IMPERIAL VALLEY COLLEGE

Course Syllabus - Physics 204 - Fall 2023

Basic Course Information

Semester:	**Fall 2023**	Instructor Name:	**Dr. Alejandro Cozzani**
Course Title & #:	**Physics 204**	Email:	**alex.cozzani@imperial.edu**
CRN #:	**11054**	Webpage (optional):	**Refer to Canvas**
Classroom:	**2731**	Office #:	**2776**
Class Dates:	**August 14-December 09, 2023** **Last Day to Add: 08/26/23** **Drop Deadline with W: 11/04/23**	Office Hours:	**Monday 7:30-8:00 AM** **Tuesday 12:30-1:00 PM** **Thursday 12:30-1:00 PM** **Online: Wednesday 9:00-11:30 AM.**
Class Days:	**Monday**	Office Phone #:	**760-355-5720**
Class Times:	**8:00-11:10 AM**	Emergency Contact:	**Silvia Murray 760-355-6201**
Units:	**4.0 (3.0 Lecture/1.0 Lab)**	Class Format:	**Hybrid**

Course Description

This course is designed to give an understanding of the fundamental principles of physics in optics, thermodynamics, and modern physics.

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

Physics 200 with a grade of "C" or better and concurrent enrollment in Math 194.

Student Learning Outcomes

1. Solve problems involving mirrors, lenses, polarization, reflection, refraction, interference, and diffraction. (ILO 1, ILO 2).
2. Solve temperature, heat, and First Law of Thermodynamics problems. (ILO 1, ILO 2).
3. Solve problems involving the Kinetic Theory of Gases, entropy, and the Second Law of Thermodynamics. (ILO 1, ILO 2).

Course Objectives

1. The student will solve problems involving interference, reflection, and transmission of transverse waves.
2. The student will solve problems involving velocity, frequency, energy, intensity, and the Doppler effect of sound waves.
3. The student will solve problems involving resonance, superposition and interference of standing waves in air, strings, rods and plates.
4. The student will solve problems involving temperature, thermometric properties, and temperature scales.
5. The student will solve problems involving thermal energy, heat capacity, latent heat, heat transfer, and the first law of thermodynamics.
6. The student will solve problems involving the kinetic theory of gases and the concepts of ideal gases.
7. The student will solve problems involving heat engines, refrigeration, entropy, and the second law of thermodynamics.
8. The student will solve problems involving Huygens' Principle, reflection, and refraction.
9. The student will solve problems involving images formed by plane mirrors, spherical mirrors, and thin lenses.
10. The student will solve problems involving interference of light waves, Young's Double Slit Experiment, and interference in thin films.
11. The student will solve problems involving single slit diffraction, resolution, diffraction gratings, and polarization.
12. The student will solve problems involving Einstein's Theory of special relativity.

13. The student will solve problems involving the hypothesis of Planck, Einstein's photoelectric effect, atomic spectra, and the Bohr Theory of the atom.
14. The student will solve problems involving the wave properties of particles, the uncertainty principle, and the Schrodinger wave equation.
15. The student will solve problems involving the hydrogen atom, quantum numbers, electron spin, and the exclusion principle.

Textbooks & Other Resources or Links

1. **Textbooks (either one)**:
   a. Fundamental of Physics, 10th edition, ISBN: 978-1-118-23072-5 (Wiley).
      i. Halliday/Resnick/Walker.
   b. Physics for Scientists and Engineers, 4th edition, ISBN: 978-13-149508-1 (Pearson).
      i. Giancoli, Douglas C.
   c. University Physics, Volumes II and III (Openstax.org). FREE OER
      i. William Moebs, Samuel J. Ling, and Jeff Sanny.

Course Requirements and Instructional Methods

1. **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.

2. **Minimum Requirements**: Access to a computer, internet, and Google Chrome or Firefox (do not use Safari as some content may not display properly).

3. **Lab Experiments and Reports Guidelines:**
   - **Lab experiments will be conducted during class. Following each experiment, lab reports must be submitted.**
   - **Ensure that your lab reports are typed, utilizing double-spacing, and adhering to a font like Times New Roman, size 12.**
   - **Graphs should be created using Excel or another graphing program. Please refrain from submitting hand-drawn graphs.**
   - **Submit your reports within a week from the date of the experiment via Canvas. Strictly adhere to this timeline; late submissions will not be accepted under any circumstances.**
   - **Kindly note that there will be no make-up opportunities for missed experiments due to room constraints and staffing limitations. Your understanding is appreciated.**

4. **Lecture**: You need to read the modules because there are assignments aligned to your readings (you can use any textbook of your choice).

5. **Online Discussions**: As part of the course requirements, you need to answer the online discussions found in Canvas, under the "Discussions" tab.

6. **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.

7. **Computer Simulations:** To enhance your knowledge, you will have to run computer simulations (PhET) and labs by Labster (done via Canvas).

8. **Tests or Exams:** They may be T/F, multiple choice, open-ended, and free response questions (also, done in Canvas).

9. **Questions**: will be submitted via Canvas under "Assignments." Please pay attention to deadlines.

10. **Problems**: will be submitted via Canvas under "Assignments." Please pay attention to deadlines.

11. **Mid-term:** It may include questions from the tests (recycled questions) and new questions (you have not seen them before but with similar level of difficulty). No makeup! (Done in Canvas).

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 Canvas).

13. Students will not be allowed to make up any exam or assignment unless they have a powerful reason (e.g., hospitalization) and send the corresponding paperwork as evidence; it is students 'responsibility to notify the instructor via e-mail to make arrangements.

Course Grading Based on Course Objectives

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

➢ Laboratory Experiments	15%
➢ Discussions / Quizzes	15%
➢ Problems / Questions	10%
➢ Exams (2)	20%
➢ Labs / Simulations	15%
➢ Mid-term / Final Exam	25%
TOTAL	**100%**

All grades are calculated by using the standard scale of:

A = 100-90% ***B = 89-80%*** ***C = 79-70%*** D = 69-60% F = 59% and below

Grades are displayed in Canvas and you must earn at least a "C" to pass the class.

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, AND/OR TOPIC	READING	ASSIGMENT DUE
1-August 14	Syllabus / HW/Canvas Module 0: Meet and Greet Module 1: Waves I	Read Content Module 0 Read Content Module 1	*Refer to Canvas for due dates*
2- August 21	Module 2: Waves II	Read Content Module 2	*Refer to Canvas for due dates*
3 – August 28	Module 3: EM and Light Waves	Read Content Module 3	*Refer to Canvas for due dates*
4- September 04 *Monday 09/04/23 is a Holiday*	**Exam # 1 (Modules 1-2-3)** Module 4: Images	Read Content Module 4	***Done in CANVAS*** *Refer to Canvas for due dates*
5- September 11	Module 5: Interference	Read Content Module 5	*Refer to Canvas and Refer to Canvas for due dates*
6- September 18	Module 6: Diffraction	Read Content Module 6	*Refer to Canvas for due dates*
7- September 25	**Midterm Exam (Modules 1 through 6)**	*Review for Exam*	***Done in Class***

8- October 02	Module 7: First Law of Thermodynamics	Read Content Module 7	*Refer to Canvas for due dates*
9- October 09	Module 8: Kinetic Theory of Gases	Read Content Module 8	*Refer to Canvas for due dates*
10- October 16	Module 9: Second Law of Thermodynamics	Read Content Module 9	*Refer to Canvas for due dates*
11- October 23	**Exam # 2 (Modules 7-8-9)** Module 10: Relativity	*Review for exam* Read Content Module 10	***Done in Class*** *Refer to Canvas for due dates*
12- October 30	Module 11: Photons and Matter Waves	Read Content Module 11	*Refer to Canvas for due dates*
13- November 06	Module 12: Quantum Mechanics	Read Content Module 12	*Refer to Canvas for due dates*
14- November 13	Module 13: Nuclear Physics	Read Content Module 13	*Refer to Canvas for due dates*
November 20	***Thanksgiving Break***	***No Class***	------
15- November 27	Module 14: Particle Physics and Cosmology	Read Content Module 14	*Refer to Canvas for due dates*
16-December 04	**Final Exam *(All Modules 1-14)***	*Review for exam*	***Done in Class***