CET 423 - Construction Safety

Fall 2025

Course Number	CET 423 Construction Safety
Course Hours	Tuesday/Thursday 2:30 PM – 4:35 PM CKB 303
Office Hours	Tuesdays from 12:30 PM to 2:00 PM; and Friday: 10:00 AM-11:30 AM.
Course Description	This course will introduce and apply the safety issues encountered in the various forms of construction as mandated by the Occupational Safety and Health Act (OSHA) and other similar regulations. New smart sensing and monitoring technologies in the construction industry 4.0 will also be introduced. OSHA cards will not be issued after the course.
PREREQUISITE (s)	None
Required Materials	• 29 CFR 1926, OSHA Construction Industry Regulations, Mancomm Communications. July 2020 • Manual of Uniform Traffic Control Devices, Chapter 6, Work Zone Safety, 2023. (Free download found at https://mutcd.fhwa.dot.gov/kno_11th_Edition.htm) • Arduino User Manual and Tutorials (Free at https://www.arduino.cc/en/Tutorial/HomePage)
Computer Usage	Word, Excel, PowerPoint, Web Browser, and Arduino program coding.
Course Learning Outcomes	By the end of the course students should be able to: 1. Understand the purpose and scope of the Occupational Safety Health Act (OSHA) and the accompanying regulations. 2. Understand and apply the OSHA regulations to construction situations. 3. Prepare a safety plan based on an understanding of the OSHA regulations. 4. Prepare the appropriate techniques of record keeping and reporting of occupational injuries. 5. Prepare a response to an OSHA violation. 6. Prepare training materials for workers in compliance with OSHA regulations. 7. Understand the smart sensing technologies in Construction 4.0.
Class Topics	An introduction of OSHA Regulations (Record keeping/reporting of occupational injuries, personal protective equipment (PPE), Hazardous Communication), a review of a horizontal construction project safety (including work zone safety, excavation safety, electrical safety, signs, signals and barricades, tool safety, crane operation) and vertical construction project safety handling (including electrical protection, fall protection, scaffolding, stairs, and ladders and rigging and steel erection), an introduction of the smart sensing and monitoring technologies in the smart PPE application.

Student Outcomes

The Course Learning Outcomes support the achievement of the following CET Student Outcomes and TAC of ABET Criterion 9 requirements:

Student Outcome 2 –an ability to design systems, components, or processes meeting specific needs for broadly-defined engineering problems appropriate to the discipline.

Course Learning Outcome – Apply OSHA rules and regulations and the Manual of Unform Traffic Control Devices to the construction project and be able to design and prepare an OSHA-compliant safety plan and a work zone traffic safety plan.

Student Outcome 3 – 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.

Course Learning Outcome – Apply OSHA rules and regulations and the Manual of Unform Traffic Control Devices to the construction project and prepare a written plan-based OSHA rules and regulations and a work zone traffic safety plan.

Student Outcome 4 – An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes.

Course Learning Outcome – Be able to evaluate how the plans developed performed on the project and use the results to address any problems and how to address them in the future.

Program Specific Outcomes c – Utilization of measuring methods, hardware, and software that are appropriate for field, laboratory, office processes related to construction.

Course Learning Outcome - Students will be able to determine what various materials will be used and the necessary plans for an OSHA-compliant safety plan regulations and a work zone traffic safety plan.

Program Specific Outcomes f – Performance of economic analysis and cost estimates related to design, construction, and maintenance of systems associated with construction engineering.

Course Learning Outcomes - Ability to provide a detailed estimate and quantities based upon an OSHA-compliant safety plan.

Program Specific Outcomes g – Selection of appropriate construction materials and practices.

Course Learning Outcome - – Students will be able to determine various materials and practices necessary to implement an OSHA-compliant safety plan based upon OSHA rules and regulations and the Manual of Unform Traffic Control Devices for a work zone traffic safety plan.

Grading Policy

Team Project	35 %
Mid Term Exam	20 %
Final Exam	25 %
Assignments	15 %
Participation	5%

Tests - Note: A student cannot pass this course if they have not taken the Final Exam. If a student misses a scheduled test, they will have 1 week from the date of the test to schedule their taking of the test.
Homework will be collected or counted for credit and should be submitted before the deadline. Late submissions will not be accepted.

Academic Integrity

Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of Integrity policy that is found at https://www.njit.edu/dos/sites/njit.edu.dos/files/NJIT%20University%20Policy%20on%20Academic%20Integrity_0.pdf

Please note that is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any Student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of "F" and/or suspension or dismissal from the university. If you have any questions about the Code of Academic Integrity, please contact the Dean of Student Office at https://www.njit.edu/dos.

Student Behavior

Class time should be participative. You should try to be part of the discussion.

Modification to Course

The Course Outline may be modified at the discretion of the instructor or in the event of extenuating circumstances. Students will be notified in class and in writing of any changes to the Course outline.

Course Coordinated by

Prof. John A. Wiggins

GRADING LEGEND

GRADE	NUMERIC RANGE
A	90 to 100
B+	85 to 89
B	80 to 84
C+	75 to 79
C	70 to 74
D	60 to 69
F	0 to 59

The grade of Incomplete will only be granted in the case of an extreme emergency on the part of the student, proved by adequate evidence.

COURSE IMPORTANT DATES

- **SEP 8, 2025 – LAST DAY TO ADD/DROP A CLASS**
- **SEP 8, 2025 – LAST DAY FOR 100% REFUND, FULL OR PARTIAL WITHDRAWAL**
- **SEP 15, 2025 – LAST DAY FOR 90% REFUND**
- **SEP 29, 2025 –LAST DAY FOR 50% REFUND**
- **OCT 2, 2025 – WELLNESS DAY**
- **OCT 20, 2025 –LAST DAY FOR 25% REFUND**
- **NOV 10, 2025 – LAST DAY TO WITHDRAW**
- **NOV 25, 2025 – THURSDAY CLASSES MEET**
- **NOV 26, 2025 – FRIDAY CLASSES MEET**
- **NOV 27, 2025 – THANKSGIVING RECESS BEGINS. NO CLASSES.**
- **DEC 11, 2025 – LAST DAY OF CLASSES**
- **DEC 12, 2025 – READING DAY 1**
- **DEC 14, 2025 – FINAL EXAMS BEGIN**