Wharton County Junior College

Administrative - Master Syllabus
COVER SHEET

***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 – Engineering Physics I: Mechanics, Head and Sound
Course Prefix and Number – PHYS 2425
Department - Physics **Division** – Math & Physical 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 # 4:4:2

Equated Pay hours for course - 5

List Lab/ Other Hours
Lab Hours 2
Clinical Hours
Practicum Hours
Other (list)

Course Catalog Description – Intended primarily for students of engineering, physics, chemistry, and mathematics. This calculus-based course covers measurement, motion in a straight line, vectors, motion in a plane, forces and motion, work and energy, conservation of energy, systems of partiicles, collisions, waves, temperature, first and second laws of thermodynamics, kinetic theory of gases. The course provides part of the background necessary for higher level study, particularly in physics and engineering. Students who have not had high school physics should consider taking PHYS 1401 prior to enrolling in PHYS 2425.

Prerequisites/Corequisites - Credit for or concurrent enrollment in MATH 2414 or consent of the department head.

Approvals – the contents of this document have been reviewed and are found to be accurate.

Prepared by Dr. Benito Pastora	Signature J. Benito Pastora	Date 9/5/07
Department Head Kirby Lowery, Jr.	Signature Kirby Lowery	Date 10-25-7
Division Chair Kirby Lowery, Jr.	Signature Kirby Lowery	Date 10-25-7
Vice President Dr. Ty Pate	Signature Ty Pate	Date 10-25-07

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

Course Learning Outcome	Method of Assessment
1.Solve problems involving systems of units and vectors 2.Solve problems in kinematics, Newton's laws and friction. 3.Solve problems involving work, energy, power, conservation of energy and impulse and momentum of particles and systems of particles. 4.Solve problems in rotational motion, torques, angular momentum, gravity, oscillation and elasticity 5.Solve problems involving fluid flow, waves, sound, heat and the laws of thermodynamics.	1. Tests, Final exam .2. Tests, Final exam. 3. Tests, Final exam. 4. Tests, Final exam. 5. Tests, Final exam.

III. Required Text(s), Optional Text(s) and/or Materials to be Supplied by Student.

University Physics, Revised edition, Benson, Harris. New York: John Wiley and Sons, Inc, 1996.

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
5.

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 Excellent
B Good
C Average
D Poor

F 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 Checklist, including the following:

- Basic Intellectual Competencies
- Perspectives
- Exemplary Educational Objectives

☐ - **WECM Courses**
Attach the following:

- Program SCANS Matrix
- Course SCANS Competencies 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.
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.	Assessed through problem assignments, laboratory work, tests and final exam
COMPUTER LITERACY: Computer literacy at the college level means the ability to use computer-based technology in communicating, solving problems, and acquiring information.	Lab repots.

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.	Tests, 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.