



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 – General Physics I

Course Prefix and Number – Physics 1401

Department – Chemistry, Physics and Engineering
Sciences

Division – Math and

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 # **4:3:2**

Equated Pay hours for course – 4.2

Course Catalog Description - Algebra-level physics sequence, with laboratories, that includes study of mechanics, heat, waves, electricity and magnetism, and modern physics

Prerequisites/Co requisites - MATH 1314 or MATH 1316 or one of the following math courses: MATH 2312, 2413, 2414, or 2415

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

Prepared by Frank Carey

Date 9/23/11

Reviewed by department head Frank Carey

Date 9/23/11

Accuracy verified by Division Chair Kevin Dees

Date 11/11/11

Approved by Dean of Vocational Instruction or Vice President of Instruction
Leigh Ann Collins

Date 11-9-12



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):

Introduction: Measurement Uncertainties, Dimensional Analysis, Conversion of units: 1 week

Kinematics: One- and Two-dimensions, Vectors: 2 weeks

Newton’s Laws of Motion: Statics, Friction: 1 week

Work, Energy & Power: 1 week

Collisions: Impulse & Momentum: 1 week

Gravitation: Circular Motion, Kepler’s Laws & Thermodynamics: 2 weeks

Heat: Kinetic Theory, Specific/Latent Heat & Thermodynamics: 2 weeks

Vibrations & Waves: Simple Harmonic Motion & Simple Pendulum: 2 weeks

Sound: Standing Waves, Resonance, Beats & Doppler Effect: 2 weeks

LAB WORK (Experiments)

- Measurements (Length, Area & Volume) & Uncertainties
- Density of Solids/Liquids
- Displacement, Velocity & Acceleration
- Vector Analysis
- Projectiles Motion
- Equilibrium & Force Table
- Laws of Motion & Friction
- Work/Energy/Power
- Collisions
- Simple Pendulum
- Simple Harmonic Motion
- Specific Heat/Heat Transfer
- Elastic Constants
- Velocity of Sound
- Standing Waves
- Sound Intensity/Intensity-level (Decibels)

II. Course Learning Outcomes

Course Learning Outcome	Method of Assessment
<ol style="list-style-type: none"> 1. To perceive the distinction between Scalar- and Vector-physical quantities. 2. To understand the physical significance of various physical quantities (units and dimensions) related to each other in an equation by dimensional analysis. 3. To acquire an ability to solve word-problems from fundamental concepts of physics. 4. To visualize physics concepts by hands-on experiments in lab work and express the results with discussions in the lab report. 5. To appreciate the elegance of problem-solving by algebra & trigonometry with confidence. 	<p>Four major tests. Assignments Lab work + Lab report Final (comprehensive) exam + Exit test</p>

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

Walker, James. Physics with mastering Physics. 4th Edition. Pearson.
ISBN: 9780321541635

IV. Suggested Course Maximum – All locations 36 lecture; FBT and SUGA-32 lab; WH-24 lab

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

Physics lab work is required turning-in weekly lab report in addition to class-room lectures participation and taking periodic tests.

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

Grading Assessment : All Tests : 50% ; Final (comprehensive) : 25% ; Lab work + Lab Report : 10%

Assignments/ Presentation + Research Paper : 15%

Grade-classification : A (Excellent) ; B (Good) ; C (Average) ; D (Poor) ; F (Failure) ; W (Withdrawn) ;

I (Incomplete)

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**
If needed, revise the Program SCANS Matrix & Competencies Checklist.



Page 1: Competencies

Course Prefix & Number: PHYS 1401		Semester Credit Hours : 4	
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.			
WRITING: Competency in writing is the ability to produce clear, correct, and coherent prose adapted to purpose, occasion, and audience.			
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.			
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.		Assess the ability of thinking during periodic problem-solving sessions	
COMPUTER LITERACY: Computer literacy at the college level means the ability to use computer-based technology in communicating, solving problems, and acquiring information.			



Page 2: Perspectives

Course Prefix & Number: PHYS 1401		Semester Credit Hours : 4
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;		Tests & Final Exam .
5. Develop personal values for ethical behavior;		
6. Develop the ability to make aesthetic judgments;		
7. Use logical reasoning in problem solving;		Lab Work + Lab Report + Tests + Final Exam .
8. Integrate knowledge and understanding of the interrelationships of the scholarly disciplines		Case-studies with physics of everyday life .



Page 3: Exemplary Educational Objectives

Course Prefix & Number: PHYS 1401		Semester Credit Hours : 4	
Component Area: Natural Sciences			
Exemplary Educational Objective		Method of Assessment	
1. Understand and apply method and appropriate technology to the study of natural science.		Laboratory Experiments + Tests	
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 + + Tests	
3. Identify and recognize the differences among competing scientific theories.		Lectures + Group Discussions + Tests	
4. Demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics, values, and public policies.		Case-studies in different areas of Physics	
5. Demonstrate knowledge of the interdependence of science and technology and their influence on, and contribution to, modern culture.		Same as above	