



22 Spring Semester

University Physics II

PHY 252.H1

Number of Credits: 5

Days/Times/Location Class Meets:

Lectures will be recorded and posted through the Big Blue Button on JetNet.

Laboratory will be held Friday 9:00 – 11:57 a.m. in JM 207.

Instructor: Dr. Xania Payne

Contact Phone: 517-796-8486

Contact Email: paynexanian@jccmi.edu

Office Hours:

Online: Tuesday 9:00 am – 10:00 a.m. & Thursday 11:00 a.m. – noon.

Face-to-Face in JM 207: Wednesday & Friday 11:00 am – 1:00 p.m.

Other days/times available by request.

Course Description

Students cover topics in classical electricity and magnetism, optics, special relativity, and modern physics. A continuation of PHY 251. Course includes a laboratory component.

Prerequisite(s)

PHY 251

Course Goals

The purpose of this course is to prepare students with the fundamentals of physics relevant to science and engineering. Students will have an opportunity to read from an online physics textbook with computer simulations, practice applying physical principles in weekly homework assignments emphasizing problem solving and developing mathematical models, perform weekly laboratory activities that support key concepts, hone technical writing skills in laboratory reports, and design and carry out a group engineering project. In order to be successful in these activities, students will need to be able to read a significant amount of technical material, be able to write in a concise and cogent manner and have thorough grasp of

basic mathematics, algebra, pre-calculus and calculus fundamentals. If you feel uncomfortable with any of these items, please contact your instructor as soon as possible.

Course Objectives

- Familiarize students with the physical laws associated with electricity, magnetism, optics and modern physics.
- Enhance students' skills at developing and applying mathematical models to real world problems.
- Demonstrate the ability to set up and utilize equipment to take data with minimal systematic error
- Perform data analysis appropriate to the mathematical level of the in producing the result for the experiment.
- Describe the experiment, data acquisition, results and error analysis in a detailed laboratory report.
- Demonstrate the ability to actively and productively work in a group focused on completing an experiment or project.

Textbook

Openstax University Physics – Volume 2 & 3 <http://openstaxcollege.org/textbooks/>

[Learn about the new textbook program at JC](#)

For account billing questions, please contact the Jackson College Cashier at jccashier@jccmi.edu

Extras

- Any calculator with graphing and statistical capabilities
- A webcam for proctored exams
- The ability to take images of documents and upload them to JetNet.

Exam Process- Respondus

To protect the fairness and integrity of the exams, students will be required to take exams using Respondus Lockdown Browser and Monitor. This is an online test proctoring software that requires a download to your computer. Training and practice of Respondus technology will be provided in advance of the first exam. A Mac or PC that has a webcam and microphone is required to use Respondus. If you do not have this technology, please contact your instructor right away. Students are expected to complete the Respondus Practice quiz on time. This is to give our IT department time to help troubleshoot issues before the first exam opens.

Grading Procedure

Students will be graded on homework assignments (150 points), laboratory exercises (250 points), a project (100 points) and four exams (500 points). There is no individual extra-credit available in this course.

Homework

There will be fifteen homework assignments, each is worth 10 points. It is the best interest of students to do all the homework so that they are adequately prepared for the exams. Late homework is discouraged; however, it will be accepted under special circumstances.

Laboratory

See the attached laboratory schedule. Students meet in the laboratory every week to perform thirteen (13) standard verification laboratory exercises and to work on a project. The exercises require “Informal Reports” that consist of the Data & Results and the answers to the questions posed in the instructions or “Formal Reports” in the same style required in the previous semester. All reports are due one week following the day that the experiment is performed at 11:59 p.m. Students will be allowed one late report to be turned one week following the original due date; after that late reports will NOT be accepted under any circumstances. If a student misses their laboratory section for a legitimate reason, they will have the opportunity to make-up the laboratory at a time that is convenient for the instructor. Each report is worth 20 points. The total for this section of laboratory grade is 250 points.

Also part of the laboratory grade is a group project, which is worth 100 points to the final grade. Groups will research and design an experiment around an Arduino microcontroller (programmable circuit board). They will present their results during the last laboratory session. Project details and expectations are described in a separate document.

Exams

There will be four (4) exams; each is worth 125 points. Each exam will consist of approximately 5 questions based on the material covered in lecture, laboratory or homework to be done in a 2.5-hour period. An 8.5”x11” sheet of notes (both sides) may be used on the exam. Given the nature of Physics, each exam should be considered cumulative.

Exams will be available online through JetNet and will require the Respondus lock-down browser and webcam. The first three (3) exams will be open on Friday at 8:00 am and be due the following Sunday at 11:59 pm. The fourth exam will be due Saturday April 30th at 11:59 p.m. Please contact the instructor as soon as possible with any conflicts.

Make-up exams will be given only in special circumstances and will generally be more difficult than regularly scheduled exams

Grading Scale

Minimum Points	900	850	800	750	700	650	600	550
Grade	4.0	3.5	3.0	2.5	2.0	1.5	1.0	0.5

Makeup Policy

See individual course activities described under Grading Procedures for this information.

Student Responsibilities

Outside of scheduled lecture time, students should expect to invest time to review notes from previous lectures, preview any posted course materials, read the textbook, and do assigned homework. Outside of scheduled laboratory time, students should expect to invest time to read laboratory background material and procedures and to write either an informal or formal report. They should also expect to meet with their project group outside of class to research and plan for their lab project and produce their presentation. For exams and lab quizzes, students should expect to invest time in studying all course materials and preparing their sheet of notes.

The generally accepted amount of time outside of class needed to be successful in lab science classes is 1 to 2 hours for every class hour. For College Physics, this translates to 6 to 12 hours of per week. Studying is not simply the passive activity of reviewing the course notes. Studying utilizes active techniques such as copying over course notes, comparing classroom discussion topics with the textbook or other resources, making flash cards for vocabulary or ideas, running simulations, re-working problems, etc. Students unfamiliar with these study techniques should consult their instructor as soon as possible.

Attendance-Participation Policy

Regular class participation and keeping up on the reading and assignments is strongly correlated with survival in college. It is my recommendation that you plan to do your assignments and take your exams before the last day they are due. If problems occur, there is time to fix them before the deadline.

In compliance with Federal Title IV funding requirements, as well as college initiatives, I will be monitoring student participation on a regular basis and officially reporting student activity throughout the term to assure compliance with college policy and federal regulations. It is imperative that you log in to the course and actively participate *within the first couple of days of the term* to validate your enrollment in the course. After that, not actively participating in class may result in you being withdrawn from the course. Being withdrawn from a course can have an impact on financial aid, billing, athletic eligibility, and housing status. As a college student you are responsible for how your participation impacts your academic progress; the accountability lies with you.

Failure

A failing grade of 0.0 is earned by students if they accumulate less than 550 points or are academically dishonest (see the Academic Honesty Policy below).

Course Management

See the following link for information on Drops and Withdrawals:

<https://www.jccmi.edu/registration-records/canceled-classes-drops-and-withdrawals/>

In accordance with JC's Incomplete Grade Policy, a student may request the grade of Incomplete if they are unable to complete the course work for some documentable unforeseen circumstance. The Incomplete will be granted if at least 50% of the assigned work in the course (including both assignments and exams) has been performed with sufficient quality (with an average grade of 2.0) and the student provides documentation of the circumstance. The student will be required to provide a detailed written schedule with due dates for making up the missing work during the following semester.

Academic Advising

Student success navigators serve not only as academic advisors but as a student's academic, financial, and total resource advocate or coach.

Students will have an assigned navigator to meet with for advising and any questions they may have. Navigators will serve as the "go-to" person to help students throughout the college experience.

It is important to know your Student Success Navigator. You may find your Navigator by visiting this website <https://www.jccmi.edu/academics/academic-advising/> and click on your pathway. You should also receive an email from your Navigator at the beginning of the semester.

Academic Honesty Policy

Academic Honesty is defined as ethical behavior that includes student production of their own work and not representing others' work as their own, by cheating or by helping others to do so.

Plagiarism

Plagiarism is defined as the failure to give credit for the use of material from outside sources. Plagiarism includes but is not limited to:

- Submitting other's work as your own
- Using data, illustrations, pictures, quotations, or paraphrases from other sources without adequate documentation
- Reusing significant, identical or nearly identical portions of one's own prior work without acknowledging that one is doing so or without citing this original work (self-plagiarism)

Cheating

Cheating is defined as obtaining answers/material from an outside source without authorization. Cheating includes, but is not limited to:

- Plagiarizing in any form
- Using notes/books/electronic material without authorization
- Copying
- Submitting others' work as your own or submitting your work for others
- Altering graded work
- Falsifying data
- Exhibiting other behaviors generally considered unethical

- Allowing your work to be submitted by others

Accessibility

Jackson College understands that cultivating a broadly diverse community is crucial to our educational mission and to our foundational commitment to leadership and service. Jackson College is fully committed to ensuring our courses are accessible to everyone including those with disabilities. We are currently working to increase accessibility and usability of our course materials in order to meet or exceed the requirements of Section 508 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1991 and Web Content Accessibility Guidelines (WCAG) 2.0. For more information about Jackson College's efforts to ensure accessibility please visit the [Jackson College accessibility web page](#).

If you have an accessibility need in any of our classes please e-mail the Center for Student Success at JCCSS@jccmi.edu or visit the [Center for Student Success web page](#).

Support

At the Center for Student Success (CSS), we are committed to providing all students the opportunity to achieve academic success by providing a variety of support services free of charge to Jackson College students. This includes, but is not limited to, peer and faculty tutoring, mental health referral, temporary assistance with transportation, various workshops/seminars, and the TRIO program.

In addition, the CSS staff is committed to adapting the College's general services to meet the individual needs of otherwise qualified students with disabilities, for the purpose of providing equal access to all programs and facilities.

Oasis Center

During a student's college experience, one might encounter situations that impact their learning environment. When these situations occur, support from the Oasis Center is available to provide short-term assistance. If the situation requires ongoing support, the Oasis Center staff can provide that level of support or will assist the individual in securing an outside agency to provide it.

For more information visit the Jackson College Oasis Center webpage <https://www.jccmi.edu/the-oasis-center/>

Health Clinic

Jackson College has partnered with Henry Ford Allegiance Health to offer healthcare to Jackson College students and employees. The Jackson College Health Clinic (JCHC) is located on Central Campus in the Justin Whiting Hall, Room 111. The caring and professional staff at the JCHC provides quality healthcare, including annual exams (physicals, program physicals and sports physicals), acute and chronic illness care and preventative health care (It's Your Life).

For more information visit the Jackson College Health Clinic webpage <https://www.jccmi.edu/health-clinic/>

Dental Clinic

Community members may utilize Jackson College Dental Hygiene Clinic, which offers dental hygiene services while helping students gain experience. Students work under the supervision of license dental hygiene instructor and dentist as they offer preventative services.

For more information visit the Jackson College Dental Clinic webpage <https://www.jccmi.edu/dental-hygiene/dental-hygiene-dental-clinic/>

Caveat

Please note: The format and timing of this course may need to change due to unforeseen circumstances. In particular: school closings, instructor illness, weather, or other situations that may arise.

If you are taking an in -person class, you will be required to complete a Reintegration Video Training course in JetNet prior to being admitted to campus.

All COVID safety protocols in place are based on current guidelines and will be enforced while students are on campus.

Important Dates:

MONDAY 03/07/2022- FRIDAY 03/11/2022	MID-SEMESTER BREAK-NO CLASSES
SUNDAY 04/30/2022	END OF FALL SEMESTER

Calendar

All dates are approximate and subject to change.

Week	Lecture Topics	Chapters	Laboratory	Project Work
1 Jan 10	Electric Charge, Forces & Fields	5 & 6 (Volume 2)	Electrostatics	--
2 Jan 17	Continued	5 & 6	Electric Fields	Form teams; Introduction to Arduino
3 Jan 24	Electric Potential & Capacitance	7 & 8	DC Circuits I	Basic Arduino programing
4 Jan 31	Continued Exam 1	7 & 8	DC Circuits II	Formulate hypothesis and plan Basic Arduino programing
5 Feb 7	Electric Current, Resistance & Ohm's Law	9	DC Circuits III	Submit materials/equipment list Basic Arduino programing
6 Feb 14	Circuits & DC Instruments; Semiconductors	10	Current Balance	Basic Arduino programing
7 Feb 21	Magnetism Exam 2	11 & 12	<i>Project Work Only</i>	Start Project Construction
8 Feb 28	Electromagnetic Induction	13 & 14	Magnetic Fields	Construction
9 Mar 7	Spring Break	--	Spring Break	Spring Break
10 Mar 14	AC circuits	15	EM Induction I	Construction
11 Mar 21	EM Waves	16	EM Induction II	Construction
12 Mar 28	Geometric Optics Exam 3	1 (Volume 3)	AC Circuits	Construction

13 Apr 3	Vision & Optical Instruments	1	Reflection, Refraction & Polarization	Construction
14 Apr 10	Wave Optics	3 & 4	Lenses & Mirrors	Finalize
15 Apr 17	Introduction to Quantum Physics	7	Analysis of Light	Finalize
16 Apr 24	Continued Exam 4	7	--	Presentation