

# Physics 11: General Physics — Fall 2009

**Instructor:** Dr. Klaus Bartschat  
Harvey Ingham (Rm 18a)  
271-3750 (klaus.bartschat@drake.edu)  
Office Hours: MWF 10–10:50 a.m.; R 4–6 p.m.

**Format:**

**Lecture:** MWF 9:00–9:50 a.m.  
Part of the material will be presented on transparencies that are made available to you on Blackboard. You might want to print these out, bring them to the lectures, and add your own notes. These copies will allow you to prepare for each lecture ahead of time and to concentrate on the material instead of copying the transparencies yourself during the lecture, but **they do not replace the book!** Attendance is **expected** and will occasionally be recorded.

**Recitation:** W+R 1:00–1:50 p.m.  
Attendance is **voluntary**; if you have further questions, check during office hours with Mr. Hey (your lab instructor), Mr. Mason (your recitation teacher), or Professor Bartschat. If you need more assistance, make an appointment with the instructor.

**Homework:** You will need to **purchase an access** key to do the assignments using the *Mastering Physics* package. This homework is **mandatory**. The principal idea of the recitation session is to clarify problems that become evident from your attempts of doing the homework. Additional (see notes) problems will also be discussed and may be relevant for the tests. You should look at all problems **before** the recitation session and **come prepared** with questions.

**Laboratory:** Sign up for one of the sessions with Mr. Hey (HI 15). Obtain a laboratory manual and a set of rules from Mr. Hey. Laboratory classes will start during the week of Aug. 24, 2009. Attendance is **mandatory**.

**Place:** Lecture: Harvey Ingham 102, Discussion: Harvey Ingham 28

**Text:** "Physics" by Douglas C. Giancoli (5th edition), Prentice Hall (1997). Check out

**<http://www.prenhall.com/giancoli>**

for sample problems, puzzles, MCAT study guide, etc.

**Study Guides are on 2-hour reserve in Cowles Library. The Solution Manual for the 5th edition problems is, unfortunately, no longer available in the library. However, hardcopies are on sale from various sources (just check the internet), and there is a good chance that you'll find an electronic version as well.**

## Objectives of Physics 11 and Physics 12:

Provide a **Knowledge of the Basic Laws** that govern the world in which we live.

### **Basic Forces:**

Gravitation (Physics 11)  
Electromagnetic (Physics 12)  
Nuclear (Physics 12)  
Weak (Physics 12)

### **Show Applications to Real Life:**

Mechanics (Physics 11)  
Acoustics (Physics 11)  
Thermodynamics (Physics 11)  
Optics (Physics 12)  
Chemical Reactions (Physics 12)  
Biology as Applied Physics and Chemistry (Physics 11,12)  
Instruments in Medicine (Physics 11,12)

Show the present status in our **Understanding of the Universe** (Physics 11,12)

Develop **Problem Solving Skills** (Physics 11,12)

## Prerequisites:

### **Math background** (Appendix A). **REVIEW !**

significant figures  
exponents and powers of 10  
algebra (solve for unknowns)  
quadratic equations  
right-angle trigonometry  
areas and volumes  
logarithms

### **Friday, Aug. 28, 2009:**

A 15 min. test of your basic math skills will be held during the class period. **Although your performance on this test will have no effect on your grade**, it will indicate to both you and the instructor whether you are sufficiently prepared to take this course at the present time.

### **VECTORS (to be discussed in sections 3.1–4) !!!**

<u><b>Contents:</b></u>	<b>Introduction</b>	(Chapter 1)
	<b>Kinematics (Motion, Forces, Energy)</b>	(Chapters 2 – 8)
	<b>Statics</b>	(Chapter 9)
	<b>Hydrodynamics</b>	(Chapter 10)
	<b>Waves</b>	(Chapters 11 – 12)
	<b>Thermal Physics</b>	(Chapter 13 – 15)

## **Class Tests:**

There will be five tests during the term and one final examination. The dates for the tests are:

<b>Test 1: Friday, Sept. 11, 2009</b>	(Chapters 1 – 3)
<b>Test 2: Friday, Oct. 2, 2009</b>	(Chapters 4 – 6)
<b>Test 3: Friday, Oct. 30, 2009</b>	(Chapters 7 – 9)
<b>Test 4: Friday, Nov. 20, 2009</b>	(Chapters 10 – 12)
<b>Test 5: Wednesday, Dec. 9, 2009</b>	(Chapters 13 – 15)
<b>Final: Friday, Dec. 18, 2009, 7:30 – 9:20 a.m.</b>	<b>(comprehensive)</b>

**Rules:** There will be **no make-up exams!** [**DO NOT plan to leave town before 9:20 a.m. on Friday, Dec. 18, 2009 — missing the scheduled final exam could be disastrous! If you miss the final exam, you may receive an F for the entire course!**]

A **missed test** will correspond to a **grade of F, except if:**

illness is documented by a **medical certificate;**  
an **extraordinary** personal circumstance has arisen, the instructor has been notified **before** the test (x3750, x3141), and the **instructor has agreed** that you can miss the test. The need for **prior notification** also includes absences due to Drake related events, such as Athletics, Choir, Symphony, Theater, ...

### **Seating arrangements:**

start on first row (bottom) of the lecture hall;  
leave (at least) one seat empty between yourself and your neighbor;  
if possible, leave next row empty, i.e., occupy rows 1, 3, 5, 7, ...

### **Academic honesty:**

All tests are closed-book exams, i.e., you may only use a calculator, a ruler, a pen, and the paper provided with the test questions. Attempts to break these rules and/or to copy from another student's paper will result in a failing grade for the test, and the incident will be reported to the corresponding authorities at Drake University.

### **DROPPING/WITHDRAWAL POLICY:**

- 1) You may drop this course until Friday, Sept. 4, 2009 without a recorded grade.**
- 2) You may drop this course until Friday, Oct. 16, 2009 with a grade of W.**
- 3) Although there are exceptions in place for students to drop classes with a grade of W after the midpoint of a course (here Oct. 16, 2009), being granted such a drop is very difficult to achieve. It is unlikely that the instructor for this course will support such request, and the A&S Dean's office has a record of following the instructor's recommendations.**

**Grading:** You will receive grades for each individual item. The final grade will be calculated similarly to a GPA, i.e., it will be a weighted average of:

<u>item</u>	<u>percentage weight</u>
Tests 1–5	12% each
Laboratory	12%
Mastering Physics Homework	8%
Final Exam	20%

In the grading of the tests, the difficulty of the problems will be accounted for to some extent. A good **estimate** for the required performance **in the tests** is:

A: 85 – 100%; B: 75 – 84%; C: 65 – 74%; D: 50 – 64%; F: 0 – 49%

The above levels **will not be raised but may be lowered** at the discretion of the instructor.

**The lab grades will be determined using different percentages, as set by the lab instructor. The Mastering Physics portion will also be graded on the laboratory scale.**

**Example:** Suppose a person has obtained the following grades:

Test 1: **A**; Test 2: **C**; Test 3: **B**; Test 4: **D**; Test 5: **C**; Lab: **B**; Homework: **B**; Final: **C**

This corresponds to:

$$4 \times 0.12 + 2 \times 0.12 + 3 \times 0.12 + 1 \times 0.12 + 2 \times 0.12 + 3 \times 0.12 + 2 \times 0.08 + 2 \times 0.20 = \mathbf{2.36}$$

The result will be rounded down to 2 and lead to a **C**. Had the fourth test been a **B** instead of a **D**, the total score of **2.60** would have resulted in a **B** after rounding up to 3.

### **EXCEPTIONS:**

**1) You have missed a test (excused by the instructor);** in that case, the instructor will try to estimate your knowledge of the corresponding material based upon your performance in the final exam. If the instructor finds it impossible to assign a grade (other than **F**) because of missed test(s), you will receive an "Incomplete" (**I**) and an oral exam will be scheduled to clarify the situation.

**2) In some cases (particularly for students who do well),** a better grade may result by taking the average percentage of the test scores instead of using the above scheme. If that is the case, the **method resulting in the better grade** will be applied.

**3) You have done significantly (a full grade or more) better or worse in the final exam** than in the rest of the course. In that case, the instructor *may* give you a **better or worse grade** than what might come out of the above scheme.

**4) You must pass at least three tests** to pass the course. If you do not, but you pass the final exam, the instructor *may* give you a passing grade anyway.

**5) You must pass the laboratory section** in order to pass the course.

**6) Only for those students with a previous "Pass" for the Laboratory section:**

*If you want a grade for the laboratory that can go into the above grading scheme, you will need to retake the lab during this term, under the rules established for the present section. On the other hand, if you choose not to retake the lab, the weights for the individual class tests will be 14% and for the final exam 22%, instead of the 12% and 20% listed above.*

**A FINAL NOTE:** Ultimately, it is the instructor's responsibility to judge your knowledge of the material presented in this course. In extraordinary circumstances, this may be difficult by using purely mathematical recipes such as those given above. Consequently, the instructor reserves the right to use additional criteria, such as performance trends in tests, participation in class, recitation, and laboratory sessions, and the homework to determine the appropriate grade for you.