



Independent Study | in Idaho

**Phys 112: General
Physics II**

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Course Guide

Independent
Study | in Idaho

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Physics 112 General Physics II

University of Idaho
3 Semester-Hour Credits

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Phys 112: General Physics II

3 Semester-Hour Credits: UI

Welcome!

Whether you are a new or returning student, welcome to the Independent Study in Idaho (ISI) program. Below, you will find information pertinent to your course including the course description, course materials, course objectives, as well as information about assignments, exams, and grading. If you have any questions or concerns, please contact the ISI office for clarification before beginning your course.

Policies and Procedures

Refer to the ISI website at www.uidaho.edu/isi and select *About ISI Policies* for the most current policies and procedures, including information on setting up accounts, student confidentiality, exams, transcripts, course exchanges, refunds, academic integrity, library resources, and disability support and other services.

Course Description

Phys 112: General Physics II. General education credit, natural and applied sciences. Electricity, magnetism, optics, and modern physics. Prerequisite: Phys 111
This course does not include a lab component.

*5 graded assignments, 14 self-study assignments, 4 proctored exams
Available online only.*

Course Materials

Required Course Materials

List all required materials here.

- Cutnell, John D., and Kenneth W. Johnson. *Physics*. Vol. 2 (paperback). 9th ed. John Wiley & Sons, Inc., 2012. ISBN-10: 0470879548 ISBN-13: 978-0470879542
- Scientific calculator with trigonometry functions

Recommended Course Materials

- Cutnell, John D., and Kenneth W. Johnson. *Student Solutions Manual to Accompany Physics* (Paperback). 9th ed. John Wiley & Sons, Inc., 2012. ISBN-10: 0470879564 ISBN-13: 978-0470879566
- Wiley Student Companion site: <http://www.wiley.com/college/cutnell>

Course Delivery

All ISI courses are delivered through Canvas, an online management system that hosts the course lessons and assignments and other items that are essential to the course.

Course Introduction

Physics is the study of how things work. Physics covers just about everything from technology to medicine, biology, sports, engineering, philosophy, cosmology, and psychology. There are many reasons for studying physics. Many other fields (e.g., engineering, architecture, sports medicine, biology, medicine) make use of the basic ideas of physics. Instrumentation, electronics, and computers find wide application and they all involve physics.

Studying physics will improve your ability to think. You will learn to use abstractions, models, theories, and hypotheses. You will learn the process of problem solving, and your skill in mathematics will increase significantly. You will gain self-confidence. Learning about the laws of physics and how our universe is put together will help you form a worldview based on fact and reality. You will gain a better appreciation of the aesthetic beauty of the world in which we live. Studying physics is like getting a chance to see in full color instead of just black and white.

Finally, and perhaps most important of all, you will find that studying physics can be a lot of fun. You will likely find you are better at it than you thought.

Course Objectives

- To give you an understanding of the fundamental physical laws that describe our universe
- To enable you to apply the laws of physics to your everyday world; it is hoped this will be of practical value in many ways, ranging from repairing a toaster to buying a new car.
- To help you be a better citizen through acquiring the "scientific literacy" needed to understand the many crucial public issues that are so critically dependent on science and technology
- To develop in you the ability to think logically and analytically; one aspect of this skill is the ability to solve problems and to think quantitatively and in mathematical terms.
- To provide you with an appreciation of the philosophical consequences of science and of how science has influenced and continues to influence the evolution of humanity and civilization

Assignments

Each lesson includes the following components:

- Reading assignment
- Self-study assignment
- Written/Graded assignment

The lesson assignments are listed in the *Assignment Submission Log* in this course guide.

Reading Assignments

Read the chapter indicated for each of the lessons. You may omit the following sections: 18.9, 18.10, 19.6, 21.9, 22.6, 22.9, 26.11, 26.12, 26.13, 27.8, 30.9, 30.10, and all of Chapter 23.

Self-Study Assignments

Some of the questions and problems in lessons 1-12, and 14-15 are labeled "self-study." These questions and problems are found in your textbook, in the *Conceptual Questions* and *Problems* sections at the end of each chapter. Answers and solutions to these are provided in *Solutions to Self-Study Assignments: Lessons 1-12, 14, and 15*, located toward the back of this course guide. They will not be graded, but they must be turned in. Not turning in the Self-Study Assignments may result in a failed course grade. When submitting them with the written (graded) assignments, please place the corresponding self-study assignment at the beginning of the lesson. Attempt to solve these problems on your own, but if you get stuck, look at the solution provided. As a last resort you may simply copy the solution, but you will not learn much if you do this.

Written/Graded Assignments

It is very important that you do a good job on the homework lessons. You should carefully read each chapter before attempting the assigned problems in the *Conceptual Questions* and *Problems* sections. It is usually best to read the chapter twice. First go through it without working out all the details. Then go back a second

time and reread all the material and work through the examples. Only then should you tackle the assigned problems. Try to answer as many of these as you can. These are similar to the questions on the examinations. Answers to odd-numbered problems are given at the back of the book, so if you have trouble, try working a problem for which the answer is given. You will find that problems in the text are often included as adjacent pairs, which are similar.

Study Hints

- Keep a copy of every lesson submitted.
- Complete all assigned readings.
- Set a schedule allowing for completion of the course one month prior to your desired deadline. (An *Assignment Submission Log* is provided for this purpose.)
- Show all of your work. Work neatly. Show the equations used before substituting in numbers. Draw good diagrams using a straight-edge ruler. This is **important**.
- Give answers in the form of an equation, e.g., $x = 3.98\text{m}$. Round most answers to three significant figures. Be sure to give the units of the answer (i.e., meters, seconds, kilograms). Enclose your answer in a box. Don't crowd your work.
- Show ALL of the steps in your work. Work from the top of the page down, not from left to right. Experience shows that students who work neatly and systematically seem to gain a better understanding of the subject. Do not skip steps or try to do too much algebra in your head. Try to follow the methods used in the textbook and self-study examples.
- You should have a scientific calculator with trigonometric functions and exponential notation.

Refer to the **Course Rules** in Canvas for further details on assignment requirements and submission.

Exams

Four exams are given. Exams 1, 2, and 3 are unit exams, each covering one-fourth of the course content. Exam 4, the final examination, is comprehensive.

- Exam 1 covers chapters 18-20. Submit assignments 1-4 before taking the exam.
- Exam 2 covers chapters 21, 22, 24, and 25. Submit assignments 5-8 before taking the exam.
- Exam 3 covers chapters 26-29. Submit assignments 9-12 before taking the exam.
- Exam 4, the final exam, is to be taken after you have submitted lessons 13-15. It covers all of the material in the course, with some emphasis on chapters 30-32.
- Exams 1, 2, and 3 are designed to be completed in 50 minutes. Exam 4 is intended to be completed in 2 hours. However, for all exams, so that you do not feel time pressure, you are allowed as much time as you need, up to double time.
- You must wait for grades and comments on lessons prior to taking each subsequent exam.

You are not required to memorize numerous formulas. With each exam is provided a sheet of equations that you will need. Some fundamental equations are not given (e.g., basic trig relations for sine and cosine, or the Pythagorean Theorem). This equation sheet is provided toward the back of this course guide. You should study it in advance of taking an exam so that you are sure what the symbols mean. You also must know which equation to use in a given problem. If some basic relations are omitted from the sheet, you are expected to know these on your own. Values of needed constants are provided.

To each examination you should bring a nonprogrammable calculator and a straight-edge ruler.

Partial credit may be given even if the final answer is incorrect, so it is important that all work be shown.

There is no penalty for a wrong guess on a multiple-choice question, so answer all questions. Mark the one best answer in each case. Many multiple-choice questions are based on the qualitative questions at the end of each chapter, and some may be based on drawings or illustrations in the text.

Sample exams are included in this course guide. The format and content of these may differ slightly from the exams you will take, but they are similar to yours in scope and difficulty. It is a good idea to try these for practice before you take an exam.

A final exam review sheet is included in this course guide following Lesson 15.

- You must wait for grades and comments on assignments prior to taking subsequent exams.
- For your instructor's exam guidelines, refer to the **Course Rules** in Canvas.
- See Grading below for specific information on points and percentages.

Grading

Grades are assigned on the basis of the total points earned on the lessons and exams, and on the instructor's assessment of what you have learned. The final exam is comprehensive and worth 200 points, which is a third of the final grade. The points are distributed as shown here:

Lessons/Exams	Points	Breakdown of Points
Lessons	100	
Exam 1	100	10 multiple-choice questions (50 points); 3 problems (50 points)
Exam 2	100	10 multiple-choice questions (50 points); 3 problems (50 points)
Exam 3	100	10 multiple-choice questions (50 points); 3 problems (50 points)
Final Exam	200	34 multiple-choice questions (170 points); 3 problems (30 points)
Total Points	600	

Exam Grade	Percentage Earned
A	85%
B	72%
C	60%
D	50%

Any cheating is considered a very serious transgression and may result in a grade of F for the course. The final course grade is issued after all lessons and exams have been graded.

Contacting Your Instructor

Instructor contact information is posted on your Canvas site.

<u>Assignment Submission Log</u>				
Lesson	Projected Date for Completion	Date Submitted	Grade Received	Cumulative Point Totals
1				
2				
3				
4				
It is time to take Exam 1.				
Exam 1				
5				
6				
7				
8				
It is time to take Exam 2.				
Exam 2				
9				
10				
11				
12				
It is time to take Exam 3.				
Exam 3				
13				
14				

15				
It is time to take Exam 4.				
Exam 4				

Lesson 1 Electric Fields

Reading Assignment

Chapter 18: All but sections 18.9 and 18.10

Assignment

Self-Study

- Focus on Concepts: 1, 14
- Problems: 2, 17, 25, 39, 49

Graded

- Focus on Concepts: 2, 9, 17
- Problems: 12, 27, 51, 72, 75