



National University of Engineering (UNI)
School of Civil Engineering
Syllabus 2026-II

1. COURSE

CE3C11. Sanitary and Electrical Installations (Mandatory)

2. GENERAL INFORMATION

2.1 Course	: CE3C11. Sanitary and Electrical Installations
2.2 Semester	: 10 th Semester.
2.3 Credits	: 3
2.4 Hours	: 4 HT; 2 HP;
2.5 Duration of the period	: 16 weeks
2.6 Type of course	: Mandatory
2.7 Learning modality	: Face to face
2.8 Prerequisites	: CE3H1. Fluid Mechanics II. (8 th Sem)

3. PROFESSORS

Meetings after coordination with the professor

4. INTRODUCTION TO THE COURSE

Sanitary and Electrical Installations covers the design of sanitary installations (water supply and wastewater and stormwater drainage) and electrical installations (installed power, maximum demand, lighting, and grounding) within a building.

5. GOALS

- Design the water supply system and the wastewater and stormwater drainage system of a building.
- Determine the installed power and maximum demand of a residential electrical installation applying current regulations.
- Apply complementary concepts of lighting, grounding, and electricity tariffs to the design of electrical installations.

6. COMPETENCES

ABET-2) An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors. (Usage)

7. TOPICS

Unit 1: Water Supply System in Building Sanitary Installations (17 hours)	
Competences Expected: ABET-2	
Topics	Learning Outcomes
• Importance and scope of sanitary installations in a building • Cold water system design: demand allowance, pressures, and pipe sizing • Hot water system design and other building water uses • Cisterns, elevated tanks, and water pumping systems	• Explain the importance and scope of sanitary installations in a building [Familiarity] • Design a building's cold and hot water system, determining demand allowance, pressures, and pipe sizing [Usage] • Size cisterns, elevated tanks, and water pumping systems for a building [Assessment]
Readings : [Cap06]	

Unit 2: Drainage System in Building Sanitary Installations (13 hours)	
Competences Expected: ABET-2	
Topics	Learning Outcomes
• Wastewater drainage system design • Building stormwater drainage system design • Sanitary venting systems and traps for odor control	• Design a building's wastewater and stormwater drainage system [Usage] • Apply sanitary venting and odor control criteria to the design of a drainage system [Assessment]
Readings : [Cap06]	

Unit 3: Building Electrical Installations (26 hours)	
Competences Expected: ABET-2	
Topics	Learning Outcomes
• Importance and scope of electrical installations in a building • Determination of installed power per applicable standards • Maximum demand calculation and demand factors • Design of branch circuits and feeders • Basic lighting design concepts for buildings • Grounding systems • Electricity tariffs and service billing	• Explain the importance of electrical installations in a building [Familiarity] • Determine the installed power of a building per current standards [Usage] • Calculate the maximum demand of a building applying the corresponding demand factors [Assessment] • Design the branch circuits and feeders of a residential electrical installation [Usage] • Apply lighting and grounding concepts to the design of an electrical installation [Assessment]
Readings : [Ene11]	

8. WORKPLAN

8.1 Methodology

Individual and team participation is encouraged to present their ideas, motivating them with additional points in the different stages of the course evaluation.

8.2 Theory Sessions

The theory sessions are held in master classes with activities including active learning and roleplay to allow students to internalize the concepts.

8.3 Practical Sessions

The practical sessions are held in class where a series of exercises and/or practical concepts are developed through problem solving, problem solving, specific exercises and/or in application contexts.

9. EVALUATION SYSTEM

***** EVALUATION MISSING *****

10. BASIC BIBLIOGRAPHY

- [Cap06] Servicio Nacional de Capacitación para la Industria de la Construcción (SENCICO). *Norma IS.010: Instalaciones Sanitarias para Edificaciones*. Tech. rep. Reglamento Nacional de Edificaciones del Perú, 2006.
- [Ene11] Ministerio de Energía y Minas del Perú. *Código Nacional de Electricidad – Utilización*. Tech. rep. Ministerio de Energía y Minas, 2011.