

MSE504 - Engineering Management
Summer 2009, Ticket 10906, Monday 6:00-10:05 p.m., Room: JD1555

Instructor ***Ghassan H. Elias***: BS/MS; Industrial/Manufacturing Systems Engineering
-Expertise: Engineering Consulting, Decision-Making/Risk Analysis and
Facility Planning. Industrial Safety & Material Control - global
certification programs for commissioning electronic & pneumatic
devices in General (Non-Hazardous) Locations, Hazardous ‘Classified’
Areas & Potentially Explosive Atmospheres.

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Office hours: Monday 15:20-15:55 **by appointment** (*take advantage of it !!*)

Text Book Daniel L. Babcock & Lucy C. Morse - **Managing Engineering and Technology**,
Fourth Edition - Prentice-Hall, 2006. ISBN: 0-13-199421-2

Course Packet **Transparency copies for most sessions will be available at Northridge Copy Center, 9130-B Reseda Blvd., Northridge, 818-775-0255**

Catalog Description Prerequisite: Consent of instructor. An introduction to management of engineering and technology. Principles and applications to effectively manage technical projects, people, budgets and schedules. Organizing and motivating people, and controlling activities. Managing research, development, design and production activities. Directing projects, improving quality, and engineering ethics.

COURSE OBJECTIVES

This course will contribute to ***your***:

- knowledge of engineering and technology management concepts and tools, particularly as they pertain to issues of engineering planning, strategy, and control
- ability to facilitate the implementation of solutions to engineering problems
- ability to design and implement the complex human systems and processes essential to meeting engineering objectives
- ability to lead and function effectively on multidisciplinary and multicultural teams
- understanding of engineering professional and ethical responsibilities
- ability to communicate effectively, both orally and in writing
- knowledge of contemporary issues / ability to understand the global/societal context of engineering
- recognition of the need for, and the ability to engage in, independent learning
- ability to use word processing and to conduct literature and web searches

STANDARD OPERATING PROCEDURES

1. Class members are expected to maintain personal and professional standards consistent with the Code of Ethics of the national Society of Professional Engineers, the Preamble and Fundamental Canons of which are as follows:

Engineering is an important and learned profession. As members of this profession, engineers are expected to exhibit the highest standards of honesty and integrity. Engineering has a direct and vital impact on the quality of life for all people. Accordingly, the services provided by engineers require honesty, impartiality, fairness and equity, and must be dedicated to the protection of the public health, safety, and welfare. Engineers must perform under a standard of professional behavior that requires adherence to the highest principles of ethical conduct. Engineers, in the fulfillment of their professional duties, shall:

- *Hold paramount the safety, health and welfare of the public.*
- *Perform services only in areas of their competence.*
- *Issue public statements only in an objective and truthful manner.*
- *Act for each employer or client as faithful agents or trustees.*
- *Avoid deceptive acts.*
- *Conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession.*

2. Students must take **ORIGINAL NOTES** and submit **ONLY ORIGINAL WORK**. Notes from previous semesters taken by others are **NOT** allowed.
3. Class members are expected to attend **ALL** class sessions, promptly & entirely.
4. Class members are responsible for the course material, reading assignments, class presentations, discussions, and practice problems.
5. Tardy/Late submissions are unacceptable.....**NO EXCEPTIONS!**
6. Class members will always be considerate & respectful to their colleagues.
7. Pagers, Cellular Phones, Alarms, etc...***MUST BE TURNED OFF*** during class.
8. **IMPORTANT NOTICE:** Using PC Laptops, cameras and/or mobile phones during the midterm and/or final exams is prohibited. Violation of this rule will result in issuance of an "F" grade for the course. **NO EXCEPTIONS!**

COURSE PLAN

(Tentative guidelines -- may change as deemed necessary)

<u>Week</u>	<u>Date</u>	<u>Topic</u>	<u>Task</u>
1.	05/27	Class introduction	Lecture Re-scheduling: Once a week lecture!
2.	06/01	History of Engineering Engineering in Context	Syllabus (via email) - Class Initiation Chapters 1 & 2 Groups – Introduction & Formation
3.	06/08	Management Functions - Planning and Forecasting	Chapter 3 Groups Formation & Confirmation <i>(Homework+Special Assignments)</i>
4.	06/15	Management Functions - Decision Making Decision-Making	Chapter 4
5.	06/22	Management Functions – Organizing	Chapters 5 & 6
6.	06/29	Management Functions – Leadership and Motivation	Chapter 7
7.	07/06	Management Functions - Controlling	Chapter 8
8.	07/13	Midterm Exam (35 points)	Chapters. 1-8 Open book/Open notes Use Engineering (light green) paper
9.	07/20	Managing: Technology, Research and Design	Chapters 10, 11,
10.	07/27	Managing Engineering Operations and Projects	Chapters 12, 14,
11.	08/03	Project Management	Chapter 15
12.	08/10	Project Management	Chapter 15 Course Wrap-up & Review
13.	08/17	Final Exam (45 points)	Comprehensive Note: class time is 18:00-21:00 Open book/Open notes Use Engineering (light green) paper

HOMEWORK GUIDELINES & ASSIGNMENTS:

- a) Answers to discussion questions **MUST** be typed. However, solutions to problems can either be typed or neatly hand-written (your choice!). Please include a cover sheet stating your group number, names of group members, course number, semester, homework assignment number, and the due date. For hand-written problem solutions, use Engineering (light green) paper. Each problem is worth 10 points.
- b) Answer all discussion questions **concisely** and to the best of your ability. Typical answers to 'discussion questions' shall range between 8-to-30 lines. Solve all problems methodically and show your work in a detailed manner.

<u>Chapter</u>	<u>Problems</u>	<u>Due By Week*</u> <i>(*may change!)</i>	<u>Points</u>
1	3, 4, 6, 7, 10	3 (08-Jun-09)	50
2	2, 3, 5, 7, 10	3 (08-Jun-09)	50
3	2, 6, 7, 8, 9, 11, 12, 13, 14, 16	4 (15-Jun-09)	100
4	2, 3, 4, 5, 6, 7, 8, 9, 10, 11	5 (22-Jun-09)	100
5	1, 3, 6, 9, 12	5 (22-Jun-09)	50
6	1, 4, 5, 8	6 (29-Jun-09)	40
7	Instructor-Assigned (see next page)	6 (29-Jun-09)	60
8	1, 3, 4, 5, 6, 7, 8, 9, 10, 12	7 (06-Jul-09)	100
9	Instructor-Assigned (see next page)	9 (13-Jul-09)	60
10	9, 10, 11, 12, 13	9 (13-Jul-09)	50
11	5, 6, 7, 8, 9, 10, 11	9 (20-Jul-09)	70
12	2, 3, 5, 6, 7	10 (27-Jul-09)	50
14	6, 7, 8, 9, 10, 11, 12	11 (03-Aug-09)	70
15	12, 13, 14, 15	11 (10-Aug-09)	50

***** Late homework will NOT be accepted! *****

******* NO EXCEPTIONS *******

Instructor-assigned questions for Chapters 7 & 9 – Morse/Babcock

Each question is worth 10 points.

Chapter 7: Leading Technical People

- 1- Herzberg specifically classified “*salary*” as a hygiene factor, not a motivator. How do you classify it? Discuss.
 - 2- *Job enrichment* seeks to make work more meaningful and give employees more control over their work. Discuss the negative responses of many blue-collar production workers toward this initiative. Why do you think workers have this attitude?
 - 3- Provide another example of the validity of *equity theory as a motivator* of human performance at work or elsewhere?
 - 4- From your analysis of the findings of *Harris in Table 7-1*, why do you think engineers look for different qualities in their managers as they themselves (the engineers) grow in experience?
 - 5- Would you regard engineers in an “applied” field such as production management as being any more or less “*professional*” than a research scientist? Explain your viewpoint.
 - 6- Would you expect the *factors* motivating an engineer to change as he or she proceeds through a career? In what ways? How can an engineering manager make use of these changes?
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Chapter 9: Managing the Research Function

- 1- *Contrast* the application of Blanchard’s *product life-cycle* with that of Betz’s *technology life-cycle*. Would the same kind of leader be suitable throughout *technology life-cycle*? If not, what kind of a leader would be effective in each portion of it?
 - 2- An engineer proposes to buy a machine for \$100,000 today that will save \$60,000 in labor costs at the end of each of the next 2 years. If the company demands 15% return on investments such as this, what is the net present worth (NPW) of the proposal? Should it be funded?
 - 3- Your company has 2 alternative opportunities, A & B, each requiring your entire capital investment budget of \$325,000. Alternative “A” will return \$390,000 at the end of one year; alternative “B” will return \$216,000 at the end of each of the first two years. Which (if either) alternative should you recommend on the basis of: (a) simple payback time? (b) net present worth?
 - 4- If you have been exposed to a capital investment analysis and/or engineering economy, comment on the proposal to invest One Million dollars in a new product now that is projected to generate \$200,000 profit at the end of each year for 8 years, assuming that your company requires 15% return on investment before taxes.
 - 5- The General Electric Company was troubled to find out that almost two dozen employees were implicated in the theft of turbine trade secrets. What actions or defensive programs might a firm institute to reduce the likelihood of this happening?
 - 6- What are some of the steps a manager can take to encourage creativity in his/her technical employees? Discuss.
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COURSE EVALUATION METHOD

- (5 pts) Attendance and class participation
- (15 pts) Homework and special assignments
- (35 pts) Midterm Exam -- based on class discussion, homework & reading assignments.
Format: True/False, Multiple Choice, Essay Questions, Analytical Problems.
Open Book & Open Notes:
ONLY ORIGINAL WORK/NOTES ARE ALLOWED!
- (45 pts) Final Exam – Comprehensive (all of the discussed material in the semester)
Format: True/False, Multiple Choice, Essay Questions, Analytical Problems.
Open Book & Open Notes:
ONLY ORIGINAL WORK/NOTES ARE ALLOWED!

Letter Grade Scale:

(Refer to the next page for more information on grading)

$A \geq 92$	$89 \leq A- < 92$	$85 \leq B+ < 89$
$80 \leq B < 85$	$78 \leq B- < 80$	$75 \leq C+ < 78$
$70 \leq C < 75$	$60 \leq D < 70$	$F < 60$

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**This syllabus is your contract with the instructor,
the course and the MSEM department.
All students must fully adhere to the stated terms and guidelines.**

For Your Information

* 'A' grade range (A to A-) is reserved for work that is exceptional. This means that it (1) is professional and reflects the writer's/s' careful consideration of audience and purpose; (2) shows perfect to near-perfect understanding of the necessary concepts and analytical tasks; (3) where appropriate, it shows the capacity to think creatively or to see implications beyond the immediate scope of the question; (4) contains all necessary information (invention); (5) is arranged in a logical manner (6), is memorable; (7) delivery is visually appealing; and (7) is free of mechanical errors and is formatted as specified. Work must be flawless to attain an A/A-. Work with minor flaws that is nonetheless excellent in other ways will earn an A-.

* A grade in the B range means that the work is acceptable at the graduate level (B- range) to very good (B/B+). This work satisfies all (B+) or most (B/B-) of the requirements of the question/research task, shows the capability to think beyond the task by relating it to other areas of knowledge in or outside of the course; is neatly presented and shows above-average use of academic English. If the work is decently written, is formatted basically correctly, and covers most of the required content, but has several minor flaws or one major flaw, the grade will be B-.

* A grade in the C range means that the work, while covering much of the required ground, does not show graduate-level analytic and expressive ability. That is, major and minor items may be missing or incorrect; and while the language may communicate most points adequately, it does not qualify as above-average academic work.

* A grade in the D range shows that the work does not, overall, achieve an acceptable level of coverage of the requirements AND/OR the language is insufficient to make the writer's points understandable to the reader. The content may be either incorrect to an unacceptable degree, or very incomplete.

* A grade of F indicates that so little of the required content is covered that grading the paper is an exercise in futility. It may mean that very major points have clearly not been grasped or have been misunderstood by the student. An F may also indicate that the ideas are expressed in such a way that they are not at all understandable to the reader. A grade of F is also awarded when assigned work is not handed in, or not handed in by the set deadline.