

Spring 21 (Date: 1/20/21)

Phys274: General Physics III - Relativity, introduction to quantum mechanics, atomic and nuclear physics, and physical optics

Instructor Information

Name: Philip von Doetinchem

Email: philipvd@hawaii.edu

Course website: <http://go.hawaii.edu/37F>

My last name is complicated to pronounce. It is an old German noble name of Dutch origin. Please do not worry about pronouncing my last name correctly. **"von D"** is fine with me.

Course Information

- Time (online): 12-1:15pm, Tuesday, Thursday:
<https://hawaii.zoom.us/j/96263593868> (Passcode: phys274lec)
- Office hours (online): 4:30-5:30pm, Tuesday, Thursday
<https://hawaii.zoom.us/j/93732459320> (Passcode: phys274oh)
(or other times by email arrangement)
- Course Description: The course will cover topics from physical optics to relativity to an introduction to quantum mechanics and atomic and nuclear physics.
- Course Communication: email and course website
- Prerequisites: PHYS 152 or PHYS 272 and MATH 243 (or concurrent) or MATH 253A (or concurrent); or consent
- General Learning Objectives:
 - Apply basic physical principles from a broad range of topics in physics to diverse scientific and technological problems.
 - Be able to formulate scientific problems in mathematical terms and apply analytical and numerical methods towards its solutions
- Specific Learning Objectives:
 - Mastering interference and diffraction
 - Understand the basic principles of modern physics:
 - Einstein theory of Relativity
 - Quantum theory of light
 - Particle nature of matter

- Quantum mechanics in one dimension
- Nuclear physics and its applications.
- Introductory overview of modern physics.

Course Format and Pacing

The course will be fully synchronous online. Lectures will be held over zoom. Each lecture will be a mix of slideshow, derivations and calculations with the help of Google Jamboard, and interactive quiz questions. Questions through the zoom chat function are encouraged. Dedicated breaks will be taken to address the questions. If possible turn on your camera, but please mute yourself and use the chat function for questions.

All lecture materials will be linked on the course website and hosted in a dedicated shared google drive folder.

Required Materials

Textbook: University Physics, Young and Freedman, 15th Edition (course will cover Ch. 35-44)

Grades

final:	35%
midterm 1:	25%
midterm 2:	25%
homework:	15%
extra credit: in-class questions:	5%

Final grades will be determined based on your scores in final, midterms, homework, and in-class questions. **To pass the class only one out of the exams (midterm 1, midterm 2, final) is allowed to be F.**

The final score translates into the following final grade:

A+	$95\% \leq \text{score}$	C+	$65\% \leq \text{score} < 70\%$
A	$90\% \leq \text{score} < 95\%$	C	$60\% \leq \text{score} < 65\%$
A-	$85\% \leq \text{score} < 90\%$	C-	$55\% \leq \text{score} < 60\%$
B+	$80\% \leq \text{score} < 85\%$	D+	$50\% \leq \text{score} < 55\%$
B	$75\% \leq \text{score} < 80\%$	D	$45\% \leq \text{score} < 50\%$
B-	$70\% \leq \text{score} < 75\%$	D-	$40\% \leq \text{score} < 45\%$
		F	$\text{score} < 40\%$

Homework

New problem sets will be given out every week on Thursdays. They will be due on Fridays at 5pm of the following week (unless noted otherwise). All homework will be using Mastering Physics. You have to submit your individual solution. Cheating will not be tolerated.

Please follow these registration to access Master Physics [instructions](#).

Digital access for the course is being delivered through IDAP. The cost of your digital materials will automatically be charged to your student account at a deeply discounted price.

To access your course materials:

- Go to www.pearsonmylabandmastering.com
- Register with our specific course ID, which is: vondoetinchem61523
- Use our course specific access code, which is:
DSCKUO-DRNNK-TWINE-FACET-FIERI-BIDES

If you have issues accessing the course materials, visit Pearson's tech support page at <https://support.pearson.com/getsupport/s/>. Either search for an immediate answer or choose "Contact Us" in the top right corner to chat with a tech support team member.

If you decide to opt-out of IDAP and lose access to the required digital course materials, please follow the link you will receive in an email about IDAP from your UH campus bookstore.

If you opt-out before the deadline, the IDAP Rental Charge will be refunded to your MyUH account. By opting-out you will lose access to the required course materials. If you have any questions about IDAP or this charge to your student account, contact the bookstore.

Exams

Make accommodations in your schedule for the exams well before. I will not arrange for make-up exams if you are traveling or have other non-emergency or health related obligations.

There will be two exams during the regular course hours (**February 16th & March 30th**). Midterm 1 will cover chapters 35-37 and midterm 2 chapters 38-40. The midterms will be taken online. Details on the exact format will be announced ahead of time.

Final exam: May 11th, 12-2pm, online

The final will focus on chapters 41-44, but will also have additional questions on chapters 35-40. Details on the exact format will be announced ahead of time.

Course Technology

The lectures are delivered with zoom. Slides and other materials will be shared in a google drive folder. Exact format for online exams will be determined (either google or laulima). Contact me if you would like to discuss the use of alternate options or technologies.

Required Hardware and Software

- Reliable high-speed Internet connection
- Zoom
- Webbrowser
- Access to the hawaii.edu google drive account
- PDF viewer

Minimum Technical Skill Requirements

Basic computer skills are required, e.g., zoom, google doc tools

Recordings

Lectures will not be recorded. Students are not permitted to record and/or share video or audio in class in any way (e.g., by way of cell phones, third-party screencast software, livestreams, etc.)

Technical Support

- [UH ITS Computer Help Desk](#) – email help@hawaii.edu or call 956-8883 (or toll free at 1-800- 558-2669 from the neighbor islands)
- [Laulima Assistance Form](#) – Click on the [Request Assistance](#) link at the bottom of any Laulima Page to fill out and submit a question and get your answer via email.
- [Laulima Student Support](#)
- [Information Security for Students](#)

Academic Support

University of Hawai'i Online Learning Academy (all students)

- The [Online Learning Academy](#) (OLA) provides FREE, one-on-one English, math and science tutoring, by highly-qualified college tutors, for the University of Hawai'i (UH) System students statewide. They offer tutoring in the following subjects: basic math, pre-algebra, algebra, geometry, trigonometry, calculus, biology, chemistry, physics, environmental science, writing, and language arts.

UH Mānoa

- [Hamilton Library](#)
- [Distance Learning at UH Mānoa](#)
- [Writing Center](#)
- [Learning Assistance Center](#)

Course Calendar

	Tuesday	Thursday	
Week	lecture	lecture	Chapter
1	01/12/21	01/14/21	Introduction, Ch. 35
2	01/19/21	01/21/21	Ch. 35
3	01/26/21	01/28/21	Ch. 36
4	02/02/21	02/04/21	Ch. 36-37
5	02/09/21	02/11/21	Ch. 37, review
6	02/16/21	02/18/21	Midterm 1, Ch. 38
7	02/23/21	02/25/21	Ch. 38-39
8	03/02/21	03/04/21	Ch. 39
9	03/09/21	03/11/21	Ch. 39-40
10	03/23/21	03/25/21	Ch. 40, review
11	03/30/21	04/01/21	Midterm 2, Ch. 41
12	04/06/21	04/08/21	Ch. 41-42
13	04/13/21	04/15/21	Ch. 42
14	04/20/21	04/22/21	Ch. 42-43
15	04/27/21	04/29/21	Ch. 44
16	05/04/21		review

The chapters refer to the required text for the course (see above). Slight changes to the schedule will be made as needed.

Emailing me: philipvd@hawaii.edu

Preferably you come to my office hours to discuss questions. However, I will also try to email you back in a timely manner. Please keep in mind that sending me questions late in the evening before the due date of homework or in the night before exams will most likely not get a reply in time. Please always check the website first before asking organizational questions. I will not answer questions that are already answered on the website.

Extra credit:

- **Presentations**

- in-class presentation for 1.5% extra credit
- presentation has to be related to electric or magnetic fields or geometric optics (ideally some type of application of course material)
- presentation cannot be longer than 7min (including questions)
- as a rule of thumb: do not prepare more than 5 slides (1 title slide, 1 slide of introduction and embedding in bigger picture, 2 slides with the actual content, 1 slide summary/conclusion/outlook)
- only 1 presentation per student
- group presentations are not possible
- presentations have to be discussed with the instructor at least once before during office hours

- **Chapter summaries**

- 5-10 pages of typed summary per chapter for 1% of extra credit per chapter
- 1inch margin, single-spaced, 12pt
- use your own words and full sentences, do not copy and paste from the book (explain in a way that you could understand it in 6months from now without going back to the book), do not just submit a list of bullet items
- include key formulas and graphics
- do **not** take screenshots from the book, but make your own sketches (e.g., you can just make a sketch on a notepad, snap a picture with your phone, crop the picture and include it in your document), use the same procedure if you do not know how to type in formulas.
- use proper highlighting and (sub)sections (do not use bold for the regular text)
- you can turn in one chapter summary per chapter
- there are no strict deadlines when the extra credit summaries have to be submitted, but all summaries have to be submitted before the final examinations
- email me your summaries as a pdf

Advice:

- This is going to be a tough class for most of the students. Don't get behind or you will quite likely not be able to catch up. The difficulty level is increasing throughout the course.
- Ask a lot of questions to yourself, to your fellow students, and to me. Make use of office hours. Don't worry about asking naive questions. These are typically the best and most likely others have the same questions.
- Problems in the exam will be extremely similar to the homework. I say it again: Problems in the exam will be extremely similar to the homework.
- Copying solutions from others does not help you learn physics. You have to really understand the homework. Then you should have no problem to get a good grade. Deciding to not spend a lot of time on understanding the homework because it is only 15% of the grade is a bad idea.

University Policies and Procedures

The University of Hawai'i is an equal opportunity/affirmative action institution. It is committed to a policy of nondiscrimination on the basis of race, sex, victims of domestic or sexual violence, gender identity and expression, age, religion, color, national origin, ancestry, citizenship, disability, genetic information, marital status, breastfeeding, income assignment for child support, arrest and court record (except as permissible under State law), sexual orientation, national guard absence, or status as a covered veteran. For additional details, visit the [UH Systemwide Policies and Procedures Information System \(PPIS\)](#) site.

Student Conduct

Review the [UH Systemwide Student Conduct Code](#) for more information. Review the [Online Netiquette and Privacy Tips](#) to prepare yourself when interacting online.

Academic Honesty

Acts of dishonesty, including but not limited to the following:

- Cheating, plagiarism, or other forms of academic dishonesty.

Cheating is an act of academic dishonesty and includes, but is not limited to:

- 1 use of any unauthorized assistance in taking quizzes, tests, or examinations;
- 2 use of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments;
- 3 the acquisition, without permission, of tests or other academic material belonging to a member of the UH faculty, staff or student body; and

- 4 engaging in any behavior specifically prohibited by a faculty member in the course syllabus or class discussion.

Plagiarism is also an act of academic dishonesty and includes, but is not limited to:

- the use, by paraphrase or direct quotation, of the published or unpublished work of another person without full and clear acknowledgement.
- It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.

Furnishing false information to any UH official, faculty member, or office.

Forgery, alteration, or misuse of any UH document, record, or form of identification.

UH Title IX

- The University of Hawai'i 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 ([UH Title IX](#)). If you or someone you know is experiencing any of these, the University has staff and resources on your campus to support and assist you.
- If you would like to report incidents of sex discrimination or gender based violence, contact your campus [Title IX Coordinator](#) or submit the online [reporting form](#).
- If you wish to remain ANONYMOUS, speak with someone CONFIDENTIALLY, or would like to receive information and support in a CONFIDENTIAL setting, contact your campus' [confidential resource](#).

Accommodation Statement

The University of Hawai'i is committed to a barrier-free campus and provides accommodations to ensure students with disabilities equal access to education. We agree to make academic adjustments to ensure non-discrimination of students with disabilities. This commitment is in accordance with applicable state and federal laws, including the Americans with Disabilities Act, and Sections 504 and 508 of the Rehabilitation Act.

Under the Americans with Disabilities Act (Title II) and the Rehabilitation act of 1973-section 504 and 508, individuals with disabilities have protections against discrimination and are assured access to programs, services and activities. For more information see "Americans with Disabilities Act" and "Rehabilitation Act of 1973 – Section 504 or Section 508".

Students must self-identify to the appropriate Disability Services Office and complete the intake process before receiving reasonable accommodations. To ensure the prompt

and effective provision of accommodations, students should contact the Disability Services Office as early as possible. Find your disability services office contact for your home campus.

- **UH Mānoa**
Visit the [KOKUA](#) website. KOKUA can be reached at (808) 956-7511 or (808) 956-7612, email: kokua@hawaii.edu.

Student Support

- [Academic Advising](#)
- [Bookstore](#)
- [Career Services](#)
- [Counseling Services](#)
- [Registration](#)

Financial Aid Statement

If students do not begin attendance in a course or stop participating in a course, Title IV funds must be returned according to Federal Return of Title IV funds regulations (34 CFR 668.21(a)). This means you may be required to return some (or all) of the financial aid you have received. It is very important to remember that colleges are required to take steps necessary to ensure that students are academically engaged in order to justify the disbursement of Federal Title IV student aid funds. If at any time your plans change and you no longer plan to participate in the courses in which you enrolled, you must contact the financial aid office to minimize any possible negative financial impact.

For more information on financial assistance for your education, please contact your [home campus financial aid office](#). Financial assistance may include grants, scholarships, and other resources to help you pay for the cost of college. A financial aid adviser will be able to help you navigate this process to determine your eligibility for these funds.