1. **COURSE TITLE\*:** Applied Physics III – Electricity and Magnetism
2. **CATALOG – PREFIX/COURSE NUMBER/COURSE SECTION\*:** PHYS 1121
3. **PREREQUISITES\***: MATH 1118, or the equivalent.

**COREQUISITE\***: MATH 1120, or MATH 1141, or MATH 1142, or permission of the Department

1. **COURSE TIME/LOCATION: (*Course Syllabus – Individual Instructor Specific*)**
2. **CREDIT HOURS\*:**3 **LECTURE HOURS\*:** 2

**LABORATORY HOURS\*:**1 (2 Contact)  **OBSERVATION HOURS\*:** 0

1. **FACULTY CONTACT INFORMATION: *(Course Syllabus – Individual Instructor Specific)***
2. **COURSE DESCRIPTION\*:**

An algebra based introductory course in electrostatics, magnetism, electromagnetism, electromagnetic induction; sources and effect of electric current, alternating current, circuits; introduction to concepts of atomic energy. Demonstrations and laboratory work to complement class work.

1. **LEARNING OUTCOMES\*:**

At the completion of this course, the student will have an understanding of and be able to apply the following topics using algebra concepts and physics concepts where appropriate:

1. Electric forces and electric fields, Coulomb's Law

2. Electric energy and capacitance, potential difference

3. Current, Ohm's Law, resistivity and resistance

4. Temperature variation of resistance

5. Electrical energy and power

6. Direct current circuits

7. Resistors in series, resistors in parallel

8. Kirchoff's rules

9. RC circuits

10. Electrical safety

11. Magnets, magnetic fields

12. Magnetic force on a current carrying conductor

13. Galvanometer and its applications

14. Motion of a charged particle in a magnetic field

15. Magnetic field, Ampere's Law

16. Induced EMF and magnetic flux, generators

17. Alternating current circuits, power, transformers

18. Electromagnetic waves

1. **ADOPTED TEXT(S)\*:**

*College Physics,* loose leaf version +enhanced WebAssign

11th edition, 2017.

Serway, and Vuille.

Cengage Learning,

ISBN #9781337741620

OR:

Sections that are offered at OFF-SITE locations can be permitted to use older editions of the current approved text (within 6 years from current editions copyright). These older editions must be approved by curriculum committee and/or the department.

1. **OTHER REQUIRED MATERIALS:**

Scientific Calculator

1. **GRADING SCALE\*\*\*:**

Grading will follow the policy in the catalog. The scale is as follows:

A: 90 – 100

B: 80 – 89

C: 70 – 79

D: 60 – 69

F: 0 – 59

1. **GRADING PROCEDURES OR ASSESSMENTS: (*Course Syllabus – Individual Instructor Specific)***

EXAMPLE:

Class Attendance = 5%

Assignments = 20%

Examinations (4-5) = 50%

Labs = 25%

Or at the discretion of the instructor, furnished to students at the beginning of the course.

1. **COURSE METHODOLOGY: *(Course Syllabus – Individual Instructor Specific)***

Course Methodology is at the discretion of the instructor. The course material will be primarily delivered through the lecture/discussion method. Special attention will be given to interactive problem solving. Laboratory experiences are included as well as hands-on demonstration.

**14. COURSE OUTLINE: *(Course Syllabus – Individual Instructor Specific)***

EXAMPLE:

Week 1: Introduction, Electric Charge (L.O. 1)

Week 2: Electric Forces, Lab 1 (L.O. 1)

Week 3: Electric Fields, Lab 2 (L.O. 1)

Week 4: Electrical Energy, Test 1 (L.O. 2, 5)

Week 5: Potential (L.O. 2)

Week 6: Electrical Capacitance, Lab 3 (L.O. 2)

Week 7: Electric Current and Resistance, Lab 4 (L.O. 3, 4)

Week 8: DC Circuits, Test 2 (L.O. 6)

Week 9: Resistance and Ohm’s Law, Lab 5 (L.O. 7)

Week 10: Ammeters and Voltmeters, Lab 6 (L.O. 9, 10)

Week 11: Kirchhoff’s Laws. Test 3 (L.O. 8)

Week 12: Electrochemistry, Storage Cells, Batteries, Lab 7 (L.O. 11, 12, 13)

Week 13: Magnetism, Induced Voltage, (L.O. 14, 15, 16)

Week 14: Generators, Transformers, Test 4 (L.O. 16)

Week 15: AC Circuits, RC Circuits, Waves, Lab 8 (L.O. 17, 18)

Week 16: Test 5

**15. SPECIFIC MANAGEMENT REQUIREMENTS\*\*\*:**

All assignments and tests must be completed on time.

Please see course outline, offered as an example.

The actual course outline is subject to revision at the discretion of instructor.

Several lab sessions will be held to allow the students to perform experiments in a selection of the topics studied and complete lab reports.

**16. FERPA:\***

Students need to understand that your work may be seen by others. Others may see your work when being distributed, during group project work, or if it is chosen for demonstration purposes. Students also need to know that there is a strong possibility that your work may be submitted to other entities for the purpose of plagiarism checks.

**17. DISABILITIES:\***

Students with disabilities may contact the Disability Services Office, Central Campus, at 800-628-7722 or 937-393-3431.

**18. OTHER INFORMATION\*\*\*:**

**SYLLABUS TEMPLATE KEY**

**\*** Item cannot be altered from that which is included in the master syllabus approved by the Curriculum Committee.

**\*\*** Any alteration or addition must be approved by the Curriculum Committee

**\*\*\*** Item should begin with language as approved in the master syllabus but may be added to at the discretion of the faculty member.