

PHYS 1112: Introductory Physics — Optics, Electricity & Magnetism

Section: 27133; M,W,F 8:00 A.M. – 8:50 A.M.

Lectures will be given F2F at regular class times. No recordings!

Attendance is required, but will not be monitored!

Instructor: Professor Henning H. Meyer

Office hours: M,W,F 11:15A.M. -12:00 Noon

Q&A Zoom Session: Day before exam 5:00 P.M. - 6:00 P.M.

Office: Room 217, Physics Building

Email: hmeyer@uga.edu, add 'PHYS1112 Period1' to subject line.

No individual communication via ELC!!!

ELC: General announcements; Posting of lecture slides/comments, homework or exam solutions, practice exams.

I. GENERAL INFORMATION

- Primary method of communication: during office hours;
- Email through: hmeyer@uga.edu
- Text: James S. Walker, Physics, 5th edition (2017). (3rd or 4th editions are fine, but **you will be responsible** for knowing about any changes in content.)
- Make sure you get a copy that says: w/**MasteringPhysics**.
- Mastering Physics: To register look for Course Name: **PHYS1112-Spring2023-Meyer**
- with Course ID: **meyer74793** – You will need to enter your UGA ID, i.e. your 81X number. **Enter 9 digits only – do not enter the last digit. Please count the digits!!**

II. ACADEMIC HONESTY

- UGA Student Honor Code: "**I will be academically honest in all of my academic work and will not tolerate academic dishonesty of others.**"
The UGA has a comprehensive academic honesty policy, [A Culture of Honesty](http://honesty.uga.edu/), which is available from the Office of Instruction at <http://honesty.uga.edu/>. This policy covers all academic work. All students are responsible for fully understanding and abiding by this policy.
- If you have any question about the appropriateness of your actions or your work, you are obligated to ask me for clarification.

III. GRADING POLICY

- Overall grade will be determined as follows:
- 25% LAB grade (completion mandatory; see Section IV for details)

15% HOMEWORK (no makeup; working in groups OK; must be submitted individually)

60% Exams (each exam (incl. Final) is worth 15%, worst of exam 1-4 and final is dropped)

EXAM 1 (no makeup; must be taken with the section you are registered for)

EXAM 2 (no makeup; must be taken with the section you are registered for)

EXAM 3 (no makeup; must be taken with the section you are registered for)

EXAM 4 (no makeup; must be taken with the section you are registered for)

Final EXAM (comprehensive, no makeup, unless required by University Rules)

100% TOTAL

The final exam is optional. If you are satisfied with the results in your 4 in class exams, you do not have to take the final.

- Letter grades will be assigned in accordance with the following cut-offs (for additional rules see below):
- F: [0, 55) D: [55, 65) C-: [65, 68) C: [68, 72) C+: [72, 75)
- B-: [75, 78) B: [78, 82) B+: [82, 85) A-: [85, 90) A: [90, 100]
- NOTE: There is no rounding; 64.99 = "D", etc.

IV. LABS (25%)

- All students are required to complete the LAB part of the class.
- Students who are not assigned a lab grade due to non-completion will automatically receive a failing grade ("F") for the course.
- PLEASE NOTE:
 - Labs will start week of January 30.
 - Lab syllabus: needs update

V. HOMEWORK (15%)

- There will be a number of HOMEWORK assignments posted online (on the Mastering Physics website).
- All assignments count towards your grade.
- All assignments must be submitted on time.
- No makeup, no late submission.
- **Rules:**
 - You may work in groups.
 - You submit your work individually.

VI and VII. In Class EXAMS and Final Exam (60%)

- There will be a total of four (4) in-class EXAMS on selected chapters.
- Final exam is given as a mass exam on **Wednesday, May 3, 2023, 7:00 - 10:00 P.M.**
- **The final exam is comprehensive (all chapters covered in class).**
- **No makeups or re-scheduling unless required by University rules.**
- Worst of the 5 exam (four (4) in-class EXAMS and Final Exam) grades will be dropped (such as, *e.g.*, a "0" due to non-completion), so, technically, each exam is worth 15%.
- **Rules for the EXAMS:**
 - Recommendation: Prepare ONE (1) STANDARD SHEET of paper containing anything you want (*e.g.*, physical constants, formulae, diagrams, problem solutions, *etc.*) ALL HANDWRITTEN. You may write on both sides
 - A simple (non-graphing, non-symbolic, non-programmable) scientific calculator.
 - No other electronic device(s) permitted.
 - Must work individually.

VIII. INCOMPLETES

- You may be assigned an “I” (incomplete) for the course in accordance with the UGA Regulations, provided all of the following applies:
 - You received a non-failing grade in LABS (> 70)
 - You received a non-failing grade ($> 55\%$) on at least one EXAM,
 - No violation of the Academic Honesty Policy took place during the course of the semester.
 - There is a request by **the UGA Student Care and Outreach office**.

IX. ABSENCES

- **You are responsible** for obtaining any announcements/materials/information that were given out in a class that you missed.
- As demanded by UGA, the class is given strictly F2F. But you will find on ELC under Content and then under Lecture Slides, the slides I will discuss in class. Under Lecture Comments, you will find essentially a transcript of my discussion for the slides. Furthermore, homework assignments are given online through Mastering Physics. You find instructions on how to sign up for MP under ELC->Content-> Syllabus. Finally, for each chapter, I provide a practice exam with notes to be found under ELC->Content->Practice Exams. Currently, all material for the first exam is already uploaded or will be uploaded shortly.
- Typically, I will upload to ELC all materials for a specific chapter (slides, transcripts, practice exam) before I start the chapter

X. WITHDRAWALS

- The Undergraduate Bulletin and the Registrar’s Office website describe the University policies regarding withdrawals and incompletes. The deadline for withdrawal is **Thursday, March 23rd**.

XI. TUTORS

- Tutors are available through the following:
 - Department of Physics and Astronomy: <https://www.physast.uga.edu/tutors/>
 - UGA Tutoring Program: <https://dae.uga.edu/services/tutoring/> Please remember: the goal is to *learn* from your tutor, not for them to do your homework for you.

XII. HOW TO DO WELL IN THIS CLASS

- Read each chapter before it is discussed in class.
- Attend every lecture.
- Participate actively in discussions.
- Re-read chapter carefully after class. Rework the notes taken during lecture.
- Do assigned homework.
- Solve as many end-of-chapter problems as possible.
- Concepts first. Do NOT plug-and-chug.
- Use a buddy system: find a friend with whom to discuss physics.
- Think about physics on a regular basis.
- If everything fails, consider dropping the class before the deadline and retaking it at a later time.

XIII. Mental Health and Wellness Resources

1. If you or someone you know needs assistance, you are encouraged to contact Student Care and Outreach in the Division of Student Affairs at 706-542-7774 or visit <https://sco.uga.edu>. They will help you navigate any difficult circumstances you may be facing by connecting you with the appropriate resources or services.
2. UGA has several resources for a student seeking mental health services (<https://www.uhs.uga.edu/bewelluga/bewelluga>) or crisis support (<https://www.uhs.uga.edu/info/emergencies>).
3. If you need help managing stress anxiety, relationships, etc., please visit BeWellUGA (<https://www.uhs.uga.edu/bewelluga/bewelluga>) for a list of FREE workshops, classes, mentoring, and health coaching led by licensed clinicians and health educators in the University Health Center.
4. Additional resources can be accessed through the UGA App.

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

TABLE I: Fall 2023 Master Schedule (**ATTENTION:** This schedule is preliminary. It is subject to modification, possibly including exam dates.)

Week	Date	Reading	Topics	Day
1	Jan 9 Jan 11 Jan 13	26.1-4 26.5-7	Intro to this course; Principles of GO GO: Reflection; Plane mirrors; Spherical mirrors GO: Spherical mirrors, Refraction; Total internal reflection	M W F
2	Jan 16 Jan 18 Jan 20	26.5-7 27.1-2	MLK GO: Ray tracing for lenses; thin lens equation OI: Human eye, camera;	M W F
3	Jan 23 Jan 25 Jan 27	27.1-2 27.3-5	OI: Human eye, camera; Corrective optics OI: Human eye, camera; Corrective optics OI: Magnifying glass; Microscope; Telescope	M W F
4	Jan 30 Feb 1(E1) Feb 3	28.1-2	Review; Problem Solving EXAM 1 (Chap26,27) WO: Superposition & interference, two-slit experiment	M W F
5	Feb 6 Feb 8 Feb 10	28.4-6 19.1-3	WO: Diffraction gratings WO: Single-slit diffraction, Resolution EF: Electric charge	M W F
6	Feb 13 Feb 15 Feb 17	19.4-5 19.6-7	EF: Insulators & conductors; Coulomb's Law EF: Electric field; field lines; capacitor EF: Shield. & charge by induction, El. flux & Gauss' Law	M W F
7	Feb 20 Feb 22 Feb 24(E2)		EF: Electric flux & Gauss' Law Review; Problem Solving EXAM 2 (Chap28,19)	M W F
9	Feb 27 Mar 1 Mar 3 Mar 6-10	20.1-2 20.3-4	REVISITING: Energy, WE-Theorem & Law-CE; EP: Electric potential & energy; Energy conservation EP: Electric potential of point charges; Spring Break	M W F
10	Mar 13 Mar 15 Mar 17	20.3-4 20.5-6 21.1-4	EP: Equipotential surfaces & E-field EP: Capacitors & dielectrics; Electric energy storage DC: El. current; Ohm's Law; Energy & pow in El.Circ.	M W F
11	Mar 20 Mar 22 Mar 23 Mar 24	21.5-7	DC: Energy & power in el..Circuits DC: Resistors in series & parallel; Kirchhoff's Rule, RC-circ. Withdrawal Deadline Review; Problem Solving	M W Th F
12	Mar 27 (E3) Mar 29 Mar 31	22.1-4 22.4-5	EXAM 3 (Chap20,21) MF: Magnetic field; Magn. force on moving charges MF: Magnetic force on current-carrying wire	M W F
13	Apr 3 Apr 5 Apr 7	22.6-8	MF: Magnetic force on current loops & magn. torque MF: Ampere's Law; loops & solenoids; Magnetism in matter Review; Problem Solving	M W F
14	Apr 10 Apr 12 Apr 14	23.1-4 23.5-6	EMI: Ind. EMF; Magnetic flux; Faraday's Law; Lenz's Rule EMI: Ind. EMF; Magnetic flux; Faraday's Law; Lenz's Rule EMI: Work & E. Energy; Generators	M W F
15	Apr 17 Apr 19 Apr 21 (E4)	23.5-6	EMI: Work & E. Energy; Generators Review; Problem Solving EXAM 4 (Chap22,23)	M W F
16	Apr 24 Apr 25 Apr 27	25.1-2 25.3-5	EMW: Production and Propagation EMW: Power, Energy and Polarization Review; Problem Solving	M W F
17	May 1		Review; Problem Solving	M
	May 3		FINAL EXAM (Chap19-23,26-28) Time: 7-10pm	W

GO = Geometric Optics; OI= Optical Instruments; WO= Wave Optics; EF=Electric Field; EP= Electric Potential; MF=Magnetic Field; EMI= Electro-Magnetic Induction; EMW= Electro-Magnetic Waves