CMCE 1224 – MATERIALS AND METHODS OF CONSTRUCTION II

Course Description:
This course covers the fundamentals of the major categories of any building construction project: foundation & substructure, the superstructure (structural frame); the building enclosure and interior work; and the site work. Currently used methods and materials of construction are emphasized. Cast-in-place and precast concrete frame construction; masonry construction; steel frame construction; curtain wall construction systems; interior finishes as well as an overview of Sustainable Construction and Green Building Design including the LEED – Green Building Rating System are covered.

Prerequisites: CMCE 1110, CMCE 1114, CUNY proficiency in reading and writing
1 Class hour, 2 Lab hours, 2 credits

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

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);
- Selection of appropriate construction materials and practices (Criterion g);

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 dishonestly 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/ Text Reference
1	Types of building systems, clearing the site, soils and soil investigation, test borings and drilling methods	Chapters 1 & 2
2	Site excavation methods and bracing procedures, well points and underpinning methods.	Chapter 2
3	Shallow foundations - column footings, wall footings, combined footings, cantilevered footings, stepped footings	Chapter 2
4	Deep foundations - caissons, bell caissons, socketed caissons, end bearing piles and friction piles, column caps and tie beams	Chapter 2
5	Making and placing concrete, formwork, reinforcement bars, testing methods, casting a concrete wall and concrete column	Chapter 13
6	Site cast concrete framing systems, one-way solid slab system, one-way concrete joist system, two-way flat slab and two-way flat plate systems	Chapter 14
7	Precast concrete framing systems, precast concrete structural elements, joining precast concrete structural elements	Chapter 15
8	Masonry load bearing wall construction, masonry wall types, detailing masonry walls.	Chapters 8 & 9
9	Spanning systems for masonry-bearing wall construction, stone and concrete masonry wall construction	Chapter 10
10	Steel frame construction, structural shapes, steel shear and moment connections, details of steel framing.	Chapter 11
11	Steel construction process, fabrication, steel erection, floor and roof decking, fireproofing of steel.	Chapter 11
12	Glass and glazing, history, the material glass, glazing, glass and energy.	Chapter 17
13	Glazed curtain wall systems, the rainscreen principle, expansion joints in metal and glass walls.	Chapters 20 & 21
14	Sustainable Construction - Green building design	Instructor's Notes
15	FINAL EXAM Submission of Term Research Paper	