



NATIONAL UNIVERSITY OF ENGINEERING

COLLEGE OF ENVIRONMENTAL ENGINEERING

HYGIENE AND INDUSTRIAL SAFETY ENGINEERING PROGRAM

SA745 – PERSONAL PROTECTIVE EQUIPMENT

I. GENERAL INFORMATION

CODE	: SA745 – Personal Protective Equipment
SEMESTER	: -
CREDITS	: 03
HOURS PER WEEK	: 04 (Theory – Practice)
PREREQUISITES	: SE102 – Safety Engineering II
CONDITION	: Elective

II. COURSE DESCRIPTION

The course prepares the student in the analysis of risks of work accidents and occupational diseases in the productive centers, which affect the safety and health of the workers, so that they can make a safe decision in the selection of the personal protection equipment in benefit of workers in general, likewise develops its creativity, innovation and design of new personal protective equipment, to protect the head, ears, eyes, faces, respiratory tract, upper and lower limbs, protection against falls.

III. COURSE OUTCOMES

At the end of the course the student will:

- Recognize and analyze the occupational risks that affect workers in work environments, in order to protect workers.
- Order the selection of personal protective equipment that meets quality standards.
- Develop creativity to innovate personal protective equipment.
- Formulate management programs in the company of personal protection equipment.
- Design new personal protection equipment.

IV. LEARNING UNITS

1. PRINCIPLES OF ENGINEERING CONTROL

Introduction. General concepts. Personal protective equipment. General criteria for the selection and use of equipment. Common and special risks. Classification of personal protective equipment. Organizations of Peruvian and International Technical Standards.

2. HEAD AND SCALP PROTECTION

Occupational hazards. Safety helmets. Lessons. Applications. Inspection and maintenance of helmets. Peruvian Technical Standards. International Technical Standards.

3. EAR PROTECTION

Occupational hazards. Types of protectors. Requirements of hearing protectors. Earmuffs against noise. Degree of attenuation of the different hearing protectors. Selection criteria. Degree of protection. Analysis of the Peruvian and International Technical Standards.

4. EYES AND FACE PROTECTION

Occupational hazards. Requirements Eyeglasses and glasses. Requirements that must meet. Plastic and glass lenses. Advantages and disadvantages. Facial protectors Glasses and masks for welding. Lenses. Filters Classification. Selection. Analysis of Peruvian and International Technical Standards.

5. PROTECTION OF THE RESPIRATORY SYSTEM, UPPER AND LOWER LIMBS AND BODY

Work risks. Main factors in the selection. Classes of air purifying equipment. Old masks. Respirators with chemical cartridge or filters. Combined respirators Equipment with air supply and auto contents. Basic requirements of respirators. Gloves and sleeves. Safety shoes Lessons. Selection. Aprons Hoods and pants. Special clothing and emergency control. Analysis of the Peruvian and International Technical Standards.

6. PROTECTION TO AVOID FALLS FROM ONE LEVEL TO A LOWER ONE AND NEW TECHNOLOGIES APPLIED TO PERSONAL PROTECTION

Work risks. Belts for normal and emergency use. Requirements Lessons. Inspections and tests. Emerging technologies. Formulate Program for Personal Protective Equipment within the framework of the Occupational Health and Safety Management System.

V. LABORATORIES AND PRACTICAL EXPERIENCES

- Laboratory 1: Test on the obtained prototype
- Laboratory 2: Tests on personal protection equipment.

VI. METHODOLOGY

In theory sessions, the teacher presents the concepts, theoretical fundamentals and use of personal protective equipment.

In the practice sessions, the work teams are formed among the students, the fundamentals and the importance of teamwork are taught, where the teacher is the organizer, mediator and facilitator of the work teams in the solution of problems or cases raised and in the innovation of personal protective equipment.

VII. EVALUATION FORMULA

The learning will be evaluated through the "G" system.

- Partial Exam: Weight 1
- Final Exam: Weight 2
- Practices Average: Weight 1.

Calculation of the Final Average:

$$FA = \frac{PE + 2 * FE + PA}{4}$$

PE: Partial Exam; FE: Final Exam, PA: Practices Average

For the Practices Average, during the semester four qualified practices and the practice with lowest grades is eliminated. The average is calculated with the remaining three practices.

$$PA = \frac{P1 + P2 + P3}{3}$$

VIII. BIBLIOGRAPHY

- Law on Safety and Health At Work N° 29783. Lima-Peru.
- Robert, Herrick. Personal Protection. Encyclopedia of Work Security and Health According to Ilo. Madrid 2001.
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