

PH 201–04 College Physics I: Laboratory Syllabus Winter 2017 ◦ Northern Michigan University

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Begin subject line with *PH 201-03*:
Office Hours: {M,W,R} 10:00 to 11:00 & {M,W,F} 15:00 to 16:00 in West Science 2513.
Other times by appointment
Class Meetings PH 201-04 [CRN: 11015]: Tues 14:00 to 16:50 in WS 2607
Webpage: <https://educat.nmu.edu>
Required Text: The Physics department will provide documentation for each lab.
For Lab There is no additional required text for lab.

Required Materials:

One copy of each of the required printed lab material will be provided to the student by NMU Physics. Students will provide their own copy of the textbook, paper, **pencil**, eraser, and calculator (NOT a cell phone or laptop, an *actual* calculator). The student's NMU issued laptop will also be required for many of the lab activities.

Class Meetings:

Laboratory sections will meet at each student's officially scheduled place and time. Students are *only* permitted to regularly attend sections for which they are *officially* registered. Make-ups for missed labs are *not* possible (see *attendance* section below for more detail on the policy).

Food or drinks in any form (including chewing tobacco, gum, etc) and cell phone (or any other non-approved electronic gizmo) usage are *not* permitted in the lab room.

Grading:

- 40% – Quizzes
- 30% – Lab Recaps
- 30% – Lab work (e.g. charts, graphs, participation, etc)
- 100% – Total Lab Grade Reported to Lecture

Laboratory (lab work):

The laboratory portion will consist of working through the interactive exercises during the class time, which will include activities such as data collection, analysis and answering questions within each exercise. Overall topics include classical mechanics (motion, forces, work, energy, momentum, periodic motion). Performance in the laboratory portion is evaluated via in-class [instructor] observation and submitted lab work. The student **MUST** be present during the data collection portion of the lab in order to receive credit for work submitted related to that exercise.

Lab work will generally be due at the beginning of the next scheduled lab meeting. Any changes to a particular assignment's due date and time will be discussed in class. Late work is not accepted.

Lab Recaps:

Short, typed statement discussing the highlights of the relevant laboratory exercise. Students are required to use the format provided by the instructor. Recaps that are hand written (i.e. not typed) or that follow any format other than what is specified by the instructor will not be accepted under any circumstances. Equations and diagrams *may* be neatly written in by hand.

Quizzes:

May be administered in the beginning of each class and cover material from the previous lab.

Participation:

Punctuality (in your seat and ready to begin by the scheduled start time), not leaving early, being on-task and maintaining a respectful attitude all contribute to the participation grade. Completing physics education research or department assessments (general pre-test, post-test or other surveys) may also count toward your participation grade.

Full credit for participation is earned by making a serious effort in completing the assigned activities regardless of the *accuracy* of the particular responses. Participation points will be lost if equipment is utilized in any form that is not related to the prescribed exercise, fail to take part in group work or are otherwise not on task. Violations of the lab and general class rules may result in dismissal for the class period, reduction in participation grade, forfeiture of any submitted work left incomplete due to the dismissal and, if necessary, reported to the appropriate authorities.

Attendance:

Attendance contributes directly to the participation grade as if one is absent one is not capable of participating in a given activity. Absences will be excused for officially sanctioned university events, illness (documentation may be required), court appearances (plaintiff, defendant, witness, juror -- documentation is required), family emergencies (at the discretion of the instructor and may require appropriate documentation). If something occurs that you feel should be grounds for being excused it is your responsibility to contact your instructor, in writing, PRIOR to the absence (if possible, or as soon as possible after the absence) to discuss the situation. Excused absences for situations beyond the purview of NMU policy are at sole discretion of the instructor, will be evaluated confidentially, on a case-by-case basis and confirmed in writing.

An excused absence does NOT necessarily excuse you from completing the work. Arrangements for a planned excused absence, if possible, should be finalized (with written confirmation between the student and instructor) no later than the Friday before the week for which the absence will occur. Otherwise, establish contact with the instructor as soon as reasonably possible.

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 2101 C. B. Hedgcock Building (227-1700 or 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."

Religious Holiday

Pursuant to university policy, a student who intends to observe a religious holy day should make that intention known, in writing, to the instructor prior to an absence. A student who is absent from a class, exam or exercise for the observance of a religious holy day shall be allowed to complete an assignment or exam scheduled for that day within a reasonable time around that absence.

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.

Appropriate behavior:

Students are expected to behave in a respectful, considerate and courteous fashion in any activity related to this course. Rude, disrespectful or disruptive behavior will *never* be tolerated.

Physics 201 Laboratory Schedule Winter 2017

Week	Experiment	Description	Laptop Required
1	Graphing	Data reduction and graphical analysis	No
2	Vector Addition	Addition of 2-D vectors with analytic and graphical methods and experimentally tested by way of a force table	Yes
3	Constant Acceleration	Experimentally determining 'g' with motion along a near frictionless inclined plane. Computer aided graphing is also introduced	Yes
4	Projectile Motion	Test your skills and understanding of 2-D kinematics by measuring and predicting and measuring parameters for an object in flight	No
5	Force and Acceleration	Test Newton's 2 nd law (relationship between force, mass and acceleration)	Yes
6	Friction	Measuring coefficients of friction	Yes
7	Uniform Circular Motion	Measuring the force required for a rotating bob to maintain a uniform circular path	Yes
8	Conservation of Energy	"Peg and Pendulum": Test relationship of gravitational potential energy and kinetic energy in a system where work done by non-conservative forces is negligible	Yes
9	Impulse and Momentum	A collision that directly tests the impulse-momentum theorem	Yes
10	Conservation of Momentum	Experimenting with collisions	Yes
11	Torque Balancing	Studying rotational equilibrium	Yes
12	Moment of Inertia	Experimentally determine the moment of inertia of a rotating system	Yes
13	Simple Harmonic Motion	Studying periodic motion with pendulums and mass-spring systems	Yes
14	Archimedes' Principle	Experimentally determine density of objects	Yes