

**UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING**

CEE 420 – Construction Productivity – Spring 2025

Instructor: Ernest-John Ignacio
Office: 2110 Newmark Lab
E-mail: esignaci2@illinois.edu
Class Hours: Tuesdays & Thursdays 11:00am to 12:20pm (NCEB 1310)
Office Hours: Tuesdays & Thursdays 9:30am to 11:00am (NCEB 2110) Zoom by request
Course Websites: canvas.illinois.edu (Course Documents)
mediaspace.org (Lecture Recordings)
Prerequisites: Construction Engineering (CEE 320) or Graduate Student status

TA Office Hours: Hannah Daggett, hed2@illinois.edu
Day TBD Time TBD, Location TBD
Dominick Tadewald, dlt4@illinois.edu
Day TBD Time TBD, Location TBD
Daniel Zhuravel, dzhura2@illinois.edu
Thursday 3:30pm to 4:30pm, Bridge between Hydro and Yeh

Course Description:

Application of scientific principles to the measurement and forecasting of productivity in construction engineering as well as conceptual and mathematical formulation of labor, equipment, and material factors affecting productivity are covered in this course.

Required Textbook:

Nunnally, S. W., “Construction Methods and Management”, Prentice Hall, 7th Edition (or newer), ISBN:0-13-171685-9

Reference Materials:

Engineering News-Record. A weekly magazine that provides news, analysis, data, and opinion for the construction industry worldwide.

ASCE Journal of Construction Engineering and Management. Hard copies are available in Grainger Engineering library. Online access is available at <https://www.library.illinois.edu>.

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Course Objective:

The course is designed to allow students to develop an understanding of productivity in on-site construction throughout the completion of construction project. Emphasis is placed upon the building construction and management techniques that affect productivity of activities, work crews, and equipment.

Main Topics:

- Introduction to Construction Productivity
- Data Gathering & Sampling
- Time Studies
- Productivity Improvement
- Total Quality Management
- Preplanning for On-Site Construction
- Material Management
- Factors Affecting Humans & Materials
- Human Factors in Construction Productivity
- Safety and Environmental Health
- Construction Decisions & Optimization

Assignments:

Assignments will be submitted electronically on the course website (canvas.illinois.edu). Late assignments will be penalized according to the following system:

- Submitted on time: No deduction
- 0 to 24 hours late: 10% deduction
- 1 day to 1 week late: 50% deduction
- More than 1 week late: 80% deduction

Grading Disputes:

All grading disputes (assignments, exams, projects, etc.) will be made via a grading change order. The student must submit a grading change order that clearly articulates the dispute and provides justification for a grade change.

Group Project Description:

Students will work in a group of six (6) self-selected students to study a construction operation and suggest productivity improvements. Each team is free to choose any construction operation, but the construction crew must have at least five workers and some types of equipment. Students will work together to deliver a technical report including a video presentation

Course Grading:

Item	Three Credit Students	Four Credit Students
Class Participation	5 points	5 points
Assignments	15 points	15 points
Workshops	15 points	15 points
Exam 1 (Mar 04)	20 points	20 points
Exam 2 (May 06)	25 points	25 points
Term Project (Apr 22)	20 points	20 points
Fourth Credit Research Assignment (Apr 24)	N/A	33 points
Total	100 points	133 points

Grading Policy:

A weighted grade will be assigned according to UIUC grading letter system. Final grade cutoffs will not exceed the following:

A+=95%; A = 90.0%; A- = 86.7%; B+ = 83.3%; B = 80.0%; B- = 76.9%; C+ = 73.3%; C = 70.0%; C- = 66.7%; etc...

Students who have borderline scores (± 1 point) may be rounded to the next highest grade category depending on the following factors at the discretion of the instructor: (1) student attendance and participation in the class; and (2) whether student overall performance has been improving (tests and homework grades increasing) or declining (tests and homework grades decreasing).