

## Syllabus for PHYS 3342.121: Physics for Bio Science II Summer 2005

This class meets in Founders North 2.102 on Monday and Wednesday from 12:00 to 1:50 (There will be a five-minute break at about 1:00.) The 19 classes of the course will be between May 16 and July 25 (inclusive). The final exam will be on Wednesday July 27, 12:00 am in FN 2.102.

**Instructor:** Dr. Paul MacAlevey FO2.708B [paulmac@utdallas.edu](mailto:paulmac@utdallas.edu)

**Teaching Assistant:** Jagruti Patel FO 1.414

### Course description:

This course is designed for any student with an interest in any of the health professions. The course is calculus-based and its principal goal of the course is to develop an ability to solve problems in the areas of electromagnetism and optics.

The prerequisite courses are:

- PHYS 3341 (Physics for Bio Science I or equivalent)

And

- MATH 2419 (Calculus II or equivalent)

You must also register for Physics Laboratory II (PHYS 2126).

### Required Materials:

We will use “**University Physics**” (eleventh edition) by **Young & Freedman** (ISBN: 0-8053-8684-X). It is available as a single volume and you will want the ‘extended version’ if you want all possible topics that can appear on the MCAT. You need to know that the problems at the end of the chapters are divided into ‘Discussion Questions’, ‘Exercises’ and ‘Problems’.

The book is also published as a split version and you’ll want volume 2 (Electromagnetism and Optics. I’ll include material on Atomic structure and Nuclear Physics (from volume 3) if we have time.

I don’t mind which version of the book that you use provided that you **have part two and have access to the homework website. Before buying a new book, please make sure that it contains a Student Access Kit.** (This is used to register for the on-line homework site that you need to use. Details about this are in the schedule.) Books from the UTD bookstore have these codes.

The best book in the world won’t help if you don’t read it. I am going to give **reading-quizzes**. I do not expect you to master the material on your own but I do expect you to read the sections that are assigned and know the terminology that is used in those sections. I’ll expect that you know what is (and what is not) discussed in various sections so that discussion in lecture can

proceed without line-by-line repetition of the text. **These quizzes cannot be made-up if missed.** Three will be dropped in the calculation of your course grade.

Many resources are available to help you learn Physics but the book is one of the more useful ones. **Please read the sections “How to Succeed in Physics by Really Trying” and “Using your textbook”** on pages x to xiii (just before the table of contents of “University Physics”.)

Much time and effort has gone into devising strategies for learning Physics. A good place to begin reading about them is on Larry Shepley’s web page called How to Study Physics : <http://wwwrel.ph.utexas.edu/%7Elarry/how/how.html> .

### **Taking Notes:**

Learning to take notes is a very useful skill. **Taking notes helps keep you focused** during the lecture. Remember that your notes are to remind you about what was said. They will only be an effective reminder if you go through them soon after the lecture. (We all forget very rapidly after a lecture unless we take concrete steps to remind ourselves about what happened.)

During the lecture, I suggest that you not worry about getting a complete transcript of everything; some diagrams etc. may be in the book and you can get them later. However, it is important that you fill in the gaps soon after the lecture. That is a very good way to interact with the material and continue the dialog with the material that began when you read the material prior to the lecture. Questions should be written in the margins etc. that you can ask yourself (or any of us) later.

**After a chapter** is finished, **make a summary for yourself.** It is true that the book already contains summaries but these were not written by you. They may gloss over some point that it took you a while to realize or they may not make a connection to some other material that you have spotted.

I don’t require it but I’d like you to turn in your summaries at the end of the course. (Summaries are part of my ‘intangibles’ See my grading scheme). These summaries might help convince me that your work is worth an A+ if the calculations show that you have an A. (Copies of summaries or paraphrases of summaries from any Physics textbook won’t help you. I’m looking for evidence that you have thought about the material, come to your own conclusions and linked the material of this course to other courses.)

### **Suggested Materials:**

In the past, students have asked about **books that review Math** with a view to doing Physics courses. One such book is

- “So you want to take Physics: A Preparatory Course with Calculus” by R. Cole. My copy was published by Saunders College Publishing and has ISBN 0-03-096020-7
- Preparing for General Physics: Math Skill Drills and Other Useful Help by Arnold D. Pickar ISBN: 0-20-153802-4

(These are not required books.)

Some people like the **Cartoon Guide to Physics** by Larry Gonick and Art Huffman. There is a copy on reserve in the UTD library and it has call number QC24.5 .G66 1991b. I have also put Physics texts by D. Halliday et al (QC 21.2.435), R. Serway (QC 23.S458) and D. Giancoli (QC 21.2.G5) on reserve too. Other student supplements are mentioned in the preface to the text.

### **Homework:**

Homework problems are assigned,

- to help you become familiar with the material
- to provide practice at solving problems

I will use the Mastering Physics web site that allows you to input answers and get feed-back. Your grade for this homework will count towards your grade in the course. The questions are taken from the section called 'Problems' at the end of our book. More detailed instructions for getting to the homework site are in the schedule.

Homework questions provide one starting-point for office-hours/discussion sessions offered by the TA. Attempt the homework problems before attending these sessions. The sessions don't really work if you show up and just expect to be told the answers. TAs aim to help you so that you can produce a correct solution. **TAs don't work homework problems before their due date.**

Future omit ???However, other starting-points include the 'Discussion Questions' and 'Exercises'.

Future include: ??????????Even if your most immediate question is about a homework problem, you will find that clarification of physical principles involved is often all you need to help you solve the problem.

### **Future include??**

**Late homework. For 1 week after due date 75%. After that zero.**

### **Tests:**

There will be three midterm tests (one of which is dropped) and a final exam. **Seats are assigned only for tests.** Your assigned seat for testing will be written on an index card that I will give to you on the first day.

The **final** exam will be **comprehensive** and may contain questions asked on any midterm or as a homework question. You can bring a **single 3"×5" index card** to any of the tests provided that it has been prepared by the person using it and is **written by hand**. All answers to test questions are to be written in pen. **I do not intend to curve grades** in any way.

**You must have a UTD student cards during tests.** (You can get one made at the info depot in the student union building; SU 2.204.) All tests will be done with books closed. Calculators other than those with significant amounts of memory are allowed on tests or exams. All books, notes,

computers, Palm Pilots or equivalents, cell-phones, communicating calculators, as well as **backpacks, purses, etc. are to be placed at the sides of the room during the exam. To avoid distracting others, please turn off cell-phones etc.**

Changes to grades will only be made if a ‘clerical error’ has occurred. (These include mistakes in adding up marks on a test paper etc. If such an error is found, I will check the entire test: the overall grade may either decrease or increase as a result.) **Any questions that involve the grading on a quiz (or test) must be asked by the next day that the class meets.**

**Missed midterm tests can only be made up in the case of documented, extenuating circumstances.** Such circumstances include medical emergencies and work-related travel that cannot be re-scheduled. In any event, the student will have one week in which to do the make-up test if one is scheduled.

Any student INVOLVED in cheating will be reported to the Dean of Students. That Dean will decide on the penalty for a confirmed incident of cheating. Please see below for a more comprehensive statement on scholastic dishonesty.

### **Grading:**

The results of your tests and homework will be used to calculate your grade in the course.

Reading Quizzes	10%
Homework	15%
3 midterm Exams @ 20% each	40%
Drop one	
Final Exam	30%
Intangibles	5%

“Intangibles” include completion of reading quizzes (and quality of summaries if turned in).

Notice two things:

- The grade scale is absolute i.e. there is no curve. Thus, your grade does **not** depend on the class average. The entire class can get As!
- Responses to discussion-questions (questions answered with flash cards) are not part of your grade. They are for us to get concepts straight!

To turn these numeric values into letter-grades, I’ll begin with a simple set of ‘cut-off’ points for the assigning of grades; if ‘s’ is a score,

$s \geq 85$	A
$85 > s \geq 70$	B
$70 > s \geq 55$	C
$55 > s \geq 40$	D

‘Plus’ and ‘minus’ signs will be added to these letters where the score is near a grade boundary.

A grade of X (incomplete) is awarded **only** if an **unforeseen, non-academic emergency** prevents a student from completing the work in a course. If a student wants to discontinue the course because a poor grade is expected, it is nearly always more appropriate for the student to withdraw from the course and re-register in another semester. If an incomplete is given, the course must be completed within 90 days of the first class day of the next long semester.

### **Withdrawal from the course:**

You should plan to attend all class sessions. Careful attention should be paid to the course material as it is delivered and regular attendance at class sessions is expected.

If a student is unable to complete the course in which he/she is registered, it is the student's responsibility to withdraw from the course by the appropriate date (This date is published on the University's homepage.) The instructor cannot initiate this process. If the student stops attending class but does not officially withdraw, he/she will receive a grade based on their performance in the course.

### **Scholastic dishonesty:**

Of great importance to you as a student is that others perceive your degree as having value. That value is diminished if others suspect that a degree can be obtained through dishonest means. As your instructor, academic dishonesty gives me a false picture of the capabilities of the individual that is being dishonest. In a wider context, it gives me a false picture of what can be reasonably expected of my students.

In order to further the objective of eliminating scholastic dishonesty, the University has a policy on scholastic dishonesty for several reasons. This policy is clearly articulated in Subchapter F section 49.36 of the policy on student discipline & conduct adopted by the University and used in this course. The full chapter 49 is at <http://www.utdallas.edu/student/slfe/chapter49.html>. **Students enrolling in the course are bound by this policy** and are encouraged to read it. Any questions about this policy can be asked of the Dean of Students. Any suspected cases of scholastic dishonesty will be passed along to the Dean of Students.

Some questions have arisen in past semesters about scholastic dishonesty. Roughly speaking, these questions fall into three groups and are about

- Discussions of students among themselves
- Discussions of students with either the TA or me
- Use of any material posted on the WebCT site

Discussion of problems among students is encouraged provided each student has attempted each problem before any discussion. It is important for every student to avoid collusion. (Collusion means the unauthorized collaboration with another person in preparing academic assignments offered for credit.) I do not authorize any student to generate homework solutions in any fixed form with the aid of any other student, group of students or any secondary source. Anything handed in for credit must be the sole work of the student to whom credit is to be given.

Students are welcome to ask questions of my TAs or me about homework problems. However, I do not authorize these students to communicate such discussions to other students. These other students are welcome to ask me questions too.

The WebCT site contains postings exclusively for the use of the person with the privilege accessing the site. Materials on this site form another secondary source that is intended to help students in my class during the semester that the posting is made. No materials posted on the WebCT site become the property of a student. Students acknowledge that distribution/transmission of any posting made on the WebCT site constitutes scholastic dishonesty. (See parts (d) 1 and (d) 5 of section 49.36 of the policy on student discipline & conduct.)

The question about WebCT can be extended. I will treat in the same way any pre-existing solution to a problem assigned as homework in a previous semester, a solution to a problem asked on a test, or any problem from the book. As soon as any student in the class comes across any kind of pre-existing solution to a problem that I assign, that student must inform me of its existence and source. To do otherwise is to aid copying. (See part d (1) of section 49.36.) In order to maintain privacy, I can be contacted by e-mail if desired.

To complete this discussion I would like to state my policy clearly and succinctly. I object strongly to any verbatim, unacknowledged work done by anyone else and presented as part of your work. (This includes any passages from textbooks, any solutions that you come across in hard copy or on WebCT, any previously graded homework etc.)

At the conclusion of the course, all students undertake to keep all course materials (posted solutions, graded homework etc.) for their exclusive use.