



# Course Syllabus- Physics 204 Spring 2024

## Basic Course Information

Semester:	Spring 2024	Instructor Name:	Dr. Alejandro Cozzani
Course Title & #:	Physics 204	Email:	alex.cozzani@imperial.edu
CRN #:	20958	Webpage (optional):	Refer to Canvas
Classroom:	2731	Office #:	2776
Class Dates:	February 12 - June 07, 2024 Last Day to Add: 02/24/24 Drop Deadline with W: 05/11/24	Office Hours:	Monday: 7:30-8:00 AM & 3:45-4:15 PM Tuesday: Tuesday 9:00-10:00 AM (online) & 10:30-11:15 AM Wednesday: 7:30-8:00 AM Thursday: 10:30-11:15 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/Modality:	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

#### Textbooks (either one):

- a. Fundamental of Physics, 10<sup>th</sup> edition, ISBN: 978-1-118-23072-5 (Wiley).
  - i. Halliday/Resnick/Walker.
- b. Physics for Scientists and Engineers, 4<sup>th</sup> 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:**
  - 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: use Google Chrome or Firefox (opt for Google Chrome or Firefox as your browser choice, as Safari may not display certain content correctly).
3. **Homework:** The purpose of homework is to provide the student with sufficient practice to master all topics studied in class and to do well on tests. Homework is done online at: <https://mlm.pearson.com/northamerica/masteringphysics/>

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- *Enrollment dates: 2/12/24-5/31/24. You will not be able to sign up for HW after this date! Please refer to webpage for details. Please double-check dates in the webpage.*
- *All assignments close on 06/01/24 at 8:59 PM. After this date, the course will be expired, and it cannot be open.*

To receive full credit, aim for an overall score of 90% or higher. Falling below that threshold will result in your earned percentage being converted to points, for example, 72% translates to 72 points.

**Using the exact first and last name from the IVC roster is crucial to ensure proper credit for your homework. Sharing or using another person's account is strictly prohibited, with no exceptions.**

4. **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, response to questions, and a conclusion).

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- 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 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.
5. **Lecture:** You need to read the modules because there are assignments aligned to your readings (you can use any textbook of your choice).
  6. **Online Discussions:** As part of the course requirements, you need to answer the online discussions found in Canvas, under the "Discussions" tab.
  7. **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.
  8. **Computer Simulations:** To enhance your knowledge, you will have to run computer PhET simulations (done via Canvas).
  9. **Tests or Exams:** They may be T/F, multiple choice, open-ended, and free response questions (also, done in Canvas).
  10. **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).
  11. **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).
  12. Students who are absent bear responsibility for both in-class activities and Canvas assignments.
  13. **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%
➤ Online Homework	20%
➤ Discussions / Quizzes / Simulations	15%
➤ 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 = 89-80%**    **C = 79-70%**    D = 69-60%    F = 59% and below

***Check your grades on Canvas, ensuring you achieve a minimum grade of "C" to successfully 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.



## Course Syllabus- Physics 204 Spring 2024

- 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	ASSIGNMENT DUE
1-February 12	Syllabus / HW/Canvas Module 0: Meet and Greet  Module 1: Waves I	Read Content Module 0  Read Content Module 1	<i>Refer to Canvas for due dates</i>
2- February 19 <b>Monday 02/19</b> <b>Holiday</b>	Module 2: Waves II <b>NO CLASS</b>	Read Content Module 2	<i>Refer to Canvas for due dates</i>

3 – February 26	Module 3: EM and Light Waves	Read Content Module 3	<i>Refer to Canvas for due dates</i>
4- March 04	Module 4: Images	Read Content Module 4	<i>Refer to Canvas for due dates</i>
5- March 11	Module 5: Interference  <b>Exam # 1 (Modules 1-2-3)</b>	Read Content Module 5	<i>Refer to Canvas and Refer to Canvas for due dates</i>  <b>Done in Class</b>
6- March 18	Module 6: Diffraction	Read Content Module 6	<i>Refer to Canvas for due dates</i>
7- March 25	Module 7: First Law of Thermodynamics	Read Content Module 7	<i>Refer to Canvas for due dates</i>
<b>April 01</b>	<b>SPRING BREAK</b>	<b>NO CLASS</b>	<b>April 01</b>
8- April 08	<b>Midterm Exam (Modules 1 through 6)</b>		<b>Done in Class</b>
9- April 15	Module 8: Kinetic Theory of Gases	Read Content Module 8	<i>Refer to Canvas for due dates</i>
10- April 22	Module 9: Second Law of Thermodynamics	Read Content Module 9	<i>Refer to Canvas for due dates</i>
11- April 29	Module 10: Relativity	Read Content Module 10	<i>Refer to Canvas for due dates</i>
12- May 06	Module 11: Photons and Matter Waves  <b>Exam # 2 (Modules 7-8-9)</b>	Read Content Module 11	<i>Refer to Canvas for due dates</i>  <b>Done in Class</b>
13- May 13	Module 12: Quantum Mechanics	Read Content Module 12	<i>Refer to Canvas for due dates</i>
14- May 20	Module 13: Nuclear Physics	Read Content Module 13	<i>Refer to Canvas for due dates</i>
15- May 27 <b>Monday 05/27</b> <b>Holiday</b>	Module 14: Particle Physics and Cosmology	Read Content Module 14	<i>Refer to Canvas for due dates</i>
16-June 02	<b>Final Exam (All Modules 1-14)</b>	<i>Review for exam</i>	<b>Done in Class</b>