



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 – College Physics II

Course Prefix and Number – PHYS 1402

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 –PHYS 1401 or consent of the Department Head.

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

Prepared by Frank Carey

Date 10/7/11

Reviewed by department head Frank Carey

Date 10/7/11

Accuracy verified by Division Chair Kevin Dees

Date November 1, 2011

Approved by Dean of Vocational Instruction or Vice President of Instruction Lac

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):

Lectures

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- 2weeks

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)

The following lists of labs are examples of ways to fulfill the learning outcomes for the course.

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.

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.

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



Page 1: Competencies

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|---|--|--|
| 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. | | |
| 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 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. | | |



Page 2: Perspectives

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|--|--|-----------------------------|
| 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 | |