SYLLABUS
PHYSICS FOR PHARMACY: PHY U149
INSTRUCTOR: Professor Mark C. Williams

1.Educational Goals

To learn the basic concepts of physics and apply them to a wide range of examples and applications.

2. Lectures

Lectures Monday, Wednesday, and Thursday, 9:15-10:20 in 101 CH.

3. Instructor Information

Office: 101 Dana
Office Phone: 617-373-7323
Email: **mark@neu.edu**
Office Hours: Mon. 3:00-4:00, Wed. 2:00-4:00

4. Required Text

College Physics, by Raymond A. Serway, Jerry S. Faughn, Charles A. Bennett, Chris Vuille. Seventh Edition (2005) Thomson. ISBN 0495084107. Includes RF-based "clicker" for responding to questions during the lecture.

5. Homework, Exams, and Grading

Homework

The assigned reading and homework should be completed before the first lecture of the following week.

Quizzes (16% of final grade)

There will be ten 20-minute quizzes based on the homework assignments for each week. The lowest two quizzes will be dropped from the average.

Classroom responses using clickers (14% of the final grade)

You will be given 75% credit just for answering and an additional 25% for answering correctly.

Two one-hour midterm exams (24% of the final grade)

One two-hour final exam (26% of the final grade)

PHY U150 laboratory (20% of the final grade)

You must register for and attend the laboratory portion of this class. Information about the introductory physics laboratories can be found at http://www.atsweb.neu.edu/physics/ipl/

The schedule on the following page gives approximate information on the topics covered in the course.

PHY U149: PHYSICS FOR PHARMACY: APPROXIMATE SCHEDULE

Week 1 (7-8 Sept)	**Vectors** Chapter 3, sections 1 and 2. Addition, subtraction, and components of vectors Problems 3, 4, 12, 17, 18
Week 2 (12, 14, 15 Sept) **Expt. 12, Forces and Torques in Equilibrium** **Quiz 1: vectors**	**Forces in equilibrium** Chapter 8, sections 1, 2. Rotational Equilibrium Problems 1, 2, 4, 6, 9
Week 3 (19, 21, 22 Sept) **Expt. 12, Forces and Torques in Equilibrium** **Quiz 2: equilibrium**	**Forces in equilibrium** Chapter 8, sections 3, 4. Rotational Equilibrium Problems 8, 15, 16, 19, 27
Week 4 (26, 28, 29 Sept) **Expt. 3, Free Fall** **Quiz 3: velocity and acceleration**	**Velocity and acceleration in one dimension** Chapter 2, sections 1-3 Problems 1, 3, 11, 19, 21
Week 5 (3, 5, 6 Oct) **Expt. 3, Free Fall** **Quiz 4: Newton's laws**	**Newton's laws** Chapter 4, sections 1-4. Problems 2, 5, 11, 18
Week 6 (12, 13 Oct) No class Oct. 10 **Hour Exam #1 (weeks 1-4)** **Expt. 7, Circular Motion**	**Applications of Newton's laws** Chapter 4, section 5. Problems 19, 20, 23, 30
Week 7 (17, 19, 20 Oct) **Expt. 7, Circular Motion** **Quiz 5: circular motion, Newton's laws**	**Circular motion** Chapter 7, sections 1-4. Problems 2, 9, 20, 25, 27
Week 8 (24, 26, 27 Oct) **Expt. 41, Thermometry and Calorimetry** **Quiz 6: work-energy theorem**	**Work-Energy Theorem** Chapter 5, sections 1-3 Problems 2, 4, 9, 19, 23
Week 9 (31 Oct, 2, 3 Nov) **Expt. 41, Thermometry and Calorimetry** **Quiz 7: conservation of energy**	**Conservation of Energy** Chapter 5, sections 4-6 Problems 27, 28, 33, 42, 49, 50
Week 10 (7, 9, 10 Nov) **Expt. 22, Pressure and Fluid Flow** **Quiz 8: thermal physics**	**Thermal physics** Chapter 10, sections 1, 2, 4, 5. Temperature, Ideal gas law, kinetic theory. Problems 3, 5, 27, 38, 43, 44
Week 11 (14, 16, 17 Nov) **Expt. 22, Pressure and Fluid Flow** **Quiz 9: fluids**	**Fluids** Chapter 9, sections 3 - 6. Density and Pressure, buoyant forces, Archimedes' principle. Problems 19, 22, 24, 26, 30
Week 12 (21, 23 Nov) **Hour Exam #2 (weeks 5-10)** **Makeup Experiments**	**Fluid dynamics** Chapter 9, sections 7 - 9. Fluids in motion, viscous fluid flow. Problems 41, 43, 44, 62, 63
Week 13 (28, 30 Nov, 1 Dec) **Expt. 40, Radioactive Decay** **Quiz 10: fluid dynamics, radiation**	**Radiation** Chapter 29, sections 3-5. Radioactivity, alpha, beta, and gamma decay, carbon dating Problems 15, 16, 22, 61
Week 14 (5, 7 Dec) **Expt. 40, Radioactive Decay**	**CAT scan, Review** Chapter 29, section 7.
Week 15 (9 – 16 Dec)	**FINAL EXAM**