Introductory Physics 1 (PH 201) Lecture Syllabus

Fall 2025 ∘ Northern Michigan University

Instructor:	Dr. P.W. Mengyan ("men-gin") **Office**: Science 2513; Cohodas 402 **Phone**: x2183
Email:	pmengyan@nmu.edu [preferred comm. method]. Begin subject line with "*PH 201:*"
Office Hours:	Tues and Wed 10:00 to 10:50 [Science 2513]. Other times by appointment.
Class Meetings:	Lecture [CRN 80273]: {M,T,W,R} 09:00 to 09:50 in *Science 2906*
Webpage: *Required for HW* *Includes eBook*	https://www.webassign.net [class key: *nmu 5219 1527*] Self-enroll with class key. Instructions available at http://www.webassign.net/manual/WA_Student_Quick_Start.pdf For 'Name', 'Student ID Num' and 'Email', see homework section for instructions
Suggested Texts: *For lecture* *For Lab*	OpenStax, College Physics 2e (09 Jul 2025 [web update]) Textbook is **FREE** from https://openstax.org/details/books/college-physics-2e. The Physics department will provide documentation for each lab.

Course Description (outline and expected outcomes): This algebra-based introductory Physics course will introduce the basics of classical (Newtonian) mechanics, encourage critical thinking and general problem solving skills. A student who is successful in this class will, for each topic, be able to (i) explain the fundamental principles to a peer and (ii) apply a general problem-solving strategy to interpret and write a solution to basic questions. Progress towards these outcomes will be assessed through activities such as in-class exams, homework assignments, quizzes, laboratory and discussion exercises.
More information is available via the teaching section of the instructor's webpage.

General Education Requirements: PH 201 satisfies the Laboratory Science University Requirement (LAB) and part of the Scientific Inquiry (SCII) requirements. SCII relates to the ability to use of the scientific process to investigate and report knowledge about natural or social phenomena.

Liberal Studies Requirement: (applicable to pre-2017 bulletin): PH 220 satisfies part of the 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.

Homework: Assigned periodically via www.webassign.net (*) and may include suggested questions, readings and other activities to supplement lecture. Due date, time and assignment description will be indicated on each assignment. Late assignments are *not* typically accepted.
The homework will take time and effort to work and may be difficult. Do yourself a favor, start the homework as soon as it is available, and allow plenty of time to work through each question. Be warned that some questions may go quickly and others may take a significant amount of time.
*NOTE: To get started, see http://webassign.net/manual/Student_Quick_Start_Guide_SE.pdf and use
- Class Key: ** See top of page **
- Name: Full legal name as on record with NMU (so I know who you are)
- Email Address: Your official *@nmu.edu* email is required to be used for all university business
- ID Number: MUST be your *complete* NMU IN with leading zeros. This is the *only* way to uniquely identify students; without it, you will NOT receive any credit for work completed via webassign. No exceptions.

Quizzes: May be administered during the regularly scheduled class time and may include content from lecture, homework, exams, labs or any other relevant course related information. Please note that quizzes may or may not be announced during lecture and will *never* be announced via email. **Make up quizzes will *not* be administered**. These will be designed with a few goals in mind (1) provide students the opportunity to check their understanding of relevant material and receive feedback from the instructor (2) provide the instructor with feedback as to how well students are understanding the material (3) encourage students to continue to stay on top of the material, develop sound study habits, regularly attend class, etc

Exams: There will be three (3) scheduled exams during the semester plus a final exam. Each in-class exam is equally weighted. If the final exam score is higher than the lowest in-class exam score, the final exam score will replace this lowest in-class exam score. Exams 1, 2 and 3 will be administered in the normal lecture room and during the normal meeting time. The final exam will be administered in the same room as lecture and at a time pre-determined by NMU. **Make up exams will not be administered**. If an exam is to be missed due to extenuating circumstances, contact me via email BEFORE the scheduled exam time to see about making the appropriate arrangements.
Use of notes, books or electronic gizmos of any sort will not be permitted on the exams unless otherwise specified by the instructor.

TENTATIVE[**] **Exam Schedule**:

Exam 1:	Normal class time	Thu	~11 Sep 2025	Ch 1 – 6 *[#'s for Serway 10ed]*
Exam 2:	Normal class time	Thu	~09 Oct 2025	Ch 7 – 9
Exam 3:	Normal class time	Mon	~10 Nov 2025	Ch 10 – 14
Final Exam	08:00 to 09:50	Wed	10 Dec 2025	All course material

[**]<u>Exam *times* and *content* **will** be adjusted appropriately to accommodate the course schedule</u>. Deviations from this tentative schedule will be discussed, *in class*, as they become relevant. Exam dates will typically be finalized a minimum of one week before the exam is administered.
All exams, including the final, will be administered through EduCat.
The <u>final exam</u> time is <u>predetermined by NMU</u> and will *not* be modified by the instructor.
<u>University Closure During Exam Week</u> (<u>as per the NMU Registrar</u>):

> *"Students should be prepared for the possibility of in-class [final] exams being postponed and held later in the week than originally scheduled due to unforeseen circumstances, such as inclement weather, causing the University to close. If the University were to close one day during the first four days final exam week, that day's exams would be moved to Friday of exam week. Should the University close a second day or on the Friday of exam week, the exams scheduled for that day would be moved to Saturday afternoon of exam week. Exams scheduled to be taken on-line outside of the classroom will be administered on the originally scheduled date, regardless of changes to the in-class exam schedule due to unexpected University closures."*

Grades:

Lab***, Quizzes, Homework, etc:	30%	A: ≥ 90%; B: ≥ 80%
Exams[◊] (1, 2, 3, Final, Final; Best 4 of 5):	70%	C: ≥ 70%; D: ≥ 60%
Total:	100%	F: < 60%

'+' and '−' grades are typically assigned when a grade is within ± ~2.0% of the letter grade cutoff.
***Minimum grade of 60% in the laboratory component, in addition to appropriate performance in the rest of the course, is *required* to earn an overall passing grade in this course.
[◊]If fewer than 3 exams are conducted in class or there is not a cumulative final exam, expect all exam scores to be counted with reduced weight assigned to the lowest scoring exam. This will be clearly discussed in class.

Lab:
Lab is a separate course in which you must be enrolled. A minimum score of 60% is *required* in order to qualify for a passing score in the lecture. To be clear, that means if your score is any less than 60.0%, you will have earned a FAILING grade in your lecture section. The final grade from the laboratory course part of your lecture score and likely to be weighted at ~15%. The laboratory section of this course is designed to provide hands on experience with the topics discussed in lecture.

Important Notes:
- **ADA Statement**:
  In compliance with the ADA and university policy: *"If you have a need for disability-related accommodations or services, please inform the Coordinator 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 obligations**:
  Consistent with university recommendations, a student whose religious or spiritual obligation(s) conflict with a class-related activity (e.g. exam, lab, homework, etc) will make their conflict known, in writing, to the instructor a minimum of 5 business days prior to the conflict. The student is not exempt from meeting course requirements or completing assignments in a timely manner as determined by the instructor.
- **Academic Integrity**:
  Section 2.3.1 of the NMU Student Handbook discusses scholastic dishonesty; all of which will be upheld in all aspects of this course. Academic dishonesty will not be tolerated.
  Link to student handbook https://www.nmu.edu/policies?p=1070&type=Policy
- **Appropriate behavior**:
  Students will behave in a respectful, considerate and courteous fashion in any activity related to this course (e.g. Lecture, lab, discussion, office hours etc).
  Rude, disrespectful or disruptive behavior will *never* be tolerated.
- **Attendance**:
  o Attendance and participation in all scheduled classes is expected unless you are feeling unwell (note from healthcare provider may be required) or, in compliance with the university guidelines, have an official university-sponsored event that conflicts with class
  o ##
  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, including COVID-19 testing.*
  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. See 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."
  ##
  o Changes to the in-person attendance policy may occur to comply with updates in the university, local, state or federal guidelines.
  o Any questions or concerns should be discussed with your professor as soon as possible

Final Notes and Suggestions to Succeed:
- **Course Assistance**: A plethora of options are available to support your success in this course (e.g. Lecture [Dr. Mengyan], lab and discussion via class, office hours, email or special appointment), your textbook, the library, other text books and physics department tutors. Take advantage of the available resources. DO NOT HESTIATE TO ASK QUESTIONS AS THEY ARISE!
- Preparation is the key!
  o Read your book material before AND after we discuss it in class
  o Take good notes during lecture
  o Study your notes
  o Take advantage of available resources (e.g. *actually* attend class, read the book)
  o If something is unclear during lecture or your own studying, ASK ABOUT IT!
- Homework and supplemental work:
  o Work each question using the problem-solving process. Getting the 'correct' numerical answer is *meaningless* if you do not understand the process used to arrive there.
  o Start your homework assignments as early as possible
  o Read the homework questions when they are available before the related material is presented in class; familiarity with the questions will help you associate the relevant concepts as they are introduced in lecture, lab and while you read the material
  o Give yourself plenty of time to complete the assignments as you will likely need to think carefully about the questions, review the relevant sections of the text or your notes and then work towards a solution
  o Use a dedicated notebook to *fully* work out homework and supplemental questions
- Studying for any exam should be an ongoing exercise. Structured reviews of material built into your schedule promotes better long-term retention and higher understanding of the material
- I cannot stress enough: ASK QUESTIONS WHEN YOU HAVE THEM!

Chapter list (Serway 10ed)	Chapter list (OpenStax)
1. Physics and Measurement	1. General introduction
2. Motion in One Dimension	2. Kinematics
3. Vectors	3. Two-dimensional kinematics
4. Motion in Two Dimensions	4. Dynamics: force and Newton's laws of motion
5. The Laws of Motion	5. Further applications of Newton's laws
6. Circular Motion and Other Applications of Newton's Laws	6. Uniform circular motion and gravitation
7. Energy of a System	7. Work, energy and energy resources
8. Conservation of Energy	8. Linear momentum and collisions
9. Linear Momentum and Collisions	9. Statics and torque
10. Rotation of a Rigid Object About a Fixed Axis	10. Rotational motion and angular momentum
11. Angular Momentum	11. Fluid statics
12. Static Equilibrium and Elasticity	12. Fluid dynamics and its biological and medical applications
13. Universal Gravitation	13. Temperature, kinetic theory and the gas laws
14. Fluid Mechanics	14. Heat and heat transfer methods
	15. Thermodynamics
	16. Oscillatory motion and waves
	17. Physics of hearing

TENTATIVE Schedule of Course Content:

Week	Start Date	Chapter[s]	Content / Additional Detail
1	25 Aug 25	Intro, 1, 2, 3	Syllabus, expectations Scientific method, problem solving process, general intro to physics, physical quantities, measurement, coordinate systems, 1-D kinematics
2	01 Sep 25	3,4	2-D Kinematics (projectile, uniform circular motion, tangential & radial acceleration)
3	08 Sep 25	4,5	Laws of motion/Forces/FBD's **Exam 1** (~11 Sep 2025)
4	15 Sep 25	4,5,6	Laws of motion/Forces/FBD's; friction; uniform circular motion, gravitation
5	22 Sep 25	7,8	Work, energy, conservation of energy, power
6	29 Sep 25	8,9	Linear momentum, collisions, Center of mass
7	06 Oct 25	8,9,10	Collisions, rotational motion, Newton's 2nd law, moment of inertia, torque **Exam 2** (~ 09 Oct 2025)
8	13 Oct 25	10, 11	Newton's 2nd law, moment of inertia, torque, energy, momentum
9	20 Oct 25	12	Torque, equilibrium, elasticity
10	27 Oct 25	14	Fluid statics and dynamics
11	03 Nov 25	18 – 21	**Exam 3** (~10 Nov 2025) Temperature, thermodynamics, heat engines, entropy
12	10 Nov 25	18 – 21; 15 – 17	Thermodynamics; oscillations and standing waves
13	17 Nov 25	Special topics from 14+	Selected topics from later in the book
	24 Nov 25	## Fall Break, no class ##	
14	01 Dec 25	Special topics from 14+	Selected topics from later in the book; General review
☺	**10 Dec 25**	**Final exam 08:00 to 09:50**	

Notable dates

25 Aug 2025	First day of class
01 Sept 2025	Labor Day (no class)
23 to 30 Nov 2025	Fall recess (no class)
06 Dec 2025	Last day of class
Wed 10 Dec 2025	Final exam (08:00 to 09:50)
Sat 13 Dec 2025	Commencement
Thu 18 Dec 2025	Grades available via MyNMU