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## Course Information

# Physics 2232 - Honors Physics II

Class Time & Location:	M, T, W, and Th at 10:05 am in Howey S106
Instructor:	Professor James Gole Office: Howey N106 Phone 404-894-4029  e-mail: james.gole@physics.gatech.edu
Office Hours:	BY APPOINTMENT ONLY
Overview:	This is a course for physics majors and other interested students. It is assumed students are proficient in Mechanics (Physics I), Calculus (Derivatives, Integrals) and Vector Algebra.
Grades:	Exams (50%), Final (25%), Homework (15%), Lab (10%) 85+% = A, 75-84 = B, 65-74 = C, 55-64 = D, below 55 = F
Textbook:	"Matter and Interactions II - Electricity and Magnetic Interactions" by Chabay and Sherwood, Third Edition. (copies available at Engineering Bookstore)
Homework:	Homework is assigned on a weekly basis. The due dates will be given. You may work with other students on homework but you must write up your solution entirely by yourself. There is no other way to learn this difficult material than to work the homework problems diligently.
Laboratory:	Labs begin the week of <b>August 22</b> . You will participate in the Matter and Interactions Lab. You are responsible for reading all the lab policy and administrative pages at <a href="http://www.physlab.gatech.edu">www.physlab.gatech.edu</a> , before your first lab. Attendance in lab is a course requirement. To pass this course, you must pass the laboratory portion with an average of 60% or more. <b>Three unexcused absences from lab will result in automatic failure of the lab, and therefore, of the course.</b>
Academic Integrity:	We expect every student to know and comply with the Georgia Tech honor code. Please see <a href="http://www.honor.gatech.edu">http://www.honor.gatech.edu</a>

## Course Schedule

Date	Day	Topic	Reading
Aug 22	Mon	Introduction, 3D Vectors	Website
Aug 23	Tues	Electric field and electric force, field of a point particle	14.1-14.3
Aug 24	Wed	Field Point of a point particle, superposition, dipoles	14.4-14.5
Aug 25	Thur	Dipoles	14.4, 14.6
Aug 29	Mon	Review. Homework #1.	
Aug 30	Tues	Interactions of charged objects, tape experiments, polarization	15.1-15.3
Aug 31	Wed	Polarization, interaction of charged and neutral matter, insulators, and conductors	15.3-15.5
Sep 1	Thur	Insulators and conductors, static equilibrium, charging and distribution	15.3-15.7
Sep 5	Mon	Labor Day Holiday	
Sep 6	Tues	Charging and discharging	15.7
Sep 7	Wed	Sparks in the air	Handouts
Sep 8	Thur	Calculating electric fields of distributed charges. Homework #2	16.1-16.3
Sep 12	Mon	Field of a ring, disk, capacitor	16.4-16.6
Sep 13	Tues	Field of a sphere	16.7-16.8
Sep 14	Wed	Review. Homework #2a	
Sep 15	Thur	Potential energy and electric potential	17.1-17.3
Sep 19	Mon	Exam 1	
Sep 20	Tues	Sign of potential difference and direction of field, potential difference in nonuniform field	17.4-17.5
Sep 21	Wed	Potential at one location, path independence, round trip potential difference	17.6-17.7
Sep 22	Thur	Electric field and potential in an insulator. Homework #3	17.8
Sep 26	Mon	Moving charges and magnetic field, Biot-Savart Law	18.1-18.3
Sep 27	Tues	Moving charges, electron current and conventional current	18.4
Sep 28	Wed	Magnetic field of a wire.	18.5-18.7
Sep 29	Thur	Magnetic field of a current-carrying loop, magnetic dipoles. Homework #4	18.8-18.9
Oct 3	Mon	Atomic structure of magnets	18.10-18.11
Oct 4	Tues	Magnetism of Magnets	Handout
Oct 5	Wed	Magnetism of Magnets	
Oct 6	Thur	Magnetism of Magnets.	
Oct 10	Mon	Exam 2	
Oct 11	Tues	Steady state current, node rule	19.1-19.3
Oct 12	Wed	Electric fields in circuits, electron motion in wires, surface charge	19.4-19.5
Oct 13	Thur	Energy conservation in circuits	19.6-19.8
Oct 17	Mon	Fall Break	
Oct 18	Tues	Fall Break	
Oct 19	Wed	Solving circuit problems	Handout
Oct 20	Thur	Macroscopic analysis of circuits.	20.1-20.8

Oct 24	Mon	Electric field and potential in capacitor circuits. Homework #5.	20.1-20.8
Oct 25	Tues	Magnetic forces on charged particles and current-carrying wires	21.1-21.3
Oct 26	Wed	Electric and magnetic forces, velocity selector	21.3
Oct 27	Thur	The Hall effect	21.4
Oct 31	Mon	Magnetic torque, magnetic potential energy	21.7-21.8
Nov 1	Tues	Gauss's Law	22.1-22.3
Nov 2	Wed	Gauss's Law. Homework #6.	22.2-22.4
Nov 3	Thur	Reasoning with Gauss's Law, Ampere's Law	22.4-22.6
Nov 7	Mon	Ampere's law, Faraday's law	22.6, 23.1-23.3
Nov 8	Tues	Faraday's law	23.3
Nov 9	Wed	Solving problems with Faraday's law Homework #7	23.2-23.5
Nov 10	Thur	Review. Homework #8	
Nov 14	Mon	Exam 3	
Nov 15	Tues	Solving problems in Faraday's Law	23.2-23.5
Nov 16	Wed	Motional EMF	21.5, 23.3
Nov 17	Thur	Inductors in Macrocircuits	23.6, Handout
Nov 21	Mon	Levitation of Magnets	
Nov 22	Tues	Maxwell's equations, electromagnetic radiation	24.1-24.2, 23.4, 22.7
Nov 23	Wed	Maxwell's equations, electromagnetic radiation	
Nov 24-25	Thur	Thanksgiving Holiday	
Nov 28	Mon	Accelerated charges and radiation. Homework #9.	24.3-24.4
Nov 29	Tues	Energy and momentum in radiation	24.4
Nov 30	Wed	Polarization of radiation. Homework #10.	24.6-24.8
Dec 1	Thur	Review and Special Topics Final Exam.	

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