Phys 2425-002
Engineering Physics I
Spring 2011 - MW
North Ridge Campus

Section # 002 and Synonym: **25423**
Meeting Times and Place: Lecture: MW 12:00-1:20 P.M., **Room 2213**
Lab: MW 1:30-2:45 P.M., **Room 2228**
Credit: 4 credit hours.
Instructor: Dr. Michael McGraw
Web Site: www.austincc.edu/mmcgraw
Office: **PB-4**
Office Hours: MW 11:00 AM - 12:00 PM and TTh 4:40 - 5:40 P.M.
E-mail Address: mmcgraw@austincc.edu
Textbook: Physics for Scientists and Engineers - Volume 1, 6th Edition, Tipler and Mosca.
Prerequisites: A grade of "C" or better in Calculus I, (MATH 2413) or equivalent.

All students will have one week to produce a copy of proof that they have satisfied the course prerequisites. If you do not have the prerequisites, you will be withdrawn from the course.

Grading: There will be four (4) exams and a final exam. The exams will account for 36% of your grade and the final exam will account for 19%. The lab will account for 25%. The homework will account for 10%. Quizzes, class work and other activities will account for 10%. Class attendance is accounted for as part of this grade.

The distribution of grades is as follows:

90-100	=	A
80-89	=	B
70-79	=	C
60-69	=	D
59 and below	=	F

Important Note: You must earn a grade of "C" or better in the laboratory portion of the course as well as a grade of "C" or better in the lecture portion of the course in order to earn a grade of "C" or better in the course. The grade in each portion, either lecture or laboratory, of the course will be as outlined in the grading system in the syllabus. The determination of a "C" grade will be as stated under the grading scale in the syllabus.

The Lecture components include the Homework, Exams (including the Final Exam), Quizzes, in class assignments, attendance and participation. The Lab components are the lab experiments, lab reports and any other lab assignments or lab quizzes.

Course Description: Calculus-based study of electricity and magnetism and geometrical and physical optics. This is the first half of the calculus-based PHYS 2425/2426 sequence.

Subject Matter: In this course we will cover chapters 1-19 with a few sections in these chapters being omitted. For more detail see the list of required topics and the course outline/calendar given as part of this handout.

Course Rationale

Generally, our courses are intended to help students fulfill degree requirements in science, to prepare students for further studies, or both. This course is intended for science majors and engineers. It is important to re-emphasize the following: since our courses are intended for transfer to a four-year institution, they will be taught at the University level.

Course Objectives

The objectives of this course are:

1. To further develop the concepts and language of physics.
2. To further develop problem-solving methodologies involving mathematics including calculus.
3. To further develop the use of graphs and charts to communicate.
4. To strengthen the concepts and ideas introduced in class and show the link between theory and experiment.
5. To further develop experimental techniques.
6. To further develop the concept of experimental design.
7. To develop technical writing through the process of writing formal lab reports.
8. To develop critical thinking.

Course Outline / **Calendar**: A course outline / calendar is attached as part of this syllabus. Every attempt will be made to maintain this schedule. Please note: schedule changes may occur during the semester. Any changes will be announced in class.

Methodology: Lecture/Laboratory. The lectures will consist of demonstrations, explanations of the basic ideas and physical concepts, techniques for solving problems and class discussions. Some problem solving sessions will also be included and in these the student will be an active participant.

Homework: About 12 problems will be assigned from each chapter. The homework will be due at the beginning of the class on the due date. Working problems is the single most important way to learn and apply the basic ideas you are studying in this course and the best way to prepare yourself for the exams.

Important Note on Homework
http://www.oberlin.edu/physics/dstyer/SolvingProblems.html

Method for Doing Problems
1. Read the question carefully.
2. Draw the appropriate diagram and label it.
3. Write down the given information.
4. Write down what you are trying to find.
5. Write big so your work can be read easily.
6. Maintain the equality - write each step on a new line.
7. Show all your work – don't skip steps.
8. Make sure you have answered the question.
9. Don't forget the SI units.
10. Round off answers to three significant figures and use proper scientific notation.
11. Draw a box around the answer(s).

After you read the question you might not remember how to solve the problem. Never mind – just start writing. A blank sheet of paper is not very inspiring – fill it up. Go on to step 2 and start drawing and labeling the diagram – this will start your mind going and you will build up some momentum and the paper won't be blank anymore.

By systematically approaching the solution of the homework problems you are furthering your understanding of the material. This is the best way to ensure success in this course.

Grading the Homework: Homework assignments are due at the beginning of the class period on the due date. Two problems, from each assigned homework set, will be chosen randomly and graded. The same two problems will be graded on everyone's paper for that assignment. These two problems will be given a maximum credit of five (5) points each. An additional ten (10) points per assignment will be given if all of the problems are attempted and a good effort has been made to solve them. Each homework assignment is worth a maximum of twenty (20) points. **IMPORTANT**: The solution of homework problems should be the result of your own work. If I feel that your homework solutions are copied from another student, from a solution manual you have in your possession or from some solutions available online, your homework will not be graded and you will get a zero for that homework set. I will point this out to you and will attempt to resolve the matter to the satisfaction of everyone. In short, copying homework (or anything else concerning this course) will not be tolerated and will be dealt with according to the rules of the College.

Late Homework Policy: Late homework will be accepted the next class (following the due date) with a 20% penalty. No late homework is accepted after that.

Laboratory: This semester you will do at least sixteen (16) experiments. You must do all the experiments and your lab grade will be based on these experiments. You

will be given a separate write up that describes each of the experiments. You will be given another handout the will outline the format for the lab reports.

A missed experiment must be made up the following Friday which is the make-up day. The labs are open on Friday from 9:00 A.M. until 12:00 P.M. However, Friday IS NOT an alternative to the regular lab time. You may only make up two (2) labs.

Please contact the Lab personnel in advance to let them know you will be making up a missed lab. One of the lab assistants will help you with the set-up so that you can do the experiment. When you make up an experiment, you must write down the date, the time, the room number and the name of the assistant who helped you and supervised the experiment and then have him/her sign your data sheet. Also, please sign the log sheet to indicate that you were in the lab on that Friday.

Lab reports not turned in on time are considered late. Late lab reports will be accepted until the next class meeting. No lab reports will be accepted after that. **Late lab reports will receive only 80% of the full credit.**

Exams: The exams will be composed largely of problems to be solved, similar to the homework. Credit for the solution of a problem is usually given for the procedure including the diagram, the basic equation that forms the starting point of the calculations, and some reasoning, explanation or justification of the steps or answers.

The Final Exam is a comprehensive exam covering all the material in Chapters 1 through 19.

Missed Exams: You should make every effort to ensure that you do not miss an exam for this course. If you know that you will miss an exam, due to events beyond your control, you must contact the instructor prior to the exam if at all possible. A make up exam will be given at the discretion of the instructor.

Participation: Physics is a participatory activity and you are the main player in that activity. My responsibility this semester is to help YOU learn physics. I can explain it to you, but I can't make you understand it. The understanding part is up to YOU.

The time requirement for this class is about 20 hours per week. This much time is needed to study the material carefully and do the homework and the lab. You need to make sure this much time is available in your schedule. If your schedule does not allow you to spend this much time on this course this semester, I strongly urge you to drop this course. Take it when you are not so busy with other responsibilities and you can dedicate the needed time for it. The time you spend studying and doing homework in this class is the single most important factor in deciding how well you do in this class.

Participation includes:

- Arriving at class on time
- Being prepared
- Taking part in class discussions
- Class quizzes
- In class assignments

If a lecture or laboratory session is missed the student is still responsible for the material that was covered.

COURSE POLICIES

1. **Attendance policy:** (a) Quizzes and other class work and activities will count for 10% of the credit. This includes class attendance. If you miss a class, you can not make up the work given on that day and the credit that goes with it. The only exceptions are documented absences due to sickness or other extraordinary circumstances. You must show documentation (a doctor's report is an example) which shows that you could not have attended class on that day. (b) After four (4) unexcused absences, I have the option of withdrawing a student.
2. **Withdrawals**: This is your responsibility. The last day to withdraw is **Monday, April 25th**.
3. **Incomplete:** See the incomplete rule in the College catalog. Generally I do not give incompletes.
4. **Safety Statement**
   "Health and safety are paramount values in science classrooms, laboratories and field activities. You are expected to learn, understand and comply with ACC environmental, health and safety procedures and agree to follow the ACC science safety policy. You are expected to conduct yourself professionally with respect and courtesy to all. Anyone who thoughtlessly or intentionally jeopardizes the health or safety of another individual will be immediately dismissed from the day's activities, may be withdrawn from the class, and/or barred from attending future activities. Specific safety training will take place before most activities. If you are late and miss the training, you will not be able to participate in the activity. You can read the complete ACC science safety policy at: http://www2.austincc.edu/sci_safe/ ."
5. **Scholastic Dishonesty**: "Acts prohibited by the College for which discipline may be administered include dishonesty, including but not limited to cheating on an exam or quiz, plagiarizing and unauthorized collaboration with another in preparing outside work. Academic work submitted by students shall be the result of their thought, research or self-expression. Academic work is defined as but not limited to, tests, quizzes, whether taken electronically or on paper; projects, either individual or group; classroom presentations; and homework."
6. **Academic Freedom**: Students are free to disagree with instructors on matters of opinion or personal philosophy, and will incur no penalty for doing so. However, instructors will judge work based upon its relation to the current state of mainstream scientific fact and theory. Students are allowed to voice opinions, concerns, complaints and suggestions to the instructor. However, it is up to the instructor to decide how to use the students' comments to meet the class's best interests.
7. **Student Discipline**: Matters of student discipline will be adjudicated by the instructor on a case-by-case basis, in conjunction with the Department Head or the Dean. Student may consult with the Office of Students' Services or the Assistant Dean on these matters.

8. **Office for Students with Disabilities**: "Each ACC campus offers support services for students with documented physical or psychological disabilities. Students with disabilities must request reasonable accommodations through the Office for Students with Disabilities on the campus where they expect to take the majority of their classes. Students are encouraged to do this three weeks before the start of the semester."

   "Students who are requesting accommodation must provide the instructor with a letter of accommodation from the Office of Students with Disabilities (OSD) at the beginning of the semester. Accommodation can only be made after the instructor receives the letter of accommodation from OSD."
9. **Student Services**: The web address for student services is:
   http://www.austincc.edu/current/
   The ACC student handbook can be found at:
   http://www.austincc.edu/handbook/

10. **Instructional Services:** The web address for instructional services is:
    http://www.austincc.edu/evp/newsemester/index.htm
11. **Cell phones:** As a courtesy to your instructor and your classmates, please make sure that your cell phone is turned completely off before class. If you are expecting an urgent phone call, then please place the phone in a silent mode. Cell phone calculators or other cell phone applications may not be used during exams and quizzes.