



Course Syllabus

Physics 212: Physics for Elementary Teachers

Fall Semester, 2018

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| Instructor: | Dr. Steven Sahyun |
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| E-mail: | sahyuns@uww.edu |
| WWW: | http://sahyun.net/courses/physcs212 |
| Desire2Learn: | https://www.uww.edu/desire2learn |
| Class Meetings: | M W F 10:00 – 11:45 a.m. |
| Office Hours: | M 1:00 - 4:30 p.m.; T 11:00 – 12:00 noon or by appointment. |
| Exams: | Midterms: See the schedule. Final: Friday December 14, 10:00 a.m – 12:00 noon |
| Required Text: | Next Gen PET Units packet available at the UWW bookstore: <i>Interaction and Energy; Interactions and Forces; Magnetism and Static Electricity; and Light</i> , (2017) SDSU Research Foundation, Activate Learning. |
| Supplemental Text: | Hewitt, <i>Conceptual Physics 11th ed.</i> (Text Rental) |
| Math Pre-requisite: | Math 141 |

Note: The last day to drop classes is Sept. 17 (no ‘W’); Oct. 26 (‘W’ grade.)

Course Description:

This course is a one-semester introduction to physics with curriculum and instruction designed as an activity-based hands-on course for K-8 elementary education students and open to all education majors. The course emphasizes a student-oriented pedagogy in order to develop various physics concepts and the nature of science. Topics covered include motion, forces, energy, light, heat, electricity, and magnetism.

Other Requirements: PREREQ: MATH 141 AND RESTRICTED TO STUDENTS WITH BSE PROGRAM

Required materials: You will need to purchase the unit pack consisting of seven “*Next Gen Physical Science & Everyday Thinking*” workbook units (EM, PEF, FM, CF, M, SE and L) from the UWW Bookstore; the price is about \$85 for the set. **Movies, simulation links, and homework referenced in the book are on-line at:** <http://nextgenpet.sdsu.edu/sc/index.html> as well as from links posted on D2L. This site contains links to homework and videos used in the homework as well as many other resources. Quizzes referenced in the homework are found on the course D2L site.

You may also wish to bring paper, colored pencils, and a scientific calculator (one with trigonometric and logarithmic functions, scientific notation, etc.) Other course materials will be distributed to you as needed during the course.

ATTENDANCE AND PARTICIPATION:

You are expected to attend class and participate. This is a participatory course and group participation is not only important for your own learning, but for the learning of your group members. By engaging in meaningful discussions with your group members, by actively participating in whole class discussions, and by performing interesting experiments, you will develop with your classmates a set of ideas. Similar to the way in which scientists develop ideas, your ideas will be based on *evidence* gathered from the experiments you do. At appropriate times, you will be able to compare your ideas with those developed by scientists. It is expected that except for some special jargon, the ideas you develop with the class should be quite similar to the scientists' ideas.

Because you will play such an important role in your own learning, **and especially the learning of your classmates, you are expected to come to class on time, come prepared, and participate every class period.** All personal electronic devices (e.g., cell phones, pager, iPods, etc.) **MUST** be turned off when not directly used for class-related activities. Be considerate to your group and **DO NOT TEXT** while in class. If your cell phone is not being used for class activities, I request that you put it in a box.

In order to encourage a classroom environment where the free exchange of ideas is possible, video and audio recording must be limited to that done for educational purposes. Prior instructor permission and notification of fellow students is required for any video or audio recording.

If you are unwilling or unable to come to class on time, with your assigned homework completed, and to participate in the group activities and discussions or abide by course conduct, register for a different course!

HOMEWORK:

Homework will be due almost every class period (see schedule) and consists of two parts: Written assignments and on-line quizzes. If the schedule is modified, I will post the changed schedule on the course Web site. Sometimes the homework will be discussed during the class period when it is due. Please ask if you have any questions about the homework. You may discuss assigned homework on the course D2L site. Written **Late** homework may receive up to half credit if turned in within one class of the due date. D2L **quizzes** may **NOT** be completed late so do them early!

Note: **ALL** of the assignments will require you to have access to a computer with an Internet connection in order to access simulator programs and movies. If you do not have a computer at home, or your computer cannot access the information, there are several computer labs on campus, or you can use the computers in our classroom before or after class. For homework and in-class activities requiring Internet access, the appropriate link will be available on the course D2L page.

It is your responsibility to locate and test the simulator and other applets located on the Web used in the course assignments before the assigned date to avoid any technical difficulties.

Software:

The simulator applets primarily use HTML5 although there are a few that use Java. There has been a lot of difficulty using the applets due Java issues. Let me know if this is a problem on your system. It is recommended using the class computers for any Java related activities. HTML5 related activities should work on most platforms (computer, tablet, smartphone)

As a student, you can get Microsoft Office ProPlus at no cost. See <http://www.uww.edu/icit/4u/proplus> for details. **Free alternatives to MS Office** that can open/save most Word, Excel, and PowerPoint files are OpenOffice (<http://www.openoffice.org/download/index.html>) and LibreOffice (<http://www.libreoffice.org/download>)

GRADING CRITERIA AND TENTATIVE DATES:

Course grades will be determined by the percentage of total points assigned for the course.

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|-----------|-----------|------------|
| 93% = A, | 80% = B-, | 67% = D+, |
| 90% = A-, | 77% = C+, | 63% = D, |
| 87% = B+, | 73% = C, | 60% = D-, |
| 83% = B, | 70% = C-, | < 60% = F. |

The **approximate** distribution and estimated number of points are:

| Course component | Point value | % |
|-------------------------------|-------------|-------|
| IE test | 40 | 14.3% |
| IF test | 40 | 14.3% |
| MSE test | 40 | 14.3% |
| L & Final | 80 | 28.6% |
| On-line Homework (2 pts * 40) | 80 | 28.6% |
| Total points = | 280 points | |

See the attached schedule for Exam and assignment dates.

Exams: There will be three mid-term exams as well as a comprehensive final. Exams may only be taken on the assigned day and may not be taken at other times. Questions for the exams will be similar to submitted homework problems and to problems in the in-class activities. See the class D2L site for sample exam questions.

You will be provided with a TI 30X IIS or similar calculator for use during exams. If you have a similar calculator to use as an alternate, it must be checked and approved by the instructor **before** the exam. No other electronic devices are allowed during exams. **NO CELL PHONES ARE ALLOWED DURING EXAMS.**

You will not be allowed to use a cell phone as a calculator during the exams or have your cell phone available.

I reserve the right to adjust grades slightly based on class participation. There will be a few extra credit opportunities posted on D2L and other occasional opportunities for extra credit may arise. Extra credit is limited to 10 points. Extra credit must be submitted in the D2L dropbox and must be submitted before the last class.

In the event of university closure (for example due to flu), I will attempt to post videos of relevant in-class experiments on D2L. In such an event, group discussions would occur on-line in the D2L forum area. Homework would be submitted to the D2L dropbox.

D2L Grade book: Grades (exams, papers, and the homework total) will be posted on D2L as a **courtesy** and are for your information so that you can check that all your items have been accounted for. The D2L grade book is not the definitive score as transcription errors can occur, but it should match my personal grade book. Please inform me if you notice any errors. The homework and extra-credit totals will only be occasionally updated; I will try to update the grades at other times if requested.

Campus Policies and Practices Statement

Course Policy Regarding Video/Audio Recording:

In order to encourage a classroom environment where the free exchange of ideas is possible, video and audio recording must be limited to that done for educational purposes. Prior instructor permission and notification of fellow students is required for any video or audio recording.

Per UW-W policies and practices, if and when certain information is learned, whether in an academic program, residence life or other campus activity, the person (UWW employee) who learns that information is required to report if the information includes any form of sex discrimination, violence, abuse or neglect, past or present. If you share something personal that falls within one of the categories above, thereby requiring the instructor or staff person to report what was shared. If this occurs, the staff person will use discretion, reason and sensitivity to abide by our policies while respecting your privacy. The goal of these requirements is to prevent or avoid further harm to you, as a student, or those who may be exposed to further abuse by others. If you have questions or concerns, you are encouraged to talk with your course instructor or department chair.

The University of Wisconsin-Whitewater is dedicated to a safe, supportive and non-discriminatory learning environment. It is the responsibility of all undergraduate and graduate students to familiarize themselves with University policies regarding Special Accommodations, Misconduct, Religious Beliefs Accommodation, Discrimination and Absence for University Sponsored Events. (For details please refer to the Undergraduate and Graduate Timetables; the "Rights and Responsibilities" section of the Undergraduate Bulletin; the Academic Requirements and Policies and the Facilities and Services sections of the Graduate Bulletin; and the Student Academic Disciplinary Procedures" [UWS Chapter 14]; and the "Student Nonacademic Disciplinary Procedures " [UWS Chapter 17]).

FINAL EXAMINATION POLICY & SCHEDULE

FALL TERM 2018

All instructional staff of on- and off-campus classes are expected to meet during their scheduled final examination period. All comprehensive final examinations shall be administered at the prescribed time during the final examination period. For those classes where there is no final examination, the time prescribed during the final examination period shall be used as a regular class meeting. Exception to meeting classes during the examination period requires specific written approval in advance from the college dean.

The general schedule will be available via PDF around the time of registration for a given term. Due to the amount of department requested changes, the specific exam schedule in WINS will not be available to view until after the tenth day of classes for the term.

No student shall be required to take more than two comprehensive final examinations on the same day. Any student with more than two comprehensive final examinations scheduled on the same day who want to reschedule the excessive examination(s) must make arrangements with the instructors involved. If the student and instructors are unable to reach mutual agreement about alternate arrangements, the student must notify the Registrar by Friday, October 19. The Registrar shall arrange times as necessary with instructors involved and shall notify the student of the arrangements by Monday, November 19. This policy covers only comprehensive final examinations given during the final examination period.

- Final examinations for web-based classes are scheduled during finals week at the discretion of the instructor.
- Courses meeting four or five periods a week, i.e. MTWTR, may use either the MW/F or TR period for the exam, whichever is most convenient for all concerned, unless otherwise stated.
- Classes scheduled MW, MF, or WF are to follow the MW/F exam times unless otherwise stated.
- Examinations for off-campus evening classes are scheduled for the regular class meeting time that falls during the examination week that begins Wednesday, December 12.
- Classes offered at non-standard class times do not have designated final examination periods. Instructors are to make arrangements to administer examinations during the Thursday, December 20 exam times.

Wednesday, December 12

4:00-6:00PM MW or W only classes beginning between 4:00-6:25PM
Common Exam Block 1
6:15-8:15PM MW of W only classes beginning 6:30PM or later
Common Exam Block 2

Monday, December 17

7:45-9:45AM 10:00-12 Noon MW/F or MW classes beginning between 9:00-9:50AM
12:15-2:15PM MW/F or MW classes beginning between 11:00-11:50AM
2:30-4:30PM MW/F or MW classes beginning between 1:00-1:50PM
4:45-6:45PM MW/F or MW classes beginning between 3:00-3:50PM
7:00-9:00PM M only classes beginning between 4:00-6:25PM
M only classes beginning 6:30PM or later

Thursday, December 13

7:45-9:45AM TR classes beginning between 8:00-8:50AM
10:00-12 Noon TR classes beginning between 10:00-10:50AM
12:15-2:15PM TR classes beginning between 12:00-12:50PM
2:30-4:30PM TR classes beginning between 2:00-2:50PM
4:45-6:45PM TR or R classes beginning between 4:00-6:25PM
7:00-9:00PM TR or R classes beginning 6:30PM or later

Tuesday, December 18

7:45-9:45AM 10:00-12 Noon TR classes beginning between 9:00-9:50AM
12:15-2:15PM TR classes beginning between 11:00-11:50AM
2:30-4:30PM TR classes beginning between 1:00-1:50PM
4:45-6:45PM TR classes beginning between 3:00-3:50PM
7:00-9:00PM T only classes beginning between 4:00-6:25PM
T only classes beginning 6:30PM or later

Friday, December 14**

7:45-9:45AM MW/F classes beginning between 8:00-8:50AM
10:00-12 Noon F only classes beginning between 8:00-9:55AM
12:15-2:15PM MW/F classes beginning between 10:00-10:50AM
2:30-4:30PM F only classes beginning between 10:00-11:55AM
4:45-6:45PM F only classes beginning between 12:00-12:50PM
MW/F classes beginning between 12:00-1:55PM
F only classes beginning between 2:00-2:50PM
MW/F classes beginning between 2:00-3:55PM
F only classes beginning between 4:00-4:50PM
MW/F classes beginning between 4:00PM or later

Wednesday, December 19

7:45-9:45AM 10:00-12 Noon MW classes beginning between 8:00-8:50AM
12:15-2:15PM MW classes beginning between 10:00-10:50AM
2:30-4:30PM MW classes beginning between 12:00-12:50PM
MW classes beginning between 2:00-2:50PM

Thursday, December 20

7:45-9:45AM 10:00-12 Noon Courses offered at a non-standard start time and special makeup exams for on-campus students if authorized by instructor
1:00-3:00PM
3:15-5:15PM

Weekend

Saturday and Sunday classes should hold exams during the meeting time that falls during exam week

** This is not the date for M only, W only or MW courses.

FINAL GRADES DUE IN WINS BY FRIDAY, DECEMBER 21 AT 4:00PM