Syllabus for PHY 102—General Physics II Lecture 3.0 Credit Hours Spring 2023

COURSE DESCRIPTION A continuation of PHY 101 Lecture. Includes electricity, magnetism, light and modern physics. Prerequisite: PHY 101 Lecture Co-requisite: PHY 102 Lab. Course fee: \$35

II. STUDENT LEARNING OUTCOMES FOR THIS COURSE

After completing this course successfully, students will be able to:

- A. Demonstrate concepts of physics performing satisfactorily on homework and tests.
- B. Solve problems by applying the laws of physics and the tool of mathematics.
- C. Demonstrate communication skills by answering questions in class, writing reports and journals, and turning in homework assignments.
- D. Show design and team-work capabilities by working on a project.
- E. Apply the scientific method in analyzing natural physical phenomena in written reports.
- F. Demonstrate professional and ethical responsibility through punctual class attendance and stewardship of resources.

III. ASSOCIATED PROGRAMS

This course meets degree completion requirements for the following program:

A. General education:

I.

- a. The ability to interpret the Scriptures accurately in order to arrive at principles that serve as guidelines for living a Spirit-filled life.
- b. The ability to integrate knowledge in order to identify and weigh possible responses to different situations, and to process information—both analytically and critically—so as to determine the validity of different, competing claims; .
- c. An ability to formulate and develop knowledge about physical and natural world.
- d. The ability to develop flexible thinking patterns and to process information analytically in a manner that results in the creation of new forms and structures.
- e. The ability to access, evaluate, and use information, as well as to determine which sources to consult.
- f. The capacity to adapt to an international understanding in an increasingly interdependent global community, and to understand how current situations relate to events of the past
- g. An ability to communicate effectively both in written and spoken forms.
- h. The ability to effect change within various group settings by influencing and motivating others to accomplish a vision through communicating and carrying out key decisions

IV. UNIVERSITY OUTCOMES

This course aligns with the following University Outcomes as indicated on the last page:

- A. Spiritual Integrity
- B. Personal Resilience
- C. Intellectual Pursuit
- D. Global Engagement
- E. Bold Vision

V. TEXTBOOKS AND OTHER LEARNING RESOURCES

- A. **Required Materials**
 - 1. Textbooks
 - Raymond A. Serway and Chris Vuille. College Physics. 11 ed. Belmont, CA:
 - Thomson Brooke/Cole, 2011 with WebAssign. ISBN: 9781285737028
 - 2. Other
 - Scientific calculator
- B. **Optional Materials**
 - **Textbooks** 1.
 - None 2.
 - Other
 - None

VI. POLICIES AND PROCEDURES

- A. School Policies and Procedures
 - Attendance at each class or laboratory is mandatory in the School of Engineering 1. at Oral Roberts University. Excessive absences can reduce a student's grade or deny credit for the course
 - 2. Any student whose unexcused absences total 33% or more of the total number of class sessions receives an F for the course grade.
- B. **Course Policies and Procedures**
 - **Evaluation Procedures** 1

The final grade is a composite result of performance in exams, quizzes, homework problems, and class participation. The final exam constitutes approximately 25% of the final average, 25% of the final grade is based on 3 hour exams, 25% is based on homework problems, and 25% is based on guizzes. Grading scale:

A=90-100%	Excellent
B=80-89	Above Average
C=70-79	Average
D=60-69	Below Average
F=59% and below	Fail

- 2. Whole Person Assessment Requirements None
- Other Polices and/or Procedures 1.
 - The first five absences (excused or unexcused) do not result in a grade a. reduction. The numbers of absences allowed prior to grade reduction are designed to accommodate emergencies and illness. The final grade is be reduced by 2.5% if the amount of missed classes reaches 25% of all total sessions (10 classes). Make-up assignments (for full credit) are given only in extremely unavoidable situations **upon prior arrangement with instructor** or with valid medical or administrative excuse. Perfect attendance results in a 2.5% increase in final score. You can also earn extra credit by doing a special project and/or class participation.
 - Students are responsible for keeping up with the rest of the class (even if b. they are absent). Please find out what we studied during the class you missed from another student.
 - Solutions for assigned problems from sections covered in class are due in c. the next class—don't fall behind! Come to class with any questions you have from the homework. Come see me regularly; don't wait until you get in trouble. If you do get into trouble, get help immediately- don't wait!! Problem solving is much more than merely substituting numbers

for the symbols in a formula or fitting together the pieces of a jigsaw puzzle. Merely thumbing through the book until you find a formula that seems to fit or a worked-out example that resembles the problem is a waste of time and effort. You should study before tackling the problems. Problems enable you to find out whether or not you understand the assigned material. This is a good indicator of your motivation, initiative, and reliability.

- d. Show all work for the full credit. Messy papers (nontrimmed, nonstapled, or nonreadable) will result in a
- e. No Late work.
- f. An online quiz and homework is given every week during each chapter.
- g. Exams cover several chapters.
- h The final exam is comprehensive, partial credit applied.
- i. You could bring a formula sheet and submit it with your quiz or exam (handwritten, no copies, no work out problems). Illegal formula sheets result in a 0 score for the assignment. No calculator sharing!
- j. Students are expected to be in class on time. Those who would be late by more than 15 minutes should not enter the class unless the instructor was informed of the possible tardiness in advance. Also, please, let me know in advance that you need to leave early. I circulate an attendance sheet at the beginning of each class section. Students who are late cannot sign the attendance sheet once it is circulated.
- k. Chapters to be covered during a class period should be read before the class. There is a direct relationship between the amount of time you invest in a course and how much you learn. In keeping with my goal to maximizing your learning, this course requires a significant amount of your time. Form study groups. Learn from your mistakes: examine graded work carefully to understand your errors.
- 1. Please turn off your cell phones.
- m. No food in the classroom without valid medical reason.
- n. Lecture NEC 221/Lab NEC 121

Instructor: Dr. Elena Gregg, School of Engineering Office: NEC 204A, ext. 6253 egregg@oru.edu Admin. Secretary: Kerri Ophus Office NEC 208, ext. 6531

VII. COURSE CALENDAR

Week	Торіс	
1	Chapter 15: Electrical Forces	
	and Electrical Fields	
2	Chapter 16: Electrical	
	Energy and Capacitance	
3	Chapter 17: Current and	
	Resistance	
4	Chapter 18: Direct Current	
	Circuits	
	Exam 1: Ch 15-18	
5	Chapter 19: Magnetism	
6	Chapter 20: Induced	
	Voltages and Inductance	
7	Chapter 21: Alternating	
	Current Circuits and	
	Electromagnetic Waves	
	Exam 2: Ch. 19-21	
8	Chapters 22-23:	
	Reflection and Refraction of	
	Light; Mirrors and Lenses	
9	Chapters 24-25: Wave	
	Optics; Optical Instruments	
	Exam 3: Ch. 22-25	
10	Chapter 26: Relativity	
11	Spring Break	
12	Chapter 27: Quantum	
	Physics	
13	Chapter 28: Atomic Physics	
	Exam 3: Chapters 9-12	
14	Chapter 29: Nuclear Physics	
15	Chapter 30: Nuclear Energy	
	and Elementary particles	
	Exam 4: Ch 26-30	
16	TBA	
17	Final Examination	Chapters 15-30

Instructor may change the assignment schedule AT ANY TIME by verbal or written notification to the class.

Primary Program: General Education PHY 102—Physics II Lecture Spring 2023

This program contributes to the University and program outcomes as indicated below: **Significant Contribution** – Addresses the outcome directly and includes targeted assessment. **Moderate Contribution** – Addresses the outcome directly or indirectly and includes some assessment. **Minimal Contribution** – Addresses the outcome indirectly and includes little or no assessment.

OUTCOMES	Significant	Moderate	Minimal
Spiritual Integrity			
Gen Ed: The ability to interpret the Scriptures accurately in order to arrive at principles that serve as guidelines for			Х
living a Spirit-filled life			

Personal Kesilience			
Gen Ed: The ability to effect change within various group settings by influencing and motivating others to accomplish			
a vision through communicating and carrying out key decisions		X	

Intellectual Pursuit		
Gen Ed: The ability to integrate knowledge in order to identify and weigh possible responses to different situations, and to process information—both analytically and critically—so as to determine the validity of different, competing claims;	X	
Gen Ed: An ability to formulate and develop knowledge about the physical and natural world.	X	
Gen Ed: The ability to develop flexible thinking patterns and to process information analytically in a manner that results in the creation of new forms and structures	X	
Gen Ed: The ability to access, evaluate, and use information, as well as to determine which sources to consult	X	
PHY 102: Demonstrate concepts of physics performing satisfactorily on homework and tests.	X	
PHY 102 Solve problems by applying the laws of physics and the tool of mathematics.	X	
PHY 102: Demonstrate communication skills by answering questions in class, writing reports and journals, and turning in homework assignments.	X	
PHY 102: Show design and team-work capabilities by working on a project.	X	
PHY 102: Apply the scientific method in analyzing natural physical phenomena in written reports.	Х	
PHY 102: Demonstrate professional and ethical responsibility through punctual class attendance and stewardship of resources.	X	

Global Engagement		
Gen Ed: The capacity to adapt to an international understanding in an increasingly interdependent global community,	X	
and to understand how current situations relate to events of the past		

Bold Vision			
Gen Ed: The ability to communicate effectively in both written and spoken forms at appropriate cultural, educational,	Х		
economic, social, and maturity levels			