

MASTER SYLLABUS: PHY 105

1. Course Information

College: College of Science and Mathematics
Department: Physics
Course Title: Light, Colors and Sound
Course Designation and Number: PHY 105
GE Area(s): Area V - Natural Sciences

Writing Intensive: ___ Yes x No

Method(s) of Instruction: x Lecture

x Discussion
___ Web-enhanced
___ Web-only
x Other
on-line notes

Includes Lab: x Yes ___ No

Three hours lecture, two hours lab

Prerequisites: None

2. Objectives

GE Program Objectives:

Sharpen critical thinking, problem solving and communication skills.
Learn about the aesthetic, ethical, moral, social, and cultural dimensions of human experience needed for participation in the human community.
Increase knowledge and understanding of the past, of the world in which we live, and of how both past and present have an impact on the future.

GE Area Five Objectives:

Area Five courses emphasize scientific inquiry as a way to discover the natural world, and they explore fundamental issues of science and technology in human society.

Course Objectives and GE Learning Outcomes:

The course will address development of theories, testing of theories, the practical limitations on controlling phenomena imposed by our technology, and our ability to model a given scenario based upon all the factors that might affect the outcome. Topics include: fundamental theories of vibrational motion and wave propagation, colors and color mixing, basic properties of light, and basic principles of sound production and propagation.

Understand the experimental basis of scientific inquiry
Understand the importance of model building for understanding the natural world
Understand the theoretical, practical, creative and cultural dimensions of scientific inquiry
Discuss some of the fundamental theories underlying modern science
Understand the dynamic interaction between society and the scientific enterprise
Recognize appropriate ethical uses of knowledge in the natural sciences

3. Suggested Course Materials

Text: *Light, Colors, and Sound* (Department of Physics publication, available on-line or from Library Reserve)

Lab Manual: *Sounds and Colors* (Department of Physics publication)

4. Suggested Methods of Evaluation

Three tests and two
Comprehensive final Exam is required

5. **Grading Policy**

All GE courses are graded A-F.

Grading scales will be announced after each exam. Grades will be assigned on the basis of total points earned during the quarter.

6. **Suggested Weekly Course outline Including Typical Assignments**

Wk 1: Optical Illusions, Colors

Wk 2: Vibrations, traveling Waves

Wk 3: Wave Nature Sound & Light, Properties of Light

Wk 4: The camera and the Eye

Wk 5: Interference and Polarization, Lasers and Holography

Wk 6: Atmospheric Optics, Sound Waves

Wk 7: Standing Waves and Harmonic

Wk 8: Musical Instruments

Wk 9: Hearing and the Ear, The Human Voice

Wk 10: Sound Reproduction, Room Acoustics

7. **Other**

Syllabus distributed to students should employ the format approved by UCAPC and must include:

- Instructor name, office hours, and contact information
- Office of Disability Services information
- Information on how grades will be determined
- Attendance policy