CE 410-102: CONSTRUCTION SCHEDULING AND ESTIMATING

(3 credits)

Lectures Thursdays 6:00 pm - 8:50 pm; Face to Face
KUPF 104

Instructor Dr. Avinash Prasad; **PE, PLS, PP, F.ASCE** ; Office Hours: Online by appointment
Avinash.prasad@njit.edu
201-873-8089

Prerequisite: CE 210, Construction Materials & Procedures

Required Textbook: Estimating Construction Costs, 6th Edition; Robert L. Peurifoy and Garold D. Oberlender McGraw Hill, ISBN No. 978-0-07-339801-3

Course Description:
Quantity take off, cost estimate and CPM computer analysis of typical building or highway projects. A study is made of construction project organization, contract requirements and management control techniques with an introduction to computer applications (Microsoft Project).

POLICIES & PROCEDURES

Academic Integrity: It is expected that NJIT's University Code on Academic Integrity will be followed in all matters related to this course. Refer to NJIT's Dean of Students website to become familiar with the Code on Academic Integrity and how to avoid Code violations.

https://www.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf

Communication: All communication by the instructor will be done through Canvas/email. It is your responsibility to check your e-mail, and the course page on Canvas/email regularly.

Lectures/Class: This course will be administered Face to Face. Attendance to all lecture/class periods is expected. Please turn all cell phones off during class and be respectful to the course instructor and your classmates.

Handouts: Handouts; Lectures will be posted on Canvas.

Homework: Homework will be posted on Canvas. It will be worked individually.

Late Homework: No late Homework is allowed.

Homework Solutions: Homework solutions will be posted on Canvas after their due date.

Calculation of Course Grade: A weighted average grade will be calculated as follows:

Attendance & Participation	10%
Assessment Quizzes	15%
HomeWorks	15%
Term Group Project	15%
Midterm Exam	20%
Final Assessment Exam	25%

The minimum requirements for final letter grades are as follows:

A = 90.0%, B+ = 85.0%, B = 80.0%, C+ = 75.0%, C = 70.0%, D = 60.0%, F < 60.0%

Instructor Commitment: You can expect the instructor to be courteous, punctual, organized, and prepared for lecture and other class activities; to answer questions clearly; to be available during office hours or to notify you beforehand if office hours are moved; to provide a suitable guest lecturer or pre-recorded lecture when they are traveling or unavailable; and to grade uniformly and consistently.

Students with Documented Disabilities: NJIT is committed to providing students with documented disabilities equal access to programs and activities. If you have, or believe that you may have, a physical, medical, psychological, or learning disability that may require accommodations, please contact the Coordinator of Student Disability Services located in the Center for Counseling and Psychological Services, in Campbell Hall, Room 205, (973) 5963414. Further information on disability services related to the self-identification, documentation, and accommodation processes can be found on the webpage at: (http://www.njit.edu/counseling/services/disabilities.php)

Course Schedule:

Week	Proposed Topics
1 (Thursday; Jan 23, 2025)	Introduction: Estimating Overview & Scheduling Overview
2	Contract Drawing Industry Standards Project Process Groups
3	Bid Documents & Preparation Estimating Process Conceptual Cost Estimating
4	Cost of Construction Labor & Equipment Construction Safety Handling and Transporting Material
5	Earthwork and Excavation
6	Pavements & Structural Elements Portland Cement Concrete Asphalt Concrete
7	Drainage & Utilities Total Cost of Engineering Projects
8	Midterm Exam
9	Activity Relationships Project Control Principles Network Modeling
10	Construction Sequencing
11	Contract Requirements & Provisions
12	Critical Path Method
13	Monitoring & Control Change Management
14	Cost Schedule Integration
15	Final Exam

*The NJIT Honor Code will be upheld and any violations will be brought to the immediate attention of the Dean of Students. *Students will be consulted with by the instructor to any modifications or deviations from the syllabus throughout the course of the semester.

CEE Mission, Program Educational Objectives, and Student Outcomes

The mission of the Department of Civil and Environmental Engineering is:

- to educate a diverse student body to be employed in the engineering profession
- to encourage research and scholarship among our faculty and students
- to promote service to the engineering profession and society

Program Educational Objectives

Our **Program Educational Objectives** are reflected in the achievements of our recent alumni:

- **Engineering Practice:** Alumni will successfully engage in the practice of civil engineering within industry, government, and private practice, working towards safe, practical, resilient and sustainable solutions in a wide array of technical specialties including construction, environmental, geotechnical, structural, transportation, and water resources.
- **Professional Growth:** Alumni will advance their technical and interpersonal skills through professional growth and development activities such as graduate study in engineering, research and development, professional registration and continuing education; some graduates will transition into other professional fields such as academia, business, and law through further education.
- **Service:** Alumni will perform service to society and the engineering profession through membership and participation in professional societies, government, educational institutions, civic organizations, charitable giving and other humanitarian endeavors.

Student Outcomes

Our **Student Outcomes** are what students are expected to know and be able to do by the time of their graduation:

- an ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science and mathematics
- 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
- an ability to communicate effectively with a range of audiences
- 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
- 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
- an ability to develop and conduct appropriate experimentation, analyze and interpret data and use engineering judgment to draw conclusion
- an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Updated 1/3/2025

Outcomes Course Matrix :CE 410-102 Construction Estimating and Scheduling,

Strategies, Actions and Assignments	ABET Student Outcomes (1-7)	Program Educational Objectives	Assessment Measures
Student Learning Outcome 1: Recognize the various components of construction.			
Review bid documents and the cost estimating process using labor, materials, equipment, overhead and profit.	1	1	Homework, mid-term exam, Quiz
Student Learning Outcome 2: Prepare cost estimates.			
Prepare cost estimates for various civil areas of construction.	1, 7	1, 2	Homework, project assignment, Quiz
Student Learning Outcome 3: Prepare a CPM schedule for a project.			
Present project control principals, CPM and cost schedule integration.	1, 7	1,2	Homework, project assignment, Quiz, final exam.