

P150/A SYLLABUS Spring/14 (Rev B 1/21/14)
Section 01 M, We, Fr

COURSE: **Physics (Introductory)**
ALL course information is posted on BlackBoard

TEXT/Materials: (1) *How Things Work*, Bloomfield, 5th edition, 2012 (ISBN: 9781118571187)
 (2) WileyPlus – homework system (comes with new textbook) – see Blackboard
 (3) Turning Point NXT Response Pad (clicker) – see Blackboard

Course Objectives:

General objectives are to:

- Develop an understanding of basic scientific concepts, principles and laws of Physics.
- Develop critical thinking skills and a scientific approach to problem solving.

Specific Objectives:

Physics principals to be covered include concepts of force, motion, Newton’s Laws, conservation of energy, momentum, torque, electricity & magnetism. “How things work” topics of current interest include wind turbines, copiers, hybrid vehicles, radios, audio amplifiers, electrical power plants, microwave ovens, lasers, DVDs, nuclear weapons & reactors.

CLASS MEETINGS: Lecture Section 1: M, We, F 12:00 – 12:50 PM, Faraday West 200

Instructor: Lyle Marschand, Faraday 221; 815-753-6469
Office Hours: **Monday 2-3pm, Tues 10:30-11:30am, Wed 10-11am, Th 11am-12 Noon;** or by
 appointment
Email: lmarschand@niu.edu
Web page: <http://www.niu.edu/marschand/p150.shtml>

Note: Honors students will be required to do a special project – see me to discuss.

SCHEDULE OF TESTS:

TEST 1: **Wednesday, 2/19** Chs 1,2,3 (see Course Schedule below for specific sections)

TEST 2: Chs 7,10,11 (see Course Schedule below for specific sections)

TEST 3: Chs 12,13,15 (see Course Schedule below for specific sections)

FINAL EXAM, Faraday West 200

GRADING:

Tests* 50%	<u>Scale:</u> 100 - 88	A
Final Exam* 25%	87 - 84	A-
In Class/Online Exercises* 25%	83 - 79	B+
Homework: Up to 10% EC	78 - 75	B
	74 - 71	B-
	70 - 66	C+
	65 - 62	C
	61 - 50	D

***MINIMUM REQUIREMENTS TO PASS THE COURSE: YOU MUST HAVE COMPLETED ALL THE FOLLOWING:**

1. Take 2 of the 3 exams and the Final exam
2. Achieved an average of at least 50% on the 2 Tests, the Final Exam and the In Class Exercises.
3. Pass the Lab (150A students only).

IF YOU ARE TAKING THE LAB (150A): The above applies to the 2 ½ hour/week lecture portion of the class, which will count for 75% of your total grade. The other 25% will be the lab.

NOTE: YOU MUST PASS BOTH THE LECTURE COURSE & LAB IN ORDER TO PASS THE ENTIRE COURSE.

TESTs:

There will be 3 tests. The lowest test score will be dropped. If an exam is missed that will be the lowest score which is not counted. There will be **no** makeup tests unless you obtain written (email is fine) approval from me **PRIOR** to the exam. You will need to provide documentation for your absence, if you are ill I will ask you to bring in a note from Health Services or your Doctor.

The **Final** Exam is comprehensive.

YOU MAY BE ASKED TO SHOW YOUR NIU PHOTO ID WHEN YOU TAKE EACH TEST. IF YOU DO NOT HAVE YOUR ID WITH YOU YOUR TEST WILL NOT BE GRADED

IN CLASS/ ONLINE EXERCISES: (Given during Lecture & online sessions)

Every lecture will have exercises, most of which will be done using your TP clickers. There are **no** makeups for any missed exercises, however the two lowest scores will be dropped.

COURSE NOTEBOOK: Students are strongly encouraged to keep a Course Notebook of key materials that is brought to all lecture and recitation sessions. Materials include (must be current): Syllabus, lecture notes (printed from Blackboard with room to take notes), student's class notes, tests, class exercises.

HOMEWORK: Extra credit homework will be assigned to help you practice the application of the concepts provided in the text and lectures. Completing the homework will improve your performance on the tests. ALL HW assignments and due dates are in WileyPlus' online system, which can be accessed via Blackboard.

The homework system (WileyPlus), which is included in the price of a NEW textbook, but will have to be paid for if a USED textbook is used. See instructions on Blackboard for registering for the WileyPlus homework system.

WHAT TO BRING TO CLASS: Lecture notes (printed from Blackboard), Notebook, **clicker**, text book, and calculator

ACCESSIBILITY: Northern Illinois University is committed to providing an accessible educational environment in collaboration with the Disability Resource Center (DRC). Any student requiring an academic accommodation due to a disability should let his or her faculty member know as soon as possible. Students who need academic accommodations based on the impact of a disability will be encouraged to contact the DRC if they have not done so already. The DRC is located on the 4th floor of the Health Services Building, and can be reached at 815-753-1303 (V) or drc@niu.edu.

COURSE POLICIES INCLUDE:

1. Be respectful of each other (this applies to Instructors, TA's and students). Some specifics include:
 - a. No cell phone/ electronic device usage in class (except clickers, calculators). Cell/ smart phones must be turned off or silenced and placed in backpacks, etc. (not in pockets or on desks). Violators may be required to turn in their devices to the Instructor for the remainder of the class period.
 - b. Read your newspapers before or after class
 - c. No talking during class – raise your hand if have a question at any time.
 - d. Be on time to class
 - e. If you need to leave class early, let your Instructor/ TA know
2. Laptops/ notebooks may be used for lecture materials and taking notes only, BUT students must sit in the first row of the lecture hall to use them.
3. Seat assignments will be used to facilitate in class group discussions.
4. Be aware of the policies and procedures regarding your rights as well as responsibilities that are published in the NIU Student Code of Conduct. It is available on line at [http://www.stuaff.niu.edu/judicial/24430jo\(body\).pdf](http://www.stuaff.niu.edu/judicial/24430jo(body).pdf) .
5. The instructor and the university reserve the right to modify, amend, or change the course syllabus (course requirements, grading policy, etc.) as the curriculum and/or program require.

Course Schedule

The textbook (*How Things Work*) is designed for a 2 semester course, so we will only be covering selected sections that are more focused on technology.

After learning some basic/ foundational physics principles (chapters 1, 2, 3), we will learn the physics of technology products and services.

Chapter 1. The Laws of Motion, Part 1

- 1.1 Skating
- 1.2 Falling Balls
- 1.3 Ramps

Chapter 2. The Laws of Motion, Part 2

- 2.1 Seesaws
- 2.2 Wheels

Chapter 3. Mechanical Objects, Part 1

- 3.1 Spring Scales

_____ **Test #1** _____

Chapter 7. Heat and Phase Transitions

- 7.1 Woodstoves

Chapter 10. Electricity

- 10.1 Static Electricity
- 10.2 Xerographic Copiers
- 10.3 Flashlights

Chapter 11. Magnetism & Electrodynamics

- 11.2 Electric Power Distribution
Hybrid Automobiles

_____ **Test #2** _____

Chapter 12. Electromagnetic Waves

12.1 Radios

12.2 Microwave Ovens

Chapter 13. Light

13.1 Sunlight

13.2 Discharge Lamps

13.3 Lasers and LEDs

Chapter 15. Modern Physics

15.1 Nuclear Weapons

15.2 Nuclear Reactors

_____ **Test #3** _____