

This syllabus was last updated on **August 21, 2021**

- Instructor:** Sylvio May, South Engineering 216A,
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- Bulletin Description:** Beginning course for students without a calculus background. Includes basic principles of bodies at rest and in motion, fluids, vibrations, waves, sound, and thermodynamics.
This course has been approved for the General Sciences category in general education because “Students will learn to comprehend concepts and methods of inquiry in science and technology, and their application for society.” and “Students will learn to integrate knowledge and ideas in a coherent and meaningful manner.”
- Goals:** The primary goal of this course is to provide the students with an understanding of the basic principles of mechanics, fluids, and waves that will aid them in their everyday lives and careers as informed members of society.
- Objectives:** The students should attain a conceptual understanding and problem-solving ability such that they can readily apply their knowledge to novel problems and situations. Students shall be able to reason qualitatively and quantitatively about linear and rotational motion, forces, energy, momentum, fluids, and waves using a few foundational dynamical and conservation principles.
Course objectives are met by readings, lectures, in-class discussions, and homework through the development of conceptual understanding and the ability to quantify concepts in specific physical situations. Students demonstrate their level of comprehension in LON-CAPA homework and exams.
- Prerequisites:** MATH 105 (Trigonometry) or higher, or consent of instructor
- Meetings:** Monday, Wednesday, and Friday 10:00-10:50 AM in *NDSU A.G.HILL Building, Room 112*. Attendance is possible in-person or remotely through zoom at <https://ndsu.zoom.us/j/95986828087> (with authentication through NDSU). Class attendance is expected but is not a component of the grading.
- Office hours:** Monday and Friday 11:15am-12:45pm in South Engineering 216A or through zoom at <https://ndsu.zoom.us/j/95986828087>
- Textbook:** Nicholas J. Giordano, *College Physics, Reasoning and Relationships 2nd edition*, (Brooks/Cole, Cengage Learning), Chapters 1-13
- Topic Outline and Timing:** The textbook chapters to be discussed in this course are listed below. Most (but not all) material of each chapter will be covered.
chapter 01: **Introduction** (Aug 25-Aug 30)
chapter 02: **Motion, Forces, and Newton’s Laws** (Sept 01-Sept 03)
chapter 03: **Forces and Motion in One Dimension** (Sept 08-Sept 13)
chapter 04: **Forces and Motion in Two and Three Dimensions** (Sept 15-Sept 20)
chapter 05: **Circular Motion and Gravitation** (Sept 24-Oct 01)
chapter 06: **Work and Energy** (Oct 04-Oct 11)
chapter 07: **Momentum, Impulse, and Collisions** (Oct 13-Oct 20)
chapter 08: **Rotational Motion** (Oct 22-Oct 29)
chapter 09: **Energy and Momentum of Rotational Motion** (Nov 01-Nov 8)
chapter 10: **Fluids** (Nov 10-Nov 17)
chapter 11: **Harmonic Motion and Elasticity** (Nov 19-Nov 29)
chapter 12: **Waves** (Dec 01-06)
chapter 13: **Sound** (Dec 08-10)
- Format:** The class will both involve traditional lecture and engage the students in discussions and active problem solving. Paper flash cards may be distributed and used. Students are encouraged to ask questions at any time during or after class.
- How to succeed:** Attending class, reviewing lecture notes, studying the textbook, taking part in class activities and discussions, seeking help through office hours, and completing homework problems are keys to success. Each student is encouraged to contact the instructor with any concerns, questions, and suggestions.

LON-CAPA: This course does not use Blackboard. Instead, 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”. For help using LON-CAPA contact your instructor or laboratory technician Paul Omernik (SE110, Paul.Omernik@ndsu.edu, 231-7047)

Homework: 10 homework problems will be available for each textbook chapter (1-13) through LON-CAPA. From the 130 available problems, 100 need to be solved for full credit. All homework problems become available on Aug 25 and are due according to the following table:

HW set #	1	2	3	4	5	6
chapters	1-2	3-4	5-6	7-9	10-11	12-13
assigned	Aug 25	Aug 25	Aug 25	Aug 25	Aug 25	Aug 25
due	Sept 10	Oct 01	Oct 22	Nov 19	Dec 03	Dec 13
# of problems assigned	20	20	20	30	20	20

Each correctly solved problem earns 1 point (for problems with multiple parts each part counts as a problem and earns 1 point). Only 100 problems from the entire set (chapters 1-13) need to be solved. Hence, the maximal number of points for all homework sets is 100. You may work together on homework sets, but simply copying another’s answers is neither recommended nor beneficial. No late homework will be accepted.

Exams: The course contains 12 short “midterm” exams and a comprehensive final exam. The midterm exams are all 25 min long and will be based primarily on material covered since the last exam, but questions may require previous knowledge. The final exam is 50 min long and will be comprehensive, covering all course material. Each midterm exam consists of 5 multiple-choice problems. The final consists of 10 multiple-choice problems. Each correctly solved problem earns 2 points. The problems are a mix of conceptual and computational problem-based questions; three of the five problems tend to be simple, one or two require more advanced reasoning skills. The four lowest midterm exams or the final plus two midterm exams (whatever is lower) will be dropped.

- Practice Exam: **Wed, Sep 01 at 10-10:25am** (5 questions from chapter 1)
- Exam 01: **Wed, Sep 08 at 10-10:25am** (5 questions from chapters 1-2)
- Exam 02: **Wed, Sep 15 at 10-10:25am** (5 questions from chapters 2-3)
- Exam 03: **Wed, Sep 22 at 10-10:25am** (5 questions from chapters 3-4)
- Exam 04: **Wed, Sep 29 at 10-10:25am** (5 questions from chapters 4-5)
- Exam 05: **Wed, Oct 06 at 10-10:25am** (5 questions from chapters 5-6)
- Exam 06: **Wed, Oct 13 at 10-10:25am** (5 questions from chapter 6)
- Exam 07: **Wed, Oct 20 at 10-10:25am** (5 questions from chapters 6-7)
- Exam 08: **Wed, Oct 27 at 10-10:25am** (5 questions from chapters 7-8)
- Exam 09: **Wed, Nov 03 at 10-10:25am** (5 questions from chapters 8-9)
- Exam 10: **Wed, Nov 10 at 10-10:25am** (5 questions from chapters 9)
- Exam 11: **Wed, Nov 17 at 10-10:25am** (5 questions from chapter 9-10)
- Exam 12: **Wed, Dec 01 at 10-10:25am** (5 questions from chapters 10-11)
- Final Exam: **Tue, Dec 14 at 9-9:50am** (10 questions from chapters 1-13)

All exams are “open notes”. Notes include the textbook and all course material in Lon-Capa. Using computers to access notes and google information (if needed) is permitted during an exam. Communicating with others and using external help (including tutoring services such as Chegg.com) is not permitted. Violating this policy constitutes an act of academic dishonesty and leads to an F in the course. Exams can be taken from any location; taking them in the classroom is recommended. Students bring a device (computer, laptop, even a cell phone may work) that allows them to access and answer the exam questions through Lon-Capa during exam time. Scantrons will not be used. No makeup exams will be scheduled.

Grading:

Grading will be based on LON-CAPA homework score (max. 100 points) and exams (max. $10 \times 10 = 100$ points). From the actual number of points and the maximal number ($100 + 100 = 200$ points) the percentage will be calculated and used to grade according to: 0% - 55.0% F, 55.0% - 66.0% D, 66.0% - 77.0% C, 77.0% - 88.0% B, 88.0% - 100% A. Expressed in points, this corresponds to: 0 - 109 F, 110 - 131 D, 132 - 153 C, 154 - 175 B, 176 - 200 A. The instructor reserves the right to lower the grade cutoffs in response to class performance, but they will not be raised.

COVID-19:

All students, fully vaccinated and not fully vaccinated, are required to wear a mask when inside our classroom. This recommendation follows CDC guidelines: <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/fully-vaccinated.html> and <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/prevention.html>. Please note that these guidelines may change as the pandemic evolves.

- Students who cannot wear a face covering due to a medical condition or disability, or who are unable to remove a mask without assistance may seek an accommodation through the Disability Services (701-231-8463; <https://www.ndsu.edu/disabilityservices/>).
- In accordance with NDSU Policy 601, failure to comply with instructions, including the mask requirement, may be handled according to the Code of Student Conduct resolution process and may result in disciplinary sanctions.
- Similar to other contagious infectious diseases, students should not come to class if they experience COVID-like symptoms. If a student is infected with COVID-19, or is a contact of an infected person, they should immediately inform their course instructor via an official means of communication, and isolate/quarantine at home according to CDC guidelines: <https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/quarantine.html>. Consistent with NDSU policies and procedures (including, but not limited to NDSU Policy 331.1: Course Syllabus, NDSU Policy 606: Guidelines for Student Requests for Reasonable Accommodation), faculty will offer the student a reasonable accommodation to maintain instructional continuity.
- Students that are considered at high risk of severe illness if infected with COVID-19 are encouraged to inform the course coordinator during the first week of class to request reasonable accommodations (if desired). For additional information, please see: <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html>.

Additional Statements:

Veterans and student service members with special circumstances or who are activated are encouraged to notify the instructor as soon as possible and are encouraged to provide Activation Orders. Any students with disabilities or other special needs, who need special accommodations in this course, are invited to share these concerns or requests with the instructor and contact the Disability Services Office (www.ndsu.edu/disabilityservices) as soon as possible. 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.