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 ___No

Method(s) of Instruction: _x_ Lecture
   ___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