NATIONAL UNIVERSITY OF ENGINEERING
COLLEGE OF ENVIRONMENTAL ENGINEERING
SANITARY ENGINEERING PROGRAM

SA333 – EPIDEMIOLOGY

I. GENERAL INFORMATION

CODE	**:**	SA333 Epidemiology
SEMESTER	**:**	4
CREDITS	**:**	3
HOURS PER WEEK	**:**	6 (Theory, Practice)
CONDITION	**:**	Mandatory

II. COURSE DESCRIPTION

The course prepares students in the application of epidemiology concepts and methods for the study and analysis of the patterns, causes, and effects of health and disease conditions in defined populations. Students analyze disease causation, transmission, outbreak, process, and surveillance, mostly relate to water and sanitation. Infectious diseases transmissibility and epidemiologic chain, as well as general symptomatology and control are analyzed considering the particular characteristics of different regions of the country.

III. COURSE OUTCOMES

At the end of the course, students:

1. Recognize and identify the most important factors determining people health.
2. Analyze epidemiology applications in sanitary engineering.
3. Analyze the epidemiologic chain of transmissible diseases.
4. Get epidemiological data and use it to make decisions considering existing and potential risks on people health.
5. Analyze ways to control the dissemination of transmissible infectious diseases.

IV. LEARNING UNITS

1. PUBLIC HEALTH

Public health scope / Health conditioning factors: economic level, housing, education level, public safety / Feeding: basic concepts, nutrients, classes, functions, foods table, principles or laws, deficiency states and consequences / Life styles and harmful habits (alcohol and drugs) / Personal hygiene, family situation / Health center.

2. MEDICAL TERMINOLOGY

Symptoms, signs, syndromes and illness / Health statistics: demographic statistics, morbidity statistics, and resources and activities statistics / Main applications.

3. EPIDEMIOLOGY

Basic concepts / Epidemics: epidemic outbreak, pandemic / Epidemiology evolution / Epidemiology uses / Principles of the ecological concept of health / Multi-causality principle.

4. RISK AND CAUSALITY

Sufficient cause - necessary cause / Epidemiologic method: descriptive phase, description elements / Analytic phase, design of epidemiological studies, main types, and applications / Epidemiological surveillance / Natural history of disease / Disease prevention.

5. INFECTOLOGY

Practical revision of microbiology: virus, bacteria, mushrooms, parasites / Classification of produced diseases (related to Sanitation) / Pollution / Infection / Infectious diseases: conditions for its outbreak / Transmissible diseases / Epidemiologic chain of transmissible diseases / General symptomatology of infectious diseases / Main alterations in blood analysis. Hemogram / Classification of infectious diseases / General actions for controlling transmissible diseases.

V. PRACTICAL EXPERIENCES

Analysis of actual cases related to:

1. Public health
2. Epidemiology
3. Risk and causality
4. Transmissible diseases

VI. METHODOLOGY

The course takes place in theory and practice sessions. In theory sessions, faculty presents concepts, methods and applications. In practice sessions, various problems are solved and their solution analyzed. At the end of each practice session, students present a report with main results, analysis and conclusions. Student's active participation is promoted throughout the course.

VII. GRADING FORMULA

The Final Grade PF is calculated as follow:

PF = (EP + 2*EF + PL) / 4

EP: Mid-term Exam. EF: Final Exam.
PL: Average of Practice Works.

VIII. BIBLIOGRAPHY

1. ANTONIO R. VILLA ROMERO.
   Statistical Epidemiology in Public Health
   Autonomous University of Mexico, Mc Graw-Hill, Mexico D. F., Mexico.

2. ROSS C. BROWNSON, DIANA B. PETTITI.
   Applied Epidemiology Theory to Practice
   Oxford University Press, Oxford, United Kingdom.