

Course Syllabus

Physics 130: Physics Foundations

Spring 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: T: 3:30 – 4:45, W: 3:30 – 4:30, R: 3:30 – 4:45.
Laboratory	Sec. 01: T 10:00 - 11:50 am, Sec. 02 T 12:00 – 1:50 pm, Sec. 03 W 11:00 am – 12:50 pm.
Office Hours:	T, W, R 11:00 - 12:00 noon, W, R 2 – 3:00. 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:	In Person. This course will be offered in person. Laboratories are in-person.
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, where 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 about 2 hours “out-of-class”.

<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 PRIOR TO the class meeting. Posts are due for each chapter. 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 in class or as a Canvas Quiz. You are expected to fully participate and complete these activities. **Activities are a graded item.**

Exams: There will be three (3) exams. Each exam will be in-person. See the schedule for dates.

Laboratory: There are 14 laboratory experiments scheduled, one each week except for the first week of class. There is a pre-printed PHYSCS 130 Laboratory Manual available for purchase at the UWW Bookstore. You are expected to come to the laboratory with the appropriate laboratory pages from the manual. Any updates or revisions to the manual will be provided.

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	Number	Points Ea.	Total	%
Chapter Summaries	28	2	56	8%
Daily Quiz	28	4	112	16%
Homework	28	10	280	40%
Laboratories	13	10	130	19%
Exams	3	40	120	17%
		Total	698	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>.

Tentative Course Schedule. See updates at: <http://sahyun.net/courses/physcs130/schedule.pdf>

Sahyun		Physics 130 Physics Foundations Schedule			Spring 2022	Updated 1/12/2022
Text: Kirkpatrick and Francis: Physics: A Conceptual World View, 7th ed.						
Week	Class	Date	Read and post	Chapter/Topic	Assignment Due	Laboratory
1	1	Tue	18-Jan	01: Intro and A World View		No Lab!
	2	Wed	19-Jan	02: Describing Motion		
	3	Thu	20-Jan	02 (Continued)	HW01	
2	4	Tue	25-Jan	03: Explaining Motion	HW02	Lab 01: Intro and Safety
	5	Wed	26-Jan	04: Motions in Space		
	6	Thu	27-Jan	04: (Continued)	HW03	
3	7	Tue	1-Feb	05: Gravity	HW04	Lab 02: Measurements
	8	Wed	2-Feb	06: Momentum		
	9	Thu	3-Feb	06: (Continued)	HW05	
4	10	Tue	8-Feb	07: Energy	HW06	Lab 03: Free Fall
	11	Wed	9-Feb	08: Rotation		
	12	Thu	10-Feb	08 (Continued)	HW07	
5	13	Tue	15-Feb	09: Classical Relativity	HW08	Lab 04: Simple Pendulum
	14	Wed	16-Feb	10: Einstein's Relativity	HW09	
	15	Thu	17-Feb	10: Continued and Review	HW10	
6	16	Tue	22-Feb	Exam 1 (1-10)		Lab 05: Projectile Motion
	17	Wed	23-Feb	11: Structure of Matter		
	18	Thu	24-Feb	12: States of Matter		
7	19	Tue	1-Mar	12 (Continued)	HW11	Lab 06: Buoyancy
	20	Wed	2-Mar	13: Thermal Energy	HW12	
	21	Thu	3-Mar	14: Available Energy		
8	22	Tue	8-Mar	14 (Continued)	HW13	Lab 07: Internal Energy
	23	Wed	9-Mar	15: Vibrations and Waves	HW14	
	24	Thu	10-Mar	16: Sound and Music		
9	25	Tue	15-Mar	16 (Continued)	HW15	Lab 08: Standing Waves
	26	Wed	16-Mar	17: Light	HW16	
	27	Thu	17-Mar	18: Refraction of Light	HW17	
10				Spring Break		
11	28	Tue	29-Mar	18 (Continued)		Lab 09: Optics
	29	Wed	30-Mar	19: Model of Light	HW18	
	30	Thu	31-Mar	Review	HW19	
12	31	Tue	5-Apr	Exam 2 (11-19)		Lab 10: Electric Fields/SA
	32	Wed	6-Apr	20: Electricity		
	33	Thu	7-Apr	21: Electric Current		
13	34	Tue	12-Apr	21 (Continued)	HW20	Lab 11: Circuits
	35	Wed	13-Apr	22: Electromagnetism	HW21	
	36	Thu	14-Apr	23: The Early Atom		
14	37	Tue	19-Apr	23 (Continued)	HW22	Lab 12: Magnetic Fields
	38	Wed	20-Apr	24: The Modern Atom	HW23	
	39	Thu	21-Apr	25: The Nucleus		
15	40	Tue	26-Apr	25 (Continued)	HW24	Lab 13: Radioactive Decay
	41	Wed	27-Apr	26: Nuclear Energy	HW25	
	42	Thu	28-Apr	27: Elementary Particles		
16	43	Tue	3-May	27 (Continued)	HW26	Lab 14: TBA
	44	Wed	4-May	28: Frontiers of Physics	HW27	
	45	Thu	5-May	Review	HW28	
17	46	Thu	12-May	Final Exam (20-28) 2:30 - 4:30 pm		

FINAL EXAM SCHEDULE

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

The general schedule will be available via PDF around the beginning of the given term. Due to the amount of department requested changes, the specific final 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 exams on the same day. Any student with more than two comprehensive final exams scheduled on the same day who want to reschedule the excessive exam(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 Chair of Department by end of week 7. The Chair of the Department shall arrange times as necessary with instructors involved and shall notify the student of the arrangements by end of week 11. This policy covers only comprehensive final exams given during the final exam period. Common exams cannot be rescheduled.

- Final exams for web-based classes are scheduled during finals week at the discretion of the instructor.
- Exams for off-campus evening classes are scheduled for the regular class meeting time that falls during the exam week.
- Classes offered at non-standard class times do not have designated final exam periods. Instructors are to make arrangements to administer exams during the non-standard exam times indicated below.

Monday

7:45-9:45 a.m. MW, MW/R, MW/F, MTW/R, M/F or WF classes beginning between 7:00-8:50 a.m.
 10:00-12 Noon MW, MW/R, MW/F, MTW/R, M/F or WF classes beginning between 10:00-10:50 a.m.
 12:15-2:15 p.m. MW, MW/R, MW/F, MTW/R, M/F or WF classes beginning between 12:00-12:50 p.m.
 2:30-4:30 p.m. MW, MW/R, MW/F, MTW/R, M/F or WF classes beginning between 2:00-2:50 p.m.
 4:45-6:45 p.m. M, MW, MW/R, MW/F, MTW/R or MF classes beginning between 4:00-6:25 p.m.
 7:00-9:00 p.m. M, MW, MW/R, MW/F, MTW/R or MF classes beginning 6:30 p.m. or later

Thursday

7:45-9:45 a.m. TR, MTR, MTW/R/F or TWR classes beginning between 9:00-9:50 a.m.
 10:00-12 Noon TR, MTR, MTW/R/F or TWR classes beginning between 11:00-11:50 a.m.
 12:15-2:15 p.m. TR, MTR, MTW/R/F or TWR classes beginning between 1:00-1:50 p.m.
 2:30-4:30 p.m. TR, MTR, MTW/R/F or TWR classes beginning between 3:00-3:50 p.m.
 4:45-6:45 p.m. R or TWR classes beginning between 4:00-6:25 p.m.
 7:00-9:00 p.m. R or TWR classes beginning 6:30 p.m. or later and Common Exam 2

Tuesday

7:45-9:45 a.m. TR, MTR, MTW/R/F or TWR classes beginning between 7:00-8:50 a.m.
 10:00-12 Noon TR, MTR, MTW/R/F or TWR classes beginning between 10:00-10:50 a.m.
 12:15-2:15 p.m. TR, MTR, MTW/R/F or TWR classes beginning between 12:00-12:50 p.m.
 2:30-4:30 p.m. TR, MTR, MTW/R/F or TWR classes beginning between 2:00-2:50 p.m.
 4:45-6:45 p.m. T, TR, MTR or MTW/R/F classes beginning between 4:00-6:25 p.m.
 7:00-9:00 p.m. T, TR, MTR or MTW/R/F classes beginning 6:30 p.m. or later
 and Common Exam 1

Friday*

7:45-9:45 a.m. F only classes beginning between 7:00-9:55 a.m.
 10:00-12 Noon F only classes beginning between 10:00-11:55 a.m.
 12:15-2:15 p.m. F only classes beginning between 12:00-1:55 p.m.
 2:30-4:30 p.m. F only classes beginning between 2:00-3:55 p.m.
 4:45-6:45 p.m. F only classes beginning between 4:00 p.m. or later

*Friday will also include courses offered at a non-standard start time and special makeup exams for on-campus students if authorized by instructor.

Wednesday

7:45-9:45 a.m. MW, MW/R, MW/F, MTW/R, M/F or WF classes beginning between 9:00-9:50 a.m.
 10:00-12 Noon MW, MW/R, MW/F, MTW/R, M/F or WF classes beginning between 11:00-11:50 a.m.
 12:15-2:15 p.m. MW, MW/R, MW/F, MTW/R, M/F or WF classes beginning between 1:00-1:50 p.m.
 2:30-4:30 p.m. MW, MW/R, MW/F, MTW/R, M/F or WF classes beginning between 3:00-3:50 p.m.
 4:45-6:45 p.m. W or WF classes beginning between 4:00-6:25 p.m.
 7:00-9:00 p.m. W or WF classes beginning 6:30 p.m. or later

Saturday

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

Sunday

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