



PHYS 122 – Introduction to Physical Sciences

3 Credits (CRN: 64475)

TR 11.55-13.20

INSTRUCTOR: Mevan Ranasinghe
OFFICE: Same as classroom (at Castle HS)
OFFICE HOURS: TR 11.25-11.55 (before class / during lunch)
TELEPHONE: --- **EMAIL:** mevanr@hawaii.edu
EFFECTIVE DATE: Spring 2023

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

Windward Community College offers innovative programs in the arts and sciences and opportunities to gain knowledge and understanding of Hawai‘i and its unique heritage. With a special commitment to support the access and educational needs of Native Hawaiians, we provide the Ko‘olau region of O‘ahu and beyond with liberal arts, career and lifelong learning in a supportive and challenging environment — inspiring students to excellence.

CATALOG DESCRIPTION

Characteristics of science, historical development of scientific concepts, and interactions with society illustrated by topics from physics sciences, with emphasis in physics and chemistry. Designed for non-science majors.

STUDENT LEARNING OUTCOMES

As a result of taking this course, students can expect to attain the following outcomes:

1. Recognize the fundamental principles and philosophy upon which the scientific method is based.
2. Apply the basic concepts of physics and chemistry.
3. Apply the concept of conservation laws in problem solving.
4. Apply basic mathematics to problems in physics and chemistry.
5. Define the common terms used in physical sciences.
6. Assess the limitations of the scientific method and apply error analysis.
7. Recognize the physical science principles as applied to everyday situation.

COURSE TASKS & GRADING

The final grade will be determined by the total accumulated points. The break down for the points is:





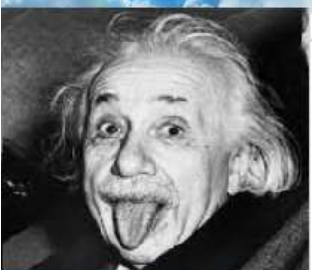
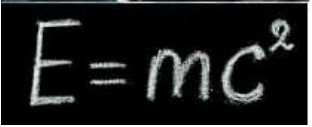
| | |
|------------|-----|
| Quiz1 | 10% |
| Quiz2 | 10% |
| Quiz3 | 10% |
| Quiz4 | 10% |
| Quiz5 | 10% |
| Midterm | 20% |
| Final Exam | 30% |

ATTENDANCE BONUS:

Students benefit from discussions and participation so please attend regularly and contribute to our collective understanding. Bonus points will be given to regular attendees (**on-time**). In the event you complete the entire semester with no absences, +2 % is added to your OVERALL end-of-semester grade.

| Days Absent | Percent Added |
|-------------|---------------|
| 0 | + 2.0 % |
| 1 | +1.5% |
| 2 | + 1.0 % |
| 3 | + 0.5 % |
| 4 | 0 |

COURSE CONTENT

| | |
|--|--|
| <p>UNIT 1: HOW DO OBJECTS MOVE?</p> <p>Week 1 - Chapter 1. About Science, Hypotheses, Predictions Chapter 2. Newton's First Law of Motion: Inertia</p> <p>Week 2 - Chapter 3. Linear Motion Chapter 4. Newton's Second Law: Force, Acceleration</p> <p>Week 3 - Chapter 5. Newton's Third Law: + QUIZ 1</p> <p>UNIT 2: WHAT IS ENERGY?</p> <p>Week 4 - Chapter 6. Momentum Chapter 7. Energy</p> <p>Week 5 - Chapter 8. Rotational Motion Chapter 9. Gravity</p> <p>Week 6 - Chapter 19. Waves/Vibrations + QUIZ 2</p> <p>UNIT 3: WHAT IS LIGHTNING?</p> <p>Week 7 - Chapter 22. Electrostatics Chapter 23. Electric Current</p> <p>Week 8 - Chapter 24. Magnetism Chapter 25. Electromagnetic Induction</p> <p>Week 9 – QUIZ 3 + MIDTERM</p> |    |
| <p>UNIT 4: WHAT IS MATTER?</p> <p>Week 10 - Chapter 11. Atomic Nature of Matter Chapter 12/13. Solids/Liquids</p> <p>Week 11 - Chapter 14. Gases and Plasma Chapter 15. Temperature & Heat</p> <p>Week 12 - *Periodic Table *Chemical Bonds</p> <p>Week 13 - *Chemical Equations + QUIZ 4</p> <p>UNIT 5: WHY IS THE SKY BLUE?</p> <p>Week 14 - Chapter 26. Properties of Light Chapter 27. Color</p> <p>Week 15 - Chapter 28. Reflection and Refraction Chapter 29. Light Waves</p> <p>Week 16 - Chapter 31. Light Quanta Chapter 35. Special Relativity + QUIZ 5</p> <p>Week 17 – FINAL EXAM</p> |    |

LEARNING RESOURCES

Laulima: Slidepacks on each Chapter.

Textbook: *Conceptual Physics* 12th edition – by Paul G Hewitt. Publisher: Pearson

Scientific calculator (TI-30 or better).

DISABILITIES ACCOMMODATIONS

If you have a physical, sensory, health, cognitive, or mental health disability that could limit your ability to fully participate in this class, you are encouraged to contact the Accessibility Counselor to discuss reasonable accommodations that will help you succeed in this class.

Jodi Asato
Counselor, Student Disabilities Office
jodiaka@hawaii.edu
Hale Koko‘o 105
808-235-7472

SEX DISCRIMINATION AND GENDER-BASED VIOLENCE RESOURCES (TITLE IX)

Windward Community College is committed to providing a learning, working, and living environment that promotes personal integrity, civility, and mutual respect and is free of all forms of sex discrimination and gender-based violence, including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence, and stalking.

If you or someone you know is experiencing any of these, WCC has staff and resources to support and assist you. To report an incident of sex discrimination or gender-based violence, as well as receive information and support, please contact one of the following:

Desrae Kahale *Confidential Resource*
808-235-7393
dkahale3@hawaii.edu

Jojo Miller, *Confidential Campus Advocate*
808-348-0663
jojo.miller@hawaii.edu

Leslie Cabingabang *Senior Confidential Advocate*
808-348-0432
leslie.cabingabang@hawaii.edu

As a member of the University faculty, I am required to immediately report any incident of sex discrimination or gender-based violence to the campus Title IX Coordinator. Although the Title IX Coordinator and I cannot guarantee confidentiality, you will still have options about how your case will be handled. My goal is to make sure you are aware of the range of options available to you and have access to the resources and support you need.

For more information regarding sex discrimination and gender-based violence, the University’s Title IX resources and the University’s Policy, Interim EP 1.204, go to manoa.hawaii.edu/titleix/

ALTERNATE CONTACT INFORMATION

If you are unable to contact the instructor, have questions that your instructor cannot answer, or for any other issues, please contact the Academic Affairs Office:

- Location: Alaka‘i 121
- Phone: (808) 235-7422