

CMCE 2457 – CONSTRUCTION TECHNIQUES IN CIVIL ENGINEERING

Equivalent to old course: CMCE 2455

Course Description:

Construction project management and heavy construction techniques, including buildings and civil engineering type structures (highways & bridges). Topics include construction management, professional ethics, contracts, and CPM scheduling. Sustainable Construction and the LEED Green Building Rating System are also introduced. The fundamentals of any construction project are covered in detail, including concrete, steel, masonry, and wood construction methods. The New York City Building and Zoning Codes and A.A.S.H.T.O are references. Each student is required to submit a research paper at the end of the semester, and must select a topic that is related to the construction of a reinforced concrete building, structural steel building or a civil engineering type structure.

Pre - or co-requisite: CMCE 1222 or department approval

1 Class hours, 2 Lab hours, 2 credits

Textbook: Building Construction Principles, Materials, and Construction, Mehta, Scarborough and Armpriest, 2nd edition, Pearson 2013.

Reference(s): Instructor's Notes & Handout Sheets
Construction Project Administration, Fisk, 10th Ed

Program Criteria

ABET, Inc. is the nationally recognized accrediting body for engineering technology programs. The CMCE department has adopted the most current ABET Program Criteria. Graduates of baccalaureate degree programs typically specify project methods and materials, perform cost estimates and analyses, and manage construction activities. The CMCE curriculum provides instruction in the following areas:

- Utilization of techniques that are appropriate to administer and evaluate construction contracts, documents, and codes (Criterion a);
- Estimation of costs, estimation of quantities, and evaluation of materials for construction projects (Criterion b);
- Performance of economic analyses and cost estimates related to design, construction, and maintenance of systems associated with construction engineering; (Criterion f);
- Selection of appropriate construction materials and practices (Criterion g);
- Application of appropriate principles of construction management, law, and ethics (Criterion h);
- Performance of standard analysis and design in at least one sub-discipline related to construction engineering (Criterion i).

Student Outcomes

The CMCE department has adopted the most current ABET student outcomes criteria. Student performance in this course will be assessed based on the following learned capabilities:

- An ability to apply knowledge, techniques, skills and modern tools of

mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline (Criterion 1);

- An ability to apply written, oral, and graphical communication in broadly defined technical and non-technical environments; and an ability to identify and use appropriate technical literature (Criterion 3);

Academic Integrity Policy

Students and all others who work with information, ideas, texts, images, music, inventions, and other intellectual property owe their audience and sources accuracy and honesty in using, crediting, and citing sources. As a community of intellectual and professional workers, the College recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity.

Accordingly, academic dishonesty is prohibited in The City University of New York and at New York City College of Technology and is punishable by penalties, including failing grades, suspension, or expulsion.

Course Outline

Week	Topic	Reading Assignment
1	Introduction	Chapter 1
2	Soils and Soil Investigation Methods	Chapter 2
3 & 4	Foundation Elements and Procedures	Chapter 2
5 & 6	Concrete Construction-Types of Concrete Floor Systems	Chapter 13, 14 &15
7 & 8	Structural Steel Frame Construction	Chapter 11
9	Short Span Bridge Construction	Instructor's Notes
10	Highway Construction	Instructor's Notes
11	The Design and Construction process	Instructor's Notes
12	Types of Contracts	Instructor's Notes
13	Construction Network Scheduling	Instructor's Notes
14	Construction Network Scheduling Presentations of students' term projects	Instructor's Notes
15	Final Examination & Term Research Paper	