Course Syllabus

Physics 130: Physics Foundations

Spring Semester, 2025

Instructor:	Dr. Steven Sahyun
Office:	Upham Hall 157
Phone:	Ext. 5113
E-mail:	sahyuns@uww.edu
Class Home page:	http://sahyun.net/courses/physcs130
Canvas:	**The Canvas site is linked from the UW-W and class Web sites (www.uww.edu) and select Canvas.**
Class Meetings:	Class: M: 2:00 – 3:15, T: 2:00 – 2:50, W: 2:00 – 3:15.
Laboratory	T 11:00 am - 12:50 pm
Office Hours:	M - R 1:00 am – 1:50 am; and T 3:00 – 4:00 pm or by appointment.
Webex Office:	https://uww.webex.com/meet/sahyuns
Required Text:	Kirkpatrick and Francis: ***Physics: A Conceptual World View*, 7th 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:
Laboratory Manual (available from the Physics Office) that contains a printout of the course laboratory experiment instructions and report forms.

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 and provide a discussion post on what you found interesting in the assigned reading for the day. **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 one or two days in advance in case any questions arise in the homework problem sets. **Late** homework will generally **not be accepted** for full credit but partial credit is possible.

Lecture activities: There will usually be some sort of interactive question for each class to complete in class and an after-class Lecture Quiz on Canvas. You are expected to fully participate and complete these activities **Late quizzes are not possible, so make sure to do these in a timely manner!**

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

Laboratory: There are 13 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.

Use of AI on Assignments:

While AI (Artificial Intelligence) text generators are helpful as a starting point to overcome writer's block, the purpose of the discussion paragraphs and any reflective papers are **for you to reflect on your learning** of the material and to put **your own** thoughts into words. **Any assignment that *appears*, according to the grader's judgement, *overly reliant* on use of AI text generation in the submitted assignment will be given between no credit up to, at maximum, half-credit.**

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.

Note: While in-progress grades are posted on CANVAS, there can be SIGNIFICANT issues with how Canvas reports grades that you need to be aware of. IF YOU HAVE A MISSING ITEM, CANVAS MAY NOT PROPERLY FACTOR THIS INTO ITS GRADE CALCULATION. MISSING ITEMS HAVE A GRADE OF "0" BUT MAY NOT BE REFLECTED IN WHAT CANVAS IS REPORTING. IT IS YOUR RESPONSIBILITY TO CHECK THAT CANVAS IS PROPERLY REPORTING YOUR SCORES AND TO ALERT ME TO ANY DISCREPENCIES THAT YOU NOTICE.

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 on CANVAS or at:
http://sahyun.net/courses/physcs130/schedule.pdf

Sahyun **Physics 130 Physics Foundations Schedule** **Spring 2025** Updated 1/21/2025

Text: Kirkpatrick and Francis: Physics: A Conceptual World View, 7th ed.

Week	Class		Date	Read and post Chapter/Topic	Assignment Due: D=Canvas Post; Q=Canvas Quiz; HW=WebAssign	Laboratory
1	1	Mon	27-Jan	01: Intro and A World View		
	2	Tue	28-Jan	02: Describing Motion		**No Lab 1/28!**
	3	Wed	29-Jan	02 (Continued)	D01, Q01	
		Thu	30-Jan			
2	4	Mon	3-Feb	03: Explaining Motion	D02, Q02, HW01	
	5	Tue	4-Feb	04: Motions in Space	D03, Q03, HW02	**Lab 01: Intro and Safety**
	6	Wed	5-Feb	04: (Continued)		
		Thu	6-Feb			
3	7	Mon	10-Feb	05: Gravity	D04, Q04, HW03	
	8	Tue	11-Feb	06: Momentum	D05, Q05, HW04	**Lab 02: Measurements**
	9	Wed	12-Feb	06: (Continued)	D06, Q06, HW05	
		Thu	13-Feb			
4	10	Mon	17-Feb	07: Energy	D07, Q07, HW06	
	11	Tue	18-Feb	08: Rotation	D08, Q08, HW07	**Lab 03: Free Fall**
	12	Wed	19-Feb	08 (Continued)		
		Thu	20-Feb			
5	13	Mon	24-Feb	09: Classical Relativity	D09, Q09, HW08	
	14	Tue	25-Feb	10: Einstein's Relativity	D10, Q10, HW09	**Lab 04: Simple Pendulum**
	15	Wed	26-Feb	10: Continued and Review	HW10	
		Thu	27-Feb			
6	16	Mon	3-Mar	**Exam 1 (1-10)**		
	17	Tue	4-Mar	11: Structure of Matter		**Lab 05: Projectile Motion**
	18	Wed	5-Mar	12: States of Matter	D11, Q11	
		Thu	6-Mar			
7	19	Mon	10-Mar	13: Thermal Energy	D12, Q12, HW11	
	20	Tue	11-Mar	13 (Continued)		**Lab 06: Buoyancy**
	21	Wed	12-Mar	14: Available Energy	D13, Q13, HW12	
		Thu	13-Mar			
8	22	Mon	17-Mar	14 (Continued)	D14, Q14, HW13	
	23	Tue	18-Mar	15: Vibrations and Waves		**Lab 07: Internal Energy**
	24	Wed	19-Mar	16: Sound and Music	D15, Q15, HW14	
		Thu	20-Mar			
9				Spring Break (3/22 - 3/30)		
10	25	Mon	31-Mar	16 (Continued)	D16, Q16, HW15	
	26	Tue	1-Apr	17: Light		**Lab 08: Standing Waves**
	27	Wed	2-Apr	18: Refraction of Light	D17, Q17, HW16	
		Thu	3-Apr			
11	28	Mon	7-Apr	18 (Continued)	D18, Q18, HW17	
	29	Tue	8-Apr	19: Model of Light	D19, Q19, HW18	**Lab 09: Optics**
	30	Wed	9-Apr	19 (Continued)	HW19	
		Thu	10-Apr			
12	31	Mon	14-Apr	**Exam 2 (11-19)**		
	32	Tue	15-Apr	20: Electricity		**Lab 10: Electric Fields/SA**
	33	Wed	16-Apr	21: Electric Current	D20, Q20	
		Thu	17-Apr			
13	34	Mon	21-Apr	21 (Continued)	D21, Q21, HW20	
	35	Tue	22-Apr	22: Electromagnetism	D22, Q22, HW21	**Lab 11: Circuits**
	36	Wed	23-Apr	23: The Early Atom	D23, Q23, HW22	
		Thu	24-Apr			
14	37	Mon	28-Apr	24: The Modern Atom	D24, Q24, HW23	
	38	Tue	29-Apr	25: The Nucleus	D25, Q25, HW24	**Lab 12: Magnetic Fields**
	39	Wed	30-Apr	26: Nuclear Energy	D26, Q26, HW25	
		Thu	1-May			
15	40	Mon	5-May	27: Elementary Particles	D27, Q27, HW26	
	41	Tue	6-May	28: Frontiers of Physics	D28, Q28, HW27	**Lab 13: Radioactive Decay**
	42	Wed	7-May	Review	HW28	
		Thu	8-May			
16	43	Mon	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 times. All comprehensive final exams shall be administered at the prescribed time during the final exam times. For those classes where there is no final exam, the time prescribed during the final exam times shall be used as a regular class meeting. Exception to meeting classes during the exam times 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.

For classes that have set meeting times, the final exam shall be administered at the prescribed time during finals week. For classes with set meeting times that do not have a final exam, the time prescribed during finals week shall be used as a regular class meeting.

For classes without set meeting times (ie. online classes), the timing of the final exam or final assignment is at the discretion of the instructor within finals week.

No undergraduate 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 for the same day may elect to reschedule the additional examination(s). These alternative arrangements are available only when the exams are comprehensive.

- Final exams for web-based and arranged classes are to be held during final exam week at the discretion of the instructor.
- Final exams for off-campus classes are to be held at the regular class meeting time that falls during the final exam week.
- Classes offered at times not listed below do not have designated final exam times. Instructors are to make arrangements by the end of week 11 to administer these exams during the standard final exam times*.
- Instructors needing an alternative time or location, different than the one assigned, must work with their department associate to request an alternative.
- 0.5 - 1 unit courses will not be assigned a final exam time. However, if instructors would like to host a final exam, please contact the Registrar's Office by the tenth day of classes to ensure proper time and room assignments occur.

Monday

7:45-9:45 am	MW, MWR, MWF, MTWR, MF or WF classes beginning between 7:00-8:50 am
10:00-12 Noon	MW, MWR, MWF, MTWR, MF or WF classes beginning between 10:00-10:50 am
12:15-2:15 pm	MW, MWR, MWF, MTWR, MF or WF classes beginning between 12:00-12:50 pm
2:30-4:30 pm	MW, MWR, MWF, MTWR, MF or WF classes beginning between 2:00-2:50 pm
4:45-6:45 pm	M, MW, MWR, MWF, MTWR or MF classes beginning between 4:00-6:25 pm
7:00-9:00 pm	M, MW, MWR, MWF, MTWR or MF classes beginning 6:30 pm or later

Tuesday

7:45-9:45 am	TR, MTR, MTWRF or TWR classes beginning between 7:00-8:50 am
10:00-12 Noon	TR, MTR, MTWRF or TWR classes beginning between 10:00-10:50 am
12:15-2:15 pm	TR, MTR, MTWRF or TWR classes beginning between 12:00-12:50 pm
2:30-4:30 pm	TR, MTR, MTWRF or TWR classes beginning between 2:00-2:50 pm
4:45-6:45 pm	T, TR, MTR or MTWRF classes beginning between 4:00-6:25 pm
7:00-9:00 pm	T, TR, MTR or MTWRF classes beginning 6:30 pm or later and Common Exam 1

Wednesday

7:45-9:45 am	MW, MWR, MWF, MTWR, MF or WF classes beginning between 9:00-9:50 am
10:00-12 Noon	MW, MWR, MWF, MTWR, MF or WF classes beginning between 11:00-11:50 am
12:15-2:15 pm	MW, MWR, MWF, MTWR, MF or WF classes beginning between 1:00-1:50 pm
2:30-4:30 pm	MW, MWR, MWF, MTWR, MF or WF classes beginning between 3:00-3:50 pm
4:45-6:45 pm	W or WF classes beginning between 4:00-6:25 pm
7:00-9:00 pm	W or WF classes beginning 6:30 pm or later

Thursday

7:45-9:45 am	TR, MTR, MTWRF or TWR classes beginning between 9:00-9:50 am
10:00-12 Noon	TR, MTR, MTWRF or TWR classes beginning between 11:00-11:50 am
12:15-2:15 pm	TR, MTR, MTWRF or TWR classes beginning between 1:00-1:50 pm
2:30-4:30 pm	TR, MTR, MTWRF or TWR classes beginning between 3:00-3:50 pm
4:45-6:45 pm	R or TWR classes beginning between 4:00-6:25 pm
7:00-9:00 pm	R or TWR classes beginning 6:30 pm or later and Common Exam 2

Friday*

7:45-9:45 am	F only classes beginning between 7:00-9:55 am
10:00-12 Noon	F only classes beginning between 10:00-11:55 am
12:15-2:15 pm	F only classes beginning between 12:00-1:55 pm
2:30-4:30 pm	F only classes beginning between 2:00-3:55 pm
4:45-6:45 pm	F only classes beginning between 4:00 pm 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 the instructor.

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.