



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 2
Course Prefix and Number – PHYS 1402
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 :3:2

Equated Pay hours for course - 4

Course Catalog Description – Continuation of PHYS 1401. Includes electric charge, electric field and potential, DC circuits, magnetism, electromagnetic induction, AC circuits, optics, optical instruments, relativity, the solid state, atomic and nuclear physics, elementary particles.

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

Prerequisites/Corequisites - PHYS 1401 or consent of the department head.

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

Prepared by Dr. Swamy Rao	Signature <i>Swamy Rao</i>	Date Aug 30, 07
Department Head Dr. Kirby Lowery	Signature <i>Kirby Lowery</i>	Date 9-4-7
Division Chair Dr. Kirby Lowery	Signature <i>Kirby Lowery</i>	Date 9-4-7
Vice President Dr. Ty Pate	Signature <i>Ty Pate</i>	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):

Lectures

TOPICAL OUTLINE	DEDICATED INSTRUCTIONAL TIME
1 Electric Field , Forces , Potential & Energy	2 Weeks
2 DC Circuits	2 Weeks
3 AC Circuits	2 Weeks
4 Magnetism & Magnetic Induction	2 Weeks
5 Optical Instruments & Wave Optics	2 Weeks
6 Relativity	1 Week
7 Quantum Theory , Atomic Physics , Solids	2 Weeks
8 Nuclear Physics & Elementary Particles	2 Weeks

COURSE OBJECTIVES

- 1 To provide students an opportunity & training in fundamental concepts of physics
- 2 To acquaint the students an awareness of physics of everyday life in modern society
- 3 To encourage , stimulate & create an interest for further studies in physics
- 4 To help the students for critical thinking in solving physics problems
- 5 To provide the students a direct experience in hands-on physics lab experiments

PHYSICS EXPERIMENTS (Lab Work)

- 1 The Oscilloscope
- 2 Electrostatics
- 3 DC Circuits
- 4 AC Circuits
- 5 Potentiometer & Wheatstone Bridge
- 6 Measurements & Calibration Procedures
- 7 Power Supplies & Transformers
- 8 Magnetic Induction & Induced EMF
- 9 Reflection & Refraction
- 10 Optical Components & Constants Evaluation
- 11 Compound Microscope & Telescope
- 12 Spectrometer & Resolving Power
- 13 Photoelectric Effect
- 14 e/m ratio of Electrons
- 15 Nuclear Physics Experiments

II. Course Learning Outcomes

Course Learning Outcome	Method of Assessment
1. Comprehend existing theories; 2. Verify the theories by experimentation wherever it is possible by appropriate technology; 3. Utilize critical thinking to analyze the theoretical & experimental data besides solving challenging problems 4. Use methods of enquiry and determine relationships of different physical quantities including the uncertainties in measurement techniques 5. Analyze the findings in lab work and communicate the results in writing. 6. Recognize future approaches in physics and potential prospects in modern society.	Lab Work + Lab Reports Tests + Assignments + Final Exam Group Discussions + Review Sessions Bonus Opportunities in Research Paper Writings/Presentations General Discussions + Opportunities to Express Interesting Ideas Note: The learning outcomes will be documented and assessed as above determining the quality of performance of individuals in this course.

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

TEXT BOOK : College Physics by Serway & Faughn (Brooks/Cole : 7th Edition)
 Supplementary : Physics by James S Walker (Prentice Hall : 3rd Edition)

IV. Suggested Course Maximum – 42 Lectures & 24 hours lab work

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

Weekly Physics Lab Work

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

EVALUATION PROCEDURES

Four Major Tests + Assignments + Lab Work/Reports + Final (comprehensive) Exam

FINAL GRADES : All Tests (60%) ; Final Exam (25%) ; Assignments (10%) ;
 Laboratory Grade (10%) ; Course Participation (5%)

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**

Attach the following:

- Program SCANS Matrix
- Course SCANS Competencies Checklist



Page 1: Competencies

Course Prefix & Number: PHYS 1402		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.		Question-answer lecture sessions and Group-discussion	
WRITING: Competency in writing is the ability to produce clear, correct, and coherent prose adapted to purpose, occasion, and audience.		Evaluate & grade the written lab reports	
SPEAKING: Competence in speaking is the ability to communicate orally in clear, coherent, and persuasive language appropriate to purpose, occasion, and audience.		None	
LISTENING: Listening at the college level means the ability to analyze and interpret various forms of spoken communication.		None	
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 thinking ability in the assignment /homework problems	
COMPUTER LITERACY: Computer literacy at the college level means the ability to use computer-based technology in communicating, solving problems, and acquiring information.		Utilization of scientific/graphing calculators are monitored	



Page 2: Perspectives

Course Prefix & Number: PHYS 1402		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;		None
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;		None
3. Recognize the importance of maintaining health and wellness;		None
4. Develop a capacity to use knowledge of how technology and science affect lives;		None
5. Develop personal values for ethical behavior;		None
6. Develop the ability to make aesthetic judgments;		Hands-on lab work
7. Use logical reasoning in problem solving;		Lab work + Tests + Finals
8. Integrate knowledge and understanding of the interrelationships of the scholarly disciplines		Discussions on physics of everyday life during Lectures / lab work

Page 3: Exemplary Educational Objectives

Course Prefix & Number: PHYS 1402		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 + Different Tests	
3. Identify and recognize the differences among competing scientific theories.		Lectures Material + 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 + tests	
5. Demonstrate knowledge of the interdependence of science and technology and their influence on, and contribution to, modern culture.		Same as above with application-oriented approach of physics in modern society + tests	