



## Course Syllabus - Physics 105 (CRN 11232) - Fall 2024

### Basic Course Information

Semester:	<b>Fall 2024</b>	Instructor Name:	<b>Dr. Alejandro Cozzani</b>
Course Title & #:	<b>Physics 105</b>	Email:	<b>alex.cozzani@imperial.edu</b>
CRN #:	<b>11232</b>	Webpage (optional):	<b>Refer to Canvas</b>
Classroom:	<b>2731</b>	Office #:	<b>2776</b>
Class Dates:	<b>August 12-December 07, 2024 Last Day to Add: 08/24/24 Drop Deadline with W: 11/02/24</b>	Office Hours:	<b>Monday: 7:30-8:00 AM Tuesday: 7:30-8:00 AM and 12:00-1:00 PM (online) Wednesday: 7:30-8:00 AM Thursday: 7:30-8:00 AM and 12:00-1:00 PM (online).</b>
Class Days:	<b>Monday &amp; Wednesday</b>	Office Phone #:	<b>760-355-5760</b>
Class Times:	<b>8:00 AM-11:10 AM</b>	Emergency Contact:	<b>Silvia Murray 760-355-6201</b>
Units:	<b>4.0 (3.0 Lecture/1.0 Lab)</b>	Class Format:	<b>In person</b>

### Course Description

This is the first course in a two-semester physics sequence. This course is intended for students not majoring in physics or engineering but needing a one-year course in physics as a requirement for their major program.

The course is part of a two-semester sequence whose contents may be offered in other sequences or combinations. Core topics include kinematics, dynamics, work and energy, momentum, fluids, and simple harmonic motion.

### Course Prerequisite(s) and/or Corequisite(s)

Intermediate Algebra or equivalent is highly recommended.

### Student Learning Outcomes

1. Students will demonstrate an understanding of the basics of the fields of mechanics, fluids, oscillatory motion, thermodynamics, and their corresponding physical laws by correctly describing and identifying the concepts relevant to these fields
2. Given new situations, by using various trigonometric and algebraic techniques (with some discussion of relevant calculus concepts) students will correctly solve a variety of physical situations by a proper application of the principles, laws, and concepts of physics.
3. Given a particular laboratory physical objective in mechanics, fluids, oscillatory motion, or thermodynamics, students will correctly construct physical systems, learn to use and manipulate laboratory apparatus, and correctly make and analyze measurements of these physical systems.

### Course Objectives

Upon successful completion of the course the student should be able to:

1. Read and critically evaluate scientific literature involving basic concepts
2. Apply basic scientific principles to analyze new situations
3. Outline and use the fundamental concepts of kinematics
4. Recognize and use Newton's Laws of Motion and Gravitation
5. Categorize and explain the connections between dynamics, energy, and momentum Synthesize and apply the basic laws of conservation of energy and momentum
6. Use the concepts of kinematic, dynamics, and energy to understand and characterize simple harmonic motion (SHM)
7. Identify, examine, and characterize the fundamental properties of fluids
8. Describe, investigate, and solve basic problems involving wave motion
9. Explore and investigate the realm of temperature, heat, thermal energy, and thermodynamics
10. Support, practice, and synthesize the above learning objectives through directed laboratory work
11. Apply fundamental physical concepts to understand life-science phenomena and to solve physical problems involving living systems.

### Textbooks & Other Resources or Links

#### Textbooks (either one):

1. College Physics (2nd edition); Urone, P. and Hinrichs, R. Openstax.;2022. ISBN 978-1-951693-60-2.
2. College Physics (11<sup>th</sup> edition). Young, H. Adams, P., Chastain, R. Pearson. 2019. ISBN 978-0134876986.
3. College Physics (4<sup>th</sup> edition). Giamgattista, A. Mc Graw Hill Education. 2019. ISBN 978-0073512143.
4. Physics (10<sup>th</sup> ed.) Cutnell, John D.; Johnson, Kenneth W; Wiley; 2018. ISBN 978-0471713982
5. College Physics (10th Edition), Serway, Raymond A.; Faughn, Jerry S.; Cengage; 2017. ISBN 978-1285737027.

### Course Requirements and Instructional Methods

1. **"Success is the only option, so apply yourself diligently, strive for excellence, study hard, and always give your best effort!"**
2. **Out of Class Assignments:** The Department of Education policy states that one (1) credit hour is the amount of student work that reasonably approximates not less than one hour of class time and two (2) hours of out-of-class time per week over the span of a semester. WASC has adopted a similar requirement.
3. **Minimum requirements to access assignments in Canvas:**
  - a. Access to a computer,
  - b. Internet access (consider accessing the internet at alternative locations like IVC or the public library if you don't have it at home),
  - c. Browser: opt for Google Chrome or Firefox as your browser choice, as Safari may not display certain content correctly.
4. **Special Project:** please refer to Canvas under "Modules" right below "Course Syllabus" for specific details and rubric.
5. **Lab Experiments and Reports Guidelines:**
  - Lab experiments will be conducted during class. Following each experiment, full lab reports must be submitted. Include:
    - Objective,
    - Summary,

- Materials,
  - Procedure,
  - Data table,
  - Graphs,
  - Response to questions,
  - Conclusion.
- Ensure that your lab reports are typed, utilizing double-spacing, and adhering to a font like Times New Roman, size 12 or similar.
  - Graphs should be created using Excel or another graphing program. Please refrain from submitting hand-drawn graphs.
  - Submit a hard copy of your report(s) within a week from the date of the experiment. Strictly adhere to this timeline; late submissions will not be accepted under any circumstances.
  - Please ensure you arrive on time for laboratory experiments, as we cannot delay the start until all students are present. If you are late, you may not be allowed to participate in the experiment.
  - Kindly note that there will be no make-up opportunities for missed experiments due to room constraints and staffing limitations. Your understanding is appreciated. If you are absent on the day of the experiment, please do not include your name in the lab report.
  - You can write a group report, but all students must contribute, and you will all receive the same grade. Alternatively, you can choose to submit an individual lab report.
6. **Lecture:** You need to read the chapters or modules because assignments are aligned with these readings. You can use any textbook or watch any videos of your choice as alternatives.
  7. **Online Discussions:** As part of the course requirements, you need to answer the online discussions found in Canvas, under the "Discussions" tab.
  8. **Online Quizzes:** At the end of each chapter, you will take a quiz to check your knowledge. Please refer to specific instructions under the "Quizzes" tab in Canvas.
  9. **Computer Simulations:** To enhance your knowledge, you will have to run computer simulations (done via Canvas).
  10. **Tests or Exams:** They may be T/F, multiple choice, open-ended, and free response questions (done in class).
  11. **Mid-term:** It may include questions from the first exam (recycled questions) and new questions (you have not seen them before but with similar level of difficulty). No makeup! (done in class).
  12. **Final Exam:** It may include questions from the tests (recycled questions) and new questions (you have not seen them before but with similar level of difficulty). The MC section will include ALL chapters. No makeup! (done in class).
  13. Students who are absent bear responsibility for both in-class activities and Canvas assignments.
  14. **Students may only request exam or assignment makeup if they provide valid documentation, such as hospitalization records, and promptly inform the instructor via email to coordinate arrangements.**

### Course Grading Based on Course Objectives

The student's grade will depend on the following areas (not on total points):

➤ Laboratory Experiments	20%
➤ Special Project	15%
➤ Discussions / Quizzes / Simulations	20%
➤ Exams (2)	20%
➤ Mid-term / Final Exam	25%
<b>TOTAL</b>	<b>100%</b>

All grades are calculated by using the standard scale of:

**A = 100-90%    B = 89.99-80%    C = 79.99-70%    D = 69.99-60%    F = 59.99 % and below.**

- **Grades are displayed in Canvas, and you must earn at least a “C” to pass the class.**
- **Final grades are not rounded under any circumstances, so please refrain from asking for adjustments if your grade is close to the next higher grade.**

### Academic Honesty (Artificial Intelligence -AI)

IVC values critical thinking and communication skills and considers academic integrity essential to learning. Using AI tools as a replacement for your own thinking, writing, or quantitative reasoning goes against both our mission and academic honesty policy and will be considered academic dishonesty, or plagiarism unless you have been instructed to do so by your instructor. In case of any uncertainty regarding the ethical use of AI tools, students are encouraged to reach out to their instructors for clarification.

### Course Policies

#### ATTENDANCE

- A student who fails to attend the first meeting of a class or does not complete the first mandatory activity of an online class will be dropped by the instructor as of the first official meeting of that class. Should readmission be desired, the student’s status will be the same as that of any other student who desires to add a class. It is the student’s responsibility to drop or officially withdraw from the class. See [General Catalog](#) for details.
- Regular attendance in all classes is expected of all students. A student whose continuous, unexcused absence exceed the number of hours the class is scheduled to meet per week may be dropped. For online courses, students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.
- Absences attributed to the representation of the college at officially approved events (conferences, contests, and field trips) will be counted as ‘excused’ absences.

#### CLASSROOM ETIQUETTE

- Electronic Devices: Cell phones and electronic devices must be turned off and put away during class, unless otherwise directed by the instructor.
- Food and Drink are prohibited in all classrooms. Water bottles with lids/caps are the only exception. Additional restrictions will apply in labs. Please comply as directed by the instructor.
- Disruptive Students: Students who disrupt or interfere with a class may be sent out of the room and told to meet with the Campus Disciplinary Officer before returning to continue with coursework. Disciplinary procedures will be followed as outlined in the [General Catalog](#).
- Children in the classroom: Due to college rules and state laws, no one who is not enrolled in the class may attend, including children.

#### ONLINE NETIQUETTE

- What is netiquette? Netiquette is internet manners, online etiquette, and digital etiquette all rolled into one word. Basically, netiquette is a set of rules for behaving properly online.
- Students are to comply with the following rules of netiquette: (1) identify yourself, (2) include a subject line, (3) avoid sarcasm, (4) respect others’ opinions and privacy, (5) acknowledge and return messages promptly, (6) copy with caution, (7) do not spam



or junk mail, (8) be concise, (9) use appropriate language, (10) use appropriate emoticons (emotional icons) to help convey meaning, and (11) use appropriate intensifiers to help convey meaning [do not use ALL CAPS or multiple exclamation marks (!!!!)].

### ACADEMIC HONESTY

Academic honesty in the advancement of knowledge requires that all students and instructors respect the integrity of one another's work and recognize the important of acknowledging and safeguarding intellectual property.

There are many different forms of academic dishonesty. The following kinds of honesty violations and their definitions are not meant to be exhaustive. Rather, they are intended to serve as examples of unacceptable academic conduct.

#### PLAGIARISM

- Plagiarism is taking and presenting as one's own the writings or ideas of others, without citing the source. You should understand the concept of plagiarism and keep it in mind when taking exams and preparing written materials. If you do not understand how to "cite a source" correctly, you must ask for help.
- Cheating is defined as fraud, deceit, or dishonesty in an academic assignment, or using or attempting to use materials, or assisting others in using materials that are prohibited or inappropriate in the context of the academic assignment in question.

Anyone caught cheating or plagiarizing will receive a zero (0) on the exam or assignment, and the instructor may report the incident to the Campus Disciplinary Officer, who may place related documentation in a file. Repeated acts of cheating may result in an F in the course and/or disciplinary action. Please refer to the [General Catalog](#) for more information on academic dishonesty or other misconduct. Acts of cheating include, but are not limited to, the following: (a) plagiarism; (b) copying or attempting to copy from others during an examination or on an assignment; (c) communicating test information with another person during an examination; (d) allowing others to do an assignment or portion of an assignment; (e) using a commercial term paper service.

### Other Course Information

Imperial Valley College offers various services in support of student success. The following are some of the services available for students. Please speak to your instructor about additional services which may be available.

- CANVAS LMS. Canvas is Imperial Valley College's main Learning Management System. To log onto Canvas, use this link: [Canvas Student Login](#). The [Canvas Student Guides Site](#) provides a variety of support available to students 24 hours per day. Additionally, a 24/7 Canvas Support Hotline is available for students to use: 877-893-9853.
- [Learning Services](#). There are several learning labs on campus to assist students through the use of computers and tutors. Please consult your [Campus Map](#) for the [Math Lab](#); [Reading, Writing & Language Labs](#); and the [Study Skills Center](#).
- [Library Services](#). There is more to our library than just books. You have access to tutors in the [Study Skills Center](#), study rooms for small groups, and online access to a wealth of resources.
- CANVAS LMS. Canvas is Imperial Valley College's Learning Management System. To log onto Canvas, use this link: [Canvas Student Login](#). The [Canvas Student Guides Site](#) provides a variety of support available to students 24 hours per day. Additionally, a 24/7 Canvas Support Hotline is available for students to use: 877-893-9853.
- Any student with a documented disability who may need educational accommodations should notify the instructor or the [Disabled Student Programs and Services](#) (DSP&S) office as soon as possible. The DSP&S office is located in Building 2100, telephone 760-355-6313. Please contact them if you feel you need to be evaluated for educational accommodations.

### IVC Student Resources

IVC wants you to be successful in all aspects of your education. For help, resources, services, and an explanation of policies, visit <http://www.imperial.edu/studentresources> or click [the heart icon in Canvas](#).

**Anticipated Class Schedule/Calendar**

\*\*\*Subject to change without prior notice\*\*\*

WEEK OF	ACTIVITY, ASSIGNMENT, TOPIC	CONTENT	ASSIGNMENT DUE
1-August 12	Syllabus / Assignments/Canvas Module 0: Meet and Greet MODULE 1: Expression of Physical Quantities	Vectors, including properties of vectors, addition, subtraction, and multiplication of vectors. Fundamental quantities. SI and non-SI units commonly used in measurements of physical quantities. Unit conversions. Scientific notation.	<i>Refer to Canvas for due dates</i>
2- August 19	MODULE 2: Kinematics Part 1	Definition of displacement, velocity, acceleration. Motion in one dimension.	<i>Refer to Canvas for due dates</i>
3 – August 26	MODULE 2: Kinematics Part 2	Definition of displacement, velocity, acceleration. Motion in two dimensions, including projectile motion, uniform circular motion and relative motion.	<i>Refer to Canvas for due dates</i>
4- September 02 Monday 09/02 Holiday	MODULE 3: Forces	Newton's Laws of Motion. Force of gravity, tension, friction, drag, and elasticity. Free body diagrams. Uniform circular motion Centripetal force.	<i>Refer to Canvas for due dates</i>
5- September 09	MODULE 4: Energy & Power	Work done by a force. Definition of kinetic energy. Definition of power. The work-energy theorem. Conservative and non-conservative forces. Potential energy. Conservation of energy.	<i>Refer to Canvas for due dates</i>
6- September 16	<b>Exam # 1 (Modules 1-4)</b>  MODULE 5: Momentum	Definition of impulse and the momentum-impulse equation. Elastic and inelastic collisions. Conservation of momentum. Center of mass.	<b>Done in Class</b>  <i>Refer to Canvas for due dates</i>

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7- September 23	MODULE 6: Rotational Motion	<p>Rotational kinematics: angular displacement, angular velocity, angular acceleration.</p> <p>Moment of inertia.</p> <p>Torque and Newton's Second Law in Rotation.</p> <p>Torques and forces in equilibrium.</p> <p>Kinetic energy of a rotating object.</p> <p>Angular momentum.</p>	<i>Refer to Canvas for due dates</i>
8 - September 30	MODULE 7: Gravitation	<p>Newton's Law of Gravitation.</p> <p>Period, frequency, angular frequency.</p> <p>Potential energy.</p> <p>Kepler's Laws of Planetary Motion.</p> <p>Satellites and Kepler's laws.</p> <p>Energy and motion of an object in orbit.</p>	<i>Refer to Canvas for due dates</i>
9- October 07	<b>Mid-term (Modules 1-7)</b>		<b>Done in Class</b>
10- October 14	MODULE 8: Oscillatory Motion	<p>Simple harmonic Motion (including ideals springs and a mass system).</p> <p>Period, frequency, angular frequency, amplitude of an oscillating system.</p> <p>Velocity, acceleration, and energy of an oscillating system.</p> <p>Simple pendulum and physical pendulum.</p>	<i>Refer to Canvas for due dates</i>
11- October 21	MODULE 9: Mechanical Waves	<p>Wavelength, frequency, speed, and amplitude of a wave.</p> <p>Transverse waves on a string.</p> <p>Reflection, transmission and intensity of sound waves.</p> <p>Interference and standing waves.</p> <p>The Doppler Effect.</p>	<i>Refer to Canvas for due dates</i>
12- October 28	MODULE 10: Fluid Mechanics	<p>Definitions of pressure and density.</p> <p>Hydrostatic pressure.</p> <p>Buoyant force and Archimedes' Principle.</p> <p>Flow rate and Bernoulli's Equation.</p>	<i>Refer to Canvas for due dates</i>
13- November 04	<p><b>Exam # 2 (Modules 8-10)</b></p> <p>MODULE 11: Heat and Heat Transfer Methods</p>	<p>Temperature (scales) and heat.</p> <p>Phase change and latent heat.</p> <p>Heat transfer methods: conduction, convection, and radiation.</p>	<p><b>Done in Class</b></p> <p><i>Refer to Canvas for due dates</i></p>



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14- November 11	MODULE 12: Thermodynamics	First law of thermodynamics and some simple processes. Second law of thermodynamics. Entropy and second law of thermodynamics. Heat engines (including Carnot's) and refrigerators.	<i>Refer to Canvas for due dates</i>
15- November 18	<b><i>Special Projects: Presentations Review for Final Exam</i></b>		
<b><i>November 25</i></b>	<b><i>Thanksgiving Break</i></b>	<b><i>NO CLASS</i></b>	<b><i>-----</i></b>
16-December 02	<b>Final Exam (All Modules)</b>		<b>Done in Class</b>