

UNIVERSITY OF KENTUCKY
DEPARTMENT OF PHYSICS AND ASTRONOMY
PHYSICS 211 Sections 401,402,403 RANGER
COURSE SYLLABUS
Fall 2009

1. **PURPOSE:** You are about to bravely go where few in our society dare. You will explore the basic physical laws that govern our universe at a level that has been known to cause mere mortals to wither. Our global society clearly mandates that “Educated Professionals” possess expanded levels of understanding in these areas to successfully deal with the complex issues on the horizon. Accept this challenge aggressively!! And if you dare earn the title of “UK Physics Ranger”. Physics 211 is designed to provide the student with a comprehensive introduction to classical mechanics, fluids, thermodynamics and mechanical waves in a non-calculus framework. Additionally, you will be utilizing three very innovative systems. “WebAssign” is a very robust automated homework system, “Turning Point” is an in class response system that you will use in Lecture, Lab and Recitation finally “Blackboard” as the primary course coordination system.

2. **OBJECTIVES:**
 - a. Each student will develop a conceptual understanding of the rudimentary principles of classical (non Quantum) mechanics and thermodynamics.
 - b. Each student will develop and exercise a flexible, logical problem solving methodology applicable to this course, their entire academic experience and other whole life challenges.
 - c. Each student will improve their capabilities in Graphical Analysis.

3. **SCOPE:** This course begins with a survey of Newtonian Mechanics from simple one dimensional motion and progresses to combined rotational and translational motion in two dimensions. Phenomena will be analyzed through the application of Newton’s Laws and the principle of conservation of energy. The latter part of the course will focus on states of matter, the parameters that influence them and provide a segue into PHY213 by exploring mechanical wave motion.

4. **MISSION:** The instructional team for PHY 211 section 020,021 will ensure that every student is given ample opportunity to master the course objectives and achieve their full potential, while continually looking for ways to improve the course pedagogy to better meet the needs of all students both present and future.

5. **EXECUTION:**
 - a. The instructional team is composed of the following members each with a specified role:

(1) Lecturer: (CP 155)
 - Present lectures that compliment and reinforce learning objects.
 - Ensure that all components of the course are coordinated and sequenced according to this syllabus.
 - Provide help sessions and additional instruction as requested.

- Ensure testing and subsequent grading is equitable and consistent with other sections and university policy.
- Be available (Office hours or by appointment)

(2) Recitation Instructors:

- Present recitation sessions focused on student needs while reinforcing key concepts from assignments and lecture.
- Evaluate student progress by analyzing the results of quizzes and homework.
- Provide help sessions and additional instruction as requested.
- Be available (Office hours or by appointment)

(3) Laboratory Instructor: (CP 165)

- Prepare Laboratory lessons in accordance with Lab Syllabus (published separately)
- Emphasize connectivity between the Lab and the Lecture and study assignments.
- Grade all Lab reports.
- Assist in the preparation of exams to ensure continuity with Lab course material and objectives.
- Evaluate student progress by analyzing the results of quizzes and Lab Reports.

(4) Students:

- **Study** assigned sections **prior** to lecture.
- **Work** assigned problems and questions **prior** to recitation and in accordance with the “**WebAssign**” Schedule
- Seek additional help early. Use Lecturer and TA’s Office hours or make appointments. Use “On Duty” Grad Students in the Department of Physics and Astronomy Resource Room (CP 148, See Schedule, weekdays).
- “Don’t Forget Nothin” (MAJ Robert Rogers, Standing orders to his Rangers, 1759).
- Increase your personal velocity to meet the demands of the course.
(Academic Acceleration)

- Course evaluations are an important (and mandatory!) component of our Department's instructional program. An on-line course evaluation system was developed to allow each student ample time to evaluate each component of the course and instructor, thus providing the Department with meaningful numerical scores and detailed commentary while minimizing the loss of instructional time in the classroom. The evaluation window for Fall will open on 23Nov close on 04 Dec. To access the system during this time, simply go the Department of Physics Web page at www.pa.uky.edu and click on the link for Course Evaluations; then follow the instructions. You will need to use your student ID# to log into the system, and this will also allow us to monitor who has filled out evaluations. However, when you log-in you will be assigned a random number that will keep all your comments and scores anonymous.

- b. Other Assistance and Study Aids:
- (1) Study Groups. Highly recommended. You get out what you put in. University rules on plagiarism apply.
 - (2) Computer Software. Interactive software package with your book Computer lab. Mastering Physics will prove to be very helpful if used properly.
 - (3) Private Tutors. Ask at the Physics office. Plan ahead; they are booked early.
 - (4) Web based Study Materials, See course Web Page and Blackboard.

6. ADMINISTRATION:

- a. Course Text: *College Physics*, by Serway and Faughn, eighth edition. a personal response system transmitter coupon will be packaged with your text. The Turning Technologies RCRF-01 is required. Access codes for “WebAssign” are also packaged with your text but can also be purchased on line.
- b. Lab Text, Laboratory Manual for General Physics, by Ellis Available at “Johnny Print” 12 Jun 2009
- c. The TI-83 or 84 Calculator is **required** for all PHY211 students.(TI 84 +Silver is the best model and is Highly Recommended)
Note: TI 85, 86, and 92 will only work with labs using TI Ranger. Check with your lab instructor before purchasing a new calculator.
- d. Class and Topic Schedule (**note homework assignment are obtained on line “WebAssign”**)

Lecture/ Recitation	Topic	Study			Notes
R1: 26 Aug	Introduction, Diagnostics	None			
L1: 27Aug	Introduction Basic Tools	Chpt1:1,3,4,5,7			Syllabus PS Handout
R2: 31 Aug	Vectors				
L2: 01 Sep	Vectors	Chpt3:1,2,3, Chpt1: 8			Use Your Calculators
R3: 02 Sep	1-D Motion I				
L3: 03 Sep	1-D Motion I	Chpt2: 1,2,3,6,			
AH:7 Sep		Labor Day			Study
L4: 08 Sept	1-D Motion II Graphs	Chpt2: 4,5			Graphs Handout
R4: 09 Sept	1-D Motion I & II Graphs				

Lecture/ Recitation	Topic	Study			Notes
L5: 10 Sept	2-D Motion	Chpt3: 4,5,			
R5: 14 Sept	2-D Motion				
L6: 15 Sept	Newton's Laws	Chpt4 :1,2,3,4,5			
R6: 16 Sept	Newton's Laws				
L7: 17 Sept	Friction	Chpt4: 6			
R7: 21 Sept	Friction				
L8: 22 Sept	Newton's 2 nd / Friction	Chpt4: 5, 6			
R8: 23 Sept	Newton's 2 nd / Friction				
L9: 24 Sept	Hour Test 1 – Ch 1-4 (Bring Your Student Reference Sheet)				
R9: 28 Sept	Review Test 1	See Syllabus			
L10: 29 Sept	Work-Energy	Chpt5: 1,2,3,4			
R10: 30 Sept	Work-Energy				
L11: 01 Oct Sept	Conservation of Energy	Chpt5: 5,6			
R11: 05 Oct	Conservation of Energy				
L12: 06 Oct	Power	Chpt5: 7,8			
R12: 07 Oct	Power				
L13: 08 Oct	Impulse/ Momentum	Chpt6: 1,2,5			
R13: 12 Oct	Impulse/ Momentum				
L14: 13Oct	Collisions	Chpt6: 3,4			
R14: 14 Oct	Collisions				
L15: 15 Oct	Circular Motion/ Gravitation	Chpt7: 1-10			
R15: 19 Oct	Circular Motion/ Gravitation				Mid Term

Lecture/ Recitation	Topic	Study			Notes
L16: 20 Oct	Rotational Motion/ Torque	Chpt8: 1,2,5,7			
R16: 21 Oct	Rotational Motion/ Torque				
L17: 22 Oct	Moment of Inertia/ rotational KE	Chpt8: 3,6			
R17: 26 Oct	Moment of Inertia/ rotational KE				
L18: 27Oct	Angular Momentum	Chpt8: 7			
R18: 28 Oct	Angular Momentum				
L19:29 Oct	Hour Test 2 – Ch 5-8				
R19: 02 Nov	Review Test 2				
L20: 03 Nov	Equilibrium	Chpt8: 2,4	Election	Day !!!!!!!!!!!	Vote !!!!
R20: 04 Nov	Equilibrium				
L21: 05 Nov	Density, Pressure	Chpt9: 1,3,4,5			
R21: 09 Nov	Density, Pressure				
L22: 10 Nov	Archimedes Principle	Chpt9: 6,9		Veterans Day	
R22: 11 Nov	Archimedes Principle				
L23:12 Nov	Bernoulli	Chpt9: 7,8			
R23: 16 Nov	Bernoulli				
L24: 17 Nov	Heat Energy/ Heat Transfer	Chpt11: 1-8			
R24: 18Nov	Heat Energy/ Heat Transfer				
L25:19 Nov	Hour Test 3 – Ch 8, 9, 11				
R25: 23 Nov	Review Test 3				

Lecture/ Recitation	Topic	Study			Notes
L26:24 Nov	S.H.M.	Chpt13: 1,2,3,4,5,6,7			
H2: 25 Nov - 29 Nov	Happy Thanksgiving	Take Your	Book with you!!!	and Use It	Study
R26:30 Nov	S.H.M.				
L27: 01 Dec	S.H.M II	Chpt13: 1,2,3,4,5,6,7			
R27: 02 Dec	S.H.M II				
L28: 03 Dec	Wave Motion I	Chpt13: 8, 9			
R28: 07 Dec	Wave Motion I				
L29:08 Dec	Wave Motion II	Chpt13: 10,11,12,13			
R29: 09 Dec	Wave Motion II				Eval Window Closes
L30: 10 Dec	Course Summary				
FE: 15 Dec	Final Exam	5:30-7:30pm	UK Physics	Ranger Qualification I	

e. Lab Coordination Schedule

See lab syllabus.

f. Lab Coordination Information and Instructions.

- (1) For labs that are missed because of Academic Holidays, you will receive your average grade attained on all labs performed.
- (2) One of the supplementary objectives of the lab program is to give students experience, working in small groups. During the first lab meeting you will be grouped into Lab Teams consisting of three students each.(Groups of two may be formed if a third student is not available) The team will consist of:
 - (a) a **principle investigator**, responsible for the entire lab including execution and subsequent report development and submission
 - (b) a **researcher** with primary responsibility for conduct of the experiment and data collection
 - (c) a **skeptic**, responsible for developing ideas about sources of

error and quantifying their relative contribution to the experimental results and discussion the experiments deviation from the theory being explored.

These roles should be rotated within the group each week. The report cover sheet must indicate which student is assigned to each of these roles. A portion of your lab grade will depend on your ability to function efficiently as a small research team. All team members must attend the lab session and actively participate in report development.

- (3) Your Lab report is part of your university level writing experience. The report must completely detail your investigation, detail your results and the conclusions that your team draws. The tone should reflect clear concise written technical communication. Raw data must be included along with annotated sample calculations and analysis. **Neatness, readability, and grammar count.** Your report must be word processed. Include Raw data, notes, sketches and hand drawn graphs as appendices referred to in your text. See lab syllabus and on-Line Appendices for more detail

g. Grading Policy.

- (1) General:

Graded Event	Course Points
3 one hour exams	300
1 two hour final Exam	200
Recitation	100
Laboratory	200
Course Total	800

Letter Grades will be assigned as follows:

- 90% - 100% A
- 80% - 89% B
- 70% - 79% C
- 60% - 69% D
- Below 60% E

No “curving” will be applied. If the results of a graded event are substantially lower then expected and this can be attributed to an omission or error on the part of the instructional team, a one time grade correction may be applied to that event. This correction will never lower grades.

Recitation Grades will be based 50% Homework and 50% Unannounced Quizzes

- (2) Partial Credit.
- Setting up and working through a logical problem solving sequence.
 - Analyzing your course of action and applying the correct Physics principle.
 - Neatly showing all your work and algebraic steps.
 - Using dimensional analysis check your result.
- h. . Bonus quizzes, based on Lecture readings will be offered on an unannounced basis. These will be worth a maximum of 3 points.
- i. Absence - Students who are forced to miss class or a graded event due to unavoidable emergency (illness, death in the family, team tournament, etc) must contact their recitation instructor.
- (1) Recitation/Lab Instructor and Lecturer will determine if the absence is to be excused, University Senate Rules on excused absences apply.
 - (2) Students with an excused absence will take a make up exam or if circumstances warrant will be awarded a virtual grade that will preserve their pre exam standing.
 - (3) To receive course credit students must take all of the three 1 hour exams and the final and attend all Labs
 - (4) Un excused absence for an exam/lab will result in a grade of zero for the course.
- j. Topics from Lab are fair game on each hour exam and the final.
- k. Tests and exams will normally be returned during the next recitation meeting after the exam. The following sequence will be followed regarding Alibis.
- (1) Exam/Test passed out, Students told not to write on the test. Comments, question or alibis should be recorded on a separate sheet of paper.
 - (2) Instructors will review test in detail.
 - (3) Student's with alibis should record, specifically, those items they would like considered for re-evaluation and return their test to their recitation instructor before leaving the class room. All others can retain their tests. No consideration will be given to alibis submitted after the student has left the class room.
 - (4) The instructor will review each request and bring them to the lecturer for adjudication. Tests will be returned with re-evaluations as soon as possible.
- l. **SRS Student Reference Sheet.** Each student should prepare their own SRS, this is part of the learning strategy.
- (1) SRS may contain any information the student desires except: Graphs, Worked Problems. Note: constants and other information will be provided with each exam.
 - (2) SRS for each hour exam must be contained on one side of one 8.5" by 11" sheet of paper.

- (3) SRS should be use for recitation quizzes
- (4) SRS must be attached to your test when it is presented for grading
- (5) Violations of these rules will result in a grade of zero for the associated test.

7. COMMUNICATIONS:

a. Team Members:

Position	Name	Office/ Hours	Phone	E-Mail
Lecturer	Steve Ellis	CP 68/ M-W 0900-1000, Lab Help M-R 0730-0800	O: 7-5845 H: 223- 6248 C:229-8174	steve.ellis@uky.edu sellis@erangersystems.com m
Recitation /Lab TAs				
Section 401	Martin Mudd	TBD	TBD	mmu222@uky.edu
Section 402	Zachariah Miller	TBD	TBD	zwmi222@uky.edu
Section 403	Justin Woods	TBD	TBD	jswo223@uky.edu

b. Course Information:

- (1) Blackboard site (Primary)
- (2) Bulletin Board;
 - Location: Outside CP-68 (just down the hall)
 - Exam results and other course information.
 - Check once per week.
- (3) Course Web site Alternate:

www.pa.uky.edu/~ellis