PHYS 1402-01: COLLEGE PHYSICS II

INSTRUCTOR: Jim Drachenberg, Ph.D. Office: Archer 100E
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Office Hours: M 12:30 – 1:30 PM, T 12 – 2 PM, W 11 AM – 12 PM (or by appointment)

REQUIRED COURSE TEXTBOOK: ***College Physics*** (3rd edition technology update) by Knight, Jones, and Field
(Including an access code for the Mastering Physics tools)
PHYS 1402: College Physics II Laboratory Manual

LECTURE: MW 1:50-3:10 PM (1402-01) or TR 2:20-3:40 PM (1402-02) in Archer 107
LABORATORY: R 8:00 – 10:00 AM (11) or 11:30 AM – 1:30 PM (12) or 1:35– 3:35 PM (13) in Archer 113

CLASS WEB SITE: https://luonline.blackboard.com/

STUDENT LEARNING OUTCOMES: During the course of this semester, students will

1. Learn and communicate fundamental concepts of electromagnetic phenomena, optics, and modern physics.
2. Master problem-solving skills applying the laws of physics and appropriate mathematical manipulations, including algebra and trigonometry.
3. Acquire a practical knowledge of physical principles as illustrated in laboratory exercises

CORE CURRICULUM OBJECTIVES: Upon completion of this course, the student will demonstrate his or her abilities to think critically, communicate quantitative information, develop empirical and quantitative skills, and work in team:

1. Critical Thinking: Develop and present a logical, consistent plan to solve a problem, recognize consequences of the solution, synthesis the information, and articulate a reason for choosing solution method. The analysis of data and observable facts will result in informed conclusions.

2. Communication: Use and present quantitative information in connection with an argument or problem solution and explicate it in an effective format. Demonstrate abilities to communicate the interpretation of ideas in writing.

3. Empirical and Quantitative: Manipulate and analyze numerical data or observable facts resulting in informed conclusions. Report a detailed solution to a problem using experimental data, with evidence to relevant contextual factors and possible approaches for solving the problem. Draw insightful conclusions.

4. Teamwork: Ability to work well in a team, to cooperate in collecting experimental data, to contribute in any leadership role, to accept leadership and guide the group to successful results.

GRADE: Course grades will be based on the following measures with the **approximate weights** as shown.

Exams (3)	15% each for a total of	45%
Quizzes		15%
Homework		10%
Laboratory		10%
Final Exam		20%

Course letter grades will be assigned using the following **approximate** scale:
A: 90 – 100% B: 80 – 89% C: 70 – 80% D: 60 – 70% F: < 60%

INCOMPLETE GRADES: The grade of "I" may be given when any requirement of the course, including the final examination, is not completed. Arrangements to complete deficiencies in a course should be made with the instructor prior to the end of the semester or term. Incomplete work must be finished during the next long semester or the Records Office will change the "I" to the grade of "F." While the extension may be granted by the instructor with the approval of his/her Department Chair and Academic Dean, once the "I" is changed to an "F" it cannot be changed back to an "I." In this case, either a "change of grade" procedure must be initiated or the course must then be repeated if credit is desired. The instructor may record the grade of "F" for a student who is absent from the final examinations and is not passing the course.

DROP POLICY: Please make note of the three dates indicated in this drop policy. Any drop will be your responsibility; I will not drop a student from the course.
***January 31, 2018*:** (Census Date-Six Drop Rule does not apply) A student may drop or withdraw without consulting with the instructor. The Six Drop Rule does not apply to a drop before 5:00 PM.
***February 19, 2018*:** (Six Drop Rule applies) A student may drop or withdraw from the course without academic penalty and receive a Q, however, the Six Drop Rule applies. The student will consult with the instructor and the Records Office to initiate a drop.
***April 4, 2018*:** (Six Drop Rule applies) Last day to drop or withdraw with academic penalty; the student must be passing the course at the time of the requested drop in order to receive a Q. The drop form, including all required signatures, must arrive in the Records Office by no later than 4:00 PM. No drop is allowed after this date except in extreme extenuating circumstances. Any "late drop" must be approved by the instructor, department chair, college dean, and provost.

ACCOMMODATIONS THROUGH THE DISABILITY RESOURCE CENTER: Lamar University is committed to providing equitable access to learning opportunities for all students. The Disability Resource Center (DRC) is located in the Communications building room 105. Office staff collaborate with students who have disabilities to provide and/or arrange reasonable accommodations. If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or physical), please contact the DRC at 409-880-8347 or drc@lamar.edu to arrange a confidential appointment with the Director of the DRC to explore possible options regarding equitable access and reasonable accommodations. If you are registered with DRC and have a current letter requesting reasonable accommodations, we encourage you to contact your instructor early in the semester to review how the accommodations will be applied in the course. http://www.lamar.edu/disability-resource-center/

HOMEWORK: Reading assignments will be given each week. Students are expected to read assignments before coming to class. You will find this reading essential in preparing for and benefiting from class time.

Practical understanding of physics benefits incalculably from working problems. Weekly assignments will be given throughout the semester. The assignments will be administered through the Mastering Physics online tools. **No late assignments will be accepted**.

LABORATORY: Laboratory attendance is required. To receive credit for PHYS 1402, a student may not miss more than 2 of the laboratory sessions. If a student misses more than 2 laboratories, the student must drop the course. Attendance and full participation in all laboratory sessions is required to receive full credit. A makeup lab near the end of the semester will offered. All other policies will be set by the laboratory instructor.

QUIZZES: There will be weekly quizzes administered during the class period. These may or may not be announced and may cover any assigned material including reading assigned for the day on which the quiz is given. Make-up quizzes may be administered only for university-approved absences (e.g. university-sponsored activity), provided prior written notification and documentation is provided to the instructor prior to the absence.

Each week there will be an online quiz (Web Quiz). Web Quizzes will have approximately 10 multiple-choice questions. Generally, web quizzes will be designed to test conceptual understanding of the principles presented in class. Once a student has initiated a web quiz, the student must answer the questions and submit the answers. Students are not permitted to return to studying in order to take the quiz at a later time. **There will be no make-up Web quizzes**.

EXAMS: There will be three exams during the semester. Make-up exams may be administered only for university-approved absences (e.g. university-sponsored activity), provided written notification and documentation are provided to the instructor *prior to the absence*. There will be a comprehensive final exam also emphasizing material covered since the third examination. The final examination will be **Wednesday, May 2, from 11 AM – 1:30 PM for 1402-01 and Tuesday, May 8, from 2 – 4:30 PM for 1402-02 in Archer 107**. The final exam is required. **There will be no make-up final exam**.

ATTENDANCE: Attendance in class, daily, is essential. If a student is unable to attend class, the instructor must be informed by e-mail, telephone, voice mail, or in person **before** the class. If such is impossible, the student is expected to contact the instructor after the absence to offer an explanation and obtain any information distributed during class. Attendance will be taken during class and will be considered in the final grade assessment at the instructor's discretion. Despite absence, students are fully responsible for material discussed in class. If a student is absent from a quiz or examination, the student's grade for the quiz or examination will be zero (0) unless prior approval is given by the instructor.

ACADEMIC INTEGRITY: Students are expected to maintain complete honesty and integrity in their academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. Students are specifically warned against all forms of cheating and plagiarism. The *Lamar University Student Handbook* clearly reads: "Any student found guilty of academic dishonesty in any phase of academic work will be subjected to disciplinary action. Punishable offenses include, but are not limited to, cheating on an examination or academic work which is to be submitted, plagiarism, collusion, and the abuse of source materials." One aspect of the *Handbook*'s definition of cheating includes "purchasing or otherwise acquiring and submitting as one's own work any research paper or other writing assignment prepared by an individual or firm." Plagiarism is defined as "the appropriation and the unacknowledged incorporation of another's work or ideas into one's own and submitted for credit." Faculty members in the College of arts and Sciences investigate all cases of suspected plagiarism. Any student who is found cheating in this course will receive a course grade of F.
http://students.lamar.edu/student-handbook.html

For tests and quizzes, students will be given specific instructions concerning authorized resources. Students are encouraged to study and discuss homework assignments with classmates if such arrangements are mutually beneficial. Students are strongly encouraged and welcomed to consult the instructor for assistance on assignments. However, assignments submitted in a student's name must reflect work original to the student. **Copying the work of students *past or present* is considered a violation of the Academic Integrity Policy and will lead to disciplinary action including but not limited to loss of credit, course grade reduction, and automatic course failure**.

For quizzes and exams, only a pencil, blank paper, and a calculator are permitted. Books, notes, and other electronic devices (e.g. cell phones) are considered unauthorized aid and the use thereof constitutes violation of the Academic Honesty Policy. Calculators may be used only for simple numerical and trigonometric calculations. Students may not use calculators to store formulae. Students are not permitted to discuss the quizzes or exams with anyone who has not yet taken it.

COURSE EVALUATIONS: You will have an opportunity to evaluate all aspects of this course in a formal process to be completed online near the end of the term. You will receive an email reminder through your LU account.

CAMPUS CLOSURE: In the event of an announced campus closure in excess of four days due to a hurricane or other disaster, students are expected to login to Lamar University's website's homepage for instructions about continuing courses remotely. http://lamar.edu

EMERGENCY PROCEDURES: Many types of emergencies can occur on campus; instructions for severe weather or violence/active shooter, fire, or chemical release can be found at:

http://www.lamar.edu/about-lu/administration/risk-management/index.html.

Following are procedures for the first two:

Severe Weather

- Follow the directions of the instructor or emergency personnel.
- Seek shelter in an interior room or hallway on the lowest floor, putting as many walls as possible between you and the outside.
- If you are in a multi-story building, and you cannot get to the lowest floor, pick a hallway in the center of the building.
- Stay in the center of the room, away from exterior walls, windows, and doors.

Violence/Active Shooter (CADD)

- **CALL** - 8-3-1-1 from a campus phone (880-8311 from a cell phone). Note: Calling 9-1-1 from either a campus phone or cell phone will contact Beaumont City Police Dispatch rather than University Police.
- **AVOID** - If possible, self-evacuate to a safe area outside the building. Follow directions of police officers.
- **DENY** - Barricade the door with desks, chairs, bookcases or any other items. Move to a place inside the room where you are not visible. Turn off the lights and remain quiet. Remain there until told by police it is safe.
- **DEFEND** - Use chairs, desks, cell phones or whatever is immediately available to distract and/or defend yourself and others from attack.

Lamar University expressly prohibits intimidation and harassment of students, faculty, staff, or applicants.
http://students.lamar.edu/academic-support/code-of-conduct.html

COURSE SCHEDULE: The following tentative course schedule based on the textbook material indicates textbook chapters and exam dates, all of which are subject to change by the instructor.

1402-01	1402-02	Topics Covered
		UNIT 1: WAVES AND OPTICS
01/17	01/16	Course Overview; Oscillatory Motion (14.1-4, 8.3)
01/22	01/18	Mechanical Waves (15.1-3, 16.1-3)
01/24	01/23	Reflection and Refraction (17.1, 18.1-4); Dispersion of Light (19.6)
01/29	01/25	Lenses and Mirrors (18.5-7, 19.2, 4-5)
01/31	01/30	Interference (16.6, 17.1-2); Diffraction Gratings (17.3)
02/05	02/01	Thin-film Interference (17.4)
02/07	02/06	Exam #1 (Ch. 14-16, 18)
02/12	02/08	Single-slit Diffraction (17.5); Diffraction and Resolution (17.6)
		UNIT 2: ELECTRICITY
02/14	02/13	Electric Charge (20.1-2); Electric Force (20.3)
02/19	02/15	Electric Field (20.4-5)
02/21	02/20	Conductors (20.6)
02/26	02/22	Electric Potential (21.1-5)
02/28	02/27	Capacitance and Capacitors (21.7-8)
03/05	03/01	Capacitors in Combination (23.6)
	03/06	Electric Current and Resistance (22.1-6)
03/07	03/08	Exam #2 (17, 20-21, 23.6)
		03/12-16: Spring Break (No Classes)
03/19		Electric Current and Resistance (22.1-6)
		UNIT 3: CIRCUITS AND MAGNETISM
03/21	03/20	Circuits I: Resistors in Combination (23.1, 3-4)
03/26	03/22	Circuits II: Kirchhoff's Rules (23.2, 4-5)
03/28	03/27	Guest Lecture! (subject to change)
04/02	03/29	Magnetic Force (24.1-2, 5)
		03/30: Good Friday (No Classes)
04/04	04/03	Current-carrying Conductors (24.3-4, 6-7)
04/09	04/05	Electromagnetic Induction I (25.1, 3-4)
	04/10	Electromagnetic Induction II (25.2)
04/11	04/12	Exam #3 (22-24)
04/16		Electromagnetic Induction II (25.2)
04/18	04/17	E/M Waves (25.5, 7)
		UNIT 4: MODERN PHYSICS
04/23	04/19	Elements of Einstein Relativity (27.1-10)
04/25	04/24	Quantum Physics (28.1-8)
04/30	04/26	Review
05/02		Final Exam for 1402-01, 11 AM - 1:30 PM
	05/08	Final Exam for 1402-02, 2 PM - 4:30 PM

LABORATORY SCHEDULE:

01/18	Laboratory 1—Simple Harmonic Motion
01/25	Laboratory 2—Waves
02/01	Laboratory 3—Thin Lenses
02/08	No Laboratory
02/15	Laboratory 4—Diffraction and Interference
02/22	Laboratory 5—Conductors in Electrostatic Equilibrium and Electric Field Lines
03/01	Laboratory 6—Capacitors
03/08	No Laboratory
03/15	Spring Break (No Laboratory)
03/22	Laboratory 7—Ohm's Law, Combination of Resistors
03/29	Laboratory 8—Field of a Magnetic Dipole
04/05	Laboratory 9—Magnetic Field of the Earth
04/12	No Laboratory
04/19	Laboratory 10—Electron Charge-to-mass Ratio
04/26	Make-up Laboratory—Atomic Spectroscopy, Spectrum of Hydrogen
05/03	No Laboratory (End of Semester)