California Baptist University
Syllabus
PHY201 – Physics for Engineers I with Lab (DE), 4 Units
2024, Spring Term

COURSE DESCRIPTION

This course covers topics such as units, vectors, motion (in one, two and three dimensions), Newton's laws of motion, work, kinetic and potential energy, momentum, impulse, collisions, conservation laws, dynamics of rotational motion, equilibrium, gravitation, and periodic motion.

Prerequisites: MAT 145 or a B or better in EGR 182.
Pre/Co-requisite: MAT 245 Calculus I

Class Hours: MWF 9:30 am – 10:30 am
Classroom: Yeager B252

Lab Sections: (D) TR 10:30 am – 12:00 noon; (E) TR 12:15 pm – 1:45 pm
Lab Location: James 122

INSTRUCTOR CONTACT INFORMATION

Instructor: Hyung S. Choi, Ph.D., M.Phil., M.Div.
Office Location: James 470
Telephone: 951.552.8723
Email: hchoi@calbaptist.edu
Office hours: M 10:45 am – 11:45 am & 1:15 pm – 3:00 pm; W 1:15 pm – 2:00 pm;
R 2:00 pm – 4:00 pm; F 10:45 am – 11:45 am.
(For extra-appointments: email the instructor.)

REQUIRED TEXTS & RESOURCES

1. Douglas Giancoli, Physics for Scientists and Engineers, 5th edition, published by Pearson.
2. Mastering Physics account for doing homework (included in bookstore bundle, or visit www.pearson.com/mastering & see Mastering Physics Student Registration instruction posted in Blackboard. The Mastering Physics course ID is: **choi29551**.
3. Scientific calculator (Calculator can't be a device with internet capabilities). Please bring to all classes, exams and laboratory sessions.

COURSE OBJECTIVES

After completing this course students should:

1. Have a greater appreciation of God, the Creator and Sustainer of the natural world, and the author of the laws of physics.
2. Develop a working understanding of important physics concepts such as displacement, velocity, acceleration, force, potential energy, kinetic energy, momentum, and angular motion.
3. Develop lower-division level problem solving skills in the areas of mechanics enumerated above (in #2).
4. Gain the necessary conceptual and problem-solving background for future course work in various engineering disciplines (e.g., statics, dynamics, and strength of materials).

After completing the laboratory component of this course students should be able to:

1. Work with equipment such as PASCO air tracks, photogates, rotational motion apparatuses, and smart pulleys.
2. Understand how the equations learned in the classroom are manifested in the laboratory and how by changing one quantity (e.g., the mass) other quantities are affected (e.g., the acceleration).
3. Collect, manipulate, and analyze physics data using PASCO Capstone and be able to answer questions regarding the results of an experiment.
4. Write laboratory reports in a professional manner.

Faith Objective: Gain a greater appreciation of God as the creator of all things and the author of the laws of nature.

University Student Outcomes (USO) Descriptions

USO 4: Academically Prepared (APb) - Demonstrate competency in mathematical, scientific, and technological skills.

ASSIGNMENTS OVERVIEW

Midterm Exams: There will be 2 midterm exams. See the course schedule in p.6.

Final Exam: **Wednesday, April 17, 9:30 am - 11:30 am**. You must take the comprehensive final exam on this date and at this time. No work will be accepted after the final exam.

Make-Up Examinations: Make-up examinations may be considered for students who miss an exam for **a university-related activity, or a documented medical reason or emergency.** Students must notify the professor in writing by CBU email before the exam date. **The student's notification to the professor of an absence does not constitute approval of a make-up exam**. If a make-up exam is granted, the exam must be made up within 1 week in the Student Success Center (SSC). The SSC will also likely charge a fee for administering the test. In all other cases, make-up examination requests will be denied.

Homework: Homework will be assigned often through the Pearson Mastering Physics online software (www.pearson.com/mastering). It is recommended that students check Mastering Physics multiple times a week. Copying homework solutions from the Internet or your friends is cheating and will be treated as an honor code violation. Cheating will NOT prepare you for Exams. **You are not likely to succeed in this course if you don't regularly do your homework**.

Please register through Blackboard by choosing "Courses" > "2024-SP-UT-PHY201-D_PHY201-E-Physics for Engineers I with Lab" > "Tools" > "Pearson's My Lab & Mastering" and signing in. The Mastering Physics course ID is: **choi29551**.

Labs: Lab Instructions will be posted in Blackboard. Please refer to the lab schedule (pp. 6-7) for the section you have registered.

Recitations/Quizzes: In recitation sessions (See course schedule in p.6.), you will practice solving problems. You may share problem-solving ideas with your classmates, but the work must be your own. You will also have some quizzes that will need to be turned in by the end of the session.

Attendance: (1) Class attendance is required and will be monitored. (2) If you are absent, regardless of the reason, you are responsible for anything you missed, and must arrange to turn in any work due. (3) Excused absences include illness and campus-approved events, but in either case, the instructor needs to be informed **by you via email in advance** of the start of the class. If you do not inform the instructor in advance via email, your absence will be unexcused and will receive no credit for missed work (including exams). If you think you are Covid positive, please follow the university guidelines.

Class Participation and Professionalism: Active participation includes alertness, volunteering to answer questions, and remaining focused on the class content. Frequently glancing at your cell phone (or other electronic device), sending and receiving text messages, playing games, watching videos, and doing other activities during class time is unprofessional, distracting, and discourteous. It will negatively impact your professionalism score.

ASSESSMENT POLICIES

Points Distribution

Graded assignments will be weighted as follows:

2 Midterm Exams	30% (15% each)
Comprehensive Final Exam	30%
Attendance & Class Participation	5%
Quizzes & Recitations	10%
Labs	15%
Homework via Mastering Physics	10%
Total	**100%**

Final Grades

The following scale will be used when calculating final grades:

A	90% - 100%	A-	87% - 89%	B+	84% - 86%
B	75% - 83%	B-	70% - 74%	C+	67% - 69%
C	63% - 66%	C-	60% - 62%	D+	57% - 59%
D	53% - 56%	D-	50% - 52%	F	Less than 50%

Checking Grades

You may check your exam and quiz grades via the “My Grades” section in Blackboard. You may check your homework grades via Mastering Physics.

COURSE POLICIES

Communication – Students are expected to use the CBU email account they have been assigned for receiving email from faculty members and sending email to faculty members. The instructor will only correspond with you from your CBU email address. It is suggested that students get in a habit of checking their email at least on a daily basis during the business week (M-F). You are required to check Blackboard at least once a week or within 24 hours if requested via email. Documents will often be posted on Blackboard rather than providing hard copies to students in class.

Professionalism – As a professional, you are expected to collaborate with your colleagues during in-class activities or out-of-class group projects, and to respect one another with exemplary listening skills during all interactions, presentations, and class discussions. This also requires supporting your classmates with positive body language and appropriate verbal communication.

Study Groups – Working on homework and studying in groups is *highly* recommended, as active group interactions are very beneficial to the learning process. However, all work you turn in *must be your own original work*. Copying of any kind is considered academic dishonesty (see below). In addition, beware of relying too heavily on other

students while completing assignments. If you are continually incapable of completing assignments on your own, please come to my office hours and seek assistance!

Academic Honesty - Any incident of academic dishonesty (cheating, plagiarism, copying, and other forms) must be reported to the Dean of Students. Judicial sanctions may include, but are not limited to, loss of a letter grade or failure in the course in which the offense occurred, suspension, and/or dismissal from the University. A detailed discussion of academic dishonesty appears in the CBU *Student Handbook.*

Repeat Students - If you are repeating this course for any reason, directly copying your own previous work (homework and tutorial solutions, lab reports, etc.) without going through the process another time and redoing the work again **is considered academic dishonesty** unless you have direct written permission from the instructor.

Students with Disabilities
Students who have a documented disability and wish to arrange the appropriate accommodation must contact the Coordinator of Disability Services at DSS@calbaptist.edu.

Recording Class Sessions
Recording of class sessions without the prior express written permission of the instructor is prohibited. Any permission granted shall include the requirements that a recording may only be used for content study purposes only and sharing a recording with anyone outside of the course and/or posting on social media are strictly prohibited. This course policy is in alignment with Student Handbook and the Standard of Student Conduct. Refer to Student Handbook policies 15.6, 15.7, and 15.8 for more information.

Title IX Policy
California Baptist University is committed to providing a learning, working, and living environment that promotes personal integrity, civility, and mutual respect in an environment free of discrimination on the basis of sex, which includes all forms of sexual misconduct. For more information on CBU's Title IX policy, procedures, and resources, please refer to the Title IX page via the CBU website at https://calbaptist.edu/about/title-ix.

TENTATIVE COURSE SCHEDULE

Tentative Schedule — **PHY201 (D&E) Physics for Engineers 1**

MWF 9:30 am -10:30 am / Lab D: TR 10:30 am -12:00 pm; Lab E: TR 12:15 pm -1:45 pm

Wk	Day	Date	Content	Lab	Wk	Day	Date	Content	Lab
1	M	1/8	L1: Introduction to the course	**Week 1: NO LAB**	8	M	2/26	L20: Symmetry & Conservation: 8.5	
	Tu	1/9				Tu	2/27		L6: Cons. of Energy
	W	1/10	L2: Units, Dimensions, Significant Figures			W	2/28	L21: Conservation of Energy: 8:1-4	
	Th	1/11				Th	2/29		Recitation 6
	F	1/12	L3: One Dimensional Motion: 2.1-3			F	3/1	L22: Dissipative Force: 8.6	
	St	1/13				St	3/2		
	Su	1/14				Su	3/3		
2	M	1/15	**** MLK holiday (no classes)**		9	M	3/4	L23: Escape Velocity, Power: 8.7-8	
	Tu	1/16	**** Last day to add a course**	L1: Uncertainty		Tu	3/5		L7: Cons of Momentum
	W	1/17	L4: Acceleration: 2.4-7			W	3/6	L24: Conservation of Momentum: 9.1-2	
	Th	1/18		Recitation 1		Th	3/7		Recitation 7
	F	1/19	L5: 2-D Motion & Vectors: 3.1-3			F	3/8	L25: Collision & Impulse: 9:3-4	
	St	1/20				St	3/9		
	Su	1/21	**** 1/22 Monday: Last day to drop a course w/ refund**			Su	3/10		
3	M	1/22	L6: Unit Vectors & Components: 3.4-5		x	M	3/11	**** Spring Break (3/11-15) No Classes**	
	Tu	1/23		L2: Inclined Plane		Tu	3/12		
	W	1/24	L7: Higher Dim, Vector Kinematics: 3.6			W	3/13		
	Th	1/25		Recitation 2		Th	3/14		
	F	1/26	L8: Projectile Motion: 3.7-8			F	3/15		
	St	1/27				St	3/16		
	Su	1/28				Su	3/17		
4	M	1/29	L9: Newton's Laws of Motion: Ch. 4		10	M	3/18	L26: Elastic and Inelastic Collisions: 9:5-6	
	Tu	1/30		L3: Vectors in 2D		Tu	3/19		L8: Pendulum
	W	1/31	L10: Mass, Weight, Free body diagram			W	3/20	L27: CM & Collisions in 2-3-Dim: 9:7-8	
	Th	2/1		Recitation 3		Th	3/21	**** 3/22 Friday: Last day to drop a course w/ W**	Recitation 8
	F	2/2	L11: Application of Newton's Laws			F	3/22	L28: CM & Translational Motion: 9.9	
	St	2/3				St	3/23		
	Su	2/4				Su	3/24		
5	M	2/5	L12: Friction, Static Cases: 5.1		11	M	3/25	**Midterm Exam 2**	
	Tu	2/6		L4: Atwood Machine		Tu	3/26		L9: Rotational Motion
	W	2/7	L13: Dynamic Cases (Including 5.4)			W	3/27	L29: Rotational Motion & Quantities: 10.1-3	
	Th	2/8		Recitation 4		Th	3/28		Recitation 8
	F	2/9	L14: Uniform Circular Motion: 5.2-3 (fictitious forces)			F	3/29	**** Good Friday (no classes)**	
	St	2/10				St	3/30		
	Su	2/11				Su	3/31		
6	M	2/12	L15: Coriolis, Drags, Terminal Velocity: 5.6	No Lab (Exam Prep)	12	M	4/1	**** Easter Observance (no classes until 4 pm)**	
	Tu	2/13				Tu	4/2		L9 (Finish)
	W	2/14	L16: Gravitation, Satellites & GR: 6.1-4	No Lab (Exam Prep)		W	4/3	L30: Torque & Moment of Inertia: 10: 4-7	
	Th	2/15				Th	4/4		Recitation 9
	F	2/16	**Midterm Exam 1**			F	4/5	L31: Rotational Dynamics 10.8-9	
	St	2/17				St	4/6		
	Su	2/18				Su	4/7		
7	M	2/19	L17: Work and Energy: 7.1-3		13	M	4/8	L32: Angular Momentum 11:1-2	
	Tu	2/20		L5: Hooke's Law		Tu	4/9		No Lab
	W	2/21	L18: Work-Energy Principle: 7.4			W	4/10	L33: Angular Momentum & Torque: 11.3-6	
	Th	2/22		Recitation 5		Th	4/11		No Lab
	F	2/23	L19: Conservative & Non-conservative Forces: 8.1-2			F	4/12	L34: Gyroscope, Precession: 11:3-6	
	St	2/24				St	4/13		
	Su	2/25				Su	4/14		
						M	4/15	L35: Course Review	
						W	**4/17**	**PHY201 Final: 9:30 am - 11:30 am**	