Occupational exposure to temperature extremes, abnormal pressure, noise, mechanical vibration, non-ionizing radiation, and cumulative trauma/ergonomics are discussed in lecture sessions. The fundamental physics, health effects, and occurrence of these agents, along with methods for evaluating the extent of exposure and approaches to controlling them are discussed in lectures and appropriate measurement instrumentation is demonstrated. A laboratory session on noise measurement is included. Applicable exposure standards, regulations, and guidelines are covered in detail.

**Course Learning Objectives**

The student will be able to:

1. Describe and define the physics, natural attributes, and characteristics of heat transfer, noise, non-ionizing radiation, mechanical vibration, and abnormal pressures.

2. Recognize and describe the health effects of exposure to the physical agents and cumulative trauma. Describe the anatomic and physiologic basis for the effects and identify the affected target organs.

3. Identify appropriate physical parameters to be measured for assessing exposure to the physical agents. Choose and utilize appropriate instrumentation and calculation algorithms for the associated measurements.

4. Identify, understand, and apply standards of acceptable exposure to physical agents.

5. Design, select, and evaluate appropriate administrative, engineering, personal protective equipment, and other control measures to reduce exposure to the physical agents to acceptable levels.