

New Graduate Course Proposal

Form Procedure

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Course Title

Course Title: * Improvement in Productivity in Construction

Proposed Banner Abbreviation: * Improvement in Productivity

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 a comprehensive systems approach to construction productivity management; labor productivity; improved methods in construction; various techniques of work sampling and productivity measurement; and current innovations in the construction industry for increasing efficiency.

Rationale and expected outcomes of offering the Course

* The purpose of the course is to introduce students to issues relating to productivity improvements in construction. This course focuses on a comprehensive systems approach to construction productivity management and advanced improvement methods used in the construction sector. This course includes work sampling, crew balance methods, process flow charts, improved project organization, project design, roles of the individual stakeholders, quantifying labor and equipment productivity, techniques to improve job site productivity, and external factors affecting construction productivity. An integral part of this course is the impact of safety on productivity, and contemporary research and critical issues in construction productivity.

Expected Outcomes:

1. Assess productivity effects & reasons of low productivity in construction industry
2. Differentiate responsibilities & roles of project participants to improve productivity
3. Measure and analyze productivity using classical methods of data gathering.
4. Apply advance construction management approaches to improve productivity
5. Present and implement productivity improvement findings
6. Explore impact factors affecting productivity and quantity lost productivity.
7. Evaluate and synthesize published scholarly articles on construction productivity

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_Productivity_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.*

...3834363036
Nirajan Mani 03/15/2022
Requester Signature Date

...3432343930
Nirajan Mani 04/18/2022
Department Chair Approval Date

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 1:10:55 PM



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

Class Information:

Course: CMGT 8XXX (Improvement in Productivity in Construction)
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
Office Hours: M/W (11:00 A. M. – 12:15 P. M.) (By Appointment)

Textbook:

Productivity Improvement for Construction and Engineering
Author: J. K. Yates
Publisher: ASCE Press
ISBN-13: 978-0784413463

References:

Construction Site Management and Labor Productivity Improvement
Authors: H. Randolph Thomas & Ralph D. Ellis Jr.
Publisher: ASCE Press
ISBN: 9780784414651

Supplementary Materials: Handout materials will be provided by instructor

Catalog Description:

This course includes a comprehensive systems approach to construction productivity management; labor productivity; improved methods in construction; various techniques of work sampling and productivity measurement; and current innovations in the construction industry for increasing efficiency.

Prerequisite: Graduate student standing required unless otherwise agreed upon by instructor.

Required Skills: Proficient in mathematics, quantity take-off, and Excel software

Course Objectives:

The purpose of the course is to introduce students to issues relating to productivity improvements in construction. This course focuses on a comprehensive systems approach to construction productivity management and advanced improvement methods used in the construction sector. This course includes work sampling, crew balance methods, process flow charts, improved project organization, project design, roles of the individual stakeholders, quantifying labor and equipment productivity, techniques to improve job site productivity, and external factors affecting construction productivity. An integral part of this course is the impact of safety on productivity, and contemporary research and critical issues in construction productivity.

Students Learning Outcomes:

This course is designed to provide the knowledge for measuring and improving construction productivity. Student will be able to:

1. Assess productivity effects & reasons of low productivity in construction industry
2. Differentiate responsibilities & roles of project participants to improve productivity
3. Measure and analyze productivity using classical methods of data gathering.
4. Apply advance construction management approaches to improve productivity
5. Present and implement productivity improvement findings
6. Explore impact factors affecting productivity and quantity lost productivity.
7. Evaluate and synthesize published scholarly articles on construction productivity

Learning Outcomes Assessment:

Assessment tools for the above learning outcomes include homework & quizzes (outcomes: 1 to 6), project (outcomes: 3, 4, 7), and exams (outcomes: 2, 5, 6).

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.

- Introduction to construction productivity and labor productivity

- A look at the construction industry
- Analysis of improvement programs
- Human impact and safety
- Measuring labor productivity
- Benchmarking field operations
- Productivity improvement data analysis techniques
- Evaluating productivity improvement alternatives: Case studies
- Engineering project and construction management productivity improvement
- Computer applications in productivity improvement
- Global productivity issues
- Sustainability in engineering and construction

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:

Week	Topics	Remarks
Week 1	Introduction to construction productivity and labor productivity	
Week 2	A look at the construction industry	<i>Homework 1 due</i>
Week 3	Analysis of improvement programs	
Week 4	Human impact and safety	<i>Homework 2 due</i>
Week 5	Measuring labor productivity	<i>Quiz 1 due</i>
Week 6	Benchmarking field operations	<i>Assign Final Project</i>
Week 7	Productivity improvement data analysis techniques	<i>Exam I due</i>
Week 8	Evaluating productivity improvement alternatives: Case studies	
Week 9	Engineering and construction management productivity improvement	<i>Homework 3 due</i>
Week 10	Computer applications in productivity improvement	
Week 11	Computer models	<i>Homework 4 due</i>
Week 12	Global productivity issues	
Week 13	Sustainability in engineering and construction	<i>Quiz 2 due</i>
Week 14	Project Week / Recorded Project Presentation	<i>Project Report & Presentation due</i>
Week 15	Final Exam	<i>Exam II due</i>

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