1. **COURSE TITLE\*:** College Physics for Scientists and Engineers II (Calculus Based)
2. **CATALOG – PREFIX/COURSE NUMBER/COURSE SECTION\*:** PHYS 2222
3. **PREREQUISITE(S)\*: PHYS 2221 COREQUISITE(S)\*: PHYS 2231**
4. **COURSE TIME/LOCATION: (*Course Syllabus – Individual Instructor Specific*)**
5. **CREDIT HOURS\*:5 LECTURE HOURS\*: 4**

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

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

Continuation of PHYS 2221. Topics will include electric charge, electric fields, Gauss’ law, electric potential, capacitance, current and resistance, basic DC circuits, introductory magnetism, Ampere’s law, optics, quantum, atomic and nuclear physics. Lab PHYS 2232 must be taken concurrently.

1. **LEARNING OUTCOMES\*:**

According to OSC017 Ohio Transfer Assurance Guidelines, 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 methods where appropriate:

1. Electric field, potential, forces

2. Current, magnetic field integration over continuous charge/current distribution

1. Quantum physics
2. Atomic physics
3. Nuclear physics
4. Induction and Inductance
5. Resistance
6. Capacitance
7. Basic circuit analysis
8. Electric power
9. Energy stored fields
10. EMF
11. Electromagnetic waves
12. Gauss’ Law
13. Kirchhoff’s Law
14. R-L-C circuits
15. Ampere’s Law
16. Faraday’s Law
17. Conductivity
18. Geometric optics
19. Diffraction
20. Interference
21. Polarization
22. **ADOPTED TEXT(S)\*:**

*Principles of Physics: A Calculus Based Text*

4th ed., 2006.

Serway and Jewett.

Thomson/Brooks/Cole,

ISBN #0-534-49143-X

1. **OTHER REQUIRED MATERIALS: (SEE APPENDIX C FOR TECHNOLOGY REQUEST FORM.)\*\***

A scientific calculator is needed.

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:

 70% of final grade will be from tests, quizzes, and projects/ presentations

 Breakdown of the 70%

60-65% of your final grade: 4-5 tests. Each test will consist of a take home and in class portion

5-10% of your final grade: 4-6 quizzes, announced and unannounced

0-10% of your final grade: A group project / presentation

30% of final grade will be from homework, attendance, and participation

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

The course design provides instruction and materials to support the course objectives.  Classes may consist of a variety of means to accomplish this including but not limiting to: lectures, class discussions, small group projects, supplemental materials, and outside assignments.  Practice is an important part of the learning process.  For every one hour of class time, two additional hours of study time should be expected

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

By Chapter: with L.O.’s

19. Electric Forces and Electric Fields.

 (OSC017 – Standards 1 and 11)

20. Electric Potential and Capacitance.

 (OSC017 – Standard 2)

21. Current and Direct Current Circuits.

 (OSC017 – Standards 6, 9 and 10)

22. Magnetic Forces and Magnetic Fields.

 (OSC017 – Standard 22)

23. Faraday's Law and Inductance.

 (OSC017 – Standard 1)

24. Electromagnetic Waves.

 (OSC017 – Standard 1)

25. Reflection and Refraction of Light.

 (OSC017 – Standard 20)

26. Image Formation by Mirrors and Lenses.

 (OSC017 – Standard 21)

27. Wave Optics.

 (OSC017 – Standard 22 and 23)

28. Quantum Mechanics.

 (OSC017 – Standard 3)

29. Atomic Physics.

 (OSC017 – Standard 4)

30. Nuclear Physics.

 (OSC017 – Standard 5)

1. Particle Physics.

 (OSC017 – Standard 5)

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

Example:Suggested pace for the course, by Chapters:

Week 1: 19

Week 2: 20

Week 3: 21

Week 4: 21

Week 5: 22

Week 6: 23

Week 7: 24

Week 8: 25

Week 9: 25

Week 10: 26

Week 11: 26

Week 12: 27

Week 13: 28, 29

Week 14: 30

Week 15: 31

Week 16: Finals

**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.