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Fall 9-1-2016

### PHSX 205N.02: College Physics I

David A. Macaluso

*University of Montana, Missoula*, david.macaluso@umontana.edu

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## Course Information

- Instructor: Dr. David A. Macaluso
- Office: C.H. Clapp Building, room 119
- Telephone: (406) 243-6641
- Email: david.macaluso@umontana.edu
- Lectures: MTWTr, 10:00 AM – 10:50 AM, CHCB 131
- Office Hours: Monday 3-5, Tuesday & Thursday 11-12. I am happy to help students and answer questions outside my normally scheduled office hours and I strongly encourage students to seek my assistance whenever necessary.

## Course Description

This course will introduce students to the fundamental concepts of Classical Physics. We will explore Kinematics (in 1-D, 2-D, and circular motion), Gravity, Momentum, Work and Energy, Fluids, Thermodynamics, Oscillations, and Waves. We will also concentrate on developing **problem solving skills** and strengthening applied math skills. This course will also stress the application of logical methodology in scientific inquiry and analysis.

## Learning Outcomes

Upon completing this course, students should have:

1. A qualitative and quantitative understanding of the fundamental concepts of classical physics.
2. Improved critical thinking and problem solving skills.
3. An appreciation for the rigorous nature of scientific methodology in evidence-based inquiry.
4. An improved ability to take previously learned concepts and techniques and apply them in new and unfamiliar situations.

## Textbook

*College Physics: A Strategic Approach* – Knight, Jones, & Field (ISBN-13: 978-0321879721, ISBN-10: 0321879724)  
Access to Mastering Physics for online homework

## Add/Drop/Withdraw

Please refer to the University policy on adding, dropping, and withdrawing from the course at <http://www.umt.edu/registrar/students/dropadd.php>.

From the 16<sup>th</sup> through the 45<sup>th</sup> instructional day, all classes must be dropped using Drop forms (instructor signature required, advisor signature required for undergraduates). **\$10 fee applies.**

From the 46<sup>th</sup> to the last instructional day prior to finals week, classes must be dropped using the Drop form (instructor and Dean signatures required, advisor signature required for undergraduates). **\$10 fee applies.**

## Websites

Online homework: <http://www.masteringphysics.com>  
Grades and other materials will be posted on Moodle

## Expectations

This is a university-level physics course. The expectations are therefore appropriate for students who should all be familiar with the concepts of personal responsibility, accountability, and academic honesty. Specifically:

### Attendance

Exams will be based on lectures and in-class problems and discussions. In addition, quizzes and iClicker lecture questions (points which **cannot** be made up without having made prior arrangements with me) represent a significant percentage of the course grade. Thus regular attendance, while not mandatory, is vital to student success. **I strongly encourage regular attendance.**

### Prerequisites/Corequisites

I expect all students to have completed the prerequisite courses (M122 or M151 or equivalent) and to be concurrently enrolled in the co-requisite lab course (PHSX 206N).

### Reading Assignments

Students are expected to read the assigned material *before* class. Quizzes will be given during class that will be based at least partially on the reading. These quizzes will not be demanding, so reading ahead will both prepare you for the upcoming lecture and help assure you earn the “low hanging fruit” of reading quizzes.

### Homework Assignments

Weekly homework assignments make up a large portion of your grade and are the primary tool by which you learn physics and develop your problem solving skills. These assignments usually take 2-5 hours to complete so don't procrastinate. **One “unit” represents 3 hours of student work and this is a 4-unit course, so it should occupy 12 hours per week; three hours and twenty minutes in-class, and over eight hours outside of class per week.**

### Mathematics

The language of physics is math. You must be comfortable with algebra, geometry, and trigonometry to succeed. We will likely have a math exam. TOMORROW.

## Grading Policy

Exams (four @ 10% each)	<b>40%</b>
Cumulative Final Exam	<b>25%</b>
Homework	<b>20%</b>
Quizzes & iClicker Questions	<b>15%</b>

Grades will be based on the traditional letter grade percentage scale (90s = A/A-, 80s = B+/B/B-, etc.). This course can only be taken with **the traditional grading option.**

Exam grades are curved such that the class average = 75%.

Final course grades are assigned based on the final student distribution. Students will not be given a lower grade than what is traditionally assigned to a given final percentage, i.e. a grade of 80% will be *at least* a B-.

## iClicker Remotes

We will be using iClicker remotes in this class. Because internet connectivity is poor on this floor of this building, all students must use an actual remote: smartphone iClicker apps will *not* be supported. Lecture iClicker content will start the first class in Week 2 (Tuesday, September 6<sup>th</sup>).

## Policies and Procedures

- The three midterm exams will be on Fridays from 8:20 – 9:50 AM in CHCB 131 (see schedule). You will be given a universal notecard for each exam. You are **NOT** allowed to use a smartphone during the exam.
- The final exam will be held in the classroom, CHCB 131 (see schedule).
- **Late homework will not be accepted and there are no make-up exams except where prior arrangements have been made with me. Otherwise, late homework and missed exams will be scored as a zero.**
- This is a large lecture hall with approximately 100 students, so please:
  - Arrive on time (we start on the hour now!). Lectures will begin promptly.
  - Do not start packing your things early - I will (usually) not keep you late.
- Keep phones and tablets/laptops put away during lecture. **THIS IS A DEPARTMENT POLICY FOR THIS COURSE. Smartphones/computers are not allowed at any time in class or during exams.**
- All email correspondences with me must be to/from an official UM email address.

## Academic Honesty

I encourage students to work together and to seek assistance from me whenever necessary. However, work submitted in this class must be the original work of the student. In addition, the majority of your grade will be based on quizzes and exams that test your mastery of the homework problems, so doing the problems on your own will give you the best chance to succeed.

**University policy statement on academic honesty:** All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code: ([http://www.umt.edu/vpsa/policies/student\\_conduct.php](http://www.umt.edu/vpsa/policies/student_conduct.php)).

## Students with Disabilities:

Students with disabilities may request reasonable modifications by contacting me. The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. “Reasonable” means the University permits no fundamental alterations of academic standards or retroactive modifications. For more information, visit the Disability Services for Students website at <http://life.umt.edu/dss/>.

## Registering for Mastering Physics

1. Go to [www.masteringphysics.com](http://www.masteringphysics.com)
2. Click the STUDENT link under REGISTER
  - If you purchased an access code***
    3. Click yes, I have an access code and accept the licensing agreement
    4. Create a User Name and Login
    5. Enter your Mastering Physics access code  
(you may also need the school zip code which is 59812)
    6. Complete the registration
  - If you have not purchased an access code***
    3. Click the button for *no, I need to purchase online access now*
    4. Choose the course text
    5. Decide if you want the etext or not
    6. Login to Mastering Physics
7. Join the course using Course ID **MPMACALUSO71455**.

## Tentative Course Schedule (dates, topics and readings subject to change)

### August

Date	Day	Topics	Reading
8/29	M	Syllabus, Course Introduction	
	T	Representing Motion & Math Review	Student Preface, Ch. 1 (all)
	W	Motion in One Dimension	Ch. 2 (Sections 1-4)
	Tr	Motion in One Dimension	Ch. 2 (Sections 5-7 & Summary)

### September

Date	Day	Topics	Reading
9/5	M	<b>Labor Day – no class</b>	
	T	Vectors & Motion in Two Dimensions	Ch. 3 (Sections 1-3)
	W	Vectors & Motion in Two Dimensions	Ch. 3 (Sections 4-5)
	Tr	Vectors & Motion in Two Dimensions	Ch. 3 (Sections 6-7)
9/12	M	Vectors & Motion in Two Dimensions	Ch. 3 (Section 8 & Summary)
	T	Forces & Newton's Laws	Ch. 4 (Sections 1-3)
	W	Forces & Newton's Laws	Ch. 4 (Sections 4-5)
	Tr	Forces & Newton's Laws	Ch. 4 (Section 6-7 & Summary)
	<b>F</b>	<b>EXAM 1, 10:00 – 10:50 AM, CHCB 131</b>	<b>Chapters 1 - 4</b>
9/19	M	Applying Newton's Laws	Ch. 5 (Sections 1-2)
	T	Applying Newton's Laws	Ch. 5 (Sections 3-4)
	W	Applying Newton's Laws	Ch. 5 (Sections 5-6)
	Tr	Applying Newton's Laws & Ch 1-5 Review	Ch. 5 (Sections 7-8 & Summary)
9/26	M	Start Ch. 6	Ch. 6 (Sections 1-2)
	T	Circular Motion, Orbits, & Gravity	Ch. 6 (Sections 3-4)
	W	Circular Motion, Orbits, & Gravity	Ch. 6 (Sections 5-6 & Summary)
	Tr	Rotational Motion	Ch. 7 (Sections 1-2)

### October

Date	Day	Topics	Reading
10/3	M	Test Return & Review, Rotational Motion	Ch. 7 (Sections 3-5)
	T	Rotational Motion	Ch. 7 (Sections 6-7 & Summary)
	W	Equilibrium & Elasticity	Ch. 8 (Sections 1-2)
	Tr	Equilibrium & Elasticity	Ch. 8 (Sections 3-4 & Summary)
	<b>F</b>	<b>EXAM 2, 10:00 – 10:50 AM, CHCB 131</b>	<b>Chapters 5 - 8</b>
10/10	M	Force & Motion – Problem Solving Day	
	T	Momentum	Ch. 9 (Sections 1-3)
	W	Momentum	Ch. 9 (Sections 4)
	Tr	Momentum	Ch. 9 (Sections 5-7 & Summary)
10/17	M	Energy & Work	Ch. 10 (Sections 1-2)
	T	Energy & Work	Ch. 10 (Sections 3-5)
	W	Energy & Work	Ch. 10 (Sections 6-7)
	Tr	Energy & Work & Ch 6-10 Review	Ch. 10 (Sections 8 & Summary)
10/24	M	Start Ch.11	Ch. 11 (Sections 1-2)
	T	Using Energy	Ch. 11 (Sections 3-4)
	W	Using Energy	Ch. 11 (Sections 5-6)
	Tr	Using Energy	Ch. 11 (Sections 7-8 & Summary)
	<b>F</b>	<b>EXAM 3, 10:00 – 10:50 AM, CHCB 131</b>	<b>Chapters 9 - 11</b>

### November

Date	Day	Topics	Reading
10/31	M	Test Return & Review, Start Ch.12	Ch. 12 (Sections 1-2)
11/1	T	Thermal Properties of Matter	Ch. 12 (Sections 3-5)
	W	Thermal Properties of Matter	Ch. 12 (Sections 6-8 & Summary)
	Tr	Fluids	Ch. 13 (Sections 1-3)
11/7	M	Fluids	Ch. 13 (Sections 4)
	T	<b>Election Day – no class</b>	<b>Vote!!!!!!</b>
	W	Fluids	Ch. 13 (Sections 5-7 & Summary)
	Tr	Thermodynamics & Fluids Problem Solving Day	Ch 12-13 & Part III Summary
11/14	M	Oscillations	Ch. 14 (Sections 1-3)
	T	Oscillations	Ch. 14 (Sections 4)
	W	Oscillations	Ch. 14 (Sections 5)
	Tr	Oscillations & Ch 11-14 Review	Ch. 14 (Section 6-7 & Summary)
	<b>F</b>	<b>EXAM 4, 10:00 – 10:50 AM, CHCB 131</b>	<b>Chapters 12 – 14</b>
11/21	M	Start Ch.15	Ch. 15 (Sections 1-2)
	T	Traveling Waves & Sound	Ch. 15 (Sections 2-3)
	W	<i>Student Travel Day – no class</i>	
	Tr	<i>Thanksgiving Break – no class</i>	
11/28	M	Traveling Waves & Sound	Ch. 15 (Sections 4)
	T	Traveling Waves & Sound	Ch. 15 (Sections 5-7 & Summary)
	W	Superposition & Standing Waves	Ch. 16 (Sections 1-3)
	Tr	Superposition & Standing Waves	Ch. 16 (Sections 4-5)

December

Date	Day	Topics	Reading
12/5	M	Superposition & Standing Waves	Ch. 16 (Sections 6-7 & Summary)
11/18	T	Waves & Oscillations Problem Solving Day	Ch. 14-16 & Part IV Summary
	W	Final Exam Review I	Ch. 1-16
	Tr	Final Exam Review II	Ch. 1-16
12/12	M	Last Day of Class, Final Exam Review III & Evaluations	Ch. 1-16
<b>12/20</b>	<b>T</b>	<b>Final Exam 8:00 AM – 10:00 AM, CHCB 131</b>	<b>Everything, again</b>