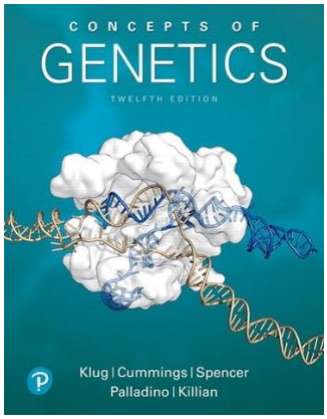

Molecular Biology I: Genes & Genetics
Biological Science BI307

Course Number: BI307
Course Title: Molecular Biology I: Genes & Genetics
Department Name: Biology
College/School/Division Name: School of Natural Sciences and Mathematics
Class Meeting Days: Monday, Wednesday, and Friday
Class Meeting Hours: 11:30 - 12:20 pm
Class Location: Eiben Hall 201 *(link to campus map (https://chaminade.edu/studentsuccess/nso/nso-campus-map/)*
Instructor Name: Dr. Mindy McDermott
Email: mindy.mcdermott@chaminade.edu
Office Location: Wesselkamper, Office 103
Office Hours: by appointment

Required Texts and Materials
Klug et al., Concepts of Genetics, 12th edition, Pearson Publishing. ISBN: 978-0134839707
You NEED to READ this book, please let me know if you are having issues getting a copy.
All other reading materials will be provided or sourced from free access on the internet.
You will also need regular access to Canvas.

Credit Hour Policy
This is a three-credit course requiring 135 clock hours of student engagement, per the official Chaminade University Credit Hour Policy. Students enrolled in this course are expected to spend about 40 hours in class, 35 hours on assignments, and at least 60 hours studying for the midterms and final exams.

Course Overview
Genetics is a one-semester course focused on the study of genes, the fundamental units of heredity, and their influence on inheritance in living organisms. The course explores inheritance patterns, including heritability and mutation, as well as the interactions between genes, gene expression, environment, and phenotypes. Topics covered include molecular genetics, such as gene structure, biotechnology, and the genetic foundations of cancer and cell cycle regulation. BI307 aims to provide a solid grounding in genetic principles and analysis, while BI308 builds upon this foundation with an emphasis on genomics.

Marianist and Native Hawaiian Values
Education is an integral value in both Marianist and Native Hawaiian culture. Both recognize the transformative effect of a well-rounded, value-centered education on society, particularly in seeking justice for the marginalized, the forgotten, and the oppressed, always with an eye toward God (Ke Akua). This is reflected in the ʻŌlelo No'eau (Hawaiian proverbs) and Marianist core beliefs.

1. Educate for Formation in Faith (Mana) E ola au i ke akua (ʻŌlelo Noʻeau 364) May I live by God.
2. Provide an Integral, Quality Education (Na'auao) Lawe i ka maʻalea a kūʻonoʻono (ʻŌlelo Noʻeau 1957). Acquire skill and make it deep.
3. Educate in Family Spirit (ʻOhana) ʻIke aku, ʻike mai, kōkua aku kōkua mai; pela iho la ka nohana ʻohana. (ʻŌlelo Noʻeau 1200) Recognize others, be recognized, help others, be helped; such is a family relationship.
4. Educate for Service, Justice, and Peace (Aloha) Ka lama kū o ka noʻeau (ʻŌlelo Noʻeau 1430) Education is the standing torch of wisdom.
5. Educate for Adaptation and Change (Aina) ʻAʻohe pau ka ʻike i ka hâlau hoʻokahi (ʻÔlelo Noʻeau 203)**.** All knowledge is not taught in the same school.

Alignment of Natural Sciences Courses with Marianist & Native Hawaiian values of the University
The Natural Sciences Division provides an *integral, quality education:* sophisticated integrative course content taught by experienced, dedicated, and well-educated instructors.

- We *educate in family spirit* – every classroom is an *Ohana* and you can expect to be respected yet challenged in an environment that is supportive, inclusively by instructors who take the time to personally get to know and care for you.
- We *educate for service, justice, and peace*, since many of the most pressing global issues (climate change, health inequity, poverty, justice) are those which science and technology investigate, establish ethical parameters for, and offer solutions to.
- We *educate for adaptation and change*. In science and technology, the only constant is change. Data, techniques, technologies, questions, interpretations, and ethical landscapes are constantly evolving, and we teach students to thrive on this dynamic uncertainty.

The study of science and technology can be formative, exploring human creativity and potential in the development of technologies and scientific solutions, the opportunity to engage in the stewardship of the natural world, and the opportunity to promote social justice. We provide opportunities to engage with the problems that face Hawai‘i and the Pacific region through the Natural Sciences curriculum, in particular, those centered around severe challenges in health, poverty, environmental resilience, and erosion of traditional culture. The Marianist Educational Values relate to Native Hawaiian ideas of *mana, na'auao, ohana*, *aloha* and *aina*. We intend for our Natural Sciences programs to be culturally-sustaining, rooted in our Hawaiian place, and centered on core values of *Maiau,* be neat, prepared, careful in all we do; *Makawalu*, demonstrate foresight and planning; *`Ai,* sustain mind and body; *Pa`a Na`au*, learn deeply.

Student (Course) Learning Outcomes

1. Understand and articulate the structure and function of DNA, RNA, and proteins, and explain their relationship to the "Central Dogma" of molecular biology.
2. Utilize correct genetic terminology effectively.
3. Explain and apply the principles of transmission genetics and the role of probability in inheritance patterns, including the chromosomal basis of heredity.
4. Identify, differentiate, and assess the impact of mutations, gene flow, nonrandom mating, genetic drift, and natural selection on the genetic structure of populations.
5. Describe and evaluate how the chemical properties of DNA and protein interactions are leveraged by scientists to study and manipulate genes and phenotypes.

Biology Program Learning Outcomes (PLO)

Upon completion of a B.S. degree program in Biology the student will be able to:

1. Utilize the scientific method in the design and testing of hypotheses.
2. Statistically evaluate, validate, and interpret scientific data and communicate the results of such analyses effectively both orally and in writing.
3. Acquire and comprehend information from published scientific literature and employ computational resources in the resolution of biological problems.
4. Recognize the chemical and physical principles that underlie all life forms, as well as 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. Embark upon career pathways towards the major post-graduate fields of research, education, and the health professions of their choice.

Alignment of Course Learning Outcomes (CLO) to Biology Program Outcomes (PLO)

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
CLO1				X		X
CLO2		X				X
CLO3		X		X		X
CLO4		X		X	X	X
CLO5				X		X

*Adopted from Dr. Michael Dohm

Strategies for Success

1. **Prepare in Advance:** Read your textbook and other materials before attending class.
2. **Be Present:** Attend all lectures and study sessions consistently.
3. **Engage Fully:** Participate actively in all activities without dividing the work or copying from others.
4. **Allocate Study Time:** Dedicate a specific block of time each day to your coursework.
5. Aim to spend 1-2 hours studying at home for every hour spent in the classroom.
6. **Establish a Study Routine:** Create a study schedule and adhere to it.
7. **Avoid Procrastination:** Stay on top of your assignments and study regularly.
8. **Practice Memorization:** Develop and regularly practice the skill of memorization.
9. **Diversify Your Learning:** Approach the material in multiple ways and connect it to things that are meaningful to you.
10. The more diverse and meaningful your learning approach, the easier it will be to remember the information.
11. **Collaborate with Peers:** Work with classmates to stay motivated and form study groups.
12. **Seek Help Early:** If you encounter difficulties with the course, seek assistance promptly.

Grading Policies

Grading Procedure

Grades will reflect an overall understanding of topics covered in class. Attendance, completion of assigned readings, and attentiveness in the lecture will ensure satisfactory performance in the class. Demonstrating a thorough understanding of course material and intelligent engagement in class discussions constitutes high achievement in the course. We will have in-class work to do to facilitate class discussion, which may range from group activities, reviews of current literature, media, articles, and class discussions. Group activities may consist of brief oral reports or short written reports. For written coursework, you will be graded on your ability not only to answer the question, but also in how effectively you can defend your answer/position using your knowledge of the subject & applying what you learned through the use of appropriate facts and examples.

Specific Assignment	% Of Grade	Due Date
Assignments	20%	Each week semester long
Participation	15%	Each week semester long
Semester exams	50%	Five during semester
Final Exam	15%	Final week of semester

Grading Scale
Letter grades are given in all courses except those conducted on a credit/no credit basis. Grades are calculated from the student's daily work, class participation, tests, reports, and examinations. They are interpreted as follows:

A (90% & above) Outstanding scholarship and an unusual degree of intellectual initiative

B (80–89%) Superior work done in a consistent and intellectual manner

C (70–79%) Average grade indicating a competent grasp of subject matter

D (60–69%) Inferior work, not satisfactory for fulfillment of course

F (59% & below) Failed to grasp the minimum subject matter; no credit given

Tutoring and Writing Services
Chaminade is proud to offer free, one-on-one tutoring and writing assistance to all students. Tutoring and writing help is available on campus at Kōkua `Ike: Center for Student Learning in a variety of subjects (including, but are not limited to biology, chemistry, math, nursing, English, etc.) from trained Peer and Professional Tutors. Please check Kōkua `Ike's website (https://chaminade.edu/advising/kokua-ike/) for the latest times, list of drop-in hours, and information on scheduling an appointment. Free online tutoring is also available via Smarthinking. Smarthinking can be accessed 24/7 from your Canvas account. Simply click Account – Notifications – Smarthinking. For more information, please contact Kōkua `Ike at tutoring@chaminade.edu or 808-739-8305.

Course Policies

Late Work Policy
Assignments are expected on the due date. If you are unable to make the due date, a conversation must be had with me PRIOR to the due date for an extension. Unexcused late work will receive a reduced grade.

Grades of "Incomplete"
Students and instructors may negotiate an incomplete grade when there are specific justifying circumstances. When submitting a grade, the “I” will be accompanied by the alternative grade that will automatically be assigned after 90 days. These include IB, IC, ID, and IF. If only an “I” is submitted the default grade is F. The completion of the work, evaluation, and reporting of the final grade is due within 90 days after the end of the semester or term. This limit may not be extended.

Instructor and Student Communication
Questions for this course can be emailed to the instructor at [mindy.mcdermott@chaminade.edu]. Online, in-person, and phone conferences can be arranged. Response time will take place as soon as possible, usually within one day.

Cell phones, tablets, and laptops
Out of consideration for your classmates, please set your cell phone to silent mode during class. Students are encouraged to bring laptops or tablets to class as the instructor will assign online activities and readings that will require the use of a laptop or tablet. Laptops and tablets should not be misused, such as checking distracting websites. Use your best judgment and respect your classmates and instructor.

ADA Policy
Pursuant to 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 the basis of disability and are eligible for reasonable accommodations or modifications in the academic environment to enable them to 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 in the Student Support Services Building, Room 101, by phone at (808) 735-4845 or email: counselingcenter@chamiande.edu for further information. Web: studentaffairs.chaminade.edu/counseling-center/counseling-services

Title IX Compliance
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. If you or someone you know has been harassed or assaulted, you can find the appropriate resources by visiting Campus Ministry, the Dean of Students Office, the Counseling Center, or the Office for Compliance and Personnel Services.

Attendance Policy

Students are expected to regularly attend all courses for which they are registered. Students should notify their instructors when illness or other extenuating circumstances prevents them from attending class and make arrangements to complete missed assignments. Notification may be done by emailing the instructor's Chaminade email address, or by leaving a message with the instructor's division office. It is the instructor's prerogative to modify deadlines of course requirements accordingly. Any student who stops attending a course without officially withdrawing may receive a failing grade. Any unexcused absence of two consecutive weeks or more may result in being withdrawn from the course by the instructor, although the instructor is not required to withdraw students in that scenario. Repeated absences put students at risk of failing grades.

Students with disabilities who have obtained accommodations from the Chaminade University of Honolulu ADA Coordinator may be considered for an exception when the accommodation does not materially alter the attainment of the learning outcomes. Federal regulations require continued attendance for continuing payment of financial aid. When illness or personal reasons necessitate continued absence, the student should communicate first with the instructor to review the options. Anyone who stops attending a course without official withdrawal may receive a failing grade or be withdrawn by the instructor at the instructor's discretion.

Academic Conduct Policy

The success of the Honor Code is made possible only with the acceptance and cooperation of every student. Each student is expected to maintain the principles of the Code. Example of Honor Code violations include, but are not limited to:

- Giving or receiving information from another student during an examination;
- Using unauthorized sources for answers during an examination;
- Illegally obtained test questions before the test;
- Any and all forms of plagiarism – submit all or part of someone else's work or ideas as your own;
- The destruction and/or confiscation of school and/or personal property.

Violations of Academic Integrity: Violations of the principle include, but are not limited to:

- Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids, or other devices in an academic exercise.
- Fabrication and Falsification: Intentional and unauthorized alteration or invention of any information or citation in an academic exercise. Falsification is a matter of inventing or counterfeiting information for use in any academic exercise.
- Multiple Submissions: The submission of substantial portions of the same academic work for credit (including oral reports) more than once without authorization.
- Plagiarism: Intentionally or knowingly presenting the work of another as one's own (i.e., without proper acknowledgment of the source).
- Abuse of Academic Materials: Intentionally or knowingly destroying, stealing, or making inaccessible library or other academic resource materials.
- Complicity in Academic Dishonesty: Intentionally or knowingly helping or attempting to help another to commit an act of academic dishonesty.

Plagiarism includes, but is not limited to:

- Complete or partial copying directly from a published or unpublished source without proper acknowledgement to the author. Minor changes in wording or syntax are not sufficient to avoid charges of plagiarism. Proper acknowledgement of the source of a text is always mandatory.
- Paraphrasing the work of another without proper author acknowledgement.
- Submitting as one's own original work, however freely given or purchased, the original exam, research paper, manuscript, report, computer file, or other assignment that has been prepared by another individual.
- Use of generative artificial intelligence (AI) without permission by instructor. Sentences, paragraphs, or entire papers written by AI are not original work.

**Students are encouraged to utilize change tracking and history functions of their word processing software to help document that a work is original to the student.*

Consequences of academic honesty violations:

From the Chaminade University catalog (https://catalog.chaminade.edu/generalinformation/academicaffairs/policies/academichonesty) : Academic honesty is an essential aspect of all learning, scholarship, and research. It is one of the values regarded most highly by academic communities throughout the world. Violations of the principle of academic honesty are extremely serious and will not be tolerated. Students are responsible for promoting academic honesty at Chaminade by not participating in any act of dishonesty and by reporting any incidence of academic dishonesty to an instructor or to a university official. Academic dishonesty may include theft of records or examinations, alteration of grades, and plagiarism, in addition to more obvious dishonesty. Questions of academic dishonesty in a particular class are first reviewed by the instructor, who must make a report with recommendations to the Dean of the Academic Division. Punishment for academic dishonesty will be determined by the instructor and the Dean of Academic Division and may include an "F" grade for the work in question, an "F" grade for the course, suspension, or dismissal from the University.

**Additional information on student conduct can be found in the student handbook.*

Course Schedule (subject to change as instructor deems necessary)

Week	Dates	Lecture (Topic & Chapter)	Assignments
1	Aug 19 - Aug 25	Introduction – Chp 1 Mitosis & Meiosis – Chp 2	See Canvas
2	Aug 26 - Sept 1	Mendelian Genetics - Chp 3 & 4	See Canvas
3	Sept 2 - Sept 5	Mendelian Genetics – Chp 3 & 4	See Canvas
3	Sept 6	**EXAM 1**	See Canvas
4	Sept 9 - Sept 15	Chromosome Mapping – Chp 5	See Canvas
5	Sept 16 - Sept 22	Quantitative Genetics – Chp 23	See Canvas
6	Sept 23 - Sept 29	Population & Evolutionary Genetics – Chp 25	See Canvas
7	Sept 30	**EXAM 2**	See Canvas
7	Oct 1 - Oct 6	DNA Structure and Analysis - Chp 10	See Canvas
8	Oct 7 - Oct 13	DNA Organization in Chromosomes - Chp 12 DNA Replication and Recombination - Chp 11	See Canvas

9	Oct 14 - Oct 17	DNA Replication and Recombination - Chp 11	See Canvas
9	Oct 18	**EXAM 3**	See Canvas
10	Oct 21 - Oct 27	The Genetic Code and Transcription - Chp 13	See Canvas
11	Oct 28 - Nov 3	RNA: Editing & Processing - Chp 14 Translation and Proteins - Chp 14	See Canvas
12	Nov 4 - Nov 7	Review	See Canvas
12	Nov 8	**EXAM 4**	See Canvas
13	Nov 11 - Nov 17	DNA Mutations & DNA Repair – Chp 8 & 15	See Canvas
14	Nov 18 - Nov 24	Epigenetic Regulation of Gene Expression – Chp 19	See Canvas
15	Nov 25 - Nov 27	Cancer Genetics - Chp 19	
15	Nov 29	No Class – Happy Thanksgiving	See Canvas
FINALS	Dec 6	Friday, 11: 00 am - 1:00 pm	

Note: Every effort has been made to ensure that the material in this syllabus is accurate and complete. However, occasionally changes must be made in the printed schedule. Thus, the instructor reserves the right to make any changes in the contents of this syllabus that she deems necessary or desirable. These changes, if any, will be announced as soon as the need for them becomes apparent.