

## **P221 Physics I**, Indiana University Northwest, Fall 2015

**Text:** *Physics for Scientists and Engineers* 3<sup>rd</sup> Ed., by R. Knight with *Mastering Physics* online system.

**Prerequisites:** M216 (or concurrent)

**Goal:** To understand Newton's laws and the laws of thermodynamics, focusing on Newton's second law from a momentum perspective, and the first law of thermodynamics. And to have some fun!

**Grades:** There will be regular homework (lowest score is dropped), three midterm exams (no make-up exams, the lowest score is dropped), one final exam (cumulative, no make-up), a laboratory grade, and extra credit. Grades will be posted on Oncourse (oncourse.iu.edu/portal, course 1409). The class will be graded on a curve. The percentages of the total grade from the various components are as follows:

Homework: 20%

Lab: 20%

Best Midterm: 20%

2nd Best Midterm: 20%

Final: 20%

Extra Credit: 3%

**Homework:** Online through *Mastering Physics*: [www.masteringphysics.com](http://www.masteringphysics.com), Course ID: **P221FALL15**. Use the *Student Access Code Card* that came with your textbook to register. There is a 10% deduction on late homework. Problems on which all online attempts have been exhausted unsuccessfully may be redone by hand for up to full credit. Hand-written extra credit problems will be assigned periodically in class. Redone problems and extra credit problems may be turned in at anytime up until the last day of class (the week before the final exam).

**Handouts:** Print these out from Oncourse (under Resources/handouts) and bring to class on the date specified. They are collections of practice problems on which we will work together in class.

**Exams:** Midterm exam questions that are not answered entirely correctly may be redone for partial credit (average of the two scores). The exam schedule is on the next page. The week before an exam, there will be an ungraded practice exam on Wednesday that will be reviewed during the discussion.

**Discussion:** Attendance is required. Discussion is mainly an extension of the lecture period, though it sometimes will focus more on solving homework and practice problems.

**Readings:** Read the relevant sections of the textbook as you would a newspaper before coming to class (see tentative schedule, next page). Reread the textbook after class, focusing closer on the things that were covered in class, and cross-referencing with your notes.

**Notes:** Write down everything that is written on the board. Colored pencils are recommended for note taking as pictures and diagrams are often drawn with colored chalk. The recommended minimum set of colors is: red, orange, green, blue, violet, and your favorite sixth color to substitute for yellow.

**Math Lab:** Walk-in tutoring for math, including calculus: 436 HH, (219) 980-6979.

**P221 Physics I**, Indiana University Northwest, Fall 2015

Exam dates and tentative schedule of lecture topics		
Week	Monday: Topic	Wednesday: Topic
1	<b>Aug. 24:</b> Inertia (mass), momentum, force, Newton's 1st and 2 <sup>nd</sup> law	<b>Aug. 26:</b> Newton's 1 <sup>st</sup> and 2 <sup>nd</sup> Law, Ch1, 2: Derivatives and 1D kinematics
2	<b>Aug. 31:</b> Ch 2: Integrals and 1D kinematics	<b>Sept. 2:</b> Ch 3: Vectors
3	<b>Sept. 7: LABOR DAY! NO CLASS!!!!</b>	<b>Sept 9:</b> Ch 4: 2D kinematics
4	<b>Sept. 14:</b> Ch 4: 2D kinematics	<b>Sept. 16:</b> Practice Exam and Review 1
5	<b>Sept. 21: MIDTERM EXAM 1</b>	<b>Sept. 23:</b> Ch 5,6,7: Newton's Laws
6	<b>Sept. 28:</b> Ch 5,6,7: Newton's Laws	<b>Setp. 30:</b> Ch 5,6,7: Newton's Laws
7	<b>Oct. 5:</b> Ch 8: 2D dynamics	<b>Oct. 7:</b> Ch 8: 2D dynamics
8	<b>Oct. 12:</b> Ch 9: Momentum Conservation, Collisions	<b>Oct. 14:</b> Ch 9: Momentum Conservation, <b>TAKE HOME MIDTERM EXAM 2 HANDED OUT</b>
9	<b>Oct. 19:</b> Ch 10, 11: Energy, Work, <b>TAKE HOME MIDTERM EXAM 2 DUE</b>	<b>Oct. 21:</b> Ch 10, 11: Energy, Work
10	<b>Oct. 26:</b> Ch 10, 11: Energy, Work	<b>Oct. 28:</b> Ch 10,11: Energy, Work, Ch 12: Rotational Motion
11	<b>Nov. 2:</b> Ch 12: Rotational Motion	<b>Nov. 4:</b> Ch 12: Rotational Motion
12	<b>Nov. 9:</b> Ch 12: Rotational Motion	<b>Nov. 11:</b> Practice Exam and Review 3
13	<b>Nov. 16: MIDTERM EXAM 3</b>	<b>Nov. 18:</b> Ch 13: Newton's Theory of Gravity, Ch 14: Simple Harmonic Motion
<b>Nov. 22 – 29: THANKSGIVING BREAK!!!!!!!!!!!!</b>		
14	<b>Nov 30:</b> Ch 15: Fluids	<b>Dec. 2:</b> Ch 16: States of Matter, Ideal Gas Law, Ch 17: 1 <sup>st</sup> Law of Thermodynamics
15	<b>Dec. 7:</b> Ch 17, 18: 1 <sup>st</sup> and 2 <sup>nd</sup> Laws of Thermodynamics, Entropy	<b>Dec. 9: FINAL REVIEW, Cumulative</b>
<b>FINALS</b>		<b>Dec. 16: FINAL EXAM, Cumulative</b>

**Disability Policy:** If you need assistance with a learning, physical, or psychological disability that may affect your academic progress, please contact the Disability Services Coordinator at 219-980-6942, 237 HH.

**Attendance:** Attendance is required. If you do not attend, you may be withdrawn from the course. This course has been approved to enforce the IU Northwest Attendance and Course Commitment Policy and the full text of this policy is available at: <http://www.iun.edu/registrar/attendance-policies.htm>. Students who do not actively participate may be administratively withdrawn from the course, which may have an impact on financial aid awards and/or student visa status. I define active participation as attending lecture, discussion, and labs and completing the homework, labs, and exams at least 50% of the time.