



Purpose: It is the intention of this Administrative-Master Syllabus to provide a general description of the course, outline the required elements of the course and to lay the foundation for course assessment for the improvement of student learning, as specified by the faculty of Wharton County Junior College, regardless of who teaches the course, the timeframe by which it is instructed, or the instructional method by which the course is delivered. It is not intended to restrict the manner by which an individual faculty member teaches the course but to be an administrative tool to aid in the improvement of instruction.

Course Title – University Physics I

Course Prefix and Number – PHYS 2425

Department - Physics

Division – Math and Science

Course Type: (check one)

- Academic General Education Course (from ACGM – but not in WCJC Core)
- Academic WCJC Core Course
- WECM course (This course is a Special Topics or Unique Needs Course: Y or N)

Semester Credit Hours # : Lecture hours# : Lab/other hours # **4:3:3**

Equated Pay hours for course – 4.8

Course Catalog Description – Fundamental principles of physics, using calculus, for science, computer science, and engineering majors; the principles and applications of classical mechanics, including harmonic motion, physical systems and thermodynamics; and emphasis on problem solving. Laboratory experiments support theoretical principles presented in lecture, experimental design, data collection and analysis, and preparation of laboratory reports.

List Lab/ Other Hours
Lab Hours 3
Clinical Hours
Practicum Hours
Other (list)

Prerequisites/Co-requisites – MATH 2413; Concurrent enrollment in MATH 2414 is recommended; or consent of department head

Prepared by

Date

Reviewed by Department Head Ramiro Acevedo

Date 11-18-13

Accuracy Verified by Division Chair Kevin Dees

Date 11-18-13

Approved by Dean or Vice President of Instruction *gghunt*

Date 11-18-13

I. Topical Outline – Each offering of this course must include the following topics (be sure to include information regarding lab, practicum, clinical or other non lecture instruction):

Lecture:

TOPICAL OUTLINE DEDICATED INSTRUCTIONAL TIME

Measurement, Vectors One Week

Kinematics in one and two dimensions Two weeks

Newton's laws of motion, Friction Two weeks

Work and Energy, Conservation of Energy 1 ½ weeks

Systems of Particles, Momentum,

Collisions 1 1/2 weeks

Rotational motion, Torque, Angular

Momentum 1 1/2 weeks

Gravity, Equilibrium, Elasticity One week

Fluid Mechanics One week

Oscillations, Waves, Sound 1 1/2 weeks

Heat, Temperature, The laws of

Thermodynamics Two weeks

Lab Work:

EXPERIMENTS

Propagation of errors. Vector analysis.

Displacement, velocity and acceleration.

Force. Projectile motion. Circular motion.

Torque. Work and energy: linear.

Energy and power - rotational.

Linear and angular momentum.

Acceleration of gravity. Oscillations.

Velocity of sound in air and in metal.

Heat transfer/ Specific heat.

II. Course Learning Outcomes

Learning Outcomes	Methods of Assessment
<p>Upon completion of this course, students will:</p> <ul style="list-style-type: none"> -- Determine the components of linear motion (displacement, velocity, and acceleration), and especially motion under conditions of constant acceleration. -- Solve problems involving forces and work. -- Apply Newton's laws to physical problems. -- Identify the different types of energy. -- Solve problems using principles of conservation of energy. -- Define the principles of impulse, momentum, and collisions. -- Use principles of impulse and momentum to solve problems. -- Determine the location of the center of mass and center of rotation for rigid bodies in motion. 	<p>Outcomes assessed by:</p> <p>Class work, homework assignment, quizzes and/or exams teamwork rubric, poster/graph/chart oral</p>

<ul style="list-style-type: none"> -- Discuss rotational kinematics and dynamics and the relationship between linear and rotational motion. -- Solve problems involving rotational and linear motion. -- Define equilibrium, including the different types of equilibrium. -- Discuss simple harmonic motion and its application to real-world problems. -- Prepare laboratory reports that clearly communicate experimental information in a logical and scientific manner. -- Conduct basic laboratory experiments involving classical mechanics. -- Relate physical observations and measurements involving classical mechanics to theoretical principles. -- Evaluate the accuracy of physical measurements and the potential sources of error in the measurements. -- Design fundamental experiments involving principles of classical mechanics. -- Identify appropriate sources of information for conducting laboratory experiments involving classical mechanics. 	<p>Labs assessed by:</p> <p>lab notebook entry, formal lab report, lab quiz, homework assignment, and/or exam question</p>
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III. Required Text(s), Optional Text(s) and/or Materials to be Supplied by Student.

Physics by Giancoli, 4th Edition

IV. Suggested Course Maximum - Lecture 40 Lab 20

V. List any specific spatial or physical requirements beyond a typical classroom required to teach the course.

Physics Lab required for lab component

VI. Course Requirements/Grading System – Describe any course specific requirements such as research papers or reading assignments and the generalized grading format for the course

Evaluative Procedures:

1. Four major tests
2. Homework assignments
3. Laboratory reports
4. Final Exam

The following method is used to arrive at the final grade:

All tests. 60%
Laboratory grade 10%
Homework 5%
Final examination 25%

The grade classifications as outlined in the College Catalog are employed:

A= 90-100
B= 80-89 Good
C= 70-79 Average
D= 60-69 Poor
F= 59 or below Failure
W Withdrawn

VII. Curriculum Checklist

- **Academic General Education Course** (from ACGM – but not in WCJC Core)
No additional documentation needed
- **Academic WCJC Core Course**
Attach the Core Curriculum Review Forms
 - Critical Thinking
 - Communication
 - Empirical & Quantitative Skills
 - Teamwork
 - Social Responsibility
 - Personal Responsibility
- **WECM Courses**
If needed, revise the Program SCANS Matrix & Competencies Checklist.



Core Curriculum Checklist

Page 1: Competencies

Course Prefix & Number: PHYS 2425	
Competency	
Method of Assessment	
READING: Reading at the college level means the ability to analyze and interpret a variety of printed materials – books, articles, and documents.	Assimilation of lecture and lab reading assignments is measured through homework, lab reports, tests and final exam
WRITING: Competency in writing is the ability to produce clear, correct, and coherent prose adapted to purpose, occasion, and audience.	Writing of lab reports in a clear, correct and coherent manner. Writing homework, tests and final exam.
SPEAKING: Competence in speaking is the ability to communicate orally in clear, coherent, and persuasive language appropriate to purpose, occasion, and audience.	
LISTENING: Listening at the college level means the ability to analyze and interpret various forms of spoken communication.	Demonstrated through the writing of lab reports, tests and final exam

<p>CRITICAL THINKING: Critical thinking embraces methods for applying both qualitative and quantitative skills analytically and creatively to subject matter in order to evaluate arguments and to construct alternative strategies.</p>	<p>Assessed through problem assignments, laboratory work, tests and final exam</p>
<p>COMPUTER LITERACY: Computer literacy at the college level means the ability to use computer-based technology in communicating, solving problems, and acquiring information.</p>	<p>Lab reports.</p>



Page 2: Perspectives

Course Prefix & Number: PHYS 2425	
Perspective	Method of Assessment
1. Establish broad and multiple perspectives of the individual in relationship to the larger society and world in which he or she lives, and help the student to understand the responsibilities of living in a culturally- and ethically-diversified world;	
2. Stimulate a capacity to discuss and reflect upon individual, political, economic, and social aspects of life to understand ways to be a responsible member of society;	
3. Recognize the importance of maintaining health and wellness;	
4. Develop a capacity to use knowledge of how technology and science affect lives;	Lab reports, homework, tests and final exam
5. Develop personal values for ethical behavior;	
6. Develop the ability to make aesthetic judgments;	
7. Use logical reasoning in problem solving;	Problem assignments, lab reports, tests and final exam.
8. Integrate knowledge and understanding of the interrelationships of the scholarly disciplines	



Page 3: Exemplary Educational Objectives

Course Prefix & Number: PHYS 2425	
Component Area: Natural Sciences	
Exemplary Educational Objective	Method of Assessment
1. Understand and apply method and appropriate technology to the study of natural science.	Lab reports, homework, tests, final exam
2. Recognize scientific and quantitative methods and the difference between these approaches and other methods of inquiry; and communicate findings, analyses, and interpretations both orally and in writing.	Lab reports, homework, tests, final exam
3. Identify and recognize the differences among competing scientific theories.	Lab reports, homework, tests, final exam
4. Demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics, values, and public policies.	Test, final exam
5. Demonstrate knowledge of the interdependence of science and technology and their influence on, and contribution to, modern culture.	Homework, tests, final exam



Core Curriculum Review Form

Foundational Component Area: **Life & Physical Sciences**

Course Prefix & Suffix: _____

Core Objective: **Critical Thinking Skills**—to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information

Student Learning Outcome supporting core objective:

For each core objective, there must be at least two different methods of assessment.

SLO Status	Student Learning Outcome (SLO)	Learning Activity	Assessment
The SLO is:	Insert SLO (from Administrative Master Syllabi) below	Provide a brief name and description of the sample learning activity:	Provide a brief name and description of the sample quiz, exam, rubric, assignment, etc. for assessing the objective:
<input type="checkbox"/> Existing <input type="checkbox"/> Revised <input type="checkbox"/> New <input type="checkbox"/> State Mandated			
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Department Head: _____

Date: _____



Core Curriculum Review Form

Foundational Component Area: **Life & Physical Sciences**

Course Prefix & Suffix: _____

Core Objective: **Communication Skills**—to include effective development, interpretation and expression of ideas through written, oral and visual communication

Student Learning Outcome supporting core objective:

For each core objective, there must be at least two different methods of assessment.

SLO Status	Student Learning Outcome (SLO)	Learning Activity	Assessment
The SLO is:	Insert SLO (from Administrative Master Syllabi) below	Provide a brief name and description of the sample learning activity:	Provide a brief name and description of the sample quiz, exam, rubric, assignment, etc. for assessing the objective:
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Core Curriculum Review Form

Foundational Component Area: **Life & Physical Sciences**

Course Prefix & Suffix: _____

Core Objective: **Empirical and Quantitative Skills**—to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

Student Learning Outcome supporting core objective:

For each core objective, there must be at least two different methods of assessment.

SLO Status	Student Learning Outcome (SLO)	Learning Activity	Assessment
The SLO is:	Insert SLO (from Administrative Master Syllabi) below	Provide a brief name and description of the sample learning activity:	Provide a brief name and description of the sample quiz, exam, rubric, assignment, etc. for assessing the objective:
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Core Curriculum Review Form

Foundational Component Area: **Life & Physical Sciences**

Course Prefix & Suffix: _____

Core Objective: **Teamwork**—to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

Student Learning Outcome supporting core objective:

For each core objective, there must be at least two different methods of assessment.

SLO Status	Student Learning Outcome (SLO)	Learning Activity	Assessment
The SLO is:	Insert SLO (from Administrative Master Syllabi) below	Provide a brief name and description of the sample learning activity:	Provide a brief name and description of the sample quiz, exam, rubric, assignment, etc. for assessing the objective:
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