

**Laboratory:****Fall 2017**

Instructor: Dr. Frederique Kandel
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Office Hours: W 1:30pm-5:30pm, F 10-11am or by appointment
Class Hours: Monday 14:30-17:20, Henry Hall, Room L1

Texts:

There is no required text for this lab. All necessary protocols and reading material will be provided to you either as handouts or will be available through Canvas.

Learning Outcomes: Introduction to Biological Techniques used in the fields of molecular and cellular biology.

General Course Objectives:

- To understand basic laboratory safety.
- To learn how to keep a proper laboratory notebook.
- To learn how to operate basic laboratory equipment.
- To be comfortable utilizing basic mathematical calculations necessary in a laboratory setting.

Specific Student Learning Outcomes:

At the end of the course, you will be able to:

Student Learning Outcomes	Corresponding Biology Program Learning Outcomes
Safety lab etiquette: Demonstrate the capacity to work safely in a laboratory setting and have awareness of common regulatory guidelines for laboratory work. Additionally, students will consistently and proactively behave within accepted norms of lab etiquette.	#7) An understanding of the entry requirements, career pathways and progression for the major post-graduate fields of research, education and health professions.
Record keeping: Understand the principles of good scientific record keeping; demonstrate the keeping of laboratory notebooks and experimental record, and organization of data for accessibility and later understanding and reproducibility	#2) ability to visualize, statistically evaluate, validate and interpret scientific data, and to communicate science effectively both orally and in writing #7) An understanding of the entry requirements, career pathways and progression for the major post-graduate fields of research, education and health professions
Mathematics: Perform basic mathematical calculations including scientific notation and algebraic conversions essential to the preparation of solutions and quantitation of molecules including standard curve analysis and regression analysis.	#1) An understanding of the scientific method and the ability to design and test a hypothesis #7) An understanding of the entry requirements, career pathways and progression for the major post-graduate fields of research, education and health professions

Precise and reproducible manipulations: Be familiar with basic laboratory equipment operation and theory of its operation as well as be able to demonstrate mechanical and technical operations central to science laboratories; including properly and accurately operating basic biology lab instrumentation such as glassware, pipettes, incubators, balances, centrifuges, pH meters, spectrophotometers, and thermocyclers.	#2) ability to visualize, statistically evaluate, validate and interpret scientific data, and to communicate science effectively both orally and in writing #7) An understanding of the entry requirements, career pathways and progression for the major post-graduate fields of research, education and health professions
Precise and reproducible measurements: Demonstrate understanding of the importance and methods for calibration, repetition of laboratory manipulations, understanding of systematic error.	#2) ability to visualize, statistically evaluate, validate and interpret scientific data, and to communicate science effectively both orally and in writing #7) An understanding of the entry requirements, career pathways and progression for the major post-graduate fields of research, education and health professions
Databases: Familiarity with electronic sources of information pertaining to the above	#3) The ability to acquire and comprehend information from published scientific literature and to employ computational resources in the resolution of biological problems. #7) An understanding of the entry requirements, career pathways and progression for the major post-graduate fields of research, education and health professions

1. The lab grade will be determined as follows:

Grade scale

A 90 – 100%
 B 80 – 89%
 C 70 – 79%
 D 60 - 69%
 F less than 60%

Assignment	Percent of grade
Attendance/participation	20 %
Quizzes	20 %
Homework	20 %
Lab notebook	10%
In lab skill evaluations	<u>30 %</u>
	100 %

Attendance:

- Presence in class is mandatory.
- 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 (Natural Science and Math 1 (808) 440-4204). It is the instructor's prerogative to modify deadlines of course requirements. Any student who stops attending a course without officially **withdrawing** may receive a failing grade.
- Unexcused absences equivalent to more than a week of classes may lead to a grade reduction for the course. 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.

Makeup exams and extra credit:

- Makeup exams are generally not given for this laboratory class. If there is an insurmountable problem please come talk to the instructor to see if arrangements can be made.

Departmental and University Policies:

1. Disability Access

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.

2. 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. Faculty members are interested in promoting a safe and healthy environment. Should they learn of any sexual misconduct, physical and/or psychological abuse, they 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.

3. 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 the Honor Code are serious. They harm other students, your professor, and the integrity of the University. Alleged violations will be referred to the Office of Judicial Affairs. If found guilty of plagiarism, a student might receive a range of penalties, including failure of an assignment, failure of an assignment and withholding of the final course grade until a paper is turned in on the topic of plagiarism, failure of the course, or suspension from the University.

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 any 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:

- Copying or borrowing liberally from someone else's work without his/her knowledge or permission; or with his/her knowledge or permission and turning it in as your own work.
- Copying of someone else's exam or paper.
- Allowing someone to turn in your work as his or her own. DO NOT provide your work to someone else for reference.
- Not providing adequate references for cited work.
- Copying and pasting large quotes or passages without properly citing them.

On-Campus Tutoring

- Retention, Advising, and Career Preparation offers free, one-on-one tutoring for all undergraduate students at Chaminade. Subjects tutored include, but are not limited to: biology, chemistry, math, nursing, English, etc. The tutoring corps consists of trained Peer and Professional Tutors.
- Tutoring is available by appointment only. Tutoring takes place in either the Student Support Services building during the hours of 8:30 a.m. to 4:30 p.m., Monday to Friday.
- In order to receive tutoring, a student can visit the Student Support Services building and complete an information form. After submitting this form, a staff member will assist the student in creating an online account that allows him/her to book a tutoring appointment through the online system.
- All appointments must be made two days prior to the desired appointment. Cancellations must be made 24 hours in advance.

Online Tutoring through Smarthinking

- All CUH students are eligible to use Smarthinking, an online tutoring system. Students are able to access Smarthinking via their Canvas account.
- Through Smarthinking, students are able to connect in real-time with an expert educator in a variety of subjects using a virtual whiteboard technology. Students also have an option to schedule a 30-minute appointment with a tutor of their choice. The Online Writing Lab provides students with the ability to receive a detailed, personalized critique of any written assignment through a formal critique process.
- All sessions are archived and available for students to review at any time for studying or test preparation.

Tentative schedule of laboratory sessions:

8/28/2017	Introduction, Laboratory safety, Reflection/Initial survey
9/4/2017	No Class: Monday Labor Day holiday
9/11/2017	Cultural lab module: Introduction to Precision and Accuracy.
9/18/2017	Precision and Accuracy: Weighing
9/25/2017	Precision and Accuracy: Use of pipettes and micropipettes
10/2/2017	Precision and Accuracy: Microscopy
10/9/2017	No Class: Discoverer's Day holiday
10/16/2017	Cultural lab module: Introduction to Solutions & Dilutions
10/23/2017	Solutions & Dilutions: Molarity, Concentration, Dilution factors.
10/30/2017	Solution & dilution: titration: Buffer and pH
11/6/2017	Solution & dilution: Serial Dilution
11/13/2017	Technical applications: DNA and PCR
11/20/2017	Technical applications: Gel electrophoresis
11/27/2017	Field Trip
12/4/2017	Outgoing survey/Reflection

Every effort was made to insure that this syllabus is accurate and complete. However the instructor reserves the right to modify the contents of this syllabus as needed. These changes, if any, will be announced as soon as possible.