

PONTIFICIA UNIVERSIDAD CATÓLICA DE CHILE  
SCHOOL OF ENGINEERING  
DEPARTAMENT OF CONSTRUCTION ENGINEERING AND MANAGEMENT  
ABET COURSE SYLLABI

**ICC2304      CONSTRUCTION ENGINEERING**

**Credits and contact hours:** 10 credits / 10 hours (3 hours in lectures; 7 h. individual work hours per week)

**Instructor's name:** Claudio Mourgues

**Course coordinator's name** Claudio Mourgues

**Textbook:**

- Class notes
- Solminihac, H. & Thenoux G. "Procesos y Técnicas de Construcción". Ediciones Universidad Católica de Chile. Santiago. Fifth Edition. May 2008.

**Course Catalog Description:** This purpose of this course is to introduce students to Construction Engineering and its specialization areas, synthetizing the stages that are developed within a project, from the gestation of the idea to its start-up, thereby highlighting the ethical values that should be considered in the profession's performance. The main emphasis of this course is put on the interpretation of technical specifications and drawings, the study of cubing, cost studies for construction projects, and the study of construction technologies.

**Prerequisite Courses:** None

**Co-requisite Courses:** None

**Status in the Curriculum:** Required course

**Course Learning Outcomes:**

1. Understanding the different types of construction projects and their main characteristics.
2. Understanding a detailed project proposal through contract documents (technical specifications, drawings, contracts).
3. Interpretation of specifications and drawings.
4. Understanding and evaluating construction operations, methods and constructive techniques used in a construction project (with emphasis on traditional ones).
5. Knowing, evaluating and selecting, from the technical and economical point of view, the most adequate construction methods and equipment for the activities related to a construction work.
6. Estimating quantities and costs of resources (machinery, labor force, materials) for construction projects.
7. Designing the installation of construction works.

8. Preparing and presenting a construction proposal for a building project.

**Relation of Course to ABET  
Criteria:**

- a. Knowledge of mathematics, science and engineering
- b. Designing and conducting experiments: to analyze and interpret data
- c. Designing a system, component, or process
- d. Identify, formulate, and solve engineering problems
- e. Broad education necessary for global, economic, environmental and societal context
- f. Techniques, skills, and modern tools for engineering practice.

**Topics covered:**

1. The construction industry
  - 1.1 Main stages
  - 1.2 Professional role of construction
  - 1.3 Construction projects: stages, design, works quantity estimate, regulations, permits and municipal rights, environmental considerations
2. Construction management
  - 2.1 Management elements
  - 2.2 Project contracts and proposals
  - 2.3 Budget studies
3. Construction work site
  - 3.1 Structure classification, components of a building, urbanizations, Works installations, auxiliary elements, topography and layout.
  - 3.2 Construction equipment
  - 3.3 Excavations
  - 3.4 Foundations
4. Construction technologies
  - 4.1 Masonry constructions
  - 4.2 Concrete construction
  - 4.3 Steel constructions
  - 4.4 Wood constructions
5. Other building components
  - 5.1 Roofs
  - 5.2 Installations
  - 5.3 Construction and finishing