*1. Course number and name*

**ENGR 429: Construction Management**

*2. Credits, contact hours, and categorization of credits in Table 5-1 (math and basic science, engineering topic, and/or other).*   
3 credits; one 2 hours 45 minute lecture per week.

*3. Instructor’s or course coordinator’s name*

Dragomir Bogdanic, PE

*4. Text book, title, author, and year*

Mubarak, Saleh, Construction Project Scheduling and Control, 3rd ed. Wiley, 2015.

*a. other supplemental materials*

Supplemental online content (animations, videos, web-based tools, etc.) delivered via course webpage

Optional Readings:

“Construction Project Administration,” 10th Edition, by E. R. Fisk and W. D. Reynolds

“Scheduling Construction Projects – Principles and Practice,” Sandra Christensen Weber

“Construction Planning, Equipment and Methods,” 4th edition, by Peurofoy and Ledbetter.

“Caterpillar Performance Handbook,” Latest edition, by Caterpillar Tractor Company.

“Walker’s Building Estimator’s Reference Book,” 21st edition, by Frank R. Walker Company.

“Engineering Law, Design Liability, and Professional Ethics,” by Rebecca J. Morton

*5. Specific course information*

*a. brief description of the content of the course (catalog description)*

Construction engineering and management; professional practice and ethics; bidding and contracting; planning and scheduling, network diagrams, scheduling computations, resource management, computer applications; cost estimating; construction safety.

*b. prerequisites or co-requisites*

ENGR 235: Surveying

*c. indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program*

Required for Civil Engineering program.

*6. Specific goals for the course*

*a. specific outcomes of instruction (e.g. The student will be able to explain the significance of current research about a particular topic.)*

* The students will demonstrate an understanding of the characteristics of the construction industry and the challenges facing it.
* The students will demonstrate familiarity with the environment of engineering professionalism, including licensing requirements and professional regulations.
* The students will demonstrate an understanding of the contractual relationships in construction.
* The students will demonstrate familiarity with pertinent code(s) of ethics and an understanding of, and an appreciation for the ethical obligations of engineers.
* The student will demonstrate an understanding of engineering plans and specifications for construction contracts.
* The students will demonstrate an understanding of network diagrams as used in CPM.
* The students will demonstrate the ability to perform scheduling computations, including activity start and finish times, floats, and determining the effect of activity crashing on project duration and cost.
* The students will demonstrate an understanding of scheduling software commonly used in the construction industry (e.g. PRIMAVERA, MS Project), and the ability to use it in simple scheduling problems.
* The students will demonstrate the ability to perform quantity take-off, obtain unit prices, and estimate project costs.
* The students will demonstrate an understanding of the safety issues in construction projects and familiarity with construction safety programs.

*b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.*

ABET student outcomes: 1, 3, 4, 7

*7. Brief list of topics to be covered*

* Overview of the construction industry
* Contractual relationships in construction
* Bidding and contracting
* Professional practice and ethics
* Project planning and scheduling
* Network diagrams (Arrow and Precedence)
* Crashing
* Schedule Updating
* Resource management
* Risk Management
* Computer applications in project scheduling
* Estimating
* Construction safety