** due by 5PM, 9 November (week 12)

Final version of **Mini-review** paper due by 5PM, 30 November (week 15)

All papers will be submitted as pdf files to Dr Dohm's website (https://www.letgen.org/chaminade – BI495/499 Seminars).

3. Peer evaluation and editing of student papers, posters.

Although subjective and far from perfect, the peer review process is regarded as an essential component of doing science. Thus, students will learn how to conduct reviews of each other's work. In addition, some students will be asked to help with editing duties – those students who have already completed their research through participation in summer research will assist the instructor with improving all written materials produced in the class.

Peer evaluation and/or editing must be completed by week 10 for **Research snapshots** and by week 12 for **Mini-reviews**.

We will utilize anonymous peer review principles – only the instructor will know names of student authors and the names of students who reviewed the work of others. Similarly, names of student authors will be not be disclosed to student editors.

4. Poster presentation to faculty and staff in week 13 of the semester.

Posters. You will create and present a poster documenting your research project at our mini-symposium. A single sheet poster will be required. The poster will include title, authors and affiliations, abstract, background, methods, results and data, discussion, literature cited and acknowledgements. Powerpoint templates for poster design are recommended and will be provided on request by the instructor. Your poster will be printed for you, provided you meet the deadline (week 11).

The mini-symposium. At the mandatory poster presentation session you should be prepared to give a brief oral presentation of your poster and answer questions from faculty and your peers. Faculty will complete an evaluation of your presentation and this element will be included as part of your score for this graded element of the course (up to 50 pts possible). This will be held on campus in week 13 of the semester. The room location and date of this symposium will be announced in class.

Requirements and Grading

Grading distribution

Graded items	***Points***
Attendance and participation in weekly meetings and forum	100
Poster Presentation Judging (50 pts possible)	150
Written papers Research snapshot Draft (30 pts) + Final (15 pts) Final paper also evaluated for formatting, grammar, spelling (5 pts) Mini-review Draft (60 pts) + Final (30 pts) Final paper also evaluated for formatting, grammar, spelling (10 pts)	150
Peer review and/or editing duties	100
Total =	500

Grades assigned as follows

A	Outstanding scholarship and an unusual degree of intellectual initiative	450 – 500
B	Superior work done in a consistent and intellectual manner	400 – 449
C	Average grade indicating a competent grasp of subject matter	350 – 399
D	Inferior work of the lowest passing grade, not satisfactory for fulfillment of prerequisite course work	300 – 349
F	Failed to grasp the minimum subject matter; no credit given	≤ 299

Course and University Policies

1. Late assignments will not be accepted without prior written approval from the instructor.
2. Use of music devices and cell phones is prohibited during all Natural Science and Mathematics classes at Chaminade, unless specifically permitted by your instructor.
    - **BI495 Electronic devices policy**: “I encourage responsible use of your laptops, tablets or other electronic devices in this course, provided they do not interfere with participation and other class responsibilities,” Dr. Dohm.
3. All other academic polices specified by the University Catalog and Student Handbook 2018-2019 apply to this course.

4. Students performing research at off-campus locations are required to perform all applicable safety trainings prior to starting work
5. ADAA Statement. Pursuant to several federal and state laws, including the Americans with Disabilities Act of 1990, as amended by the ADA Amendments Act of 2008, and Section 504 of the Rehabilitation Act of 1973, all qualified students with disabilities are protected from discrimination on basis of disability and are eligible for reasonable accommodations or modifications in the academic environment to enable them to enjoy equal access to academic programs, services, or activities. If a student would like to determine if they meet the criteria for accommodations, they should contact the Counseling Center at 808-735-4845 for further information.
6. Title IX Declaration. Chaminade University of Honolulu recognizes the inherent dignity of all individuals and promotes respect for all people. Sexual misconduct, physical and/or psychological abuse will NOT be tolerated at CUH. If you have been the victim of sexual misconduct, physical and/or psychological abuse, 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, physical and/or psychological abuse, I must report the matter to the Title IX Coordinator. Should you want to speak to a confidential source you may contact the following:
    - Chaminade Counseling Center: 808 735-4845.
    - Any priest serving as a sacramental confessor or any ordained religious leader serving in the sacred confidence role.
7. Details of the course, including syllabus and schedule, may be subject to change by instructor.

Class schedule, tentative

Week 1	Orientation and Overview. Homework: Key Scientific Questions Written Exercise 250 words “What is the most important question scientists should be addressing today?” Due to Dr. Dohm (forum posting) by 4PM Monday, Aug 27
Week 2	Discussion of Key Scientific Questions Written Exercise Name of Research Project Supervisor and project title, FORUM post, **due** by 4PM, Sep 4th. Homework: How do we know what we know? Exercise & Prepare 10 minute white board presentation on the assigned question.
Week 3	Discussion of How do we know what we know? White board presentations. Homework: Prepare project hypothesis with you research supervisor. Papers: Research synopsis and Literature mini-review
Week 4	Research hypothesis and experimental plan discussion. Be prepared to discuss the work you are planning to do or have done in the lab The Research snapshot; Mini-review; Poster
Week 5	What makes a good project? A good mini-review? Exercise and group discussion
Week 6	Role of peer review, editor. Exercise and group discussion Homework: “Bad apples” exercise. Prepare 10 min whiteboard presentation on your assigned scientific misconduct case
Week 7	Review of Research Progress. “Bad apples” Research Ethics discussion.
Week 8	Homework: prepare project Research snapshot, outline mini-review, Poster
Week 9	Drafts of Research snapshot, Mini-review due Peer review
Week 10	No class meeting; Peer review; Editing; Writing. Individual appointments
Week 11	No class meeting; Individual appointments; Poster due by noon 2 November
Week 12	How to present; Research snapshot due, 7 November
Week 13	(tentative) 4:30 – 5:30PM, 14 November, NSM Symposium, also submit poster copy to website
Week 14	No meeting; Individual appointments; Mini-review peer evaluations due by 21 November (website).
Week 15	Attendance required; Mini-review due by midnight, 30 November (PDF to website)