

PH 220

Introductory Physics I

Winter 2024

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General Information:

Professor: Dr. David W. Donovan
Office: 2517 The Science Bldg. (TSB).
Phone: (906) 227-2453
Email: ddonovan@nmu.edu
WWW: <http://physics.nmu.edu/~ddonovan/classes.html>

Office Hours:

Dr. Donovan's Face to Face office hours (2517 TSB)

M, R, F	10:00 – 10:50 AM
T	3:00 – 3:50 PM

Dr. Donovan's Zoom office hours

[Dr. Donovan's Office Hours Zoom Link for Winter 2024](#)

T, W	10:00 – 10:50 AM
R	3:00 – 3:50 PM

Other times by Appointment

Text: **Physics for Scientists & Engineers**, 5th edition by Douglas C. Giancoli

Students are asked to please be patient and flexible with how things are done during the ongoing **COVID-19 Pandemic**. While many consider the COVID-19 Pandemic to be over, in reality COVID-19 is still around. Perhaps not as dominating of our lives as it was a few years ago, but there are still cases of COVID-19 happening. Please understand that **EVERYTHING is TENTATIVE** this semester. This is not a “Business as Usual” semester. **ANYTHING can be changed** with little or no warning due to University, Local, State or Federal dictates and the professor cannot do anything about such changes.

Students are asked to not come to class if they are experiencing any health issues. Please stay home, and email the professor informing him of your situation. You should make arrangements to get class notes from another student in the class. If after reviewing these notes, you still have questions, contact the professor and he will give you some help with the material.

The professor does not have notes that are useful to students. They are largely a collection of topics he uses to discuss concepts in Physics and some example problems that are often not completely solved. Students should **early in the semester** seek out fellow students who might be willing to provide class notes in the event that they may not be able to come to class. Whether it is due to sickness, sports travel, or other university sanctioned reasons you are not able to attend the class in person, you would have a source for notes. Informing the professor that you do not know anyone, is not very helpful. **Do not wait until you are unable to come to class** to develop these relationships. Unless the professor is unable to be in the classroom for an extended time, **Zoom will not be available for class**, even though it is used for some office hours.

The professor is older and has some underlying health conditions. He therefore is requesting that students respect his desires that you keep the recommended six-foot distance from him as much as possible. Office hours will be done either Face to Face or by Zoom. See the times listed above. Zoom will not be turned on during times designated as Face to Face, and students will not be allowed into the office physically during times designated as Zoom. Please understand, you can do either or both types of office hours.

The professor is willing to arrange other office hours, either face to face or Zoom, for students who cannot attend his scheduled office hours. Please email the professor (ddonovan@nmu.edu) and request an alternative time. Please provide the professor with several options, and he will let you know which ones he could do. Please reply to his email and confirm that you will attend the extra office hours proposed. Please inform the professor **if you change your mind**, and decide you will not attend the extra office hours. Students can call (906 227-2453) and/or email (ddonovan@nmu.edu) to discuss any class business as needed.

Please avoid coming down to the professor at the beginning or end of classes. This is not only because of health concerns, but rooms are often fully scheduled and another class may be trying to get settled in for their class. Moreover, the professor himself, might have another class or meeting immediately following the class. For questions that would be of interest to other members of the class, please ask them during class.

Learning Outcomes: A student who obtains a grade of “C” or higher will have successfully completed the following Learning Outcomes:

- Through the successful completion of laboratory exercises, students will demonstrate the ability to collect, graph, and analyze experimental data.
- Through the successful completion of quizzes and exams students will demonstrate an ability to use kinematical concepts to solve problems.

- Through the successful completion of quizzes and exams students will demonstrate an ability to use Newton’s laws to solve problems.
- Through the successful completion of quizzes and exams students will demonstrate an ability to use conservation principles (energy, linear momentum, and angular momentum) to solve problems.

Grade Breakdown:

Fridays – Saturdays	Quizzes (Lowest 1 Dropped)	15%
Fridays – Saturdays	Exams 2 @ 20% each	40%
	Laboratory	20%
Monday, April 29, 2024 (10:00 – 11:50 AM)	Final Exam	25%

Please understand the Gradebook in [EduCat](#) is **not the complete grading** for the PH 220 course. The professor will maintain grades in his own personal spreadsheets. You may request a meeting at any point of the semester to discuss how well you are doing in the course. [EduCat](#) will provide the correct grades for your particular quiz or exam, however, other course materials such as labs will not have their grades reflected in [EduCat](#). **Please do not Assume [EduCat](#)’s Gradebook is in any way a final statement of your PH 220 Course grade!**

NOTE: You must receive a passing grade in each part (Lecture and Lab) separately in order to pass the course as a whole. If you fail either part, regardless of your grade in the other part you will fail the course!!

THERE IS NO EXTRA CREDIT!! Doing poorly for a portion of the semester will not be corrected by any extra projects. Please do not assume you can replace poor work under any circumstances with any “additional assignments”!!

In the event that the University cancels classes on the day of a quiz or exam, the professor will adjust the window of time allowed to take the quiz or exam. Please check your NMU email for directions from the professor. Any homework or other assignment due to be turned in on the canceled day, should be turned in at the same time listed on the next day the university is open, whether or not the class is normally held on that day. Please be aware that the university may cancel evening classes separately from daytime classes.

Students are expected to be proactive in dealing with issues that require missing class. The professor would prefer that students who are ill, not come to class and potentially spread their illness to other members of the class. The professor understands that on occasion unforeseen legitimate circumstances will arise such as family deaths or other family emergencies that requires a student to miss class. In these cases, however, the student should expend every possible effort to keep the professor apprised of the situation (usually by [email](#)). Let the professor know when you expect to be back in class. It is unacceptable to wait until the next time you happen to be in class to let the professor know what is going on. If you choose to wait

until you are in class again, the professor is within his rights to deny the making up of any missed work or even accepting previously completed work that was not turned in on time. Finally understand that the professor needs to be fair to all members of the class and may ask some questions about the situation. He might require appropriate documentation from additional sources such as a doctor or the dean of students. Students are expected to provide reasonable information.

Below is a [tentative course schedule](#) of topics, which we shall attempt to cover in this course. As with other aspects of this course, the course schedule is to be considered tentative, and it may change, as it needs to, in order to deal with conditions, present in our daily lives. Please continue to be patient and flexible as we deal with these changes. Unless specifically noted below in the outline of topics, all sections of a chapter are expected to be learned. Ask questions if you feel you need more clarification of a section.

Also contained in the course schedule are the dates of [quizzes and exams](#). The quiz dates are firm and will occur on the specified days. All [quizzes and exams](#) including the Final Exam will be given online through [EduCat](#). Other than the Final Exam which is scheduled by the University, these quizzes and exams will usually go live on Fridays. They will need to be completed by 5:00 PM on Saturdays. Normally, a quiz will allow a total of 20 minutes to be worked on once you start it, and a test will be allowed 80 minutes. The Final Exam will allow 2 hours to be taken. While you can choose when you wish to complete the quiz or exam during the roughly 25 hours (Usually, Friday 4:00 PM to Saturday 5:00 PM), once you start the quiz or exam you will have just the allotted time to complete it.

Please note that [EduCat](#) uses Marquette or Eastern Time Zone times. So, if you are in Wisconsin for example, adjust your time appropriately as 5 PM in Marquette is 4 PM in Wisconsin. Additionally, [EduCat](#) will shut off the quiz or exam at the listed end time, regardless of when you started. So, if you start a quiz at 4:55 PM, it will end at 5 PM. You will only get 5 minutes and not 20. Consider this when you plan your times for taking your quizzes and exams.

Any questions not answered will be scored a zero. **The questions are multiple choice and there is no partial credit.** The quiz content will usually be the material covered since the previous quiz. One quiz will be dropped from your grade. **There are usually no make-up quizzes or exams provided.** You should discuss any unusual situations that would prevent you from taking and/or providing your best work on a quiz or exam with the professor, and **he** will decide if there is an appropriate course of action to be taken.

Once the time window has opened for a quiz and exam, if you think there is an error in any of the questions, **after you have completed** the quiz or exam as well as you can, you may email the professor. But understand, there will be no changes to the questions. The professor will investigate the issue and if there is indeed an issue, he will adjust the final scores to properly account for the issue. The professor will not comment on any questions while the quiz or exam is still open for other students take. Please consider that some students may have circumstances

that allow them to take the quiz/exam outside of the window the majority of the class has for taking the quiz or exam. Once all students who are going to take it, have taken the quiz or exam, the professor will email the class and announce the average and inform you that a solution is available on his website <http://physics.nmu.edu/~ddonovan/classes/Nph220/ph220nq.html>

Occasionally, EduCat has a glitch and answers are not collected. The professor checks for these shortly after the window closes for each quiz or exam. When he finds an instance of this (and it is very rare), he will email you and provide you with another opportunity to provide answers. You should **check your email at least within a day** of the end of quiz or exam and see if you experienced this issue.

If you have legitimate reasons for not being able to take the quiz or exam during the allowed time window, contact the professor by email and he will decide if you can have an additional window to take the quiz.

If you receive testing accommodations, consult with [Disabilities Services](#). After they provide you with your accommodations letter, provide it to your professor, and schedule a brief meeting with him to ensure that you and he understand what is to be provided. Your accommodations will be provided, and **you will not need to schedule** any quizzes or exams with [Disabilities Services](#).

For a quiz, one **3-inch by 5-inch** index card of notes (Both Sides!) will be permitted. For an exam, one standard size (**8 and 1/2 inch by 11 inch**) sheet of paper (Both Sides!) of notes will be allowed. For the final exam, **two standard size** sheets of paper will be permitted. The professor recognizes that you will be taking the quizzes and exams by yourself and he is counting on your **honor and integrity** that you will abide by these conditions.

Students bear the responsibility of making sure their work is legible and easily discernable to the professor and the laboratory instructors. Any work that cannot be determined exactly what is presented is automatically scored as a zero (no points). It is not the responsibility of the professor and/or lab instructors to take extreme measures to ascertain whether or not the student has provided correct and proper information. The professor and/or lab instructors are willing to work with students on this, but if work is not legible, whether due to poor penmanship, poor printouts, staining of papers, insufficient ink or lead on the page, or any other reason why a paper cannot be read is solely the student's responsibility. Moreover, students are required to comply with all instructions provided by the professor and/or lab instructors. Students may ask questions, but failure to follow instructions can result in the loss of points up to and including all points for the assignment.

A knowledge of calculus and trigonometry is assumed for all participants in the course. Additional math techniques will be taught to the students as needed. Please feel free to ask for additional help if this additional math is causing problems. This is not a math course. The aim is to learn about physics, however physics is a mathematical subject. When having difficulty with material, try to decide if it is the physics or the mathematics that you are having difficulty with.

Homework is assigned for each chapter. These assignments are available on the professor's webpage. They will not be collected or graded. However, exam and quiz questions will be similar to these kinds of problems. Physics cannot be learned by watching. Without struggling with problems before a quiz or exam, you will probably struggle during the quiz or exam.

Homework, quiz and exam solutions will be posted on my webpage <http://physics.nmu.edu/~ddonovan/classes.html>. If you need assistance in learning how to use the world-wide web, see your professor. Quiz and Exam solutions will be one version of the quiz or exam. The order of questions and the order of answers will be randomized for students when they are taking them. The solutions provided will show the method and answers for the problems/questions, but they may not match the order of the specific exam or quiz you took.

Laboratory work is part of your final grade. **Reminder: You must receive a passing grade in each part (Lecture and Lab) separately in order to pass the course as a whole. If you fail either part, regardless of your grade in the other part you will fail the course!!** It is quite likely your laboratory instructor will not be the same as your lecture professor. While the Laboratory grade is a part of your PH 220 Course grade, the Laboratory instructor will have a separate syllabus, which outlines the policies of the Laboratory portion of the course. Labs begin in the **FIRST WEEK OF CLASSES!!!**

Attendance at all labs is mandatory. Make-ups for quizzes and labs will only be provided for at the discretion of the lab instructor and/or the professor. This will occur only for reasonable excuses. Desire to go home for the weekend or to go hunting are not considered reasonable excuses. Informing the lab instructor and/or the professor **BEFORE** an absence is more likely to result in a make-up than informing them after the absence. **A missed lab is a zero for that experiment and all associated work!!**

There may be questions that pertain to material only covered in laboratory on most quizzes and exams. Anything covered in Lab is fair game!!!

Physics is a cumulative subject. Falling behind will cause problems. If you have any questions or problems talk to the professor. If you need any special arrangements, they should be arranged **prior** to the problem, unless this is completely impossible (a rare occurrence!)

The professor is always willing to discuss the grading of materials. Students should review their returned work promptly. If they believe an error in grading has been made, they should arrange to meet with the professor as soon as possible after the work is returned. **Grades will not generally be changed after the student has had the work in their possession for more than one week.** The work should not have been further marked upon or changed in any way by the student if they wish to discuss a graded item. The professor is happy to discuss what is correct or not correct about an item with a student, but there is no discussion on the number of points awarded or deducted by the professor.

The professor will retain in his possession all final exams for a period of one year. Students may make arrangements to see the work during this year. **The professor is not going to provide specific grades over the phone or on email at any time prior to final grades being displayed on MYNMU (this usually occurs on Thursday after graduation).**

The professor will make every effort to respond to all email (ddonovan@nmu.edu) questions received by 5 PM Monday through Friday, with a response by 10 PM Monday through Friday. Students are expected to regularly check **their NMU issued email accounts** for any messages the professor may send out to the class as a whole or to an individual in the class. Moreover, when students ask the professor a question requiring an answer, it is expected for students to check their email in an equally timely fashion and to confirm the receipt of the answer, and if necessary provide any answers to questions the professor may have posed about the situation.

The professor reserves the right to cancel any deals proposed in email correspondence if the student fails to confirm the deal with a final email.

Civility and Course-related Behavior

Your academic attitude is a major factor in your success at NMU. You share responsibility, along with your professors and other students, for creating a productive learning environment. This responsibility includes behaving courteously and respectfully toward your professors and your classmates and becoming self-disciplined in your learning.

As a student, you have the right to a learning environment free from distractions. If others in your course are engaging in behavior that interferes with your learning, bring the situation to the attention of your instructor. The instructor has the right and the responsibility to take appropriate action when they observe an instance of inappropriate course behavior. The form of intervention taken by the instructor will depend on the nature of the misconduct observed.

Some Guidelines for Class:

Attend class and pay attention. Do not ask the instructor to go over material you missed by skipping class or not concentrating. If you have difficulty understanding the presented material, ask the instructor to assist you.

Do not come to class late or leave early. If you must enter late, do so quietly and do not disrupt the class by walking between the class and the instructor. Do not leave class early unless it is an absolute necessity. If you know in advance you will need to leave class early, sit near an exit and inform the instructor prior to class.

Do not talk with other classmates while the instructor or another student is speaking. If you have a question or comment, please raise your hand, rather than start a conversation with your neighbor. Others in the class may have the same question.

Use all electronic devices in a manner appropriate for class. [\(Please See Below on Computer Use\)](#) While the professor does not ask you to turn them off, devices should be on silent.

Focus on class during class time. Sleeping, talking to others, doing work for another class, reading the newspaper, checking email, exploring the internet etc., are unacceptable and can be disruptive.

Do not pack to leave until the instructor has dismissed the class.

Clear any visitors you would like to bring to class with your instructor ahead of time.

Students in this class are expected to conform to a code of **academic honesty**. While it is encouraged for students to work together, there are situations where work is expected to be the student's whose name appears on the work. [Quizzes and exams](#) are obvious examples of where cheating will not be tolerated. In [lab work](#), it will often be the case that both partners will have identical work. However, both partners are to turn in lab sheets, and both partners are expected to participate equally in completing the lab tasks. It is not acceptable for one partner to do all the work, while the other merely watches and writes.

Using the **same code and documentation** (even if you change your name and modify some words), **same graphs, same spreadsheets**, etc. is also considered cheating. For example, using the same EXCEL spreadsheet (unless given permission by the instructor) in lab to produce multiple copies of plots or problem solutions (even if you change your name), is considered cheating. Students are expected to learn how to create their own files, graphs, etc. All partners are expected to understand the lab exercises. If you have questions on what is considered appropriate, ask your professor and/or your lab instructor.

Please be sure any cell phones or pagers or other devices do not produce sounds during lectures.

Please do not engage in conversations at all during lectures.

Computer Usage Policies:

UNLESS PERMISSION is GRANTED, All Laptops and other Electronic Communication/Entertainment devices are to be off and remain unused during class times.

If Permission is granted then:

- Computers (both room based and laptops) are to be utilized for course work and activities related to course work.
- Writing computer code whether for this class or another class while the professor is lecturing is not appropriate.
- Do not use computers for entertainment or communications during class meetings.

- Do not display material on screen which may be distracting or offensive to other members of the class (including the professor).
- Keep a backup of all your files. The university is not liable for any data lost due to equipment failures, damaged disks, or misuse of computer programs.
- Do not utilize software in violation of licensing agreements. Do not copy software, information, data or other work in violation of applicable copyrights. Be aware of current copyright laws regarding software, music, movies, and other digital information.
- You may not copy, install or use any service, information, data, image, recording, or other work in violation of applicable copyrights or license agreements. You may not possess any software or resource whose purpose is to effect one of the afore mentioned violations.
- You must take full responsibility for what you publish, transmit, or possess.
- You may not steal, forge, cheat with; snoop on; tamper with; misuse, damage, harass with; hoard or monopolize; interfere with; violate the confidentiality of; or destroy any information, resource, equipment or software. This includes using your personal computer for these activities against other users or against their information resources.

Concerning AI/ChatGPT Use in Student Work

All submissions, including drafts, low-stakes writing, and final versions, must be your original work. Having someone else or an AI tool like ChatGPT do any part of your assignment is deemed a breach of academic integrity. This applies even to situations where you might be working in groups. Violation of this policy will be treated as plagiarism.

PH 220 satisfies part of Division III—Foundations of Natural Sciences-Mathematics Liberal Studies requirement. Students who complete the science courses should be able to recognize and understand the scientific method; understand and use scientific concepts; understand and discuss general scientific articles; and apply their knowledge of science to everyday experience. Students who complete the mathematics courses should be able to demonstrate a basic understanding of mathematical logic; use mathematics to solve scientific or mathematical problems in college classes; express relationships in the symbolic language of mathematics; and appreciate the role of mathematics in analyzing natural phenomena.

PH 220 satisfies one of the two courses required in the [General Education Program's Scientific Inquiry Component](#): Scientific Inquiry (two courses required): Students will demonstrate use of scientific processes to investigate and report knowledge about natural or social phenomena.

[Writing Center](#)

It takes time to improve one's writing skills, and very often, talking to another person who is interested in and good at writing could help one generate ideas, notice errors, or even enjoy writing more. The Writing Center, located in LRC 111G, is a place where students can go for assistance with writing. The service is free and no appointment is necessary. The tutors at the

Writing Center have experience working with all forms of college writing and all stages of the writing process. Please consider visiting the Writing Center, LRC111G, or find them online at <http://www.nmu.edu/writingcenter> .

DISABILITY SERVICES

If you have a need for disability-related accommodations or services, please inform the [Coordinators of Disability Services](#) in the Dean of Students Office at 2001 C. B. Hedgcock Building (227-1737 or disability@nmu.edu). Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state, and University guidelines.

Religious and Spiritual Observances

Faculty, staff, and students practice a variety of religious and spiritual traditions, which enhance the diversity of our campus community. NMU acknowledges that scheduling conflicts between required academic activities and religious and spiritual obligations are inevitable. Additionally, we recognize that some religious and spiritual obligations extend for multiple days and/or start at sundown of one day and extend through sundown of another day. In the event of conflicts, the professor will make every effort to help students avoid any negative academic consequences of observing religious and spiritual obligations. Students should consider the implications of missing class due to religious and spiritual obligations and should take into consideration these impacts when making decisions regarding any other absences during the term.

When an exam, assignment, or class conflicts with a religious or spiritual obligation, students are responsible for notifying me usually at least a week in advance of the date(s). You are not exempt from meeting course requirements or completing assignments in a timely manner as determined by this instructor.

NMU Official Statement on absences during the pandemic:

If you are experiencing COVID-19 symptoms, do not attend class, work, or campus and community activities. Please communicate with your instructors and/or work supervisors via email or phone to say you are not feeling well and will be absent. Stay home, avoid contact with others as much as possible, and contact your healthcare provider or the NMU Health Center for next steps. Instructors are not required to provide remote class sessions for absent students. If you are absent due to COVID-19 symptoms, please contact your instructor to discuss what options may be available to you. You can visit the SafeOnCampus website (<https://www.nmu.edu/safe-on-campus>) or the Dean of Students Office for help with non-course related COVID-19 and pandemic questions.

Non-Discrimination Policy

NMU is committed to administering all employment, admission and educational policies and practices without unlawful discrimination, according to state and federal laws. These laws and

policies are intended to ensure fairness in hiring, employee relations and benefits, student admissions, the provision of student services, and workplace and classroom accommodations.

Northern Michigan University does not unlawfully discriminate on the basis of ancestry, race, color, ethnicity, religion or creed, sex or gender, gender identity, gender expression, genetic information, national origin, age, height, weight, marital status, familial status, handicap/disability, sexual orientation, military or veteran status, or any other characteristic protected by federal or state law in employment or the provision of services. NMU provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities an equal opportunity to participate in all programs and activities.

In addition, Northern is committed to increasing the diversity of its faculty, staff and students. If you have questions, or if you believe that a violation or potential violation of state or federal non-discrimination laws has occurred, is occurring or will occur, please notify the [Equal Opportunity](#) office at 105 Cohodas, 906-227-2420, or the Dean of Students at 2001 C.B. Hedgcock, 906-227-1700. Mail to either office can be sent to 1401 Presque Isle Avenue, Marquette, MI 49855.

[NMU Veteran Services](#)

If you are a veteran and need assistance with your benefits or are experiencing complications with your education due to military service connected issues, contact the Veteran Resource Representative in 2101D Hedgcock (227-1402 or mrutledg@nmu.edu). The Veteran Resource Representative can advocate for you before the Veterans Administration and can also help you solve any veteran specific issues you may have.

RELATIONSHIP VIOLENCE, SEXUAL MISCONDUCT, AND STALKING

Our University is committed to fostering a safe, productive educational and work environment. [Title IX](#) and our Relationship Violence, Sexual Misconduct, and Stalking Policy prohibit discrimination on the basis of sex. This includes relationship violence (dating violence and domestic violence), sexual misconduct (sexual assault, sexual exploitation, and sexual or gender-based harassment), and stalking, collectively referred to as "Prohibited Conduct." Prohibited Conduct can undermine students' academic success and we encourage students who have experienced Prohibited Conduct to talk to someone about their experience, so they can get the resources and support they need.

All employees, except employees of NMU Counseling and Consultation Services and the Health Center, excluding Athletic Trainers, are designated as Campus Reporters and are required by policy to report incidents of Prohibited Conduct observed as well as incidents reported to an Official with Authority (OWA). As a Campus Reporter, your instructors are required to report to an OWA. The OWA are the [Title IX](#) Coordinator and the Executive Director of [Equal Opportunity](#) and [Title IX](#), who are assigned to implement corrective measures for Prohibited Conduct.

If you or someone you know has experienced Prohibited Conduct, you are encouraged to reach out to staff in the [Title IX](#) Office. Please contact:

Harger Boal
Assistant Director of [Equal Opportunity](#) and [Title IX](#) Coordinator
105 Cohodas Hall
phone: 906-227-2416, email: hboal@nmu.edu

Janet Koski
Executive Director of [Equal Opportunity](#) and [Title IX](#), and Equal Opportunity Officer
105 Cohodas Hall
phone: 906-227-2420, email: jakoski@nmu.edu

If you have a safety concern, please contact the NMU Police Department at 906-227-2151

Tentative Class Schedule

Jan 15 – 19 Introduction, Basic Math (Ch 1)
 Kinematics in 1 dimension (Ch 2)

Homework: [Chapter on Vectors & Intro Math Web View](#)
[Chapter on Vectors & Intro Math Word Document](#)

Homework: [Chapter on 1 Dimensional Kinematics Web View](#)
[Chapter on 1 Dimensional Kinematics Word Document](#)

Jan 15 MLK Day – No Classes

Jan 22 – 26 Kinematics in 1 dimension (Ch 2)

Jan 23 Hideki Yukawa (1907)

Jan 22 Andre Ampere (1775)

Jan 26 – 27 [Quiz 1](#)

Jan 29 – Feb 2 Kinematics in 2 dimensions (Ch 3)

Homework: [Chapter on 2-Dimensional Kinematics Web View](#)
[Chapter on 2-Dimensional Kinematics Word Document](#)

Feb 2 – 3 [Quiz 2](#)

Feb 5 – 9 Kinematics in 2 dimensions (Ch 3)

Feb 8 Daniel Bernoulli (1700)

Feb 9 – 10 [Quiz 3](#)

Feb 12 – 16 Forces (Ch 4)

Homework: [Chapter on Forces Web View](#)
[Chapter on Forces Word Document](#)

Feb 17 Otto Stern (1888)

Feb 16 – 17 [Exam #1 \(Chapters 1 - 3\)](#)

Feb 19 – 23 Forces II / Uniform Circular Motion (Ch 5)

Homework: [Chapter on Forces II and Uniform Circular Motion Web View](#)
[Chapter on Forces II and Uniform Circular Motion Word Document](#)

Feb 23 – 24 [Quiz 4](#)

Feb 26 – Mar 1 Forces III (Ch 6)

Homework: [Chapter on Forces III](#)
[Chapter on Forces III](#)

Mar 1 – 2 [Quiz 5](#)

Mar 4 – 8 **Spring Break Week – No Classes!!**

Mar 11 – 15 Work - Energy (Ch 7)

Homework: [Chapter on Work & Energy Web View](#)
[Chapter on Work & Energy Word Document](#)

Mar 14 Albert Einstein (1879)

Mar 15 – 16 [Quiz 6](#)

Mar 18 – 22 Conservation of Energy (Ch 8)

Homework: [Chapter on Conservation of Energy Web View](#)
[Chapter on Conservation of Energy Word Document](#)

Mar 21 Jean Fourier (1768)

Mar 22 Robert Millikan (1868)

Mar 22 – 23 [Exam #2 \(Chapters 4 - 8\)](#)

Mar 25 – 29 Impulse & Momentum (Ch 9)

Homework: [Chapter on Momentum Web View](#)
[Chapter on Momentum Word Document](#)

Mar 27 Wilhelm Rontgen (1845)

Mar 29 – 30 [Quiz 7](#)

Apr 1 – 5 Rotational Motion (Ch 10)

Homework: [Chapter on Rotational Kinematics Web View](#)
[Chapter on Rotational Kinematics Word Document](#)

Apr 5 – 6 [Quiz 8](#)

Apr 8 – 12 Angular Momentum (Ch 11)

Homework: [Chapter on Angular Momentum Web View](#)
[Chapter on Angular Momentum Word Document](#)

Apr 12 – 13 [Quiz 9](#)

Apr 15 – 19 Angular Momentum (Ch 11)

Apr 19 – 20 [Quiz 10](#)

Apr 22 – 26 Fluids (Ch 13)

Homework: [Chapter on Fluids Web View](#)
[Chapter on Fluids Word Document](#)

Apr 22 J. Robert Oppenheimer (1904)

Apr 23 Max Planck (1858)

April 26 Last Day to withdraw from Semester Classes with a W - See your Instructors!! And Advisors!!!

Monday April 29, 2024 10:00 - 11:50 AM Final Exam

Apr 30 Carl Gauss (1777)

May 11 Richard Feynman (1918)

May 15 Pierre Curie (1859)