



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

1. COURSE

CE402. Capstone project I (Mandatory)

2. GENERAL INFORMATION

2.1 Course	: CE402. Capstone project I
2.2 Semester	: 9 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	: BMI201. Methodology of Engineering Research. (8 th Sem)

3. PROFESSORS

Meetings after coordination with the professor

4. INTRODUCTION TO THE COURSE

Este curso tiene por objetivo que el alumno pueda realizar un estudio del estado del arte de un tema escogido para investigar dentro del ámbito de la ingeniería civil. Se busca que el estudiante consolide su base teórica y demuestre capacidad crítica para evaluar soluciones técnicas existentes.

5. GOALS

- Que el alumno realice una investigación inicial en un tema específico realizando el estudio del estado del arte del tema elegido.
- Que el alumno muestre dominio en el tema de la línea de investigación elegida (p.e. comportamiento inelástico de materiales, modelación hidrológica, etc.).
- Que el alumno elija un docente que domine el área de investigación elegida como asesor.
- Los entregables de este curso son:

Avance parcial: Bibliografía sólida y avance de un Reporte Técnico.

Final: Reporte Técnico con experimentos o simulaciones preliminares comparativas que demuestren que el alumno ya conoce las técnicas existentes en el área de su proyecto.

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: Levantamiento del estado del arte (60 hours)	
Competences Expected: ABET-1,ABET-2,ABET-3,ABET-4,ABET-5	
Topics	Learning Outcomes
• Realizar un estudio profundo del estado del arte en un determinado tópico del área de Ingeniería Civil. • Redacción de reportes técnicos y artículos científicos.	• Hacer un levantamiento bibliográfico del estado del arte del tema escogido (capítulos de marco teórico y revisión crítica) [Usar]. • Redactar un documento en L^AT_EX en formato artículo (<i>paper</i>) con alta calidad técnica (tablas, figuras, ecuaciones, citas) [Usar]. • Realizar presentaciones de avance utilizando herramientas profesionales como Beamer o similares [Usar]. • Mostrar resultados de experimentos básicos o simulaciones computacionales preliminares [Usar]. • Elegir un asesor que domine el área de investigación realizada [Usar].
Readings : [ASC22]	

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

[ASC22] ASCE. “Guidelines for State-of-the-Art Reports”. In: *Journal of Structural Engineering* (2022).