



**NATIONAL UNIVERSITY OF ENGINEERING**  
**COLLEGE OF ENVIRONMENTAL ENGINEERING**  
**HYGIENE AND INDUSTRIAL SAFETY ENGINEERING PROGRAM**

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**SA132 – INDUSTRIAL SANITATION**

**I. GENERAL INFORMATION**

<b>CODE</b>	: SA132 – Industrial Sanitation
<b>SEMESTER</b>	: -
<b>CREDITS</b>	: 03
<b>HOURS PER WEEK</b>	: 05 (Theory – Practice)
<b>PREREQUISITES</b>	: SA323
<b>CONDITION</b>	: Elective

**II. COURSE DESCRIPTION**

Train the undergraduate student on the basic aspects of Industrial Sanitation and its importance in industries as an engineering tool in the evaluation of risks to health and the environment. In the same way, to know the national and international legislation applied and the elaboration and development of Environmental Sanitation Plans applied in the industries in accordance with the national sanitation policy.

**III. COURSE OUTCOMES**

At the end of the course the student will:

- Discern on the national problem of environmental sanitation.
- Understand the importance of sanitation in industries.
- Develop technical competence for identifying hazards, assessing risks and developing procedures for the control, reduction and mitigation of the agents identified at the level of pests, non-municipal solid waste and industrial wastewater.
- Develop proposals for sanitation plans and programs in the industries.
- Develop criteria for the implementation of proposed plans and programs for sanitation in industries.
- Develop criteria for the proposal of new technologies.

**IV. LEARNING UNITS**

- 1. CURRENT SITUATION OF ENVIRONMENTAL SANITATION IN PERU**  
National problem of environmental pollution.
- 2. CONCEPTUAL BASIS OF SANITATION**  
Basic concepts of environmental and industrial sanitation. General aspects related to the water, air and soil environment.
- 3. NATIONAL SECTORAL LEGISLATION**

National and international regulations on environmental sanitation. National sector regulations. Supervision and oversight competencies.

**4. PESTS**

Pest concept Types of pests. Disinfection. Deratization

**5. PEST CONTROL PLAN**

Definition. Scope. Legal framework. Situational diagnostic. Inspection. Approach Procedures Implementation. Monitoring Control and follow up

**6. MANAGEMENT OF SOLID WASTE**

Basic concepts. Classification of solid waste. National regulations General aspects related to the management of solid waste.

**7. PLAN FOR THE MANAGEMENT OF SOLID, NON-MUNICIPAL WASTE**

Definition. Scope. Development and elaboration of a Non Municipal Solid Waste Management Plan

**8. WATER MANAGEMENT IN PERU**

Basic concepts. National regulations General aspects related to water management in Peru.

**9. PLAN FOR THE MANAGEMENT OF INDUSTRIAL WASTEWATER**

Definition. Reaches Development and elaboration of an Industrial Wastewater Management Plan.

**10. RESEARCH PROJECTS OF PROPOSALS FOR INDUSTRIAL SANITATION PLANS**

Exhibition of research projects.

**V. LABORATORIES AND PRACTICAL EXPERIENCES**

Occupational cases will be presented and students will participate in solving the problem. The students will see videos showing the standard and substandard behaviors that workers show when they perform their tasks.

**VI. METHODOLOGY**

The course is developed in theory and practical sessions. In the theory sessions, the teacher presents the concepts and in the practical sessions their integral understanding is promoted with the use of application exercises, case studies and plan models and programs applied in industries.

At the end of the course the student must prepare and present a monographic work or research project applied to some of the topics that have been addressed in the course. In all the sessions, the active participation of the student is promoted.

**VII. EVALUATION FORMULA**

The learning will be evaluated through the "C" 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

$$PA = \frac{P1 + P2 + P3 + P4}{4}$$

Five practices will be taken and the one with the lowest grade is eliminated, and for Practices Average the remaining four grades are averaged.

## VIII. BIBLIOGRAPHY

- Industrial Wastewater - Nelson Nemerow (Blume Edition)
- Methods of the Chemical Industry - Tegeder and Mayer
- Guide to Basic Industrial Sanitation (Mexican Institute of Social Security)
- Treatmznt of Blackwater and Industrial Effluents - John Arundel - Editorial Acribia S.A. (Spain)