

# GENERAL PHYSICS II

## ELECTRICITY AND MAGNETISM

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 SES 2278      SES 2150      SEL 2093

*Course Website:* [uic.blackboard.com](http://uic.blackboard.com)

*Textbook:* *University Physics* — 13th or 14th Edition, Young & Freedman

*Laboratory:* *Physics 142 Lab Site:* [uic.blackboard.com](http://uic.blackboard.com)

*Pre-Lectures:* Online: [www.flipitphysics.com](http://www.flipitphysics.com)

*Homework* (NOT graded) [uic.blackboard.com](http://uic.blackboard.com) AND [masteringphysics.com](http://masteringphysics.com)

### Introduction

Physics 142 is a calculus-based course that will introduce you to some fundamental physical concepts focusing primarily on electricity and magnetism.

The course web site is hosted by the UIC blackboard system [uic.blackboard.com](http://uic.blackboard.com). The blackboard site will be the primary source of up-to-date information about the course. There you will find important information including announcements, practice exams and solutions, assignments, grades and contact information. Do keep in mind however that announcements can be made in a variety of other ways (in class, by email, etc.) and that *it is your responsibility to be aware of such announcements*.

### Basic Information

Your final grade is determined by the weighted sum of exams, quizzes, lab reports and prelectures according to the percentages in the table.

A letter grade of *A*, *B*, *C*, *D* or *F* will be assigned at the end of the term according to the student's final score following the breakdown in the table.

The grade of incomplete (I) is given *only* in *very* exceptional cases according to very strict criteria.

Your Final Grade	Percentages
<b>A</b> 80% or higher	Exams I & II    23% each
<b>B</b> between 70% and 80%	Exam III        24%
<b>C</b> between 55% and 70%	Lab Work        15%
<b>D</b> between 45% and 55%	Quizzes          10%
<b>F</b> 45% or lower	Pre-Lectures    5%

### Homework

- **Very important!** A major part of your performance in this class will be determined by what you'll learn working on homework. Expect each assignment to take 1-3 hours to complete.
- **Will not be graded.** Your understanding of the course material will instead be evaluated *by in-class quizzes*. It is *your responsibility* to keep up with the homework.
- **Blackboard.** In the HW folder

- **Online.** To access the online homework site go to [masteringphysics.com](http://masteringphysics.com). To register and log in for the first time use the information in the table.
- **Additional work on your own.** Problems at the end of the chapter.

MasteringPhysics registration	
<b>Student ID</b>	Your 9-digit UIN
<b>Course ID</b>	UICPHY142SPRING201614E (14th ed) UICPHY142SPRING201613ED (13th ed)

### Quizzes

- **Frequency:** About once a week (check calendar below)
- **In-class** on the last lecture day of the week.
- **Length:** 15-minutes.
- **Based on Blackboard posted homework AND end-of-chapter problems.**
- **Make-up quizzes:** *NONE*.

### Pre-Lectures (formally known as SmartPhysics)

- **Online.** Prior to some lectures you'll need to watch short videos and complete a short assignment.
- **Registration.** Visit [flipitphysics.com](http://flipitphysics.com).
- **DO NOT pay for access.** You will receive an Access Card that with an Access Code before the trial period expires either in class.
- **Your section.** Use the information in the table to the right.

flipitphysics Course Access Keys		
Lefevre	Goeckner	Perez-Salas
Spring16LE	Spring16GO	Spring16PE
<b>Student ID:</b> Your 9-digit UIN		

### Pre-Labs

- Physics 142 includes an essential laboratory component intended to give you insight into the phenomena discussed in class.
- Attendance to all labs and submission of all reports is **mandatory** to pass this course.
- It is your responsibility to read the lab material in advance! **Prelab assignments** (posted on blackboard) must be turned in at the beginning of your lab (*this includes make up labs*).

### Laboratories

- All laboratory reports are due at the end of the laboratory session.
- If you miss a particular laboratory, contact your TA as soon as possible to makeup the lab in one of the scheduled make-up sessions. Contact information will be available on blackboard.

### Exams

- It is your responsibility to be available for all examinations, to take the exams at the arranged time, and to insure your exam is turned in and collected by the Instructor. *There will be no make-up exams after the exams are over.*

**Final Exam Conflict:** Spring 2016 – course listed *first* in the online Schedule of Classes has precedence. Contact your instructors *well ahead of the exam date*. After the exam date there will be no make-up exam

## Additional Resources

- Free tutoring available in the Science Learning Center (SLC) – SES 201. Tutoring hours will be listed at the center and should also be available online.
- If you require accommodations to participate in this course a letter of justification is required. You must register with the Disability Resource Center (DRC) for examinations. Contact them at (312) 413-2183 and/or drc@uic.edu.

## COURSE OUTLINE - PHYS 142 - SPRING 2015

(SUBJECT TO CHANGE. LAST UPDATE: JANUARY 15, 2016)

EXAM 1: FEB 17, CH. 21 - 25.5

EXAM 2: MARCH 30, CH. 26 - 30.6

EXAM 3: TBA CH. 31 - 36.7

WEEK DATE	BOOK	TOPICS	HOMEWORK / TESTS	LABS
1 Jan 11	Chapter 21 21.1 - 21.7	Electric Charge and Field Electric Charge, Induced Charge. Coulomb's Law. Electric Field and Forces. Electric Dipole.	• PreLecture 1-2	No Lab this week
2 Jan 18 Jan 18: No classes	Chapter 22 22.1 - 22.5	Gauss Law Charge and Electric Flux. Gauss's Law. Charges on Conductors.	• PreLecture 3-4 • HW1 • Q1	No Lab this week
3 Jan 25	Chapter 23 23.1 - 23.5	Electric Potential Electric Potential Energy and Electric Potential. Calculating Electric Potential. Potential Gradient.	• PreLecture 5-6 • HW2 • Q2	Electrostatic Interaction
4 Feb 1	Chapter 24 24.1 - 24.4	Capacitance and Dielectrics Capacitors and Capacitance. Capacitors in Series and Parallel. Dielectrics.	• PreLecture 7-8 • HW3 • Q3	Equipotential surfaces (Part 1)

WEEK DATE	BOOK	TOPICS	HOMEWORK / TESTS	LABS
5 Feb 8	Chapter 25 25.1 - 25.5	<b>Current, Resistance, and Electromotive Force</b> Electric Current. Resistance. Circuits.	<ul style="list-style-type: none"> <li>• PreLecture 9</li> <li>• HW 4</li> <li>• Q4</li> </ul>	Equipotential surfaces (Part 2)
6 Feb 15	Chapter 26 26.1 - 26.5	<b>Direct Current Circuits</b> Resistors in Series and Parallel. Kirchhoff's Rules. RC Circuits.	<ul style="list-style-type: none"> <li>• PreLecture 10-11</li> <li>• No Quiz</li> </ul> <p style="text-align: center;"><b>Midterm 1</b> Wednesday Feb 17 Covers up to 25.5</p>	Make-up Lab
7 Feb 22	Chapter 27 27.1 - 27.8	<b>Magnetic Field and Magnetic Forces</b> The Magnetic Field. Motion of Charged Particles in a Magnetic Field. Magnetic Force and Torque.	<ul style="list-style-type: none"> <li>• PreLecture 12-13</li> <li>• HW 5</li> </ul>	DC Circuits
8 Feb 29	Chapter 28 28.1 - 28.7	<b>Sources of Magnetic Field</b> Magnetic Field of a Moving Charge. The Biot-Savart Law. Ampere's Law.	<ul style="list-style-type: none"> <li>• Prelecture 14-15</li> <li>• HW6</li> <li>• Q5</li> </ul> <p style="text-align: center;">covers HW5 &amp; HW6</p>	RC Circuits
9 March 7	Chapter 29 29.1 - 29.7	<b>Electromagnetic Induction</b> Induction. Faraday's Law. Lenz's Law. Induced Electric Fields. Maxwell's Equations.	<ul style="list-style-type: none"> <li>• Prelecture 16-17</li> <li>• HW7</li> <li>• Q6</li> </ul>	Biot-Savart Law
10 March 14	Chapter 30 30.1 - 30.6	<b>Inductance</b> Mutual Inductance. Self-Inductance and Inductors. The RL and LC Circuits. The LRC Circuit.	<ul style="list-style-type: none"> <li>• Prelecture 18-19</li> <li>• HW8</li> <li>• Q7</li> </ul>	Ampere's Law

WEEK DATE	BOOK	TOPICS	HOMEWORK / TESTS	LABS
11 March 28	Chapter 31	Alternating Currents	• Prelecture 20-21	Make-up Lab
	31.1 - 31.6	Phasors and Alternating Currents. Resistance and Reactance. The LRC Circuit.	• No Quiz  Midterm 2 Wednesday, March 30 Covers up to 30.6	
12 April 4	Chapter 32	Electromagnetic Waves	• Prelecture 22-23 • HW 9	Induction
	32.1 - 32.4	Plane Electromagnetic Waves. The Speed of Light. Sinusoidal Electromagnetic Waves. EM Energy and Momentum (Poynting Vector).		
13 April 11	Chapter 33	The Nature and Propagation of Light	• Prelecture 24-25 • HW10 • Q8 covers HW9 -10.	AC Circuits
	33.1 - 33.5, 33.7	The Nature of Light. Huygens' Principle. Reflection and Refraction. Dispersion. Polarization.		
14 April 18	Chapter 35	Interference	• No Prelecture • HW11 • Q9	Make-up Lab
	35.1 - 35.5	Coherent Sources. Two-Source Interference of Light. Interference in Thin Films. The Michelson Interferometer.		
15 April 25	Chapter 36	Diffraction	• No Prelecture • HW12 • Q10	Interference
	36.1 - 36.7	Single Slit Diffraction. Intensity. The Diffraction Grating. X-Ray Diffraction. Resolving Power.		
16 May 2			Final Exam Thursday May 5th 1-3pm CH. 31 - 36.7 (Not 34)	

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EXAM 2: MARCH 30, CH. 26 - 30.6

FINAL: MAY 5TH, CH. 31 - 36.7