

## New Graduate Course Proposal

### Form Procedure

To share the form with others prior to Submitting choose the **Save Progress** option at the bottom.

Create a PDF of the saved form go to Print and choose Save as PDF copy rather than print.

To access the saved form for editing or to finalize submission visit [forms.fitchburgstate.edu](https://forms.fitchburgstate.edu) to log in and view your Pending/Drafts under My Forms.

### Course Title

Course Title: \* Construction Engineering Management

Proposed Banner Abbreviation: \* Construction Eng. Management

*Banner limit of 30 characters, including punctuation, spaces, and special characters.*

### Department/Committee Information

The main contact person for the Graduate Curriculum Committee should fill out this form.

Requestor Name: \* Nirajan Mani

Members of the Graduate Curriculum Committee: Dr. Nirajan Mani, Dr. Wayne Whitfield, Dr. Soumitra Basu, Dr. Abdel Gabar Mustafa, Dr. Hong Yu

Department / Unit Developing: \* Engineering Technology

Chair of Department for Program: \* Nirajan Mani Chair Email: \* Nirajan Mani nmani@fitchburg

Academic Dean of Department or Program: \* Margaret Hoey Academic Dean E-mail: \* <Dr. Hoey> mhoey@fitchburg

Program Chair  Yes  
 No  
The Program Chair for this request is among the people listed above.

### Course Information

#### Course Description

\* This course includes technical project management applications for pre-project planning, design, pre-construction services, value engineering, construction, startup/commissioning and decommissioning of capital facilities.

#### Rationale and expected outcomes of offering the Course

\* The Construction Engineering Management course is designed and structured to equip students with the required technical competencies and the necessary skill sets in managing construction and engineering projects, project delivery methods, construction planning, estimating, scheduling, resource management, life-cycle analysis, and construction project control processes.

#### Expected Outcomes:

1. Evaluate concepts of managing construction and engineering projects
2. Describe construction project phases, in-depth concepts of estimating, bidding, scheduling, resource management, project financing, and construction project control processes
3. Prepare work plan, work package, work breakdown structure, cost breakdown structure, organization breakdown structure, etc.
4. Describe personal management skills
5. Crash the schedule to complete projects on time
6. Explain various methods of project financing
7. Apply professional, ethical, and sustainable construction practices
8. Develop professional communication skills

Number of Credits: \* 3

Discipline Prefix or Prefixes: \*  Brief rationale if more than one prefix:

Level of Course: \*  7000  8000  9000 Brief rationale for level choice: \*

The course will be:  Requirement  Elective Elective or Requirement Note/Special:

Is there a similar undergraduate course? \*  Yes  No

Does this course affect offerings in any other department or program? \*  Yes  No

**Course Enollment**

Expected Average Enrollment: \*

This course is a replacement for: Course # / Name

Has the course been offered previously as a "Topics" course? \*  Yes  No

Is this an Extended Campus Course? \*  Yes  No

Which semester will this course be offered for the first time?: \*  How often thereafter to be offered?: \*

**Course Requirements**

Prerequisite course(s) if any:

Additional Requirements Laboratory Hours:  Fieldwork Hours:   
Pre-Practicum Hours:  Practicum Hours:

Other Requirements (specify):

**Syllabus Upload**

New Course Syllabus Upload: MSCM\_Syllabus\_Construction\_Engineering\_Management\_Final.pdf

**Signatures**

*Click on the **Submit Form** button at the bottom of the page after you have signed the form. You should receive an email confirmation that your signature has been completed.*

...3031353537  
Nirajan Mani 03/21/2022  
Requester Signature Date

...3136393939  
Nirajan Mani 04/18/2022  
Department Chair Approval Date

...3531383538  
Margaret Hoey 05/02/2022  
Academic Dean Signature Date

\_\_\_\_\_  
SGOCE Dean Signature Date

\_\_\_\_\_  
Approval of the Graduate Council Date

\_\_\_\_\_  
Approval of the President Date

**Notification**

Reviewed by the Registrar: \_\_\_\_\_

Reviewed by the Library: \_\_\_\_\_

Retired form

SGOCE Admin. Assistant  
Signature

Electronically signed by Denise Bertrand on 05/01/2022 1:01:35 PM



School of Graduate Online and Continuing Education (SGOCE)  
Department of Engineering Technology  
**SYLLABUS**  
**Spring 2024**

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***Class Information:***

Course: CMGT 8XXX (Construction Engineering Management)  
Credits: 3  
Class Modality: Online  
Class Start Date: TBD  
Class End Date: TBD

***Instructor Information:***

**Dr. Nirajan Mani**  
Office: CNIC 209A  
Phone: 978-665-4843  
Email: [nmani@fitchburgstate.edu](mailto:nmani@fitchburgstate.edu)  
Office Hours: M/W (11:00 A. M. – 12:15 P. M.) (By Appointment)

***Recommended Reference Books and Materials:***

Project Management for Engineering and Construction (2<sup>nd</sup> ed.)  
Author: Garold Oberlender  
Publisher: McGraw-Hill  
ISBN-13: 978-0070393608

Computer-Based Construction Project Management  
Author: Tarek Hegazy  
Publisher: Pearson  
ISBN-13: 978-0130888594

Construction Planning and Scheduling (4<sup>th</sup> ed.)  
Author: Tarek Hegazy  
Publisher: Pearson  
ISBN-13: 978-0132473989

RS Means Cost Guide

***Supplementary Materials:*** Handout materials will be provided by instructor

***Catalog Description:***

This course includes technical project management applications for pre-project planning, design, pre-construction services, value engineering, construction, startup/commissioning and decommissioning of capital facilities.

**Prerequisite:** *Construction Cost Analysis & Estimating (CMGT 7XXX) and Construction Scheduling & Resource Optimization (CMGT 7XXX)*

**Required Skills:** *Mandatory use of electronic spreadsheets, presentation graphics, and word processing*

***Course Objectives:***

The Construction Engineering Management course is designed and structured to equip students with the required technical competencies and the necessary skill sets in managing construction and engineering projects, project delivery methods, construction planning, estimating, scheduling, resource management, life-cycle analysis, and construction project control processes.

***Students Learning Outcomes:***

1. Evaluate concepts of managing construction and engineering projects
2. Describe construction project phases, in-depth concepts of estimating, bidding, scheduling, resource management, project financing, and construction project control processes
3. Prepare work plan, work package, work breakdown structure, cost breakdown structure, organization breakdown structure, etc.
4. Describe personal management skills
5. Crash the schedule to complete projects on time
6. Explain various methods of project financing
7. Apply professional, ethical, and sustainable construction practices
8. Develop professional communication skills

***Learning Outcomes Assessment:***

Assessment tools for the above learning outcomes include homework & quizzes (outcomes: 1 to 7), exams (outcomes: 3, 4, 6), and project (2, 3, 7, 8).

***Instructor Availability:***

Instructor will be available during weekdays to respond your questions or concern via university email. Please contact instructor via university email if you have any questions or concern to avoid spam issue. However, this is an online class, we will use Google Meet / Hangouts for all student requested meetings.

***Instructional Strategies:***

The course will be conducted in an online format. This class may use lectures, demonstrations, self-guided study, group discussions, collaborative learning groups, and presentations to cover the topics in this course. PowerPoint presentations, computer applications, etc. may be utilized. Some independent learning is expected of the students; they should complete assigned readings prior to each class session and actively engage in discussions and activities to facilitate their understanding of classroom presentations. Every effort will be made to meet the individual needs and various learning styles of the course participants. It is most important that you inform the instructor at the beginning of the semester of any particular unique needs.

**Course Topics:**

The following topics will be covered in the course. The following listing is a general indication of the order of their coverage. However, faculty instructor reserves the right to change the order of coverage and the topics to be covered based upon the class’s performance and interests.

- Key concepts, purpose, types, and functions of project management
- Project team
- Project initiation
- Project delivery methods
- Early estimating and budgeting
- Project scheduling
- Resource management
- Project financing
- Time cost tradeoff
- Project controls
- Life-cycle analysis
- Professional ethics
- Sustainability

**Grading System:**

Range	Letter Grade	Quality Points
95 - 100	A	4.0
92 - 94	A-	3.7
89 - 91	A- / B+	3.5
86 - 88	B+	3.3
83 - 85	B	3.0
80 - 82	B-	2.7
77 - 79	B- / C+	2.5
74 - 76	C+	2.3
71 - 73	C	2.0
0 – 70	C-	0
Withdrawn		W
Incomplete		IN
In-Progress		IP
Audit		AU
Satisfactory		S
Unsatisfactory		U

*\* Grades that fall between intervals will be rounded to the higher number.*

**Evaluation Criteria:**

Quizzes	10%
Homework	30%
Exam I	20%
Exam II	20%
Project	20%

*\* The instructor reserves the right and the responsibility for adjusting these items and their weights as necessary to meet specific situations as they may arise.*

***Student Responsibilities and Class Requirements:***

Each student is responsible for completing all course requirements and for keeping up with all activities of the course. Students are required to complete all assigned homework, quizzes, exams, and project work by the given deadline.

***Policy on Assignments:***

All assignments must be turned in on the blackboard on Sundays per the documented dates in the syllabus. Feedback to your submissions will be posted on the blackboard within 72 hours (96 hours for a class of 60 or more students) after the weekly submission due date and time. It means that if you chose to submit your assignment early, it will be graded at the scheduled time and not before. Work submitted after due date will receive a grade of zero. All assignments must conform to APA writing style and include a reference list (not a work cited or bibliography).

Students with extenuating circumstances, such as a medical emergency or other emergencies must provide written proof of such event, and report such events within 24 hours and make arrangement to complete assignments in a timely manner. Failure to do so will result in a penalty up to 50%. Make up examinations (if part of course) will only be offered at the discretion of the instructor.

***Technology Initiatives:***

Users of the Fitchburg State University computer systems are subject to all applicable federal, state, and international computer laws. Questions regarding regulations may be directed to the office of Information Technology Systems.

***Students will utilize technology as:***

- A research tool; (a means of discovering current trends and substantive research articles in education)
- A communication method
- An enhancement tool for the design of PowerPoint presentations (for recorded presentations-individual/group)

***Fitchburg State University Library Online Services:***

The Fitchburg State University Library online services may be accessed through the Fitchburg State University Homepage <https://library.fitchburgstate.edu/>. Students may access any of several full-text online databases. Passwords are available to students by calling 978.665.3063. Students may access the Fitchburg State University Career Service and Counseling Services Center via the college's homepage at <https://www.fitchburgstate.edu/student-support/career-support/career-resources>.

***Disabilities Accommodation:***

Students requiring course alterations or accommodations due to a disability or emergency medical condition, should inform instructor as soon as possible. You should also work with the Disability Services Office (978-665-4020). They will provide you with the forms needed to determine the particular accommodations that your situation merits.

***University Academic Dishonesty Policy:***

Fitchburg State University's policy on Academic Dishonesty will be enforced in this course. Please refer to the university catalog on this policy. Plagiarism and cheating are inexcusable. Any instance of plagiarism or cheating will result in lowered grade and possible failing the course.

***Tentative Schedule:***

<b>Week</b>	<b>Topics</b>	<b>Remarks</b>
Week 1	Introduction: Construction Engineering and Management	
Week 2	Project Management	<i>Homework 1 due</i>
Week 3	Working with project teams	
Week 4	Project Initiation	<i>Homework 2 due</i>
Week 5	Project delivery methods	<i>Quiz 1 due</i>
Week 6	Conceptual Estimates	<i>Assign Final Project</i>
Week 7	Detailed Estimates and budgeting	<b><i>Exam I due</i></b>
Week 8	Project Scheduling (Developing a network model)	
Week 9	Project Scheduling (AOA and AON diagram; TF and FF)	<i>Homework 3 due</i>
Week 10	Resource Management	
Week 11	Project Financing (cash flow analysis)	<i>Homework 4 due</i>
Week 12	Time Cost Tradeoff, Project Controls, Life-cycle Analysis	
Week 13	Professional ethics and Sustainability Construction	<i>Quiz 2 due</i>
Week 14	Project Week / Recorded Project Presentation	<i>Project Report &amp; Presentation due</i>
Week 15	Final Exam	<b><i>Exam II due</i></b>

*Note: The instructor reserves the right to modify this syllabus and schedule.*