



**PHY-251L: UNIVERSITY PHYSICS I LAB
COURSE SYLLABUS – FALL 2023**

Instructor: Matthew Cochran
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Course Room: Henry Hall L10
Prerequisites: Concurrent enrollment in PHY-251 is assumed.
Required Text: None. Handouts will be provided.
Other Materials: Scientific calculator, lab coat

COURSE DESCRIPTION:

This is an introduction to laboratory techniques and experiments that illustrate and apply basic physics principles presented in lecture. Students will have the opportunity to apply the scientific method in collecting and analyzing data.

EVALUATIONS AND GRADING SCALE:

Worksheet Labs Reports	70%
Quizzes	20%
Makahiki Games.....	10%
90% – 100%	A
80% – 90%	B
70% – 80%	C
60% – 70%	D
0% – 60%	F

Incomplete grades (I) will be given in accordance with college regulations as outlined in the college catalog. Withdrawals (W) from the class are the responsibility of the student and deadlines are set by the college.

LAB REPORTS:

Lab reports will be in the form of worksheets. Labs should be completed in class and submitted at the beginning of the next class.

Although students will work in groups on experiments, lab assignments are individual preparations. Each student is responsible for their own interpretation of results.

QUIZZES:

A short quiz will be given at the beginning of each lab. The quiz will test your understanding of the most recent lab. You may use your lab report while taking the quiz. No make-up quizzes will be given.

ATTENDANCE:

Each student is expected to attend every lab. Arrive on time. Make-up labs will only be given under extenuating circumstances beyond the student's control. If you know in advance of an absence, inform the instructor as soon as possible.

SAFETY:

No food or drinks are allowed in lab. Student must wear closed-toed shoes at all times. Slippers are not allowed. Lab coats must be worn at all times.

WEEKLY SCHEDULE:

Week	Lab
1	Units and Significant Figures
2	Representations of Motion
3	Motion of a Ball
4	Projectile Motion I
5	Projectile Motion II
6	Statics
7	Friction
8	Cart Dynamics
9	Energy and Power
10	Impulse and Momentum
11	Rotational Statics
12	Makahiki Games
13	Buoyancy
14	Thanksgiving Recess – No Class
15	Make-up

COURSE OBJECTIVES:

Upon successful completion of the course, students will demonstrate:

1. The ability to measure physical quantities such as distance, time, and force using basic scientific instruments;
2. The ability to estimate uncertainties and a knowledge of statistical analysis;
3. The ability to present results graphically;
4. The ability to measure physical quantities using a computer when appropriate;
5. The ability to analyze results using a computer when appropriate;

PROGRAM LEARNING OUTCOMES

Students completing a minor in physics will be able to:

1. Apply quantitative reasoning and appropriate mathematics to describe phenomena in the natural world.
2. Interpret multiple scientific representations, including verbal descriptions, diagrams, graphs, formulas, and translate between them.
3. Apply physics principles to understand living systems, scientific instrumentation, and everyday experiences.

MARIANIST VALUES:

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.

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.

CREDIT HOUR POLICY:

The unit of semester credit is defined as university-level credit that is awarded for the completion of coursework. One credit hour reflects the amount of work represented in the intended learning outcomes and verified by evidence of student achievement for those learning outcomes. Each credit hour earned at Chaminade University should result in 45 hours of engagement. This equates to one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester, 10 week term, or equivalent amount of work over a different amount of time. Direct instructor engagement and out-of-class work result in total student engagement time of 45 hours for one credit.

The minimum 45 hours of engagement per credit hour can be satisfied in fully online, internship, or other specialized courses through several means, including (a) regular online instruction or interaction with the faculty member and fellow students and (b) academic engagement through extensive reading, research, online discussion, online quizzes or exams; instruction, collaborative group work, internships, laboratory work, practica, studio work, and preparation of papers, presentations, or other forms of assessment. This policy is in accordance with federal regulations and regional accrediting agencies.

PHY-251L: 3 hours seat $\times$ 15 weeks = 45 hours

DISABILITY ACCESS:

If you need individual accommodations to meet course outcomes because of a documented disability, please speak with me to discuss your needs as soon as possible so that we can ensure your full participation in class and fair assessment of your work. Students with special needs who meet criteria for the Americans with Disabilities Act (ADA) provisions must provide written documentation of the need for accommodations from the Counseling Center by the end of week three of the class, in order for instructors to plan accordingly. 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 (counselingcenter@chaminade.edu).

MUSIC DEVICES AND MOBILE PHONES:

Unless specifically permitted by your instructor, use of music devices and mobile phones is prohibited during all Natural Science and Mathematics classes at Chaminade, as it is discourteous and may lead to suspicion of academic misconduct. Students unable to comply will be asked to leave class.