



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

1. COURSE

CE403. Capstone project II (Mandatory)

2. GENERAL INFORMATION

2.1 Course	: CE403. Capstone project II
2.2 Semester	: 10 th Semester.
2.3 Credits	: 4
2.4 Hours	: 4 HT; 4 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	: CE402. Capstone project I. (9 th Sem)

3. PROFESSORS

Meetings after coordination with the professor

4. INTRODUCTION TO THE COURSE

Este curso tiene por objetivo que el alumno desarrolle su propuesta técnica y sus experimentos en base al estado del arte ya levantado previamente. Es la etapa de consolidación donde se define el aporte original o la aplicación novedosa de la ingeniería civil que dará lugar a su tesis profesional.

5. GOALS

- Que el alumno esté en la capacidad de presentar formalmente su proyecto de tesis con el marco teórico y levantamiento bibliográfico completo.
- Que el alumno desarrolle su propuesta de investigación (metodología, diseño experimental o modelamiento).
- Los entregables de este curso son:

Avance parcial: Plan de tesis detallado que incluye motivación, definición del problema, objetivos, cronograma y avances de la propuesta técnica (uso/mejora de métodos existentes).

Final: Plan de tesis en etapa avanzada y borrador de tesis incluyendo capítulos de propuesta y resultados experimentales preliminares.

6. COMPETENCES

ABET-1) An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. (Assessment)

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. (Assessment)

ABET-3) An ability to communicate effectively with a range of audiences. (Assessment)

ABET-4) An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts. (Assessment)

ABET-5) An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives. (Assessment)

7. TOPICS

Unit 1: Proyecto de Tesis (30 hours)	
Competences Expected: ABET-1,ABET-2,ABET-3,ABET-4,ABET-5	
Topics	Learning Outcomes
• Estructuración formal del Proyecto de Tesis. • Definición de la metodología de investigación aplicada.	• Aplicar el formato institucional para el plan de tesis [Evaluar]. • Concluir el plan del proyecto de tesis con objetivos medibles [Evaluar]. • Presentar el estado del arte del tema de tesis al 50% [Evaluar].
Readings : [Yin18], [Mer93]	

Unit 2: Avance de Tesis (30 hours)	
Competences Expected: ABET-1,ABET-2,ABET-3,ABET-4,ABET-5	
Topics	Learning Outcomes
• Desarrollo de la propuesta técnica. • Ejecución de ensayos o simulaciones numéricas.	• Dominar el formato de tesis de la Universidad utilizando L^AT_EX [Evaluar]. • Concluir el capítulo del Marco Teórico y Trabajos Relacionados [Evaluar]. • Presentar resultados (formales o estadísticos) de experimentos orientados a su tema de tesis [Evaluar].
Readings : [AST21]	

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

- [Mer93] Jack Meredith. “Theory Building through Conceptual Methods”. In: *International Journal of Operations & Production Management* (1993).
- [Yin18] Robert K. Yin. *Case Study Research and Applications: Design and Methods*. 6th. SAGE Publications, 2018.
- [AST21] ASTM. *Form and Style for ASTM Standards*. ASTM International. 2021.