

PS-30 Classical Physics II Spring 2005 Syllabus

Text: Physics With Calculus Volume II, Schnick

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Office Hours: MWF 1:30-3:30pm unless otherwise announced, and by Appointment/Drop-in, and as Announced

| Date | Lec | Topics | Read | Assigned Problems |
|------------|-----|---|-------|------------------------|
| Mon Jan 17 | 1 | Charge and Coulomb's Law | Ch 1 | SAC201:1,2,3;SAC401:1 |
| Tue Jan 18 | | Lab #1 Coulombs Law | | |
| Wed Jan 19 | 2 | The Electric Field: Description and Effect | Ch 2 | SAC202:1,2,3,4 |
| Fri Jan 21 | 3 | The Electric Field Due to one or More Point Charges | Ch 3 | SAC203:2,3;SAC403:1,2 |
| Mon Jan 24 | 4 | Conductors and the Electric Field | Ch 4 | SAC204:1,2,3; SAC404:1 |
| Tue Jan 25 | | Lab #2 Greek Letters and Significant Figures | | |
| Wed Jan 26 | 5 | Work Done by the Electric Field, Electric Potential | Ch 5 | SAC205:1,2,3,4 |
| Fri Jan 28 | 6 | The Electric Potential Due to One or More Point Charges | Ch 6 | SAC206:1,2,3 |
| Mon Jan 31 | 7 | Equipotential Surfaces, Conductors, and Voltage | Ch 7 | SAC207:1,2,3 |
| Tue Feb 01 | | Lab #3 Electric Fields | | |
| Wed Feb 02 | 8 | Capacitors, Dielectrics, and Energy in Capacitors | Ch 8 | SAC208:1,2,3 |
| Fri Feb 04 | 9 | Electric Current, EMF, Ohm's Law | Ch 9 | SAC209:1,2,3 |
| Mon Feb 07 | 10 | Resistivity, Power | Ch 10 | SAC210:1,2,3 |
| Tue Feb 08 | | Lab #4 Capacitors | | |
| Wed Feb 09 | | Test 1: Lects 1-8; Labs 1,2,3 | | |
| Fri Feb 11 | 11 | Resistors in Series and Parallel; Measuring I & V | Ch 11 | SAC211:1,2,3 |
| Mon Feb 14 | 12 | Kirchhoff's Rules, Terminal Voltage | Ch 12 | SAC212:1,2,3,5 |
| Tue Feb 15 | | Lab #5 DC Circuits | | |
| Wed Feb 16 | 13 | RC Circuits | Ch 13 | SAC213:1,2,3 |
| Fri Feb 18 | 14 | Capacitors in Series & Parallel | Ch 14 | SAC214:1,2,3 |
| Mon Feb 21 | 15 | Magnetic Field Intro: Effects | Ch 15 | SAC215:1,2,3 |
| Tue Feb 22 | | Lab #6 Magnetic Force on a Current-Carrying Conductor | | |
| Wed Feb 23 | 16 | Magnetic Field: More Effects, Causes | Ch 16 | SAC216:1,2,3 |
| Fri Feb 25 | 17 | Magnetic Field: More Causes | Ch 17 | SAC217:1,2,3 |
| Mon Feb 28 | | Test 2: Lects 9-17; Labs 4,5,6 | | |
| Tue Mar 01 | | Lab #7 Electric Generator | | |
| Wed Mar 02 | 18 | Faraday's Law, Lenz's Law | Ch 18 | SAC218:1,2,3; SAC418:1 |
| Fri Mar 04 | 19 | Electromagnetic Induction, Generators | Ch 19 | SAC219:1,2; SAC419:1 |
| | | Spring Break | | |
| Mon Mar 14 | 20 | Maxwell's Laws, Electromagnetic Radiation Cause | Ch 20 | SAC220:1,2,3,4 |
| Tue Mar 15 | | Lab #8 Electromagnetic Induction | | |
| Wed Mar 16 | 21 | Nature of Electromagnetic Waves | Ch 21 | SAC221:1,2,3,4 |
| Fri Mar 18 | 22 | Huygens's Principle, 2-Slit Interference | Ch 22 | SAC222:1,2,3 |
| Mon Mar 21 | 23 | (10:00-10:35, St. Benedict's Day) Diffraction | Ch 23 | SAC223:1,2,3 |
| Tue Mar 22 | | Lab #9 Young's Double Slit | | |
| Wed Mar 23 | 24 | Thin Film Interference | Ch 24 | SAC223a: 1,2,3 |
| Fri Mar 25 | | Easter Break No Classes | | |
| Mon Mar 28 | | Easter Break No Classes | | |
| Tue Mar 29 | | Lab #10 Conceptual Exploration | | |
| Wed Mar 30 | | Test 3: Lects 18-24; Labs 7,8,9 | | |
| Fri Apr 01 | 25 | Polarization | Ch 25 | SAC224:1,2,3,4 |
| Mon Apr 04 | 26 | Geometric Optics, Reflection | Ch 26 | SAC225:1,2 |
| Tue Apr 05 | | Lab #11 Reflection and Refraction | | |
| Wed Apr 06 | 27 | Refraction, Dispersion, Internal Reflection | Ch 27 | SAC226:1,2,3 |
| Fri Apr 08 | 28 | Thin Lenses: Ray Tracing | Ch 28 | SAC227:1, SAC228:1 |
| Mon Apr 11 | 29 | Thin Lenses: Lens Equation, Optical Power | Ch 29 | SAC229:1,2,3 |
| Tue Apr 12 | | Lab #12 Thin Lenses | | |
| Wed Apr 13 | 30 | Elec. Field due to Continuous Charge Distribution | Ch 30 | SAC428:1,2 |
| Fri Apr 15 | 31 | Gauss' Law | Ch 31 | SAC429:1,2,3 |

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|------------|----|--|-------|--------------|
| Mon Apr 18 | 32 | Gauss' Law | Ch 32 | SAC430:1,2,3 |
| Tue Apr 19 | | Lab #13 Electric Field Numerical Methods | | |
| Wed Apr 20 | 33 | Elec. Potential due to Continuous Charge Distribution | Ch 33 | SAC431:1,2,3 |
| Fri Apr 22 | 34 | Calculating E-Field from Electric Potential | Ch 34 | SAC432:1,2,3 |
| Mon Apr 25 | 35 | Calculating E-Field from Electric Potential | Ch 35 | SAC433:1,2,3 |
| Tue Apr 26 | | Lab #14 Electromagnetic Fields Numerical Methods | | |
| Wed Apr 27 | | Test 4: Lecs 25-35, Labs 9-11; SigFigs,Grk,Units | | |
| Fri Apr 29 | 36 | Ampere's Law | Ch 36 | SAC434:1,2 |
| Mon May 02 | 37 | Biot-Savart Law | Ch 37 | SAC435:1,2 |
| Tue May 03 | | Lab #15 Magnetic Field Due to Current in a Straight Wire | | |
| Wed May 04 | 38 | Biot-Savart: Do SAC436 problems 1&2 but do not submit them. There is a practice quiz for this lecture in the Practice Quizzes section of your PRACTICE site. | | |

Final Examination: 9 a.m. on Friday, May 6, 2005 in Goulet 3102

PS30 Classical Physics II Grading Information Spring 2005

| Item | Percentage the Item Counts Toward the Total Grade |
|--------------------------|--|
| Participation Grade | 4 |
| Paper Quiz Grade | 12 |
| Average Laboratory Grade | 12 |
| Test #1 Grade | 12 |
| Test #2 Grade | 12 |
| Test #3 Grade | 12 |
| Test #4 Grade | 12 |
| Final Exam Grade | 24 |

This yields your preliminary numerical course grade on a scale of 0-100. If hindsight should show that standards (level of difficulty of tests, etc.) set during the semester were too high, scaling of tests and/or the numerical course grade will occur after all data is in. No downward scaling will occur. Raw scores can be used too keep a running tally of your minimum (and most probable) preliminary numerical course grade.

The Participation Factor

The Dean will be requested to assign the grade of F (Insufficient Attendance to Warrant a Passing Grade) to any student who misses more than 17 class/recitation sessions (including lectures, recitations, and tests) or more than 5 laboratory sessions.

To obtain the numerical course grade, the preliminary numerical course grade will be multiplied by the participation factor, a number between 0 and 1 determined as follows:

| Item Contributing to the Participation Factor | Value |
|--|----------------|
| Starting Value (Everybody gets this.) | 90 |
| 100% on Greek Letters and Significant Figures by Fri. Mar. 4 at 10 pm (All or Nothing) | 10 |
| Attendance /Participation (Each classroom/recitation session missed after 7 misses) | -1 |
| 100% on Each On-Line Quiz (Each score below 100% after 5 scores below 100%) | -1 |
| Homework (Each score of 0 on each problem after 17 zeros) | $-\frac{1}{3}$ |

The number by which the preliminary numerical course grade is multiplied to obtain the numerical grade is just the total number of "participation factor" points received, divided by 100. (Every student is expected to earn a "1" for this multiplicative grade.) The attendance of a lecture or test is generally sufficient to earn credit for attendance/participation of that class but excessive (being 20 minutes or more late is considered the same as being absent) or chronic lateness, sleeping in class, not responding to direct questions in class or other obvious of lack of participation will yield a "miss" for attendance/participation.

The numerical grade is related to the letter grade as indicated at right.

A numerical grade whose value is exactly the boundary value between two letter grades results in the higher letter grade, e.g. a numerical grade of 90.000 results in a letter grade of A- rather than B+.

| | |
|-------------|----|
| 93.33-100 | A |
| 90-93.33 | A- |
| 86.67-90 | B+ |
| 83.33-86.67 | B |
| 80-83.33 | B- |
| 75-80 | C+ |
| 70-75 | C |
| 65-70 | C- |
| 61.67-65 | D+ |
| 58.33-61.67 | D |
| 55-58.33 | D- |
| 0-55 | E |

Attendance: Class attendance at Saint Anselm College is mandatory. As such it is expected that a student will never miss a class except in the case of extraordinary circumstances beyond that student's control, such as: illness, a death in the family, or dangerous travel conditions. Extraordinary circumstances do occur. As such, each student is allowed up to 7 "sick days" to be used for lecture or recitation only under such extraordinary circumstances. No explanations or excuses are required except in the case of days on which tests are given. Beyond the 7 sick days, absences, even justifiable absences, affect the student's participation factor.

In the case of a missed test, the student must contact the professor in person or by phone prior to the test and provide documentation either before or soon after the test. In such cases, tests missed for justifiable reasons will be handled on a case by case basis. A test missed for a non-justifiable reason, such as oversleeping, will result in a zero for that test. Should a student fail to notify the professor prior to a missed test, that she or he will miss the test, that student will be assigned the grade of zero for that test. In such cases, where the professor is notified by the office of the Dean that, not only was the student's absence justifiable, but that the lack of timely notification of the professor was also justifiable, the missed test will be handled on a case by case basis.

Homework: Each problem listed in the Assigned Problems column of the syllabus is to be handed in at the start of the next lecture. Homework that is more than five minutes late will not be accepted and will earn a grade of zero (except that I reserve the right to accept homework up until the end of the lecture period in the case of a student who did the homework prior to lecture, brought the homework to lecture, but forgot to turn it in at the start of the lecture). Each homework problem is graded on a 0 or 1 basis. The homework grade is part of the participation factor. Each student is supposed to do the homework, then check her or his own solutions against solutions provided by the instructor, and finally, correct any errors in form or substance prior to submission. Because homework can often be submitted when the student is absent; a classmate can bring it in, it can be faxed or emailed, but NOT mailed (homework submitted via mail, including campus mail, will earn a grade of zero); and; because solutions are provided by the instructor prior to the due date, this policy of throwing out the first 17 zeros is in place mainly for leniency in the case of a student who does the homework but forgets to bring it to class.

On-Line Quizzes: Associated with each lecture, except the last lecture, there is an on-line quiz which the instructor is supposed to make available for a time interval beginning prior to that lecture and ending at the start of the next lecture. Students are expected to retake each quiz as necessary to obtain a hundred. The on-line quiz grade is part of the participation factor. Up to 5 scores below 100% are allowed before the participation factor is affected. The deadline for taking the quiz will be extended whenever a quiz is not available when it is supposed to be available.

Paper Quizzes: Quizzes (besides the on-line quizzes and besides any quizzes that might be given in the laboratory) will be administered, in class and/or on a take-home basis, as part of the lecture and recitation portions of the course, during the semester. Students should expect a quiz on the reading assignment for each lecture at the start of the corresponding lecture. Unless otherwise announced, each recitation quiz will be on topics addressed by the two most-recently-submitted homework assignments. Quizzes may be canceled without advance notice. In tabulating the average quiz grade, the worst 5 grades will be thrown out. This policy of throwing out the worst 5 grades is in place mainly to ameliorate the impact of a justifiable absence on a day when an in-class quiz is given. A student who is absent, or comes to class too late to take (or submit in the case of a take-home quiz) the quiz, receives a grade of zero for that quiz even if the absence or lateness is justifiable.

Participation Grade: The participation grade (not to be confused with the participation factor) is the professor's assessment of the degree and quality of your participation in the course. It addresses questions such as: Do you read the chapter before class? How well do you answer questions arising in class discussion? To what degree do you solve homework problems on your own prior to consulting the solutions?

E-mail: Each student is expected to ensure that the email address in her or his Blackboard account is correct, to take whatever steps are necessary to keep her or his email account working properly, and to check her or his email frequently. Failure to do so may have an indirect impact on a student's grade.

Lab Policies

Unless otherwise announced, physics laboratory sessions take place in: Goulet 3204/3205.

Materials and Equipment

Each student is required to bring some paper, a pencil, a pen, and a calculator to every laboratory session.

Attendance

Attendance of every laboratory session at the at the time specified is mandatory. Two laboratory "sick days" are granted each student. That is, each student may miss, for legitimate reasons, up to two laboratory sessions without penalty. No explanation is required. Students who use only one sick day will have their worst laboratory exercise grade "thrown out". Students who use neither sick day will have their worst two laboratory exercise grades "thrown out". Each absence from a laboratory session in excess of two absences will result in a grade of zero for the work scheduled for that laboratory session. In the case of a student who is absent from a total of more than five laboratory sessions, the professor of the course will request the Office of the Dean to assign that student the grade of "F" for the course, indicating insufficient attendance to warrant a passing grade. (Depending on the date of the sixth laboratory absence, such a student may have the option of withdrawing from the course.)

Laboratory Make-up Sessions

There will be no laboratory make-up sessions for credit. If a student misses a laboratory session, however, that student will still be responsible for the material covered in the lab during that session, on quizzes and tests. Where feasible, the equipment will be made available to assist a student who misses a laboratory session in preparing for quizzes and tests. The student is expected to familiarize herself or himself with the laboratory activities that she or he was supposed to engage in, but, missed out on for any reason, by meeting with another student who did carry out the laboratory exercise, and, by making an appointment with the laboratory supervisor to obtain access to the relevant laboratory equipment.

Lateness

In the event that a quiz is given at the start of a laboratory sessions, students arriving too late to take the quiz will be assigned a grade of 0 for the quiz. Whether or not there is a quiz, students arriving more than 15 minutes late will have their laboratory session grade reduced by the number of points indicated in the following table:

| | |
|--------------------|-----------|
| 15-20 minutes late | 25 points |
| 20-25 minutes late | 50 points |
| 25-30 minutes late | 75 points |

Students arriving more than 30 minutes late will be asked to leave and the occurrence will be treated as an absence.

Laboratory Quizzes

Students are required to read/study the handout for a given laboratory exercise, prior to the laboratory session during which that exercise is to be carried out, and should expect a quiz on the handout at the start of the session. Such quizzes may be canceled without advance notice. Laboratory quizzes on other topics will be announced in advance.

Reports

Each laboratory report is due at the end of the laboratory session during which the exercise, for which the report is written, is carried out (unless otherwise announced by the laboratory instructor). A laboratory report that is turned in late will not be graded. It will be marked "Late" and the student will be assigned a grade of zero for the laboratory report.

Laboratory Session Grade

When no quiz is given during a laboratory session, the laboratory session grade is based on the laboratory report. When a quiz is given during a laboratory session, the laboratory session grade is a weighted combination of the grade on the quiz and the grade on the laboratory report. The weighting factors are established on a case by case basis.