# CMCE 3520 CONSTRUCTION MANAGEMENT FOR CIVIL ENGINEERING TECHNOLOGISTS

**Course Description:**
A thorough overview of advanced planning and management techniques for the construction process. Topics include project communications, CPM scheduling, safety, construction processes, risk allocation, accounting principles, material testing and quality control techniques, change orders, claims and disputes. Project safety is addressed in a 10-hour OSHA certification training course. Students also study the LEED rating system and take a LEED certification exam (if qualified). Industry standard computer scheduling software, industry standard project management software and the use of value engineering (VE) workshop to reduce construction costs are also covered. This course is open to civil engineering technology students only..

**Prerequisites:** CMCE 2457
4 Class hours, 4 credits

**Textbook**: Construction Project Management, Gould, 4th edition, Pearson 2014.
**Reference:** Documents available from General Contractors Association and OSHA

## 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);
- Production and utilization of documents related to design, construction, and operations (Criterion e);
- 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);

## 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);
- An ability to function effectively as a member as well as a leader on technical teams (Criterion 5);

**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

| Session | Topic | In Class Work | After Class Assignment |
|---|---|---|---|
| 1 | Introduction<br>Informal Communication: Email<br>The Construction Industry & Project Delivery | | ASSGN1: Practice Email<br>Ch.1-2, 5 |
| 2 | Construction Services During Design, Construction, & On Site<br>Work Breakdown Structures<br>Specifications & Workmanship<br>Reports: Research & Library Use | Case Study 1<br>ASSGN2: WBS<br>Library Research Practice | ASSGN3: Email on CS1<br>Ch. 12 |
| 3 | LEED Module 1 & LEED Module 2<br>Project Planning & Scheduling<br>Fundamentals of CPM Construction Scheduling | ASSGN4: LEED<br>Case Study 2 | ASSGN5: CPM<br>Ch. 6, 8 |
| 4 | Fundamentals of CPM Construction Scheduling cont'd. | ASSGN6: CPM<br>Case Study 3 | ASSGN7: Email & CPM on CS3 |
| 5 | LEED Module 3<br>Meetings and Negotiations | ASSGN8: LEED<br>Case Study 4 | ASSGN9: Class Project Part 1<br>Ch. 7, 14 |
| 6 | Award & Contracts<br>Change Orders<br>Billing & Accounting Practices<br>Accounting (Progress Measurement & Payment) | ASSGN10: Requisition<br>Case Study 5 | Study for Midterm |
| 7 | MIDTERM EXAM | | Ch. 9, 13 |
| 8 | Codes, Plans & Specifications<br>Labor Law | ASSGN11: Invoices<br>Case Study 6 | ASSGN12: LEED |
| 9 | LEED Module 4 – PRACTICE EXAM | OSHA | --- |
| 10 | OSHA certification course (3 hr.)<br>Risk Allocation & Management | OSHA<br>Class Project Due | --- |
| 11 | OSHA certification course (3 hr.)<br>Value Engineering Principles | OSHA<br>ASSGN13: VE Exercise | --- |
| 12 | OSHA certification course (2 hr.)<br>Value Engineering, cont'd.<br>Project Documentation: RFIs & Reports | OSHA<br>ASSGN13: VE Exercise, cont. | --- |
| 13 | OSHA certification course (2 hr.)<br>Insurance & EMR<br>Project Closeout | OSHA | ASSGN14: EMR<br>OSHA Certification Exam |
| 14 | Review for Final | | Study for Final |
| 15 | FINAL EXAM | | |