

Course Syllabus

Physics 130: Physics Foundations

Summer Semester, 2022

Instructor:	Dr. Steven Sahyun
Office:	Upham Hall 157
Phone:	Ext. 5113
E-mail:	sahyuns@uww.edu
Class Home page:	http://sahyun.net/courses/physcs130/index.htm
Canvas:	The Canvas site is linked from the UW-W and class Web sites (www.uww.edu) and select Canvas.
Class Meetings:	Class: On-line, but plan on spending at least two hours per day for class material, there will be two on-line laboratory activities per week.
Office Hours:	T, W, R 10:00 - 11:45 am Upham Hall Room 157 or Webex; other times by appointment.
Webex Office:	https://uww.webex.com/meet/sahyuns
Required Text:	Kirkpatrick and Francis: <i>Physics: A Conceptual World View</i> , 7 th ed. (available at the UWW bookstore and as an eBook from Cengage)
Supplemental text:	Openstax Physics (free download) https://openstax.org/details/books/physics
Pre- or Co-requisite:	Math 139 or Math 141 or Math 142.
Course modality:	On-line. This course will be offered completely on-line. Although there are no defined lecture times, the course is designed so that there will be two course “lectures” per day, two on-line laboratories per week, and a weekly exam (quiz) due at the end of the week.
Tutor:	There will be a tutor available for the course. Times to be determined.

Other required materials:

You are also expected to have a **notebook** (may be spiral) to record notes and work out calculations during the course and the laboratory activities. You should also have access to paper, a scientific calculator (one with trigonometric and logarithmic functions, scientific notation, etc. These are available as physical object for **less than** \$20, but are also available as an app on your computer, tablet or phone).

Course Description: Physics Foundations is a Natural Sciences—Laboratory (GL) course that will explore topics in classical physics (motion, heat, sound, electricity, magnetism, and light) and modern physics (atomic structure, quantum mechanics, and relativity) with an emphasis on exploring phenomena of the natural world in the context of everyday life problems.

This course is a 5-credit course, it will take about 45 hours per week of work. 4 credits are for lecture and 1 credit is for lab. Each lecture credit is defined as 16 “hours” (1 “hour” = 50 min.) of instruction for a total of 64 lecture “hours”, and each credit of lab is defined as 32 “hours” for a total of 96 class “hours”. For every hour “in-class”, expect to spend around 2 hours “out-of-class” for a total of 288 hours over 6 weeks or about 45 hours per week.

<https://teachlearn.provost.wisc.edu/course-syllabi/course-credit-information-required-for-syllabi/>

Course Learning Objectives and Outcomes:

Throughout this course, students will develop their ability to read and comprehend scientific information, and draw appropriate conclusions. Additionally, this course provides scientific experimentation in which the students will learn about data collection and analysis.

Physics Foundations is a fast-paced course offering a survey of classical and modern physics. Its main goals are:

- To expose its students to the fundamental concepts of physics;
- To demonstrate the application of basic mathematics to solving physics problems;
- To provide experience with measurement collection and analysis.

Course Policies and Expectations:

Assigned reading: You are expected to read the assigned chapter for the day's class activities. **You will be expected to submit a paragraph summary about the assigned chapter as part of the discussion question posts due for each class. You will provide comments on other's posts as part of providing class interactions.**

Homework: Assigned Homework will be available through the WebAssign systems and linked from Canvas. Since this is my first time using WebAssign for homework, grades may or may-not be automatically transferred back to Canvas. If grades are not automatically listed in Canvas, I will need to manually enter the grades, but WebAssign will have its own listing of homework grades. Since the homework is available on-line and will be open well in advance of the final due date, submit your homework at least a day or two in advance in case any questions arise in the homework problem sets. **Late homework will generally not be accepted** for credit.

Lecture activities: There will usually be some sort of interactive question/quiz for each class to complete as a Canvas Quiz. You are expected to fully participate and complete these activities. **Activities are a graded item.**

Exams: Since this is a six-week course, there will be six (6) exams. Each exam will be on-line and available at the end of the week.

Laboratory: There will be 12 laboratory experiments, two for each week. Each laboratory will have a report to be submitted. The laboratory reports will be typed and follow a grading rubric style. Laboratory reports are due two days after the assigned lab date. Reports are to be submitted on Canvas. Reports will be reduced by 2 pts. for each day they are late.

Physics 130: Physics Laboratory Report Guidelines

The purpose of the report is to create a clear communication of your laboratory experience and contains information so that others can reproduce what you have accomplished. Your report must have your name and the experiment title. In addition, your report will have:

(2 pts.) I. Objective/Introduction A sentence or two that provides an explanation about the purpose of the experiment and why it is of interest.

(4 pts.) II. Theory – This section details the physics behind the experiment. Any equations that you will use will be *explained* in the theory section.

(3 pts.) III. Set-up This section describes the equipment or simulator that was used and *diagrams* of any apparatus. This section is NOT a restatement of laboratory instruction handouts.

(4 pts.) IV. Data Results This section shows the data from your experiment. Data may be presented in tables, charts, or graphs and is referred to in the analysis section.

(4 pts.) V. Analysis and Interpretation Manipulation of the data and interpretation of what it means. This section shows your theoretical modeling and correlation to data results.

(3 pts.) VI. Conclusion Final statement of what you found and any experimental uncertainties. For example, for part of your conclusion you will state: We determined the electron's mass to be xxxxx with an uncertainty of yyyy. This result differs from the accepted value of aaaaa by zzz%.

A good report has the following items: Your project shows a very good analysis and conclusions. It is a well-written paper with a clear summary of your laboratory experiments.

- The introduction shows why this experiment is of interest and the experimental objective is clearly stated.
- The experimental set-up clearly described and any necessary figures included.
- There is a coherent THEORY section that clearly shows how the theory relates to the experiment. Application of the equations are clearly shown.
- The method of how the data was acquired and results are clearly noted. Graphs of acquired data or other presentation of your work are shown.
- There is a clear and correct analysis and interpretation of what your data indicates and commentary of the results,
- There is a **useful** summary and conclusions of the experiment (including your final results). Your final results are clearly stated as well as a discussion of the implications of your experiment or activity.
- The paper has good grammar, complete sentences and paragraphs, and a logical structure.

Notes:

There will be up to a 2 pt. deduction for a poorly written (grammar/spelling) report.

There is a late fee of 2 pts. per day.

Grading:

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

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** assignment of points will be as follows:

Item	Each	Number	Total	~%
Homework	10	28	280	36%
Daily Quiz on Lecture	4	28	112	14%
Reading summary/Discussion Posts	1	56	56	7%
Laboratories	20	11	220	28%
Exams	20	6	120	15%
Total			788	100

I reserve the right to adjust grades slightly based on class participation. There may be occasional opportunities for extra credit.

Inclusive Learning Environment Statement: The University of Wisconsin-Whitewater is dedicated to a safe, supportive, and non-discriminatory learning environment. It is the responsibility of all students to familiarize themselves with UWW policies regarding: Special Accommodations, Academic Misconduct, Religious Beliefs Accommodation, Absence for University Sponsored Events, the "Rights and Responsibilities" section of the Undergraduate Catalog or the "Academic Requirements and Policies" section of the Graduate Catalog, the "Student Academic Disciplinary Procedures" (UWS Chapter 14), and the "Student Non-academic Disciplinary Procedures" (UWS Chapter 17).

Mandatory Reporting Statement: Federal law requires all university employees to report information obtained during the course of their duties regarding sexual misconduct, including domestic and dating violence, unless otherwise exempt by state law. For more information, including on how to report an incident, see <http://www.uww.edu/sexual-misconduct-information>.