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| |  |  |  | | --- | --- | --- | | [**General Information**](#GeneralInformation) | [**Learning Outcomes**](#LearningOutcomes) | [**Grading**](#Grading) | |  |  |  | | [**Quiz/Exam Information**](#QuizExam) | [**Laboratory Information**](#Laboratory) | [**Homework Information**](#Homework) | |  |  |  | | [**Computer Use**](#ComputerUse) | [**Accommodation Statements**](#AccommodationStatements) | [**Tentative Calendar**](#TentativeCalendar) | |
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| **General Information:** |
| |  |  | | --- | --- | | **Professor:** | Dr. David W. Donovan | | **Office:** | 2517 West Science | | **Phone:** | 227-2453 | | **Email:** | [ddonovan@nmu.edu](mailto:ddonovan@nmu.edu) | | **WWW:** | <http://physics.nmu.edu/~ddonovan/classes.html> | | **Office Hours:** | |  |  |  | | --- | --- | --- | |  | | | | **Dr. Donovan's office hours Will be Done Via Zoom** | | | |  | | | | [**Dr. Donovan's Office Hours Zoom Link for Fall 2020**](https://nmu.zoom.us/j/99371660880?pwd=TW9hRlZrKzk2LzJRZDN2V20rZ2c3Zz09) | | | |  | | | | M W R |  | 10:00 – 11:30 AM | | | R |  | 2:30 – 4:00 PM | | | |  | Other times by Appointment | |
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| |  |  | | --- | --- | | **Text:** | Physics (10th Edition) by Cutnell & Johnson | | **WleyPlus Site:** | <https://www.wileyplus.com/> | | **Wiley Plus Registration Help** | <http://physics.nmu.edu/~ddonovan/classes/ph202/WileyPlusFlyer.pdf> | |
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| |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Lecture Seating Charts:** | | **Please Be Aware That Seating Charts May Change As Circumstances Dictate!** | | | |  | |  | | | |  | [Lecture Seating Chart PH 202 9 AM - Group A - Web View](http://physics.nmu.edu/~ddonovan/classes/ph202/PH202SCLec9AMGroupA.html) | |  | [Lecture Seating Chart PH 202 9 AM - Group A - PDF File](http://physics.nmu.edu/~ddonovan/classes/ph202/PH202SCLec9AMGroupA.pdf) | |  |  | |  |  | |  | [Lecture Seating Chart PH 202 9 AM - Group B - Web View](http://physics.nmu.edu/~ddonovan/classes/ph202/PH202SCLec9AMGroupB.html) | |  | [Lecture Seating Chart PH 202 9 AM - Group B - PDF File](http://physics.nmu.edu/~ddonovan/classes/ph202/PH202SCLec9AMGroupB.pdf) | |
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| Students are asked to please be patient and flexible with how things are done during the current **COVID-19 Pandemic**. Please understand that **EVERYTHING is TENTATIVE** this semester. This is not a “Business as Usual” semester. **ANYTHING can be changed** with little |
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| or no warning due to University, Local, State or Federal dictates and the Professor cannot do anything about such changes. |
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| 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 by Zoom. Students can call and email to discuss class business. Please do not come down to the professor at the beginning or end of classes. Course materials will be handled electronically. There should be no need to pass physical papers. |
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| |  |  | | --- | --- | | **Learning Outcomes:** | A student who obtains a grade of “C” or higher will have successfully completed the following Learning Outcomes: | |
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| • Through the successful completion of laboratory exercises, students will demonstrate the ability to collect, graph, and analyze experimental data. |
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| • Through the successful completion of quizzes and exams, students will demonstrate an ability to solve problems related to Electric Fields, Electric Potentials, and Electronic Circuits. |
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| • Through the successful completion of quizzes and exams, students will demonstrate an ability to solve problems related to Magnetic Fields and Electromagnetic Induction. |
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| • Through the successful completion of quizzes and exams, students will demonstrate an ability to solve problems related to Optical Systems including Mirrors and Lenses. |
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| |  |  |  | | --- | --- | --- | | **Grade Breakdown:** |  |  | | **Thursdays** | [Quizzes](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202q.html) (Lowest 1 Dropped) | 15% | |  | [Laboratory](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202Labwork.html) | 20% | |  | [Exams](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202q.html)2 @ 20% each | 40% | | **Friday, November 20, 2020** | Final Exam | 25% | |
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| Please understand the Gradebook in EduCat **is not the complete grading** for the PH 202 course. I will maintain grades in my 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 202 Course grade!** |
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| **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!!** |
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| **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”!! |
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| **In the event that the University cancels classes on the day of a quiz or exam, be prepared to take the quiz or exam at the next available class period. 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 cancels evening classes separately from daytime classes.** |
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| 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 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. |
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| Below is a tentative course schedule of topics which we shall attempt to cover in this course. Please remember that the Corona Pandemic is currently active. There are many decisions that are not under the control of the Professor. 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. |
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| Also contained in the course schedule are the dates of [quizzes and exams](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202q.html). The quiz dates are firm and will occur on the specified days. All [quizzes and exams](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202q.html) will be given online through EduCat. They will usually go live on Thursdays. They will need to be completed by Noon on Fridays. Normally, a quiz will allow a total of 20 minutes to be worked on once you start it, and a test will be allowed 60 minutes. While you can choose when you wish to complete the quiz or exam during the roughly 25 hours (Thursdays 11 AM to Friday Noon), once you start the quiz or exam you will have just the allotted to complete it. Any questions not answered |
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| will be scored a zero. Their content will usually be the material covered since the previous quiz. One quiz will be dropped from your grade. **There are no make-up quizzes or exams unless a proper reason is provided.** You should discuss the situation with the professor and **he** will decide if the reason is appropriate. |
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| For a quiz, one **3-inch by 5-inch** index card of notes will be permitted. For an exam, one standard size (**8 and 1/ inch by 11 inch**) sheet of paper of notes will be allowed. For the final, **two standard size** sheets of paper will be permitted. I recognize that you will be taking the quizzes and exams by yourself and I am counting on your honor and integrity that you will abide by these conditions. |
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| Students bear the responsibility of making sure their work is legible and easily discernable to the professor. Any work that the professor cannot determine exactly what is presented is automatically scored as a zero (no points). It is not the responsibility of the professor to take extreme measures to ascertain whether or not the student has provided correct and proper information. The professor is 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. 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. |
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| A knowledge of algebra 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. |
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| [Homework](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202h.html) is assigned for each chapter. These [assignments](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202h.html) are available on the professor’s webpage. The numbers refer to problems at end of chapter not the questions!! 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. |
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| [Homework](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202h.html), [quiz and exam](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202q.html) 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. |
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| 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 202 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!!!** |
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| **Attendance at all labs is mandatory**. Make-ups for quizzes and labs will only be provided for at the discretion of 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 professor **BEFORE** an absence is more likely to result in a make-up than informing the professor after the absence. **A missed lab is a zero for that experiment and all associated work!!** |
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| **There will be questions that pertain to material only covered in laboratory on most quizzes and exams. Anything covered in Lab is fair game!!!** |
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| 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!) |
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| 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. |
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| 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). |
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| **Food and drinks of any kind (including snack food) is not allowed in the lab due to the facemask requirement.** |
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| The professor will make every effort to respond to all email ([ddonovan@nmu.edu](mailto: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, |
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| 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.** |
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| 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. However, 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 |
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| **Please be sure any cell phones or pagers or other devices do not produce sounds during lectures.** |
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| **Please do not engage in conversations at all during lectures.** |
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| **Computer Usage Policies:** |
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| |  |  |  | | --- | --- | --- | | |  |  | | --- | --- | |  | **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. Copyright information may be accessed through the NMU Library website at: <http://library.nmu.edu/guides/copyright.htm> | |  | • | 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. | | |
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| **PH 202 satisfies part of** [**Division III**](https://www.nmu.edu/acac/liberalstudies)**—Foundations of Natural Sciences-Mathematics** [**Liberal Studies**](https://www.nmu.edu/acac/liberalstudies) **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. |
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| **PH 202 satisfies one of the two courses required in the** [**General Education Program**](http://www.nmu.edu/bulletin/general-education?)**’s** [**Scientific Inquiry**](http://www.nmu.edu/bulletin/general-education?processtype=self&action=LibStudReq&phase=phase1&elementid=1490373693) **Component:** Scientific Inquiry (two courses required): Students will |
| demonstrate use of scientific processes to investigate and report knowledge about natural or social phenomena. |
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| [**Writing Center**](https://www.nmu.edu/writingcenter/home-page) |
| 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 offers **free online tutoring** to help students with their writing concerns. The tutors will help students with anything concerning writing, such as understanding assignments, organizing ideas, or learning grammatical rules. Please visit the Writing Center website for an appointment with a tutor. Here is the URL: <https://www.nmu.edu/writingcenter/home-page>. |
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| [**DISABILITY SERVICES**](https://www.nmu.edu/disabilityservices/home-page) |
| If you have a need for disability-related accommodations or services, please inform the [Coordinator of Disability Services](mailto:disserv@nmu.edu) in the Dean of Students Office at 2001 C. B. Hedgcock |
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| Building (227-1737 or [disserv@nmu.edu](mailto:disserv@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. |
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| **Mask Accommodation ADA Statement** |
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| Certain students may qualify for alternative face-covering accommodations due to a variety of health conditions. These students have gone through a qualifying process with the Office of Disability Services. Faculty have been notified of which students receive these accommodations in their class. If you have concerns regarding this topic please contact the faculty member outside of class. Please do not question or confront fellow students in the classroom who are using alternative or modified face coverings. |
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| [**Non-Discrimination Policy**](https://www.nmu.edu/equalopportunity/home) |
| Northern Michigan University is an equal opportunity employer and complies with all applicable laws prohibiting discrimination on such factors as race, color, national origin, gender, religion, height, weight, familial status, marital status, veteran status, disability/handicap, age or sexual orientation in employment, or the provision of services, and 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. |
| 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. |
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| **Tentative Class Schedule** |
| |  |  | | --- | --- | |  |  | | Aug 8 | Ernest Orlando Lawrence (1901) | | Aug 12 | Erwin Schrodinger (1887) | | Aug 15 | Prince Louis‑Victor de Broglie (1892) | |  |  | | Aug 17 – 21 | Electric Forces and Electric Fields (Ch 18) | | [Homework:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202h.html) | [CH 18:](http://physics.nmu.edu/~ddonovan/classes/ph202/Homework/ph202ha18.html) 1, 2, 4, 7, 8, 10, 12, 13, 17, 18, 19, 21, 22, 23, 27, 31, 34, 35, 36, 39, 40, 47, 49, 52, 53, 55, 56, 59, 60, 62, 66 | |  |  | | [Lab #1:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202Labwork.html) | Waves | |  |  | |  |  | |  |  | | Aug 24 – 28 | Electric Forces and Electric Fields (Ch 18) | |  | Electric Potential Energy and The Electric Potential (Ch 19) | | [Homework:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202h.html) | [CH 19:](http://physics.nmu.edu/~ddonovan/classes/ph202/Homework/ph202ha19.html) 1, 2, 3, 5, 6, 9, 10, 14, 15, 17, 18, 22, 25, 27, 31, 33, 35, 37, 38, 42, 43, 44, 49, 51, 53, 58, 65 | |  |  | | [Lab #2:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202Labwork.html) | Inverse Square Law | |  |  | | **Aug 28** | [**Quiz #1**](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202q.html) | |  |  | |  |  | | Aug 31 – Sep 4 | Electric Potential Energy and The Electric Potential (Ch 19) | |  |  | | [Lab #3:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202Labwork.html) | Plotting Electric Fields and Potentials | |  |  | | **Sep 4** | [**Quiz #2**](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202q.html) | |  |  | | Sep 5 | John Dalton (1766) | |  |  | |  |  | | Sep 7 – 11 | Electric Potential Energy and The Electric Potential (Ch 19) | |  | Electric Circuits (Ch 20) | | [Homework:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202h.html) | [CH 20:](http://physics.nmu.edu/~ddonovan/classes/ph202/Homework/ph202ha20.html) 1, 3, 4, 5, 6, 8, 11, 13, 18, 21, 22, 25, 27, 33, 37, 41, 42, 46, 47, 50, 52, 53, 55, 57, 62, 63, 64, 65, 71, 72, 73, 74, 77, 79, 81, 84, 86, 96, 97, 102, 103, 105 | |  |  | | [Lab #4:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202Labwork.html) | Capacitors in Series and Parallel | |  |  | | **Sep 7** | **Labor Day – No Classes** | |  |  | |  |  | | **Sep 11** | [**Quiz #3**](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202q.html) | |  |  | |  |  | | Sep 14 – 18 | Electric Circuits (Ch 20) | |  |  | | [Lab #5:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202Labwork.html) | Ohm’s Law | |  |  | | **Sep 18** | [**Exam #1 (Chapters 18 - 20)**](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202q.html) | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | | Sep 21 – 25 | Magnetic Forces and Magnetic Forces (Ch 21) | | [Homework:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202h.html) | [CH 21:](http://physics.nmu.edu/~ddonovan/classes/ph202/Homework/ph202ha21.html) 1, 2, 3, 5, 7, 9, 12, 13, 14, 15, 18, 23, 28, 30, 33, 37, 40, 41, 47, 49, 52, 54, 55, 59, 65, 69 | |  |  | | [Lab #6:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202Labwork.html) | Wheatstone Bridge | |  |  | | **Sep 25** | [**Quiz #4**](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202q.html) | |  |  | |  |  | | Sep 28 – Oct 2 | Magnetic Forces and Magnetic Forces (Ch 21) | |  | Electromagnetic Induction (Ch 22) | | [Homework:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202h.html) | [CH 22:](http://physics.nmu.edu/~ddonovan/classes/ph202/Homework/ph202ha22.html) 1, 2, 4, 5, 8, 9, 10, 13, 14, 17, 20, 21, 24, 28, 31, 34, 36, 37, 38, 40, 41, 47, 49, 53, 55, 61, 62, 67 | |  |  | | [Lab #7:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202Labwork.html) | Faraday’s Law and Electromagnetic Induction | |  |  | | Sep 29 | Enrico Fermi (1901) | |  |  | | **Oct 2** | [**Quiz #5**](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202q.html) | |  |  | |  |  | | Oct 5 – 9 | Electromagnetic Induction (Ch 22 | |  |  | | [Lab #8:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202Labwork.html) | Plotting Magnetic Fields | |  |  | | Oct 5 | Robert Goddard (1882) | |  |  | | **Oct 9** | [**Quiz #6**](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202q.html) | |  |  | |  |  | | Oct 12 – 16 | Electromagnetic Induction (Ch 22) | |  | The Reflection of Light: Mirrors (Ch 25) | |  |  | | [Lab #9:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202Labwork.html) | RC and RL Circuits | |  |  | | **Oct 16** | [**Exam #2 (Chapters 20 - 21)**](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202q.html) | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | | Oct 19 – 23 | The Reflection of Light: Mirrors (Ch 25) | | [Homework:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202h.html) | [CH 25:](http://physics.nmu.edu/~ddonovan/classes/ph202/Homework/ph202ha25.html) 3, 5, 6, 10, 16, 17, 22, 23, 25, 27, 28, 30, 33, 34, 38, 39, 41, 47 | |  |  | | [Lab #10:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202Labwork.html) | Optical Ray Tracing | |  |  | | Oct 20 | James Chadwick (1891) | |  |  | | **Oct 23** | [**Quiz #7**](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202q.html) | |  |  | | **Oct 23** | **Last Day to withdraw from Semester Classes with a W - See your Instructors!! And Advisors!!!** | |  |  | |  |  | | Oct 26 – 30 | The Refraction of Light: Lenses and Optical Instruments (Ch 26) | | [Homework:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202h.html) | [CH 26:](http://physics.nmu.edu/~ddonovan/classes/ph202/Homework/ph202ha26.html) 1, 2, 4, 8, 10, 13, 14, 15, 18, 21, 25, 28, 29, 31, 34, 37, 38, 42, 45, 46, 49, 51, 52, 53, 55, 56, 58, 61, 65, 69, 71, 75, 76, 79, 83, 84, 91, 94, 97, 100 | |  |  | | [Lab #11:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202Labwork.html) | Thin Lens Optics | |  |  | | **Oct 30** | [**Quiz #8**](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202q.html) | |  |  | |  |  | | Nov 2 – 6 | The Refraction of Light: Lenses and Optical Instruments (Ch 26) | |  |  | | [Lab #12:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202Labwork.html) | Spectroscopy | |  |  | | **Nov 6** | [**Quiz #9**](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202q.html) | |  |  | | Nov 7 | Marie Curie (1867) | | Nov 7 | Sir Chandrasekhar Venkata Raman (1888) | |  |  | |  |  | | Nov 9 – 13 | The Refraction of Light: Lenses and Optical Instruments (Ch 26) | |  | Interference and the Wave Nature of Light (Ch 27) | | [Homework:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202h.html) | [CH 27:](http://physics.nmu.edu/~ddonovan/classes/ph202/Homework/ph202ha27.html) 2, 5, 8, 9, 11, 13, 14, 15, 18, 19, 25, 28, 31, 33, 34, 37, 39, 47, 48, 49 | |  |  | | [Lab #13:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202Labwork.html) | Interference and Diffraction | |  |  | | Nov 12 | Lord Rayleigh (John William Strutt) (1842) | |  |  | | **Nov 13** | [**Quiz #10**](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202q.html) | |  |  | | Nov 16 – 20 | Interference and the Wave Nature of Light (Ch 27) | |  |  | | [Lab #14:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202Labwork.html) | Optical Instruments | |  |  | | Nov 19 | Patrick Maynard Stuart Blackett (1897) | |  |  | | **Nov 20** | **Final Exam #2 (Chapters 18 – 22, 25-27)** | |  |  | |  |  | | Nov 23 – 24 | Interference and the Wave Nature of Light (Ch 27) | |  |  | | [Lab #15:](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202Labwork.html) | Semester Wrap Up Activities | |  |  | | **Nov 24** | [**Quiz #11**](http://physics.nmu.edu/~ddonovan/classes/ph202/ph202q.html) | |  |  | |  |  | | Nov 30 | Nils Gustaf Dalen (1869) | | Dec 15 | A.H. Becquerel (1852) | | Dec 27 | Johannes Kepler (1571) | |  |  | |
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