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### PHSX 205N.01: College Physics I

Paul H. Janzen

University of Montana, Missoula, paul.janzen@umontana.edu

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# PHSX 205N -- College Physics I Fall 2016

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Instructor: Paul Janzen

Office: CHCB 128

Phone: 243-2374

Email: paul.janzen@umontana.edu

Office hours: M,Tu 11:00 - 12:00; W 2:00 - 5:00, and by appointment - also, I'm just usually around.

Text: *College Physics: A Strategic Approach*, 3rd ed.- Knight, Jones, and Field (Pearson, 2015).

Online homework requires access to Mastering Physics.

In-class quizzes require *iClicker*.

Lectures: M Tu W Th, 9:00 - 9:50, CHCB 131

Course website: [Moodle](#).

Homework site: [Mastering Physics](#).

Prerequisite: M122, M151, or equivalent

Corequisite: PHSX 206N (lab)

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## Course Description:

An introduction to classical physics. Topics include kinematics in one and more than one dimension, forces, conservation of energy and momentum, fluids, thermodynamics, and oscillations and waves.

## Learning Outcomes:

At the end of this course, the student:

- will have a qualitative and quantitative understanding of the fundamental concepts of classical physics
- will have improved critical thinking and problem-solving skills, particularly as related to physical modelling and approximation, and the application of mathematics to the description of physical reality
- will comprehend the physical interpretation of mathematical results
- will have improved ability to apply learned concepts and techniques to new situations
- will have developed an appreciation of the methods of physics

## Participation/Attendance

**I strongly encourage regular attendance.** In-class iClicker quizzes are part of the grade, but more importantly, exams will be based on lectures and in-class discussions. Regular attendance, while not mandatory, is vital to student success.

## Grading:

Mid-term Exams (4): 40%

Homework: 25%

iClicker Questions: 10%

Final Exam: 25%

This course can only be taken with the traditional grading option.

The four mid-term exams will be held in CHCB 131 on Fridays from 9:00 - 9:50 AM (the same time as classes Monday-Thursday). The dates are September 16, October 7, October 28, and November 18. You will be provided with a universal notecard for each exam and will probably want to bring a calculator (*not* a smartphone!).

Otherwise, exams are closed book. Make-up exams will be given only in extreme situations and must be arranged **in advance**.

Weekly homework assignments are essential to the development of problem-solving skills through applying the physics you are learning. The assignments will typically take 2-5 hours to complete. **No late homework** will be accepted. For each student, the homework assignment with the lowest grade will be dropped and will not contribute to the student's course grade.

In-class quizzes using the iClicker will start in the second week of class (September 6). A typical class will include the posing of several questions to gauge student understanding. Some credit will be given for participation; additional credit will be given for correct answers. Some questions will be partly based on reading assigned in the previous class; note that these questions will be based on concepts presented and not on minutiae. Because Internet connectivity is often poor in the classroom, all students must use an actual iClicker remote: smartphone iClicker apps will *not* be supported, as per department policy.

The final exam, which comprehensively covers the entire course, will be held in the usual classroom from 8:00 - 10:00 AM on Monday, December 19.

**Add/Drop** can be performed online until September 19. **Add/Drop** can be performed with the instructor's and advisor's signatures until October 31. But don't take my word for it: refer to <http://www.umd.edu/registrar/students/dropadd.php> for full details.

*All students must practise 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. The Code is available for review online*

*at [http://www.umt.edu/vpsa/policies/student\\_conduct.php](http://www.umt.edu/vpsa/policies/student_conduct.php)*

*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.*

### **Tentative Course Schedule**

Week	Chapters	Topics	Notes
Week 1	Ch. 1, Ch. 2	Intro, math review,	
8/29 - 9/1		one-dimensional motion	
Week 2	Ch. 2, Ch. 3	Vectors, two-dimensional	
9/5 - 9/8		motion	no class Monday
Week 3	Ch. 3, Ch. 4	Forces: Newton's Laws	9/16: First mid-term
9/12 - 9/15			
Week 4	Ch. 5	Applying Newton's Laws;	
9/19 - 9/22		friction, pulleys	
Week 5	Ch. 6, Ch. 7	Circular and rotational	
9/26 - 9/30		motion, orbits, and gravity	
Week 6	Ch. 7, Ch. 8	Rotational motion,	10/7: Second mid-term
10/3 - 10/6		equilibrium, springs	
Week 7	Ch. 9	Momentum and collisions	
10/10 - 10/13			
Week 8	Ch. 10	Energy and work;	
10/17 - 10/20		conservation of energy	
Week 9	Ch. 11	Energy and entropy	10/28: Third mid-term
10/24 - 10/27			
Week 10	Ch. 12, Ch. 13	Thermal properties of matter;	

10/31 - 11/3		fluids	
Week 11	Ch. 13	Fluids	
11/7 - 11/10			no class Tuesday
Week 12	Ch. 14	Oscillations	11/18: Fourth mid-term
11/14 - 11/17			
Week 13	Ch. 15	Waves and sound	
11/21 - 11/24			no class Wed or Thurs
Week 14	Ch. 15, Ch. 16	Waves, standing waves,	
11/28 - 12/1		superposition	
Week 15	Ch. 16, review,		
12/5 - 12/8	evals		
12/12		(last day of class)	

### Registering for Mastering Physics

1. Go to <http://www.masteringphysics.com>
2. Click the **STUDENT** link under **REGISTER**
3. Join the course using Course ID **MPJANZEN19734**
4. Create an account if you don't already have one
5. Click the button for "access code" if you have one (i.e., if you bought the text. Otherwise you'll need to purchase online access
6. Enter your Mastering Physics access code. You may need the UM zip code: 59812.
7. Complete the registration and log in