

**SPRING 2022** Department of Physics & Astronomy, UGA  
**PHYS 1112** Introductory Physics - Electricity and Magnetism, Optics (as of Jan. 10/2022)

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.

<b>Course Description:</b>	The continuation of Introductory Physics. Electricity and electric circuits, magnetism, geometric and wave optics.
<b>Athena Title:</b>	INTRO PHYS ELEC
<b>Pre or Corequisite:</b>	PHYS 1111-1111L or PHYS 1211-1211L
<b>Grading System:</b>	A-F (Traditional)
<b>Instructor:</b>	Dr. Andrei Galiautdinov
<b>Preferred method of communication:</b>	In-class and during office hours
<b>Office:</b>	Physics 220 (Phone: 706-583-8224)
<b>Emailing Policy:</b>	Before emailing, make sure you read and understood this syllabus in its entirety. I will not respond to your inquiry if the question you are asking had already been answered here. <a href="mailto:agl@uga.edu">agl@uga.edu</a>
<b>Sections:</b>	<b>27150</b> 12:45pm – 02:00pm (Physics Auditorium Rm. 202, Tue/Th) <b>45173</b> 02:20pm – 03:35pm (Physics Auditorium Rm. 202, Tue/Th)
<b>Office hours:</b>	03:35pm – 04:35pm (Tue/Th)
<b>Text:</b>	James S. Walker, <i>Physics</i> , Chapters 19 – 28, 5 <sup>th</sup> Edition, any other edition is OK (Pearson Addison-Wesley)
<b>Clickers:</b>	None
<b>Academic Honesty:</b>	<i>As a University of Georgia student, you have agreed to abide by the University's academic honesty policy, "A Culture of Honesty," and the Student Honor Code. All academic work must meet the standards described in "A Culture of Honesty" found at: <a href="http://www.uga.edu/honesty">www.uga.edu/honesty</a>. Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation. Questions related to course assignments and the academic honesty policy should be directed to the instructor.</i>
<b>In-class rules:</b>	<ul style="list-style-type: none"> <li>➤ <b>No laptops, cellphones, iPads, iPods, or any other electronic/communication devices are permitted in the classroom (with the exception of the tools needed for the DRC accommodation).</b></li> <li>➤ <b>If you are late for class, you must enter in the back of the room.</b></li> </ul>
<b>Attendance:</b>	➤ Strongly advised
<b>Labs:</b>	<ul style="list-style-type: none"> <li>➤ <b>Labs are completely independent of the Lectures</b></li> <li>➤ All inquiries related to Labs should be directed to either your respective lab TAs, or our Lab Coordinator, Mr. Tom Barnello, at: <a href="mailto:tjbar@uga.edu">tjbar@uga.edu</a> 706-542-2903, Rm. 310</li> </ul>
<b>Lab syllabus:</b>	➤ Can be found here: <a href="http://www.physast.uga.edu/courses">http://www.physast.uga.edu/courses</a>
<b>Exams:</b>	<ul style="list-style-type: none"> <li>➤ There will be <b>three (3) in-class closed book closed notes midterm exams</b> on selected chapters, and <b>one (1) on-line cumulative mass final exam</b>.</li> <li>➤ No make-ups or re-scheduling permitted.</li> <li>➤ Must be taken with the section you are registered for.</li> </ul>
<b>Midterm exams:</b>	<ul style="list-style-type: none"> <li>➤ You are allowed to create and bring with you your own single page formula sheet (8.5 in. × 11 in.) containing any information you want, <b>all handwritten</b>. You may <b>only write on one side</b>.</li> <li>➤ A simple (non-graphing, non-symbolic, non-programmable) scientific calculator. No other electronic device(s) permitted.</li> <li>➤ You must have a valid UGA ID on you to take the test.</li> <li>➤ You must work individually.</li> <li>➤ You must submit all exam materials (the test form, the scantron, the formula sheet, and all scratch paper) at the end of the exam.</li> <li>➤ You are prohibited from copying and/or taking any test materials outside of the examination room.</li> <li>➤ Cell phones and/or any other electronic devices (except for non-graphing calculators) are absolutely prohibited.</li> </ul>

<b>Mass final exam:</b>	<ul style="list-style-type: none"> <li>➤ The Mass Final Exam is a multiple-choice on-line test, to be completed on the eLC (located under <b>Tools → Quizzes</b>)</li> <li>➤ <b>Access opens at 7pm and closes at 10pm on Monday, May 09</b></li> <li>➤ The test will be split into 2 parts (8 problems each, with a total of 16 problems)</li> <li>➤ Each part will have a <b>time limit of 40 minutes</b> (+ extra time for the DRC students)</li> <li>➤ Two attempts allowed (best attempt counts)</li> <li>➤ Once attempt started, must be completed within allotted time (40 minutes)</li> <li>➤ Do NOT use smart phones, since those tend to crash (as some students had previously reported); use a desk- or laptop instead</li> <li>➤ Make sure to save each answer and to finish each Part before disconnecting/logging out</li> <li>➤ <b>IMPORTANT:</b> The second attempt is a courtesy. It is offered as a means to mitigate against unexpected circumstances, such as, e.g., a power outage, etc., so do not ask for a 3<sup>rd</sup> attempt. Once the test had been configured on the eLC, no additional modifications will be done for any reason.</li> </ul>
<b>Grades:</b>	Your grades will be posted on the eLC-New, <a href="http://elcnew.uga.edu">http://elcnew.uga.edu</a>
<b>Grading policy:</b>	<p><b>20% LABS</b>  <b>20% in-class EXAM 1</b> (Multiple-choice (MC), no individual re-scheduling or make up)  <b>20% in-class EXAM 2</b> (MC, no individual re-scheduling or make up)  <b>20% in-class EXAM 3</b> (MC, no individual re-scheduling or make up)  <b>20% on-line MASS FINAL EXAM</b> (MC, cumulative; no individual re-scheduling or make up)</p> <p>NOTE: Our departmental policy prohibits rescheduling of missed exams (regardless of the reason, be it a court appearance, immigration, medical, family, sporting, or any other type of emergency). The final exam will replace your worst midterm if it is better (say, if you got a zero for non-attendance, etc.). That replacement will <b>not</b> be visible on the eLC.</p> <p>Your overall grade will become available on Athena after the corresponding deadline. Email me only if you strongly believe there was a mistake in my calculation. Do not ask for a bump-up, a curve, or any extra credit. Make sure to include your class and section number.</p> <p><b>100% TOTAL = 20% LABS + 80% EXAMS (including the Final)</b></p>
<b>Cut-offs:</b>	<p>F : [0, 60)  D : [60, 68)  C-: [68, 70) C: [70, 75) C+: [75, 78)  B-: [78, 80) B: [80, 85) B+: [85, 88)  A-: [88, 90) A: [90, 100]</p> <p style="text-align: right;">NOTE: No rounding; 89.99 = A- , etc.</p>
<b>Main objective and strategy for success:</b>	<p>In this course, learning how to solve physics problems should be regarded as your ultimate objective. I will not be able to cover everything you are expected to know in class. You will have to independently work through some of the topics at home. Since most of your grade would come from problem solving, do the following:</p> <ol style="list-style-type: none"> <li>1. <b>Start working from Day One.</b></li> <li>2. Read each chapter before it is discussed in class.</li> <li>3. Attend every lecture.</li> <li>4. Take good notes.</li> <li>5. Participate actively in discussions.</li> <li>6. Ask questions.</li> <li>7. Re-read and re-work the chapter and the notes carefully after class.</li> <li>8. Re-work problems solved in class</li> <li>9. Solve all assigned end-of-chapter problems. Follow the formula: "Five problems a day keep the bad grade away."</li> <li>10. Concepts first. Think before plugging-and-chugging.</li> <li>11. Ace the labs.</li> <li>12. Use a buddy system; find a friend with whom to discuss physics.</li> <li>13. Form a study group.</li> <li>14. Teach physics to others.</li> <li>15. Finally, think about physics on a regular basis.</li> <li>16. If everything fails, learn from your mistakes. Drop the class before the deadline and re-take it at a later time.</li> </ol>

<b>Grade appeal:</b>	Grade appeals are resolved by following our departmental due procedure as described here: <a href="https://www.physast.uga.edu/policies/policiesonstudentissues/grievance">https://www.physast.uga.edu/policies/policiesonstudentissues/grievance</a>
<b>Incompletes:</b>	No "Incompletes" will be assigned in this class unless requested by the UGA Student Care and Outreach office.
<b>Hardship withdrawals:</b>	If your course performance is significantly affected by issues beyond your control, please seek assistance promptly from Student Care and Outreach 706-542-7774 or visit <a href="https://sco.uga.edu">https://sco.uga.edu</a> . They will help you navigate any difficult circumstances you may be facing by connecting you with the appropriate resources or services. It is always easier to address exceptional circumstances when you raise these concerns as early as possible. Waiting until the end of the semester to take action may limit my ability to provide appropriate support.
<b>Mental Health and Wellness Resources:</b>	UGA has several resources for a student seeking mental health services ( <a href="https://www.uhs.uga.edu/bewelluga/bewelluga">https://www.uhs.uga.edu/bewelluga/bewelluga</a> ) or crisis support ( <a href="https://www.uhs.uga.edu/info/emergencies">https://www.uhs.uga.edu/info/emergencies</a> ). If you need help managing stress anxiety, relationships, etc., please visit BeWellUGA ( <a href="https://www.uhs.uga.edu/bewelluga/bewelluga">https://www.uhs.uga.edu/bewelluga/bewelluga</a> ) for a list of FREE workshops, classes, mentoring, and health coaching led by licensed clinicians and health educators in the University Health Center. Additional resources can be accessed through the UGA App.

<b>2022 Spring Schedule</b>					
Week	Day	Date	Reading	Topic	End-of-Chapter Exam Practice Problems (5 <sup>th</sup> edition)
1	M	Jan. 10			
	T	Jan. 11	26.1-2	Intro to this course; 6 Principles of GO GO: Reflection, plane mirrors	Ch. 26: 1 – 47 (odd), 51, 53, 63, 65, 69 – 81 (odd),
	W	Jan. 12			
	R	Jan. 13	26.3-4	GO: Spherical mirrors, ray tracing, mirror equation	
	F	Jan. 14		<b>Drop/Add ends</b>	
2	M	Jan. 17		<b>MLK Day</b>	
	T	Jan. 18	26.3-4	GO: Spherical mirrors, ray tracing, mirror equation (cont.)	
	W	Jan. 19			
	R	Jan. 20	26.5	GO: Refraction & total internal reflection	
	F	Jan. 21			
3	M	Jan. 24			
	T	Jan. 25	26.6-7	GO: Ray tracing for lenses; thin lens equation	
	W	Jan. 26			
	R	Jan. 27	27.1-2	OI: Human eye, camera, corrective optics	Ch. 27: 1 – 11 (odd), 17 – 31 (odd), 49 – 77 (odd)
	F	Jan. 28			
4	M	Jan. 31			
	T	Feb. 01	27.1-2	OI: Human eye, camera, corrective optics (cont.)	
	W	Feb. 02			
	R	Feb. 03	27.3-5	OI: Magnifying glass, microscope, telescope	
	F	Feb. 04			
5	M	Feb. 07			
	T	Feb. 08		<b>In-class EXAM 1 (Ch. 26, 27)</b>	
	W	Feb. 09			
	R	Feb. 10	28.1-2	WO: Superposition & interference; Two-slit experiment	Ch. 28: 1 – 27 (odd), 43 – 51 (odd), 61 – 73 (odd)
	F	Feb. 11			
6	M	Feb. 14			
	T	Feb. 15	28.4,6	WO: Single-slit diffraction; diffraction gratings; spectrometers	
	W	Feb. 16			
	R	Feb. 17	28.4,6	WO: Single-slit diffraction; diffraction gratings; spectrometers (cont.)	

	F	Feb. 18			
7	M	Feb. 21			
	T	Feb. 22	19.1-3	EF: Electric charge; insulators & conductors; Coulomb's Law	Ch. 19: 1 – 55 (odd)
	W	Feb. 23			
	R	Feb. 24	19.1-3	EF: Electric charge; insulators & conductors; Coulomb's Law (cont.)	
	F	Feb. 25			
8	M	Feb. 28			
	T	Mar. 01	19.4-7	EF: Electric field; field lines; capacitor; shielding & charging by induction; Electric flux & Gauss's Law	
	W	Mar. 02			
	R	Mar. 03		In-class EXAM 2 (Ch. 26, 27, 28, 19)	
	F	Mar. 04			
9	M	Mar. 07			
	T	Mar. 08			
	W	Mar. 09		SPRING BREAK	
	R	Mar. 10			
	F	Mar. 11			
10	M	Mar. 14			
	T	Mar. 15	20.1-2 20.3-4	REVISITING: Energy, WkET & LCE EP: Electric potential & energy; energy conservation EP: Electric potential of point charges; equipotential surfaces & E-field	Ch. 20: 1 – 71 (odd)
	W	Mar. 16			
	R	Mar. 17	20.5-6	EP: Capacitors & dielectrics; electric energy storage	
	F	Mar. 18			
11	M	Mar. 21			
	T	Mar. 22	21.1-3	DC: Electric current; Ohm's Law; Energy & power in electric circuits	Ch. 21: 1 – 59 (odd)
	W	Mar. 23			
	R	Mar. 24	21.4-5	DC: Simple circuits; resistors in series & parallel Withdrawal deadline	
	F	Mar. 25			
12	M	Mar. 28			
	T	Mar. 29	21.6-7	DC: Kirchhoff's Rules	
	W	Mar. 30			
	R	Mar. 31		In-class EXAM 3 (Ch. 26, 27, 28, 19, 20, 21)	
	F	Apr. 01			
13	M	Apr. 04			
	T	Apr. 05	22.1-2	MF: Magnetic field; magnetic force on moving charges	Ch. 22: 1 – 59 (odd)
	W	Apr. 06			
	R	Apr. 07	22.3	MF: Motion of charged particles in a magnetic field	
	F	Apr. 08			
14	M	Apr. 11			
	T	Apr. 12	22.4-5	MF: Magnetic force on current-carrying wire; loops & magnetic torque (cont.)	
	W	Apr. 13			
	R	Apr. 14		(cont.)	
	F	Apr. 15			
15	M	Apr. 18			
	T	Apr. 19	23.1 23.2-4	EMI: Induced e.m.f. EMI: Magnetic flux; Faraday's Law; Lenz's Rule	Ch. 23: 1 – 73 (odd)
	W	Apr. 20			
	R	Apr. 21	23.5 23.6	EMI: Motional e.m.f. EMI: Generators & Motors	
	F	Apr. 22			

16	M	Apr. 25			
	T	Apr. 26	23.7-8	EMI: Inductance; <i>RL</i> -Circuits	
	W	Apr. 27			
	R	Apr. 28	23.7-8	EMI: Inductance; <i>RL</i> -Circuits (cont.)	
	F	Apr. 29			
17	M	May 02			
	T	May 03	23.9-10	EMI: Energy stored in the magnetic field; Transformers	
				<b>Classes End</b>	
	W	May 04		<b>Reading Day</b>	
	R	May 05			
18	F	May 06			
	M	May 09		<b>On-line cumulative Mass FINAL EXAM (on the eLC, access open 7-10 pm)</b>	
	T	May 10			
	W	May 11			
	R	May 12			
19	F	May 13		Commencement	
	M	May 16		<b>Grades due (12:00 PM)</b>	
	T	May 17			

**Spring 2022 Calendar**  
**Based on 50 minute classes (MWF), 75 minute classes (TTH), 15 weeks of classes + Exams**

Orientation / Advisement	Jan. 6	Thursday
Registration	Jan. 7	Friday
Classes Begin	Jan. 10	Monday
Drop / Add for undergraduate and graduate level courses	Jan. 10 - 14	Monday - Friday
Holiday: Martin Luther King Jr. Day	Jan. 17	Monday
Midterm	Mar. 3	Thursday
Last Day of Classes prior to Spring Break	Mar. 4	Friday
Spring Break	Mar. 7 - 11	Monday – Friday
Classes Resume	Mar. 14	Monday
Withdrawal Deadline	Mar. 24	Thursday
Classes End	May 3	Tuesday
Reading Day	May 4	Wednesday
Final Exams	May 5 - 11	Thursday - Wednesday
Commencement	May 13	Friday
Grades Due	May 16	Monday, 12 PM