






HOUSTON COMMUNITY COLLEGE SOUTHWEST
COURSE SYLLABUS FOR PHYS 2325 – UNIVERSITY PHYSICS I
 Fall, 2016
 Class Number 14873

Discipline/Program	1	Physics
Course Level	1	First Year (Freshman)
Course Title	1	University Physic I
Course Rubric and Number	1	PHYS 2325
Semester with Course Reference Number (CRN)	2	Fall 2016 CRN 14873
Course Location/Times	2	Stafford Center Monday, Wednesday, Room W118 (lecture) 5:30 PM – 7:00 PM
Course Semester Credit Hours (SCH) (lecture, lab)	1	3 (3 lecture, 1 lab)
Total Course Contact Hours	1	48
Course Length (number of weeks)	2	16
Type of Instruction	2	In-person (Web-enhanced)
Instructor contact information (phone number and email address)	2	Dr. E. Daniel Akpanumoh Office Phone: 713-718-5579 E-mail: edem.akpanumoh@hccs.edu Learning Web: http://learning.hccs.edu/faculty/edem.akpanumoh
Office Location and Hours	2	Learning Hub (Stafford Campus) 12:00 PM – 1:00 PM, Wednesday or by arrangement.
Course Description: ACGM or WECM	1	Fundamental principles, using calculus, for science, computer science and engineering majors; The principal and applications of classical mechanics, including harmonic motion and physical systems with emphasis on problem solving.
Course Description: HCC Catalog Description	1	A-Calculus based physics course designed specifically for chemistry, physics, and engineering majors. Topics include principles of mechanics, sound, wave phenomena, kinetic theory, fluid flow, and thermal physics.
Course Prerequisite(s)	1	Must be placed into GUST 0341 (or higher) in reading, and be placed into MATH 2413 .
Academic Discipline Program Learning Outcomes	1	<ol style="list-style-type: none"> 1. To provide the student a basic and practical understanding of physics (basic qualitative and quantitative concepts, and systematic problem solving strategies) and recognize its relevance in our daily lives. 2. To prepare students to meet with success in higher level Physics and other science courses when they transfer to four-year

		<p>universities.</p> <p>3. To prepare students for professional programs requiring a mastery of General Physics, such as Physics, Chemistry, Mathematics and engineering.</p>
Course Student Learning Outcomes (SLO)	1	<p>Upon successful completion of this course, students should be able to:</p> <ol style="list-style-type: none"> 1. Use vector analysis and calculus to solve kinematics and dynamics problems. 2. Apply Newton's laws of motion to analysis of dynamics problems. 3. Relate the concept of total work done to the change in kinetic energy of a particle. 4. Identify different forms of energy and transformation of energy. 5. Apply conservation laws (conservation of energy and linear momentum) to the analysis of dynamics of a particle or a system of particles. 6. Apply Newton's laws of motion to rotational motion. 7. Distinguish between waves and particles and analyze the properties of traveling waves as well as standing waves.
Learning Objectives (Numbering system linked to SLO)	2	<p>Upon successful completion of this course, students should be able to:</p> <ol style="list-style-type: none"> 1.1 Solve one and two dimensional kinematics problems. 1.2 Analyze motion of a free falling object, projectile motion, and a particle in circular motion. 2.1 Use Newton's Laws of motion in solution of dynamics problems. 2.2 Draw free body diagrams in situations involving forces. 3.1 State the Work - Energy -Theorem and apply it to the analysis of dynamics problems. 4.1 Define potential energy and relate it to conservative forces; 4.2 Relate internal energy to the work done by non - conservative forces. 5.1 State the Law of Conservation of Energy.

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-  2 To be customized by individual instructor
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		<p>5.2 Use the Law of Conservation of momentum in the analysis of collisions.</p> <p>6.1 Solve simple problems involving rotational dynamics.</p> <p>6.2 State the conditions for equilibrium and apply them to solution related to equilibrium.</p> <p>7.1 Distinguish between travelling waves and standing waves.</p> <p>7.2 Solve problems involving travelling and standing waves. related problems</p>																																				
SCANS and/or Core Curriculum Competencies	1	Reading, Speaking/Listening, Critical Thinking, Computer/Information Literacy																																				
Course Calendar	2	<p><u>Tentative** Syllabus & Exam Schedule for PHYS 2325 Fall 2016.</u></p> <table border="1"> <thead> <tr> <th>Week Chapters</th> <th>Topics To Be Discussed</th> <th>Reference</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Introduction</td> <td>Chapter 1</td> </tr> <tr> <td>2.</td> <td>Motion in One Dimension</td> <td>Chapter 2</td> </tr> <tr> <td>3</td> <td>LABOR DAY September 5, 2016</td> <td></td> </tr> <tr> <td>.</td> <td>Vectors, Motion in Two Dimensions</td> <td>Chapter 3</td> </tr> <tr> <td>„</td> <td>Motions in Two Dimensions</td> <td></td> </tr> <tr> <td>Chapter 4</td> <td></td> <td></td> </tr> <tr> <td>4.</td> <td>Newton’s Laws of Motion</td> <td>Chapter 5</td> </tr> <tr> <td>5.</td> <td>Applications of Newton’s Laws</td> <td>Chapter</td> </tr> <tr> <td>6</td> <td></td> <td></td> </tr> <tr> <td>5.</td> <td>EXAMINATION I , September 19, 2016</td> <td>CHAPTERS 1-6</td> </tr> <tr> <td>6.</td> <td>Energy of System</td> <td>Chapter 7</td> </tr> </tbody> </table>	Week Chapters	Topics To Be Discussed	Reference	1.	Introduction	Chapter 1	2.	Motion in One Dimension	Chapter 2	3	LABOR DAY September 5, 2016		.	Vectors, Motion in Two Dimensions	Chapter 3	„	Motions in Two Dimensions		Chapter 4			4.	Newton’s Laws of Motion	Chapter 5	5.	Applications of Newton’s Laws	Chapter	6			5.	EXAMINATION I , September 19, 2016	CHAPTERS 1-6	6.	Energy of System	Chapter 7
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	7.	Conservation of Energy	Chapter 8
	8.	Linear Momentum and Collisions	Chapter 9
	9.	Rotation of Rigid Bodies About a Fixed Axis	Chapter 10
	10.	Angular Momentum	Chapter 11
	11.	Static Equilibrium and Elasticity	Chapter 12
	12. EXAMINATION 2, October 24, 2016 CHAPTERS 7 - 12		
	13.	Fluids	Chapter 14
	14.	Oscillations	Chapter 15
	15.	Waves Motion	Chapter 16
	THANKSGIVING HOLIDAY November 24 – 27, 2016		
	15.	Sound Waves	Chapter 17
	16. EXAMINATION 3, November 30,, 2016 CHAPTERS 13- 18* . ,,		
		* =Superposition Principle (if time permits) Chapter 18	
	17.	Review For Final Examination	
	<u>17. Comprehensive Final Exam, Monday December 5, 2016</u>		
	** = Dates subject to change except Final Exam Date.		



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Instructors Requirements:

PROBLEM SOLVING STRATEGIES/SUGGESTIONS

Physics is not a “spectator’s game!” In order to complete the course successfully, a student must be prepared to solve many problems on his/her own time. This hopefully should help the student to do well in the exams. A student should spend 2-3 hours in preparation for every stipulated hour of lecture. It is worth noting that problem solving skill cannot be acquired by simply watching the instructor work the problems in class. The student must practice solving problems on his/her own.

Simple because the professor may explain the materials so well during the lecture, do not make the big mistake of not looking over the lectures and practicing working the problems worked by the professor in class. You should also prepare for class by at least reading the materials of the new chapter to be covered before coming to class. Avoid the mistake of studying from exam to exam, that is, only looking over and preparing for the exam a day or so before the exam. You cannot do well in physics this way, though this method may work in other subjects, IT NEVER WORKS IN PHYSICS.

You have to be constantly studying right from the very first time the materials are covered in class by the professor. No matter how good a student you may be, no matter how many A,s you have made in all other subjects, remember you are taking a course that requires the highest degree of learning including critical thinking, analyzing, evaluating, reasoning, logic, problem solving, mathematics, you name it. So what may have worked in all those other courses such as memorizing the materials and expecting to remember them during the exam, will never work in physics. You must roll down your sleeves and get down to working the problems over and over again until you understand them. If you follow these guidelines, you will certainly discover that learning physics is fun and you will complete the course with a good grade. Remember I am here to help you. If you are having problems solving the assigned problems or even those I do in class, do not hesitate to come to me for help.

NOTE! Lack of preparation, lack of commitment, lack of hard work and lack of dedication on your own part, would not constitute an emergency situation on my own part. You are totally in control of



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your destiny in this class. I am here to help you succeed in this course but I need a lot of serious effort from you.

Some Useful Hints

1. Read the problem very carefully and make sure that you understand the wording of the problem. If possible, try and have a mental picture of the problem in your mind.
2. Make a list of all known/given parameters and all unknown/required parameters from the problem. This is the starting point. Without this crucial step, you are lost.
3. If possible, draw diagrams of all forces involved, label them, and assume their directions.
4. Use the appropriate theories to write down the correct equation(s) that relate the unknown(s) with the known(s) parameters. Note that in some instances more than one equation may be needed.
5. Solve the equation(s) using the pertinent algebraic techniques.
6. Once an answer has been obtained, do not stop there, but ask yourself the question, "given the information of the problem is my answer correct?" If possible double-check your work to correct any possible errors made during the process. It is a lot of fun to solve problems and arrive at the correct answers. It makes you feel good about yourself. However if you fail to get the correct answer after one trial, do not give up. Try and try again. If still unsuccessful then it is time to seek help. **HAVE FUN LEARNING PHYSICS THIS SEMESTER.**

ASSIGNED PROBLEMS FOR PHYS 2325

Chapter 1: #s 1, 2, 4, 5, 9, 11, 15, 17, 18, 23, 24, 27, 29(a), 35, 39, 41, 45, 59, 60, 67.

Chapter 2: #s 1, 3, 5, 11, 13, 19, 21, 24, 28, 29, 33, 35, 38, 44, 51, 59, 77.

Chapter 3: #s 3, 5, 8, 11(analytical mtd.), 15, 23, 29, 31(a), 26, 39, 51.

Chapter 4: #s 1, 3, 6, 7, 13, 21, 23, 25, 36, 58, 66, 77.

Chapter 5: #s 3, 5, 15, 19, 23, 23, 29, 33, 35, 37, 42, 49, 55, 60, 61, 85.

Chapter 6: #s 11, 12, 16, 23, 27, 59.

		<p>Chapter 7: #s 1, 5, 9, 11, 12, 15, 17, 19, 29, 31, 33, 44, 63.</p> <p>Chapter 8: #s 3, 5, 7, 14, 15, 22, 25, 25, 29, 38, 47, 63.</p> <p>Chapter 9: #s 1, 3, 6, 7, 22, 23, 25, 45, 51, 60, 91.</p> <p>Chapter 10: #s 3, 5, 7, 9, 12, 15, 27, 28, 31, 39, 45, 59.</p> <p>Chapter 11: #s 1, 5, 25, 27, 31, 33, 34, 35</p> <p>Chapter 12: #s 1, 11, 13, 14, 23, 25, 41, 47, 49.</p> <p>Chapter 13: #s 3, 7, 11, 31, 43 +++</p> <p>Chapter 14: #s 1, 3, 5, 8, 11, 19, 25, 27, 40, 41, 42, 47, 52.</p> <p>Chapter 15: #s 1, 3, 5, 7, 9, 10, 21, 23, 27, 35, 37, 43 +++</p> <p>Chapter 16: #s 9, 15, 17, 19, 47, 51, ++++</p> <p>Chapter 17: #s 5, 7, 11, 19, 21, 25, 27, 35, 37, 39, 51.</p> <p>Besides, these suggested practice problems, please attempt as many of the odd number problems as possible from the end of each covered chapter as practice problems. If you fail to attempt these problems you may not do well in the course. Even though the instructor may work some problems in class during lectures, as mentioned before, studying or looking over these problems is not the way to acquire the skill of problem solving. You must “roll down your sleeves” and practice, practice and practice solving as many problems as possible including the ones done in class.</p>
Instructional Methods	2	Standard class lectures using the whiteboard with occasional use of PowerPoints.
Student Assignments	2	Special assignments are normally not required. The recommended practice problems will not graded. Practice problems, such as those at the end of the chapters, are highly beneficial, indeed essential, to learning physics. I recommend that you work as many of the odd-numbered end of chapter problems as you can (these have answers at the back of your textbook); similar additional problems follow in the “Additional Problems” section. Get a spiral leaf notebook just for working Physics problems. That will keep your work more organized and you (or I) can easily review your work.
Student Assessment(s)	2	<p>The overall score is based on the following:</p> <ul style="list-style-type: none"> • Three regular exams (60%), and compulsory comprehensive final

		<p style="text-align: center;">Examination will be administered during the semester..</p> <ul style="list-style-type: none"> . Chapter Quizzes 15% • Final Exam 25% <p>Please refer to the Tentative schedule for more details.</p> <p>Overall Grade = 0.60(Average of three regular exams) + 0.15(Chapter quizzes average grade) + 0.25(Final Exam)</p>
<p>Instructor's Requirements</p>	<p style="text-align: center;">2</p>	<p style="text-align: center;"><u>Exams and Make-up Policy</u></p> <p>Examinations will consist of three non-cumulative regular exams (60%) plus a comprehensive final (25%). Programmable calculators, such as the TI 83 Plus, are not allowed during exams! The department has calculators that you can use on test days if you do not have a "regular" calculator. Make-up exams will not normally be given, so make every effort to take the exams on their scheduled dates. In the event that you must miss a regular exam, I will count the grade made on the final exam as the grade for the missed exam (for one missed exam only), and calculate the final course grade accordingly. If you do not miss any of the regular exams, I will replace your lowest exam score with your final exam score if the final exam grade is higher. This is intended to provide you a "second chance" if you do not do well on a particular exam. Remember that the final exam will be comprehensive (meaning that it will cover all of the materials from the whole course, not just the last part). Please note that all students are required to take the final (no student can be exempted).</p> <p style="text-align: center;"><u>PROBLEM SOLVING STRATEGIES/SUGGESTIONS</u></p> <p>Physics is not a "spectator's game!" In order to complete the course successfully, a student must be prepared to solve many problems on his/her own time. This hopefully should help the student to do well in the exams. A student should spend 2-3 hours in preparation for every stipulated hour of lecture. It is worth noting that problem solving skill cannot be acquired by simply watching the instructor work the problems in class. The student must practice solving problems on his/her own.</p> <p>Simple because the professor may explain the materials so well during the lecture, do not make the big mistake of not looking over the lectures and practicing working the problems worked by the professor in class. You should also prepare for class by at least reading the materials of the new chapter to be covered before</p>

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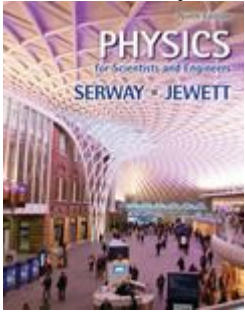
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		<p style="text-align: center;">try again. If still unsuccessful then it is time to seek help. HAVE FUN LEARNING PHYSICS THIS SEMESTER.</p> <p><u>Quizzes</u> During the semester I will periodically give a short pop quizzes. These are intended to help you prepare for the real exam. These will be un-announced.. These quizzes are highly beneficial for learning the material and are intended to help you in this regard.</p>
Program/Discipline Requirements	1	At the program level, the Physics Program strives to accomplish the Program Learning Outcomes, Student Learning Outcomes, and Learning Objectives as described above. We desire that you receive a challenging and rewarding experience in your physics classes at HCC which will prepare you well for future physics and related science courses that you may take in the future.
HCC Grading Scale	1	<p>A = 100 – 90;.....4 points per semester hour B = 89 – 80:3 points per semester hour C = 79 – 70:2 points per semester hour D = 69 – 60:1 point per semester hour 59 and below = F.....0 points per semester hour IP (In Progress)0 points per semester hour W(Withdrawn).....0 points per semester hour I (Incomplete).....0 points per semester hour AUD (Audit)0 points per semester hour</p> <p>FX is the new grade designated for students who just stop coming and do not formally withdraw from the course. IP (In Progress) is given only in certain developmental courses. The student must re-enroll to receive credit. COM (Completed) is given in non-credit and continuing education courses. To compute grade point average (GPA), divide the total grade points by the total number of semester hours attempted. The grades “IP,” “COM” and “I” do not affect GPA.</p>
Instructor Grading Criteria	2	See the above descriptions of the exams, quizzes, and final. The course grade is based on these three criteria according to the Assessment section above.
Instructional Materials	1	<u>Textbook</u>



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	<p><u>Textbook</u></p> <p><u>Books</u> > Physics for Scientists and Engineers (9th edition)</p>  <p>Physics for Scientists and Engineers, 9th edition by Serway, Raymond A. and Jewett, John, W Thomson, Brooks/Cole 9th, edition, USA. ISBN-1133947271 ISBN-13: 9781133947271</p>
<p>HCC Policy Statement: ADA Academic Honesty Student attendance 3-peaters Withdrawal deadline</p>	<p>1 Access Student Services Policies on their Web site: http://hccs.edu/student-rights</p> <p><u>Disability Support Services (DSS)</u> “Any student with a documented disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must contact the Disability Services Office at the respective college at the beginning of each semester. Faculty are authorized to provide only the accommodations requested by the Disability Support Services Office.”</p> <p>If you have any special needs or disabilities which may affect your ability to succeed in college classes or participate in any college programs or activities, please contact the DSS office for assistance.</p>

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At Southwest College, contact Dr. Becky Hauri, 713-718-7909. Contact numbers for the other HCC colleges are found in the Annual Schedule of Classes, and more information is posted at the HCC web site at [Disability Services](#).

Academic Honesty

“Students are responsible for conducting themselves with honor and integrity in fulfilling course requirements. Disciplinary proceedings may be initiated by the college system against a student accused of scholastic dishonesty. Penalties can include a grade of "0" or "F" on the particular assignment, failure in the course, academic probation, or even dismissal from the college. Scholastic dishonesty includes, but is not limited to, cheating on a test, plagiarism, and collusion.” In this class, the penalty for willful cheating on exams is a grade of F in the course. This is the standard policy of the Physical Sciences department at Southwest College.

Attendance Policy

The HCCS attendance policy is stated as follows: “Students are expected to attend classes regularly. Students are responsible for materials covered during their absences, and it is the student's responsibility to consult with instructors for make-up assignments. Class attendance is checked daily by instructors. *Although it is the responsibility of the student to drop a course for non-attendance, the instructor has full authority to drop a student for excessive absences. A student may be dropped from a course for excessive absences after the student has accumulated absences in excess of 12.5% of the hours of instruction (including lecture and laboratory time).*”

Note that 12.5% is approximately 4 classes for a 4 semester hour course, such as this one, which meets two times per week in a normal 16 week semester. If circumstances significantly prevent you from attending classes, please inform me. I realize that sometimes outside circumstances can interfere with school, and I will try to be as accommodating as possible, but please be aware of the attendance policy.

Policy Regarding Multiple Repeats of a Course

“NOTICE: Students who repeat a course three or more times may soon face significant tuition/fee increases at HCC and other Texas public colleges and universities. If you are considering course

		<p>withdrawal because you are not earning passing grades, confer with your instructor/counselor as early as possible about your study habits, reading and writing homework, test-taking skills, attendance, course participation, and opportunities for tutoring or other assistance that might be available.”</p> <p><u>Last Day for Administrative and Student Withdrawals</u> For 16-week Fall 2015 classes, this date is October 30, 2015. I urge any student who is contemplating withdrawing from the class to see me first! You may be doing better than you think. Either way, I want to be accessible and supportive. I do not believe in "weed out" classes, and I consider you to be much more than just a name or number! Note my office hours above; if you need assistance, I'm here to help.</p> <p>☞ <u>Policy Regarding Withdrawals</u> ☞</p> <p>Students desiring to withdraw from a class must do so by the above withdrawal date by filling out a withdrawal form at the registrar's office. <i>After this date, instructors can no longer enter a grade of "W" for the course for any reason.</i></p>
Distance Education and/or Continuing Education Policies	1	<p>Access DE Policies on their Web site: http://de.hccs.edu/Distance_Ed/DE_Home/faculty_resources/PDFs/DE_Syllabus.pdf</p> <p>Access CE Policies on their Web site: http://hccs.edu/CE-student-guidelines</p>
Test Bank	3	Besides the pop quizzes which may be given periodically, there are some practice problems on-line to help you.
Scoring Rubrics	3	Regular exams, quizzes, and the final will consist of multiple-choice and show-work questions. These are graded in the standard manner.
Sample Assignments	3	N/A
Sample Instructional Methods/Activities	3	See the Power Points at my Learning Web site for an overview of the content of each chapter.