1. **COURSE TITLE\*:** Applied Physics II – Heat, Light, Sound
2. **CATALOG – PREFIX/COURSE NUMBER/COURSE SECTION\*:** PHYS 1115
3. **PREREQUISITE(S)\*:** MATH 1118, or the equivalent

**COREQUISITE(S)\*:** MATH 1120, or MATH 1141, or MATH 1142

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\*:**

This course introduces the student to concepts of temperature and effects of heat, heat and change of state, heat transfer, thermodynamics, harmonic motion, waves, sound, light and illumination, reflection, refraction, and dispersion of light; optical instruments. 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. Temperature scales and absolute zero

 2. Thermal expansion of materials

 3. Relationship of pressure, temperature and volume on a gas

 4. Heat as a form of energy

 5. Calorimetry

 6. Latent Heat

 7. Heat transfer via conduction, convection, radiation

 8. 1st Law of Thermodynamics

 9. 2nd Law of Thermodynamics

 10. The electromagnetic spectrum

 11. Reflection and refraction of light

 12. Geometrical optics

 13. Basic optical instruments

 14. Simple harmonic motion

 15. Superposition of waves

 16. Characteristics of sound waves

 17. Standing waves on strings; closed and open tubes

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%

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, Properties of Solids and Fluids (L.O. 1)

Week 2: Thermal Physics, Lab 1 (L.O. 1, 2, 3)

Week 3: Thermal Physics continued, Lab 2 (L.O. 2, 3, 4)

Week 4: Heat, Test 1 (L.O. 4, 5)

Week 5: Heat continued, Lab 3 (L.O. 5, 6, 7)

Week 6: Heat continued, Lab 4 (L.O. 7)

Week 7: Thermodynamics, Test 2 (L.O. 7, 8)

Week 8: First Law of Thermodynamics (L.O. 8)

Week 9: Second Law of Thermodynamics, Lab 5 (L.O. 9)

Week 10: Waves, Test 3 (L.O. 14,15)

Week 11: Vibrations and Waves, Lab 6 (L.O. 14, 15, 16)

Week 12: Sound, Lab 7 (L.O. 16,17)

Week 13: Light, Test 4 (L.O. 10, 11)

Week 14: Reflection and Refraction, Lab 8 (L.O. 11, 12, 13)

Week 15: Mirrors and Lenses, Lab 9 (L.O. 11,12, 13)

 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.