



## Engineering Physics I: Physics 111

Course Title: Engineering Physics I      Course Number: PHY-111      Credits: 4

Pre-requisite(s)/ Co-requisite(s): Calculus I (MAT 111) \_

Meeting Times: \_\_\_\_\_

Meeting Room: \_\_\_\_\_

Instructor: \_\_\_\_\_

Office Hours: \_\_\_\_\_

Office Location: \_\_\_\_\_

E-mail: \_\_\_\_\_

Telephone: \_\_\_\_\_

**Course Description:** An introductory course in calculus-based mechanics. Topics include introduction to vector analysis, equilibrium of particles and rigid bodies, kinematics and dynamics of particles and simple rigid body systems. Emphasis is placed on Newton's laws of motion and conservation principles involving work, energy, and momentum.

### Students' Learning Outcomes/ Objectives (SLO)

*Upon successful course completion students will be able to:*

1. Apply the scientific method to analyze problems regarding classical mechanics
2. Explain the role of classical mechanics and technology in society
3. Demonstrate an understanding of the fundamentals of physics to include:
  - The application of scientific method to analyze physics problems critique and draw conclusions from data, graphs and equations.
  - Apply equations of motion, Newton's laws of motion and law of universal gravitation to natural or common problems
  - Be grounded in the concepts of work, kinetic and potential energy, impulse and momentum
  - Determine moment of inertia and the center of mass and their applications

4. Conduct basic laboratory experiments and prepare laboratory reports that clearly communicate experimental information in a logical and scientific manner.
5. Think critically and use scientific methods of inquiry and explain the role and impact of science in the natural world and the society

## **Text: University Physics (14<sup>th</sup> edition) By Young and Freidman**

Background readings and other materials:

1. Fundamental of Physics Extended Halliday, David and Resnick, Robert.  
John Wiley and Sons.
2. Feynman, Character of Physical Law. Random
3. Douglas Giancarlo Physics for Scientists and Engineers.

### **Course Outline:**

**( Exams & Labs schedules are based on material covered in class)**

#### **Week        Topics**

Week	SLO	Section
1 2	<b>1, 2, 3</b>	Vectors and Vector Addition Components of Vectors, Unit Vectors, Product of Vectors
3 4	<b>1, 2, 3, 4, 5</b>	Displacement, Time, Velocity & Acceleration Motion with Constant Acceleration Free Falling Bodies, Velocity and Position by Integration
5	<b>1, 2, 3, 4, 5</b>  <b>EXAM # 1</b>	Position, Velocity and Acceleration Vectors Projectile Motion, Motion in a Circle & Relative Velocity
6	<b>1, 2, 3, 4, 5</b>	Force and Interactions, Newton's Laws of Motion Mass and Wight & Free Body Diagrams
7 8	<b>1, 2, 3, 4, 5</b> <b>EXAM #2</b>	Using Newton's Laws, Equilibrium & Dynamics Frictional Force & Circular Motion
9	<b>1, 2, 3, 4, 5</b>	Work, Kinetic Energy and Work Energy with Varying Forces & Power

10	<b>1, 2, 3, 4, 5</b>	Gravitational & Elastic Potential Energy Conservative and None Conservative Forces
11	<b>1, 2, 3, 4, 5</b> <b>EXAM # 3</b>	Momentum and Impulse Conservation of Momentum and Collisions Center of Mass
12	<b>1, 2, 3, 4, 5</b>	Angular Velocity and Acceleration Relating Linear and Angular Kinematics Energy in Rotational Motion & Moment- of-Inertia
13-14	<b>1, 2, 3, 4, 5</b>	Torque & Angular Acceleration for a Rigid Body Work and Power in Rotational Motion
		Angular Momentum Conservation of Angular Momentum
15	<b>1, 2, 3, 4, 5</b> <b>FINAL EXAM</b>	Conditions for Equilibrium Solving Rigid Body Equilibrium Stress, Strain, and Elastic Moduli Elasticity and Plasticity

Physics Lab (may adjust based on material covered in class and available material)

<b>Week:</b>	<b>PHY111</b>
1	Lab Safety Data Analysis Measurement
2	Vectors, Force Table
3	Spring Constant
4	Static and Kinetic Friction
5	Free fall and Projectile motion
6	Atwood Machine Newton's second law
6	
8	Conservation of Energy & Momentum
9	Rotational Static Equilibrium and Torques

## Assessment

- |                               |           |
|-------------------------------|-----------|
| 1. Three in class exams       | 20 % each |
| 3. A final comprehensive exam | 20%       |
| 4. Lab work and assignments   | 20%       |

FINAL AVERAGE	GRADE	FINAL AVERAGE	GRADE
92 – 100	A	75 – 77	C+
88 – 91	A–	70 – 74	C
85 – 87	B+	60 – 69	D
82 – 84	B	0 – 59	F
78 – 81	B–		

- ATTENDANCE POLICY:

Students may be dropped after 3 absences. Regular attendance is crucial to doing well in the course. All cell phones should be turned OFF. If a student expects an emergency call, clear it with me before class. If a cell phone rings during class, the student will be asked to leave for the remainder of the class. No food or drinks are to be used except bottled water. Students are expected to follow attendance guidelines as presented in the syllabus provided by the instructor. However, in case of an emergency or illness, students are advised to notify their instructor or counselor immediately. The instructor will determine the validity of the absence. The exceptions to instructor discretion exist when members of armed forces are called for training or assignment or any case where students are legally required to be elsewhere. Pending the submission of appropriate documentation reasonable accommodations for make-up work shall be provided, and in accordance with guidelines included in the syllabus.

- DISABILITY SUPPORT STATEMENT:

Students with disabilities who believe that they might need accommodations in this class are encouraged to contact Counselor/Coordinator, and Disability Support Services at (201) 360-4157, as soon as possible to better ensure that such accommodations are implemented in a timely fashion. All disabilities must be documented by a qualified professional such as a Physician, Licensed Learning Disabilities Teacher Consultant (LDTC), Psychiatrist, Psychologist, Psychiatric Nurse, Licensed Social Worker or Licensed Professional Counselor, who is qualified to assess the disability that the student claims to have and make recommendations on accommodations for the student. All information provided to the Disability Support Services Program will be confidential between the program, professors involved with the student and individual student.

- **ACADEMIC INTEGRITY STATEMENT:**

### Academic Integrity Standards

Academic integrity is central to the pursuit of education. For students at HCCC, this means maintaining the highest ethical standards in completing their academic work. In doing so, students earn college credits by their honest efforts. When they are awarded a certificate of degree, they have attained a goal representing genuine achievement and can reflect with pride on their accomplishment. This is what gives college education its essential value.

Violations of the principle of academic integrity include:

Cheating on exams

Reporting false research data or experimental results

Allowing other students to copy one's work to submit to instructors

Communicating the contents of an exam to other students who will be taking the same test

Submitting the same project in more than one course, without discussing this first with the instructor

Submitting plagiarized work. Plagiarism is the use of another writer's words or ideas without properly crediting that person. This unacknowledged use may be from published books or articles, the Internet, or another student's work

When students act dishonestly in meeting their course requirements, they lower the value of education for all students. Students who violate the college's policy on academic integrity are subject to failing grades on exams or projects, or for the entire course. In some cases, serious or repeated instances of academic integrity violations may warrant further disciplinary action.

### Hudson County Community College Classroom Recording Policy

- Hudson County Community College prohibits the audio-visual recording, transmission, and distribution of classroom sessions. Classes may only be recorded with the advance written permission of the instructor. The Hudson County Community College classroom recording policy must be listed in all syllabi.
- All classroom recordings can only be used for academic purposes by students enrolled in that class. Recordings may not be shared, reproduced, or uploaded to public websites or other mediums, and these recordings may contain copyrighted material and are prohibited from any form of commercial use.

- All students and guests must be informed that the class may be recorded. Due to issues related to privacy and the possible inhibition of student participation, instructors should be mindful of the effects of permitting classroom recording.
- Instructors should retain electronic or paper copies of their written consent to grant classroom recordings.
- Students must destroy their recordings at the end of the semester.
- Students who are granted permission to record their class by the office of Disability Support Services should inform the instructor beforehand and are subject to the policies outlined in this document.
- Violation of this policy is subject to disciplinary action listed under the code of conduct as included in the Student Handbook. Instructor Classroom Recording Policy
- Instructors may record their classes as long as students are informed in writing in advance that recording will take place. Instructors may distribute their own lectures, but this must be limited to the lecture portion of the class. Recordings of student presentations or activities may be used in the class if the students are notified in advance of the recording. Recordings of student presentations or activities may not be distributed in any way without the advance written consent of the students. This should be included in all syllabi: Hudson County Community College prohibits the audio-visual recording, transmission, and distribution of classroom sessions. Classes may only be recorded with the advance written permission of the instructor. The complete classroom recording policy is listed in the student handbook.

Successful people access support from others when needed. Hudson County Community

College has many supportive services available to help you meet your goals. You are encouraged to contact your instructors or other professionals on campus. Below are resources available to you.

**In case of Emergency, please contact security or 911**

	<b>Journal Square Campus</b>	<b>North Hudson Campus</b>
<u><b>Counseling Services</b></u> <a href="mailto:counseling@hccc.edu">counseling@hccc.edu</a>	201-360-4150 A Building, Floor 2 <a href="https://myhudson.hccc.edu/advisement">https://myhudson.hccc.edu/advisement</a>	201-360-4150 Enrollment Center, Floor 1 <a href="https://myhudson.hccc.edu/advisement">https://myhudson.hccc.edu/advisement</a>
<b>The National Suicide Prevention Lifeline: 1-800-273-8255</b> <b>Crisis Text Line: Text HELLO to 741-741</b>		
<u><b>Advising Services</b></u> <a href="mailto:advising@live.hccc.edu">advising@live.hccc.edu</a>	201-360-4150 A Building, Floor 2 <a href="https://myhudson.hccc.edu/advisement">https://myhudson.hccc.edu/advisement</a>	201-360-4150 Enrollment Center, Floor 1 <a href="https://myhudson.hccc.edu/advisement">https://myhudson.hccc.edu/advisement</a>
<u><b>Career Development</b></u> <a href="mailto:career@hccc.edu">career@hccc.edu</a>	201-360-4181 A Building, Floor 3 <a href="https://myhudson.hccc.edu/career-development">https://myhudson.hccc.edu/career-development</a>	201-360-4181 Floor 2, Room 204 <a href="https://myhudson.hccc.edu/career-development">https://myhudson.hccc.edu/career-development</a>
<u><b>Disability Support Services</b></u> <a href="mailto:dss@hccc.edu">dss@hccc.edu</a>	201-360-4157/4163 A Building, Floor 2 <a href="https://myhudson.hccc.edu/dss">https://myhudson.hccc.edu/dss</a>	201-360-4157/4163 Enrollment Services, Floor 1 <a href="https://myhudson.hccc.edu/dss">https://myhudson.hccc.edu/dss</a>
<u><b>Library</b></u> Journal Square <a href="mailto:librarian@hccc.edu">librarian@hccc.edu</a> North Hudson <a href="mailto:librarynhc@hccc.edu">librarynhc@hccc.edu</a>	201-360-4360 L Building, Floor 1 <a href="http://www.hccclibrary.net/">http://www.hccclibrary.net/</a>	201-360-4605 Floor 3 <a href="http://www.hccclibrary.net/">http://www.hccclibrary.net/</a>
<u><b>Tutoring Center</b></u> <a href="mailto:tc@hccc.edu">tc@hccc.edu</a>	201-360-4187 Lower Level of Library Building <a href="https://myhudson.hccc.edu/tutoring">https://myhudson.hccc.edu/tutoring</a>	201-360-4623 Floor 5, Room 511 <a href="https://myhudson.hccc.edu/tutoring">https://myhudson.hccc.edu/tutoring</a>
<u><b>Writing Center</b></u> <a href="mailto:wc@hccc.edu">wc@hccc.edu</a>	201-360-4370 J Building, Room 204 <a href="https://myhudson.hccc.edu/tutoring">https://myhudson.hccc.edu/tutoring</a>	201-360-4779 Floor 7, Room 703A <a href="https://myhudson.hccc.edu/tutoring/">https://myhudson.hccc.edu/tutoring/</a>