EMGT 5033—Introduction to Engineering Management

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Fall 2017 (8W1): August 21 – October 10

Course description:
Provides foundation knowledge of engineering management. Introduces quantitative skills required to lead a diverse, technical workforce, analyze financial data, lead technical projects, develop alternative solutions and communicate complex concepts. Apply decision and risk tools. Introduces basic engineering management principles.

Required Textbook:
Managing Engineering and Technology, 6th Edition
Lucy C. Morse and Daniel L. Babcock
©2014 | Pearson
ISBN-10: 0133485102

Course Topic Outline:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>The Case for Engineering Management and the Emergence of Its Theoretical Underpinnings</td>
<td>This opening module will provide necessary context for the course by answering fundamental questions such as “What do engineers do, what does management have to do with it, and why is any of this important?” and “From where did the concept of engineering management have its start, where is it now, and where is it going?” The module will conclude with a short history of management philosophies and the people that crafted them.</td>
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<td>2</td>
<td>Leading, Organizing, &amp; Controlling a Technical Organization</td>
<td>In an effort to provide insights on how an individual moves a group to action toward a common goal, this module will introduce contemporary leadership theories that emerged from the management philosophies and associated views of motivation covered in week 1. This module then explores how various designs for the allocation of power and resources influence decisions and work and how controls are established to compel events to conform to plans.</td>
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<tr>
<td>Module</td>
<td>Title</td>
<td>Description</td>
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<td>3</td>
<td>Planning, Forecasting, &amp; Decision Making</td>
<td>In addition to leading, organizing, and controlling a technical organization, the capacity for planning, forecasting, and decision making is essential for driving a technical organization toward success. In this module, students will learn about the fundamentals of strategic planning and how forecasting, decision making, and goal setting are used in concert to create strategies for achieving an organization’s mission.</td>
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<td>4</td>
<td>Managing Research, Development, and Engineering Design</td>
<td>The course text states, “Design is the activity that best describes the engineer. To design is to create something that has never existed before, either as a solution to a new problem or as a better solution to a problem solved previously.” This module will introduce the student to the essence of design within a research and development context so that as an engineering manager, the core functions of leading, organizing, controlling, and planning can be applied effectively to this central activity.</td>
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<td>5</td>
<td>Planning Production Activity and Managing Production Operations</td>
<td>Winston Churchill famously said, “However beautiful the strategy, you should occasionally look at the results.” For new product development endeavors, full success will be measured by the ability of the produced item to fulfill technical expectations and to meet or exceed market success goals. Nevertheless, the first glimpse at the tangible results of the new product development process comes at the output end of the production process. This module will introduce the student to the fundamentals of planning manufacturing facilities, optimizing inventory, estimating process times, managing supply chains, and to inspection and sampling techniques.</td>
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<td>6</td>
<td>Engineering Ethics, Globalization, and Challenges of the Future</td>
<td>In this module, the student will be introduced to professional ethics as it applies to the engineering profession and to the challenges and opportunities associated with globalization and ever increasing rate of technology innovation.</td>
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<td>7</td>
<td>Managing a Technical Project</td>
<td>One of the first management assignments to which an engineer may be tasked is the management of a technical project. In this module, the student will learn about the basic elements of a project, the attributes of an effective project manager, and a set of project planning tools and techniques.</td>
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<td>8</td>
<td>Information Visualization &amp; Communication</td>
<td>In this final week, the course will explore the essential cross-cutting skill of communication with an emphasis on communicating technical data using information visualization tools and best practices.</td>
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Course Goal and Objectives:

The course goal is to define engineering management and the role of the engineering manager in making strategic decisions in relation to the following course objectives (CO):

CO 1  Identify and explain the origins of engineering practice and the functions and necessity of Engineering Managers

CO 2  Describe how EMs develop and maintain a leadership vision for an organization

CO 3  Understand human motivation principles underpinning mission strategies, goals, and objectives

CO 4  Define forecasting strategies and approaches, including the Delphi Method

CO 5  Analyze decision-making processes and apply selected types of decision making tools

CO 6  Understand Organizational Structure

CO 7  State important elements of financial and non-financial control systems

CO 8  Describe the role of the EM in the Production process and use production planning tools

CO 9  Describe the role of the EM in the Quality process and use some tools of Quality

CO 10 Understand legal and ethical requirements in Engineering Management

CO 11 Communicate Engineering Management problems, analyses and solutions to management orally and in writing

CO 12 Identify the effect of modernization and globalization on the role of EM

CO 13 Identify the importance of and methods for maintaining EM Professional Knowledge and Skills

Software

- Microsoft Office 2016 suite, to include Word, PowerPoint, and Excel. These are available free to you with your enrollment at the University through https://techarticles.uark.edu/microsoft/office/. The UA Computer Store also has discounts.
- Latest versions of Adobe PDF Reader, Adobe Flash Player, and Apple QuickTime to view certain files
- Latest version of Java to use required applications
- Google Chrome is the recommended browser

Note: Documents must be submitted in Microsoft Office format (e.g. docx, pptx, etc.) or as Adobe Acrobat .pdf documents
Course Requirements:

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<tr>
<th>Description</th>
<th>Points</th>
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<tr>
<td>Weekly Student Feedback Survey</td>
<td>40</td>
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<tr>
<td>Introduction Video</td>
<td>80</td>
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<tr>
<td>Lecture Quizzes (1 per module)</td>
<td>160</td>
</tr>
<tr>
<td>“Deep Dive” Quizzes (1 per module)</td>
<td>160</td>
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<tr>
<td>Midterm Paper</td>
<td>100</td>
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<tr>
<td>Midterm Application Video</td>
<td>100</td>
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<tr>
<td>Final Paper</td>
<td>180</td>
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<tr>
<td>Final Application Video</td>
<td>180</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1000</strong></td>
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Course Grade:
The assignment of the course grade is based on performance for the course requirements from the scale below:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Course Percentage</th>
<th>Points Required</th>
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<tbody>
<tr>
<td>A</td>
<td>90% and above</td>
<td>900 – 1000</td>
</tr>
<tr>
<td>B</td>
<td>80% to 89%</td>
<td>800 – 899</td>
</tr>
<tr>
<td>C</td>
<td>70% to 79%</td>
<td>700 – 799</td>
</tr>
<tr>
<td>D</td>
<td>60% to 69%</td>
<td>600 – 699</td>
</tr>
<tr>
<td>F</td>
<td>Below 60%</td>
<td>below 600</td>
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Grades of “I” are awarded for emergency situations ONLY as identified by the University Handbook. Hard copy documentation must be provided in such instances. Incomplete grades automatically turn into an “F” after a certain date. Consult the registrar’s office for more information.

Academic Honesty Policy:

- As a core part of its mission, the University of Arkansas provides students with the opportunity to further their educational goals through programs of study and research in an environment that promotes freedom of inquiry and academic responsibility. Accomplishing this mission is only possible when intellectual honesty and individual integrity prevail. Each University of Arkansas student is required to be familiar with and abide by the University’s ‘Academic Integrity Policy’ at honesty.uark.edu. Students with questions about how these policies apply to a particular course or assignment should immediately contact their instructor.

- Plagiarism is often misunderstood. It can be defined as submitting someone else’s work as your own. It is not permissible to “cut and paste” and then just cite another’s work. In writing for homework or projects, you should read and learn, process through your mind, relate ideas, and then express what you learned in your own words. Cite the references where you found your information. If you do use someone else’s words, you must use quotation marks and cite. You should not overuse quotes – save them for a rare occurrence.
A complete statement of the U of A’s Academic Honesty Policy is available in the UA Student Handbook and the UA Graduate Catalog.

**Inclement Weather Policy:**
Weather is unlikely to force cancellation of any online classes or activities. If a known weather event is approaching, it is good practice for students to turn in work early in case of local power outages.

**Attendance Requirements**
This is an asynchronous online course, which means there are no specific attendance hours, but you should budget approximately 10 hours per week to this course. You can structure your participation around your work and family obligations. Students are expected to submit weekly Quizzes and Homework assignments, participate fully in each weekly Activity, and submit each of the two Application Videos within the time window.

If you need to make up work due to unforeseen absences, please contact the professor.

**Class Procedures**
This course is fully asynchronous, which means there are no set class hours. Nevertheless, it will be a rigorous introduction to the topics we cover, and you should expect to spend 10 hours per week in preparation and participation in class. We will make extensive use of technology: Blackboard, video lectures, self-grading quizzes, and creating your personal video responses. With your participation, we will create a vibrant, active online learning environment.

Generally speaking, each week of instruction will include text reading, a video lecture over the textbook reading, a Reading Comprehension Quiz, at least one “deep dive” topic which directs you to additional resources, and a quiz/quizzes over the “deep dive” topic(s).

The textbook reading is fairly straightforward; you should read this on your own and let me know if you have any questions.

Each Reading Comprehension Quiz tests understanding of the text assigned reading material and is primarily focused on qualitative aspects of the reading.

There are two Application Video assignments which take the place of formal proctored exams. The Midterm Application Video will cover the material in weeks 1-4 and you will be expected to apply the concepts learned to your personal situation. (see complete directions for these video assignments within the course). The Final Application Video will be a comprehensive coverage of the material in the entire course. You will be expected to add to your Midterm Video with new topics covered as well as incorporating feedback received from the professor.

All assignments are due on the date given on the class schedule. The late assignment submission deduction is 10% for the first day late; another 10% for the second day late. You
will receive a zero on the third day after the assignment is due. You must contact me via Blackboard email ahead of time and let me know your assignment will be late; otherwise you will get a zero on the assignment.

Caveat re: changes to syllabus
The above schedule and procedures in this course are subject to change at the discretion of the instructor.

Family Educational Rights and Privacy Act (FERPA)

The Family Educational Rights and Privacy Act (FERPA) protects a student’s academic and other educational records from unauthorized access. This protection extends to email correspondence between a student and the University of Arkansas faculty and staff.

To provide reasonable assurance that emails are from the student, all university or class related emails must be sent from the student’s uark.edu email account. Additionally, university or class related emails must be sent to the student’s uark.edu email account.

This means that I cannot acknowledge emails sent from your personal or work email accounts, and I cannot send emails to your personal or work email accounts.

University of Arkansas Academic Policy Series 1520.10

University of Arkansas Academic Policy Series 1520.10 requires that students with disabilities are provided reasonable accommodations to ensure their equal access to course content. If you have a documented disability and require accommodations, please contact me privately at the beginning of the semester to make arrangements for necessary classroom adjustments. Please note, you must first verify your eligibility for these through the Center for Educational Access (contact 479–575–3104 or visit http://cea.uark.edu for more information on registration procedures).

Academic Appeals
Academic appeals: Students are first encouraged to resolve academic conflicts and complaints informally with the instructor involved, through their department, or through the assistance of the University Ombuds Office, which can provide objective and confidential mediation. To assist students in identifying the appropriate contact person, please view this List of Program, Department, and College Contacts. A flow chart is also available for viewing. If an informal resolution cannot be reached, there are procedures for students to pursue with complaints of an academic nature. Refer to either the Undergraduate Catalog of Studies or the Graduate Catalog of Studies for appeals structures and formal procedures for academic grievances.

Computer Access Policy
This course is offered as an online course and it is assumed that you have the minimum system requirements to participate (see the START HERE section of the course). It is your responsibility to ensure that you can access all course materials, participate in discussions and upload or download materials and software used for this course. In addition, care has been taken to ensure that the software that is used for this course does not require any out of the ordinary system set-ups. But, if your system does not meet the minimum requirements then it is your responsibility to maintain
your system to meet the requirements so that you may participate in this course. Technical difficulties on your part will not excuse you from the timely completion of assignments. If you do experience technical difficulties please make sure that you contact me immediately so that proper assistance might be provided.

**Netiquette**

Netiquette is a set of rules for behaving properly online. It is important that all participants in online courses be aware of proper online behavior and respect each other.

Use appropriate language for an educational environment:
- Use complete sentences.
- Use proper spelling and grammar.
- Avoid idioms and slang.
- Do not use obscene or threatening language.

Remember that the university values diversity and encourages discourse. Be respectful of differences while engaging in online discussions. For more information about Netiquette, see The Core Rules for Netiquette by Virginia Shea.

**CAPS**

Academic problems are often related to the non-academic events in your lives. You are welcome to visit with the capable staff at the UA Counseling and Psychological Services (with offices in the North Quadrangle). You can telephone them at 479-575-CAPS. The fact that you telephone is also entirely confidential. Each semester they conduct a variety of support groups dealing with stressful issues.

**Equal Treatment for All**

The UA "Catalog of Studies" reports that the Campus Council supports equal treatment for all. It "does not condone discriminatory treatment of students or staff on the basis of age, disability, ethnic origin, marital status, race, religious commitment, sex, or sexual orientation in any of the activities conducted on this campus. Members of the faculty are requested to be sensitive to this issue when, for example, presenting lecture material, when assigning seating within the classroom, when selecting groups for laboratory experiments, and when assigning student work. The University faculty, administration, and staff are committed to provide an equal educational opportunity to all students."

Our class work will conform to the principle of equal treatment.