

Instructor: Kyle T. Strand

kyle.t.strand@ndsu.edu

Office Location: South Engineering 216A

Office Hours: Mon: 10:00AM - Noon, Fri 10:00AM - Noon on Zoom, or by appointment

Course Website: <http://triton.physics.ndsu.nodak.edu>

Course Description: Application of physics concepts and principles to the real world. Topics selected from mechanics, heat, optics, electricity, and magnetism.

Course Goals: This course is intended to give a general overview of the many broad topics found within physics. The goal is to gain a better understanding of how general physics applies to everyday life as well as assist in improving scientific literacy. This course will cover a brief history of classical physics including and not limited to Newtonian mechanics, electromagnetism, and thermodynamics. Topics in modern physics will also be introduced with may include relativity, quantum mechanics, atomic theory, particle physics, and astrophysics.

Course Format: The intent for this course is to be taught physically in the classroom. However, each course will be streamed via Zoom for remote attendance. Class meetings will be recorded and made available through LON-CAPA. A Zoom link for the course and office hours will be provided at the beginning of the course through LON-CAPA.

Prerequisite(s): High school algebra

Credit Hours: 3

Recommended Text: *Physics, Concepts & Connections*, 3rd Edition

Author(s): Art Hobson; **ISBN:** 978-13-357090

Grading:

Weekly Homework	55%
Exams (6)	20%
Research Paper	15%
Final Exam	10 %

88%	A
77%	B
66%	C
55%	D

Course Information:

- Homework assignments will be handled using LON-CAPA. Answering 90% of the problems correctly will result in full homework credit for the course. The lowest homework score will be dropped.
- Assignments and due dates will be announced in class and posted on LON-CAPA. Any changes will be announced in class and posted on LON-CAPA.
- Late assignments will have have a grading penalty of 20% per day.

- No make up exams will be allowed except in cases of emergency circumstances.
- There will be 7 short exams throughout the semester.
 - Each exam will be taken on LON-CAPA.
 - Each exam will contain 5 questions and graded out of 10 points.
 - * 4 multiple choice questions worth 1 point each.
 - * 1 written problem worth 6 points.
 - * Partial credit is available for the written problem and must be submitted to me either by email or through LON-CAPA to be eligible.
 - * Each exam will have a 45 minute time limit.
 - * The lowest exam score will be dropped.
- I reserve the right to provide extra credit opportunities available to the entire class. These opportunities are not guaranteed and will be provided at my discretion.
- Extra credit opportunities will only be provided to the class as a whole. No extra credit opportunities will be available for individuals.
- The final exam will consist of 10 problems similar to those seen in previous homework sets and exams.
 - 8 multiple choice questions.
 - 2 written problems.
- Each student will compose a 4 page research paper on a topic of their choosing. All topics must be cleared with instructor beforehand. More information regarding the research paper will be provided as it is assigned.
- Grades will be posted on Blackboard throughout the course.
- I reserve the right to adjust grades as I see fit, but any adjustments can only be made to the student's benefit.

Student Responsibilities:

- Students will not be graded on attendance, but attending each class is highly encouraged. Physics courses can be quite difficult, especially if students are not present and engaged. If a class must be missed, the student is responsible for acquiring material from that session.
- The textbook for this course is not required as all materials for learning and success will be provided. However, reading the sections of the book covered in class is strongly recommended. Reading lists will be posted on LON-CAPA.
- In class participation is strongly encouraged. I may propose a question at any time during lecture and if no one volunteers an answer, I may just put you on the spot.
- We will attempt to solve problems and engage in many small group discussions. We will use these small group activities to drive the full class discussions as much as time permits.

- Coming to office hours are a great way to get extra help. If you are unable to make it to office hours, we can attempt to arrange special appointments to meet. You can also send questions via email and I will do my best to give a prompt response.
- Note that Friday office hours will be done through Zoom meetings.
- I have an open door policy in regards to office hours. If you come to my office outside of scheduled office hours and my door is open, feel free to come in and help will be available!
- Studying in groups are also an excellent way to learn in a physics course. I encourage you to arrange study groups to work together outside of class.
- Most of all, work hard and have fun! This course can be very enjoyable and I will do my best to make sure we can maximize the enjoyment. If you have any concerns, let me know. I welcome all feedback to help make the course better. It is my job to help you to learn the course materials to the best of your ability, so use me as a resource!

LON-CAPA:

The LON-CAPA course management system will be used to post homework, lecture notes, grades, and other information. LON-CAPA can be accessed by selecting the appropriate server at http://www.ndsu.edu/physics/lon_capa/. Your username is everything to the left of the @ in your NDSU email address (use all lowercase letters). For example, if your email address is Sheldon.Cooper.2@ndsu.edu, then your LON-CAPA username is sheldon.cooper.2. Initially you create your own password by following the link “Forgot Password”. (Use your NDSU email address *without the “my”* here.) For help using LON-CAPA contact your instructor or laboratory technician Paul Omernik (SE110, Paul.Omernik@ndsu.edu, 231-7047)

Tentative Course Outline:

Week	Content
Chapter 1:	Scientific method and early astronomy
Chapter 2:	Matter & Units
Chapter 3:	Motion, speed, and velocity
Chapter 4:	Force; Newton’s Laws
Chapter 5:	Gravity
Chapter 6:	Work and energy
Chapter 7:	Second law of thermodynamics and entropy
Chapter 8:	Electricity and magnetism
Chapter 9:	Waves, electromagnetic radiation, and atmospheric issues
Chapter 10:	Special theory of relativity
Chapter 11:	General theory of relativity
Chapter 12-13	Quantum Mechanics
Further topics (time permitting):	Particle and nuclear physics, meteorology

Tentative Exam Dates
Exam #1: Thursday, January 27
Exam #2: Thursday February 10
Exam #3: Thursday, February 24
Exam #4: Thursday, March 10
Exam #5: Thursday, March 31
Exam #6: Thursday, April 14
Exam #7: Thursday, April 28
Final Exam: Thursday, May 12, 10:30AM

Illness:

Do not come to class if you are sick or if you have been exposed to individuals who have tested positive for COVID-19 and/or you have been notified to self-quarantine due to exposure. Please protect your health and the health of others by staying home and participate in class remotely. For further information on COVID-19 symptoms, testing, and steps to stay healthy, see https://www.ndsu.edu/studenthealthservice/covid_19. If you are unable to attend class at the regularly scheduled time due to illness, contact instructor for alternate arrangements, especially for exams and homework due dates.

Student Resources:

There are many resources available to you as a student to help when needed. There's no shame and reaching out when you are in need of help. There are many other great resources available which can be very helpful in times of need:

- NDSU Counseling Services: 701-231-7671, <https://www.ndsu.edu/counseling>
- NDSU Disability Services: 701-231-8463, <https://www.ndsu.edu/disabilityservices>
- Student Health Service: 701-231-7331, <https://www.ndsu.edu/studenthealthservice>
- Dean of Students Office: 701-231-7701, <https://www.ndsu.edu/deanofstudents>
- National Suicide Prevention Lifeline: 1-800-273-8255, <https://www.suicidepreventionlifeline.org>

Additional Information:

-The academic community is operated on the basis of honesty, integrity, and fair play. NDSU Policy 335: Code of Academic Responsibility and Conduct applies to cases in which cheating, plagiarism, or other academic misconduct have occurred in an instructional context. Students found guilty of academic misconduct are subject to penalties, up to and possibly including suspension and/or expulsion. Student academic misconduct records are maintained by the Office of Registration and Records. Informational resources about academic honesty for students and instructional staff members can be found at

www.ndsu.edu/academichonesty.

-All access to NDSU computers must respect NDSU Senate Policy, section 158: Acceptable use of Electronic Communication Devices

www.ndsu.nodak.edu/policy/158.htm

-Any students with disabilities or other special needs, who need special accommodations in this course are invited to share concerns or requests with the instructor and to contact the Disability Services Office as soon as possible.