SYLLABUS: ENGINEERING MANAGEMENT

Date / Revision August 22, 2017 / 22.08.17 /MaS
Faculty Engineering
Study Programs MTE, MEE, ELE, AVE, COS

SUBJECT: Engineering Management

1 Basic Information

1.01	**Subject Name**	**Engineering Management**
1.02	**Semester**	6
1.03	**Level**	1
1.04	**SKS**	2
1.05	**Mandatory / Curriculum**	Mandatory / F-16
1.06	**Subject Code**	EMGT
1.07	**Subject Code**	ENG-F-EMGT-6116
1.08	**Year**	2017 (7)
1.09	**Quality Control**	Final Test, see evaluation
1.10	**Limitations**	Min 12 and Max 32 students in one class
1.11	**Combined with**	All Engineering Study Program
1.12	**Perquisite**	none
1.13	**Responsible**	Dean of Engineering Faculty
1.14	**Revision**	22-08-2017/MaS

2 Description of Subject

Engineering management course is describing the role of engineering in enterprise to become not only engineers who work at shop floor or factory, but one could obtain higher level of managerial responsibility. This lecture provides some knowledge what they need to achieve to become at managerial level higher.

3 Objectives

- introduce the management discipline in engineering field

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4 Competency

After having the course, students are expected have to:

- expose to the function of manager within the industrial/engineering environment,
- introduce the functions of managers,
- deal with financial, cost, marketing functions of managers,
- understand the ethics of being engineers within the globalization and millennium challenges

5 Learning Approach / Methodology

- Lectures/ Class contact (time-tabled) supplemented with interactive questions and answers;
- Discussion, sample problem, group work;
- Student Study Effort: homework/assignment; preparation for test/quizzes/ examination.

6 Evaluation

5.1	**Absence maximum**	25%
5.2	**Participation in Discussion**	05 Points
5.3	**Homework / Classwork**	05 Points
5.4	**Presentation /Simulation**	10 Points
5.5	**Daily Quiz**	20 Points
5.6	**Final Examination**	60 Points
	Total	100 Points

7 Text Book and Reference

1	**Main Text Book:** “Engineering Management : meeting the Global Challenges, 2nd ed”.,Author: C. M. Chang,, Publisher: CRC Press, 2016, ISBN 978-1-4987-3009-9
2	**Supplementary Text books:** •

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8 Content / Topics of Lecture

Week	Content/ Topics of Lecturing	Text Book	Remark
1	**Introduction to Management Challenges for Engineers** Introduction, definitions, employment trend in industries, STEM professionals as effective technical contributors, management and leadership, becoming effective manager in the new millenium	Ch-1	
2	**Planning:** Introduction, types of planning, who should do planning, inexact nature of stategic planning, planning roles for engineering managers, tools for planning, planning activities, some specific advice on planning	Ch-2	
3	**Organizing**: Introduction, definitions, activities of organising, organising one;s own workplace for productivity, developing organisational structure, enhancing corporae preformance by organising exmaples, concurrent engineering teams, delegating, establishing working relationships, informal organisations	Ch-3	
4	**Leading**: Introduction, styles of leadership, leading activities, deciding, communicating, motivating, selecting engineering employees, developing people, special topics on leading	Ch-4	
5	**Controlling**: Introduction, setting performance standards, benchmarking, measuring performance, evaluating performance, correcting performance, means of control, general comments, control of management time, control of personnel, control of business relationships, control of projects, control of quality, control of knowledge	Ch-5	
6	**Cost accounting for engineering managers :** Introduction, product or service costing, application of ABC in industry, risk analysis and cost estimation under uncertainty, miscellaneous topics	Ch-6	
7	**Financial Accounting and Management for Engineering Managers:** Introduction, financial marketing principles, key financial statements, fundamentals of financial analysis, balanced score card, capital formation, capital assets valuation,	Ch-7	
8	**MIDTERM SEMESTER BREAK**		
9	**Marketing management for engineering managers :** • Introduction, function of marketing, market forecast, market segmentation, product/service strategy, pricing strategy, marketing communication, distribution strategy, physical evidence, process design, people, customers, other factors affecting marketing success	Ch-8	

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10	**Engineers as managers/leaders:** Career path of a typical engineer, factors affecting promotion to manager, factors causing engineers to fail as managers, leader and managers, leadership styles, qualities, and attributes, leaders skills for the 21st century, unique contribution expected of engineering managers, career strategies for the 21st century, take-charge formula	Ch-9	
11	**Creativity and Innovation:** Creativity and creative thinking strategies, generation of new products / services ideas by the deept thinking methodology, fundamentals of innovations, innovation management, selected innovation practices in industry, innovation in communications, financial and technical services, innovations in insurance industry, innovations in food industry, major hurdles to innovations in health care	Ch-10	
12	**Ethics in engineering management and workplace:** Ethics in workplace, guidelines for making tought ethical decisions, corporate ethics programs, affirmative action and workforce diversity, global issues of ethics **Operational Excellence** Tools for achieving operational excellence, implementation of operational excellence	Ch-11	
13	**Globalisation** Global trends and commerce, united nations statistics and goals, great philosophical debate about globalization, impact of catastrophic events on globalization, new opportunities offered by globalization, preparation for globalization, globalization drivers, implementation issues related to globalization, quality of global leadership, production engineering in a global economy, job migration induced by globalization	Ch-13	
14	**Engineering management in new millenium:** Future trends, old economy and knowledge economy companies, characteristics of progressive companies, transition to the knowledge economy, personal strategies for the future, contributions in the new millenium, the challenge ahead	Ch-14	
15	**Review, Tutorial, and Discussion**		
16	**Final Examination**		

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