College Physics I
PHY 101   Fall 2023

Course Description
This is the first part of a two-semester sequence of algebra-based physics. Topics include kinematics, dynamics, heat, sound, and properties of matter. Algebra and trigonometry are applied throughout the course. Lecture 3 hours/lab 3 hours.

Prerequisite
MAT 038 or MAT 044 with grade C or better

Student Learning Outcomes
1. Students will be able to gain knowledge of a broad introduction to physics at the beginning college level and develop physical intuition and problem-solving skills.
2. Students will learn to manipulate a variety of instruments and development critical thinking skills through hands-on laboratory experience.
3. Students learn to design and carry out simple experiments applying theory learnt in the class.

Course Materials: PLEASE BRING TEXTBOOKS AND CALCULATOR TO FIRST CLASS!
1. Required textbook:
   Serway and Vuille
   College Physics
   Volume I
   10th Edition
   Cengage
2. Required Laboratory Manual:
   Huang
   PHY 101 Laboratory 2022-2023 Edition
   MCCC
3. A note book and three pencils are needed.
4. A scientific calculator is required for lecture, laboratory and tests. No cell phone, 89, 92, Voyage, or Nspire can be used in a test.

Evaluation & Requirements of Students

Lecture tests: 60%

Lab tests: 10%

Attendance: 10%

Lab report 20%

There is NO make-up test; the lowest grade is dropped.

Class Attendance Policy
Students are required to attend all classes and should sign attendance sheet each day. In case of transportation, medical or other emergencies, relevant documentation is required to be submitted

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to instructor within a week. Such documents include car repair invoice, doctor's note, court note, etc. Undocumented tardiness and absence will result in lowered grade.

Student Dress Policy
Students are required to dress appropriately. Please keep in mind that the class will share limited space and you'll need to sit, stand, stretch, bend over, and crawl sometimes. Please also take into consideration that clothes may shrink and shrink again.

Supporting Services
Our faculty provides office hours to help students with questions. The best way to take advantage of the time is to go prepared with specific questions to ask. Record the instructor's information here:

Name	Email or Phone	Office Hours

Course website includes homework solutions: http://www.mccc.edu/~huangj/

Mercer email is used to enhance the communication for the course. Please set up the email and check it or have it forwarded to an email that is checked regularly. Our library holds the textbook for in-library use. Our tutoring center provides tutors for Physics. It is located behind the bookstore. Please check out the schedule.

Campus Security

Emergency number for campus security is (609) 570-2222. The non-emergency number for campus security is (609) 570-3503. Please store these numbers in your cell phone.

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Schedule of Lecture and Experiments

Week	Day	Experiment	Lecture	Homework Assignments
1	1 (Wed, 9/6)	Math Overview	1.1, 1.4, 1.5 Scientific Notation Significant Digits Unit Conversion	Chap. 1 WU: 1, 3, 5, 6, 7, 9 P: 9,10, 38, 41, 42, 45
2	2 (Mon, 9/11)	Measurements	1.7, 1.8, 1.9 Cartesian Coordinates Trigonometry	
	3 (Wed, 9/13)	Velocity & Acceleration	2.1, 2.2, 2.3 Displacement, Velocity and Acceleration	Chap. 2 WU: 1*, 2*, 5,6,7,8* C: 2,3,5,7,8
3	4 (Mon, 9/18)	Free Fall	2.4, 2.5, 2.6 Constant Acceleration Free Fall	P: 8*, 12, 15, 22, 23, 29*, 32*, 59*, 70, 74 *with vectors
	5 (Wed, 9/20)	Free Fall	3.1, 3.2, 3.3 Vector Components	Chap. 3 WU: 2,6,8,9 C: 3,5,8,14 P: 8,12,22,23,70
4	6 (Mon, 9/25)	Street Crossing	Test 1 Chap. 1-2	
	7 (Wed, 9/27)	Projectile Motion	3.4 2-D Motion	
5	8 (mon, 10/2)	Atwood Machine	4.1, 4.2, 4.3	Chap. 4 WU:1,2,8,10 C:2,3,4,11,14 P: 2, 5, 6, 20, 25, 26, 27, 30, 40, 63
	9 (Wed, 10/4)	Measurement of Friction	4.4, 4.5, 4.6 Newton's Laws Friction	
6	10 (Mon, 10/9)	Conservation of Energy Pendulum	5.1, 5.2	Chap. 5 WU: 1,2,3,7 C: 1,3,4,5,6 P: 1, 5, 9, 13, 15, 19, 33
	11 (Wed, 10/11)	Conservation of Energy Slide	5.3, 5.5	
7	12 (Mon, 10/16)	6.1, 6.2	Test 2 Chap. 3-5	Chap. 6 WU:1,2,3,4,6,7,9 C:4,5,10,14 P: 4, 7, 11, 14, 15
	13 (Wed, 10/18)	Momentum and Impulse	6.3, 6.5	

WU: Warm-Up Exercises

C: Conceptual Questions

P: Problems

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8	14 (Mon, 10/23)	Momentum and Impulse	7.1, 7.2	Chap. 7 WU:1,3,4,5,7,9 C:3,9 P: 1,5,21,33,34
	15 (Wed, 10/25)	Rotational Motion	7.3, 7.4, 7.5	
9	16 (Mon, 10/30)	Rotational Equilibrium of a Rigid Body	8.1, 8.2, 8.3	Chap. 8 WU:1,3,4,5 C: 13 P: 8, 10, 20
	17 (Wed, 11/1)	Rotational Equilibrium of a Rigid Body	8.5, 8.6, 8.7	
10	18 (Mon, 11/6)	9.1, 9.2, 9.3	Test 3 Chap 6-8	WU: 1,9 C: 1, 4, 6, 8, 9, 10 P: 6, 21, 23, 31, 34, 41
	19 (Wed, 11/8)	Archimedes' Principle	9.4, 9.5, 9.6	
11	20 (Mon, 11/13)	Sustainable Energy Research	10.1, 10.2	Chap. 10 WU: 1, 2, 3, 4, 5, 7 C: 1, 2, 6, 7, 9, 11 P: 1, 2, 5, 11, 14, 19
	21 (Wed, 11/15)		10.3	
12	22 (Mon, 11/20)	Calorimeter & Specific Heat	11.1, 11.2, 11.3	Chap. 11 WU: 1, 2, 3, 4, 5, 7 C: 2, 3, 4, 5 P: 2, 3, 5, 9 25, 26, 28
13	23 (Mon, 11/27)	Calorimeter & Specific Heat Heat of Fusion	11.4, 11.5	
	24 (Wed, 11/29)	Sustainable Energy Research	12.1-12.5 1st Law Thermodynamics 2nd Law Thermodynamics	Chap. 12 WU: 3, 5, 7 C: 4, 10, 14 P: 21, 31, 38
14	25 (Mon, 12/4)	Sustainable Energy Presentation	Test 4 Chap. 9-11	
	26 (Wed, 12/6)	SHM: Spring	13.1, 13.2, 13.3	Chap. 13 WU: 1, 2, 5, 6, 8 C: 4, 8 P: 2, 10, 35, 43
15	27 (Mon, 12/11)	SHM: Pendulum	13.5, 13.7, 13.8	
	28 (Wed, 12/13)	Review/Final Exam, Cumulative		

WU: Warm-Up Exercises

C: Conceptual Questions

P: Problems