1. **COURSE TITLE\*:** General Physics II (Algebra Based)
2. **CATALOG – PREFIX/COURSE NUMBER/COURSE SECTION\*:** PHYS 2202
3. **PREREQUISITE(S)\*:**PHYS 2201 **COREQUISITE(S)\*:**
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 2201. Introduction into electric charge, capacitance, resistance, inductance, circuits, magnetism, optics, quantum, atomic and nuclear physics.

The lab portion of the course provides concurrent hands on experiments, which require imperial data to be collected, analyzed, and synthesized to solidify the physical concepts in PHYS 2201.

1. **LEARNING OUTCOMES\*:**

According to OSC015 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. EMF
10. Electromagnetic waves
11. Kirchhoff’s Law
12. R-L-C circuits
13. Faraday’s Law
14. Conductivity
15. Geometric optics
16. Diffraction
17. Interference

20. Polarization

Lab learning outcomes:

1. The student will recognize the fundamental importance of the laboratory investigation.
2. The student will acquire an understanding of the measurement process, converting conceptual ideas into measurable quantities.
3. The student will use the correct procedure for making a measurement, paying attention to method, precision, accuracy, units, dimensions, and error analysis.
4. The student will understand that this laboratory will support or confirm the principles explored in the lecture
5. The student will solidify their understanding of concepts from lecture through analyzing and synthesizing data from experiments.
6. **ADOPTED TEXT(S)\*:**

*College Physics,* loose leaf version +enhanced WebAssign

11th edition, 2017.

Serway, and Vuille.

Cengage Learning,

ISBN #9781337741620

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:

60% of final grade will be from tests, quizzes, and projects/ presentations

Breakdown of the 70%

50-55% 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

20% of final grade will be from homework, attendance, and participation

20% of final grade will be from labs

5% active participation in lab

15% written lab reports

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.

Labs:

A minimum of 10 labs, of those, a minimum of 8 labs that have substantial data collection and analysis. A preference for hands on experimentation, with allowances for interactive simulations when hands on experiments are unfeasible or where simulations provide better data/outcomes than hands on experiments. Computation and formula manipulation are key skills germane to success in the course these labs support. A maximum of 4 computational labs (recitations) allowed. The specific lab, schedule, and topic are the prevue of the instructor.

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

By Chapter:

Chapter 15: Electric Forces and Electric Fields. (OSC015 –1)

Chapter 16: Electrical Energy and Capacitance. (OSC015 – 8, 10, 14)

Chapter 17: Current and Resistance. (OSC015 – 2, 7, 14 and 16)

Chapter 18: Direct Current Circuits. (OSC015 – 2 and 9)

Chapter 19: Magnetism. (OSC015 – 11)

Chapter 20: Induced Voltages and Inductance. (OSC015 – 6 and 15)

Chapter 21: AC Circuits and Electromagnetic Waves. (OSC015 – 9, 12 and 13)

Chapter 22: Reflection and Refraction of Light. (OSC015 – 17, 18, 19 and 20)

Chapter 23: Mirrors and Lenses. (OSC015 – 17, 18, 19 and 20)

Chapter 24: Wave Optics. (OSC015 – 17, 18, 19 and 20)

Chapter 25: Optical Instruments. (OSC015 – 17, 18, 19 and 20)

Chapter 26: Relativity.

Chapter 27: Quantum Physics (OSC015 – 3)

Chapter 28: Atomic Physics. (OSC015 – 4)

Chapter 29: Nuclear Physics. (OSC015 – 5)

Chapter 30: Nuclear Energy and Elementary Particles. (OSC015 – 4 and 5)

Lab: A series of experiments will be performed supporting the course objectives. All learning objectives must be met for each lab

Example Schedule by Topic:

Waves interference

Reflection-Ray tracing

Snell’s law

Lenses

Diffraction

Circuits

Magnetism

Time dilation

Radioactive decay

Half life

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

Example: Suggested pace for the course, by Chapters:

Week 1: 15

Week 2: 16, Lab 1

Week 3: 17, Lab 2

Week 4: 18, Lab 3

Week 5: 19, Lab 4

Week 6: 20

Week 7: 21, Lab 5

Week 8: 22, Lab 6

Week 9: 23, Lab 7

Week 10: 24, Lab 8

Week 11: 25, Lab 9

Week 12: 26, 27

Week 13: 28, Lab 10

Week 14: 29, Lab 11

Week 15: 30, Lab 12

Week 16: Finals

**16. FERPA: \***

Students need to understand that their 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. ACCOMMODATIONS:\***

Students requesting accommodations may contact Ryan Hall, Accessibility Coordinator at rhall21@sscc.edu or 937-393-3431, X 2604.

Students seeking a religious accommodation for absences permitted under Ohio’s Testing Your Faith Act must provide the instructor and the Academic Affairs office with written notice of the specific dates for which the student requires an accommodation and must do so no later than fourteen (14) days after the first day of instruction or fourteen (14) days before the dates of absence, whichever comes first. For more information about Religious Accommodations, contact Ryan Hall, Accessibility Coordinator at [rhall21@sscc.edu](mailto:rhall21@sscc.edu) or 937-393-3431 X 2604.

**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.