

ENGINEERING PHYSICS IV - SYLLABUS

MICHAEL BUTROS

SPRING 2024

COURSE INFORMATION

Section Number: 30328

Course Number and Title: Physics 204 - Engineering Physics IV

Lecture Days and Times: **Lab Day and Times:** Thursday 6:00 - 9:10 PM

IMPORTANT NOTE: STATEMENT OF ACCESS: Students with accessibility needs are encouraged to meet with instructors to discuss the opportunity for academic accommodation and referral to the ACCESS Resource Center and services per Administrative Procedure (AP 3440)

INSTRUCTOR INFORMATION

Name: Michael Butros

Office: Science Building - Room 31.01T

Office Hours: Monday and Wednesday - 1:30 - 3:30 PM

Phone: 760.245.4271 Ext. 2506

E-mail: Michael.Butros@vvc.edu

Instructor's Page: <https://www.butros.info>

IMPORTANT DATES:

Semester Begins: February 12, 2024

Spring Break: April 8 - 13, 2024

Memorial Day Holiday: May 27, 2024

Semester End: June 8, 2024

GENERAL CLASS INFORMATION:

Prerequisites: PHYSICS 203 and MATH 228 (Math 228 may be taken concurrently).

Textbook: The textbook for this class will be embedded into the CANVAS course.

There is an online component to this class through the CANVAS course management system.

Course Description: This course includes a study of the nature and propagation of light, reflection and refraction, interference, diffraction, gratings and spectra, relativity, elements of quantum physics, waves and particles, and nuclear physics

Student Learning Outcomes:

Upon completion the student will be able to:

- Analyze and solve novel problems using the concepts, equations and methods of optics and basic quantum physics in both independent and collaborative settings.
- Investigate physical phenomena experimentally using appropriate equipment and methods, and make valid comparisons with theoretical predictions.
- Clearly communicate results of scientific inquiries in both oral and written form

Course Content:

The following topics will be covered in lecture

- Reflection and Refraction
- Total Internal Refraction
- Mirrors
- Lenses
- Interference
- Diffraction
- Lorentz Contraction
- Mass Increase
- Time Dilation
- Einstein's Photoelectric Effect
- Compton Scattering
- The Bohr Hydrogen Atom
- One-electron Atoms
- Conduction of Electricity in Solids
- Radioactive Decay
- Fission
- Fusion

Potential experiments to be performed and analyzed may include:

- Geometrical Optics
- Speed of Light
- Reflection and Refraction
- Interference and Diffraction
- Charge to Mass Ratio of the Electron
- Nuclear and Atomic Physics

Attendance Policy: A student may drop or withdraw (or be dropped by an instructor), before the 75% point of the completion of the class. Students may not drop or be dropped after this point, and instructors must issue a grade beyond this point. A student who drops a class (or who is dropped by an instructor) on or prior to 20% of the course will have no record of that class on their permanent transcript, although they may still be responsible for payment of fees. Drops that occur after 20% of the course, and on or before 75% of a course, will result in a W symbol being entered. Students may be dropped for lack of attendance or for ‘good cause’ as defined in the Education Code, Article 3, Sect. 76033.

You are not graded on “attendance” in this online course. Students who do not complete the first assignment or do not contact the instructor by the end of the third week of the 16-week term will be dropped. Students who do not actively participate in this online course will be dropped up to the final drop date. For more information on ‘active engagement’, see the definition below.

Class attendance is not a measure of performance or proficiency. Whether a student is just physically present in the class is not a valid basis for grading. Reference Title 5 Section 55002 of the California Code of Regulations: (A) Grading Policy. The course provides for measurement of student performance in terms of stated course objectives and culminates in a formal, permanently recorded grade based upon uniform standards in accordance with section 55758 of this Division.

The grade is based on demonstrated proficiency in the subject matter and the ability to demonstrate that proficiency, at least in part, by means of written expression that may include essays, or, in courses where the curriculum committee deems them to be appropriate, by problem solving exercises or skills demonstrations by students. (Educational Code)

Definition of Distance Education ‘No Show’ Students: DE Students will be dropped as ‘no shows’ if their online activity before the census date consists of solely logging into the online course platform without actively engaging in academic related activity (such as online discussions).

Definition of ‘Last Day of Attendance’ (LDA) for excessive absences of online students: Faculty policy regarding dropping students for excessive absences in an online course should be based on the last recorded academic activity of the student after (such as one full week of non-engagement by the student). Per an individual instructor’s syllabus and course materials, students should be informed of the instructor’s guidelines on withdrawal from an online course and the necessity of actively engaging in academic activity. Students should be informed that ‘active engagement’ is

not simply accessing the online course platform, but entails evidence of participation in online assignments as well as regular and substantive interaction between students and faculty.

Grading Policy:

The grading for this class will consist of the following assessment components:

- **Online Assignments:** These assignments will be conducted on CANVAS and will be either graded automatically by CANVAS, after you submit the assignment, or after the due date by the instructor. These assignments include, but are not limited to: Discussions, Online Quizzes, Surveys, etc.
- **Worksheets:** These are problems you will be asked to solve based on the material in each chapter.
- **In-Class Quizzes:** These are quizzes after each chapter which will be taken in class.
- **Exams:** Three exams for the semester each covering between 3 and 4 chapters each.
- **Lab Reports and Computational Project:** The lab report will be on each of the experiments we perform this semester and the Computational Project is a special lab that will be due the beginning of the last week of class.

The problems on the worksheet, in-class quizzes, and exams will be marked using the following scale:

- **Exemplary (E):**
 - Demonstrates a clear understanding of the physical phenomena and how to apply them to solving the problem.
 - Everything is completely correct, or there is a creative insight communicated.
 - Physical reasoning is explained where appropriate. All work is clear and legible.
 - Results are plausible, including being the correct order of magnitude and correct dimensions (units).
 - Problem included use of technology.
- **Satisfactory (S):**
 - Demonstrates a clear understanding of the physical phenomena and how to apply them to solving the problem.
 - Work may contain minor errors that are computational or tangential to the core issue of the problem.
 - Physical reasoning may not always be clearly explained, but it should be clear enough to figure out. All work is clear and legible.
 - Results are plausible, including being the correct order of magnitude and correct dimensions.
- **Progressing (P):**
 - There is one or more significant conceptual errors impeding the correct solution.

- Work may contain minor errors that are computational or tangential to the core issue of the problem.
- Physical reasoning is not explained, nor is it clear after a careful look at the work.
- Results are not plausible.
- Beginning (B):
 - There is not enough information in the solution to be able to assess the work.
 - It may be incomplete or too illegible to read.

Breakdown for Grades:

- For a grade of “A”
 - There are no missing assignments.
 - Maximum of 20% of problems: P and/or B
 - Average Online Assignment at 80% or higher
 - All lab reports (including Computational Project) are at S
- For a grade of “B”
 - There are no missing assignments.
 - Maximum of 40% problems: P and/or B
 - Average Online Assignment at 60% or higher
 - All lab reports (including computational project) are at S
- For a grade of “C”
 - Maximum of 60% of problems: P and/or B
 - Average Online Assignment at 40% or higher
 - No more than 1 lab report (excluding computational project) with a P or B
- For a grade of “D”
 - Maximum of 80% of problems: Above major errors
 - Average online quizzes at 20% or higher
 - No more than 2 lab reports (including computational project) with P or B

NETIQUETTE

Netiquette / Etiquette ... it's all in your words! Netiquette refers to "Etiquette", or proper way to conduct yourself, on the Internet.

Email Netiquette

- Always include a subject line
- Include your course number and section in your email. Your instructor may teach multiple courses and will have many students, so the more specific you are, the better and easier it will be for your instructor.
- Remember, without facial expressions, some comments may be taken the wrong way. Be careful in wording your emails. Use standard fonts for easy readability. Avoid special formatting such as centering, audio messages, tables, HTML, etc. unless necessary to complete an assignment or communication.
- Do not send large attachments without permission.
- Respect the privacy of other class members and always be courteous.
- Include your name at the bottom of Email messages.
- Never assume your email messages are private nor that they can be read by only yourself or the recipient. Never send something that you would mind seeing on the evening news. Be professional and careful what you say about others. Email is easily forwarded.

Discussion/Group Chat Netiquette

- You may have to make an original post before you can view others' posts and responses
- Always make a well thought out post or response (not "I agree!" or "Ditto")
- Maintain threads by using the "Reply" button rather than starting a new topic unless required by your instructor.
- Do not make insulting or inflammatory statements to other members of the discussion group.
- Be respectful of others ideas and comments.
- Be cooperative with group leaders in completing assigned tasks.
- Be positive and constructive in group discussions.
- Respond in a thoughtful and timely manner.

Other Netiquette Tips

- Are there appropriate and 'not-so-appropriate' ways to communicate on the Web? Yes. Don't say anything you wouldn't say to a person's face or that you wouldn't mind having ANYONE read. Just as when you write a letter, when you send written words through cyberspace – via email or on discussion groups – you have no control over where they go or who will see them.

- Remember you are talking to a person ... not a computer. It's easy to forget that there is a person on the other end of the email or discussion group when you're sitting alone typing at your computer. Be clear with your words. It's easy for someone to misinterpret your meaning. They can't see your expressions or hear the tone of your voice.
- Don't expect instant responses.
- Capitalize words only to highlight an important point or to distinguish a title or heading. Capitalizing whole words that are not titles is generally termed as SHOUTING!
- Never give your username or password to another person.
- Focus on one subject per message and always include a pertinent subject title for the message, that way the user can locate the message quickly.
- *Asterisks* surrounding a word can be used to make a stronger point.
- Cite all quotes, references and sources and respect copyright and license agreements.
- Be careful when using sarcasm and humor. Without face to face communications your joke may be viewed as criticism.