NEW JERSEY INSTITUTE OF TECHNOLOGY

Department of Mechanical and Industrial Engineering

IE 492- Engineering Management **Fall 2024**

INSTRUCTOR: **George Abdou**, Associate Professor, Room ME306
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OFFICE HOURS: *Wednesday 3:00 – 5:00 p.m.*

LECTURE: Tuesday 6:00 – 8:50 p.m. (ME 221)

Course Description: An introduction for engineering majors to the fundamentals of engineering economics and the management process for engineering and development. Major topics include: capital investment justification methods, project organization, scheduling and control techniques, legal, quality, and staffing issues.

Course Objectives:

1. Understand and apply the fundamental tools and methods of project management.
2. Develop knowledge of concepts and methods in the leadership of projects from a systems perspective.
3. Perform conceptual design, planning, and scheduling for a technical project.
4. Develop knowledge for understanding, assessing, and resolving human, technical and administrative issues for deployed projects.
5. Demonstrate capability in design, analysis, and evaluation of project management systems in a technical environment.

TEXT: **"S"** "Schaum's Outline of Engineering Economics**", Second Edition,** Sepulveda**.** McGraw-Hill**,** 1984
"G" "Successful Project Management, 7th Edition, Gido, J. & Clements, J., Cengage Learning, 2017

GRADING: **Final Exam** 30% **Midterm Exam:** 30% **Quizes**: **20%** **Assignments:** 20%

Course Outline: *The syllabus may be subject to change*

Month	Day	Topics	Chapter	HW
September	3	Introduction & Review	Handout	
	10	Problem Solving Tools	Handout	**HW#1**
	17	Initiating a Project	G: 1,2&3	**HW#2**
	24	Project Planning, Performing & Controlling Scope, Scheduling & Resource Utilization	G: 4,5&6	**HW#3**
October **Quiz#1**	1	Project Planning, Performing & Controlling Cost, Budget & Probability/Risk Management	G: 7,8&9	**HW#4**
	8	Project Team & Manager/Organizational Structures	G:10,11&1213	**HW#5**
	15	**MIDTERM** G: 1-13		
Quiz#2	22	Break Even &Benefit/Cost Analysis	Handout	**HW#6**
	29	Engineering Economic: Basic Concepts	**S:** 1&2	**HW#7**
November	5	Series Cash Flows, Gradient Series, Double Gradient	**S:** 3,4&5	**HW#8**
Quiz#3	12	Economic Comparison Methods	**S:** 6&7	**HW#9**
	19	Economic Comparison Methods cont.	**S:** 8&9	**HW#10**
November 28-December 1		******* Thanksgiving Recess - No Classes Scheduled *******		
December **Quiz#4**	3	Equipment Replacement	**S:** 10	**HW#11**
	10	Inflation, Taxes & Depreciation	**S:** 11	**HW#12**
December 17		**FINAL EXAM 6:00-7:30 pm ME221**		

Important Notes

1. The use of any electronic devices during class and laboratory sessions; including but not limited to: laptops, cell phones, tablets, social media, etc.., is **prohibited** for non-class related functions.
2. Homework is due **the week** following the date they are assigned. It is expected that class participants will observe specified deadlines. There will be no deviations from scheduled due dates and test dates. The assignments **will not be accepted after the noted deadline**. However, because you know all deadlines and assignments by no later than the second week of classes, deadlines should present no problems to class participants.
3. **Exams will consider all materials covered in the lectures**, **which may not be in the book**. Therefore, attendance of lectures is very important.
4. **HONOR & ETHICS**
   The code of unspoken ethics in a professional work environment in the US will apply in the classroom. That is, honesty and ethical conduct will not only be expected, but demanded. Please see me if you have any confusion on what I mean. Clearly, cheating on an exam is not permitted. Students caught in violation of this policy will earn a failing grades on their exam. Cooperation in responding to homework questions is not only permitted, but encouraged, as part of the cooperative learning framework of the course. You may discuss homework problems but not copy someone else's work. Any persons caught copying as well as the person providing the homework will be penalized.

Software Applications

To help reinforce the use of computer software to solve assignments & exams, **you will be required to submit your work only in Excel software or MS Project, and with explanation**. In some cases, the computations that you perform must be visualized by a graph.

BSIE Program Educational Objectives

1. Learn fundamental concepts and practices used in engineering management.
2. Learn to apply concepts towards the development of business and technology strategies.
3. Learn to communicate concepts effectively.
4. Obtain an understanding of accounting principles.
5. Construct financial statements and perform ratio analyses.
6. Use financial principles to develop business and technology strategies.
7. Carry out risk analyses for developing business and technology strategies.
8. Design a business plan for a technology-based enterprise.

BSIE Student Outcomes

- ***(1) An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics***
- ***(2)*** An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social and economic factors
- ***(3)*** An ability to communicate effectively with a range of audiences
- ***(4) An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgements, which must consider the impact of engineering solutions in global, economic, environmental, and social contexts***
- ***(5)*** An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- ***(6)*** An ability to conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusions
- ***(7)*** An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

IE 492 Outcomes of Instruction:

1. Understand how to apply Statistical Methods (1).
2. Able to apply Excel and Design Tools to Visual inspection (1).
3. Understand the concepts of Time Study and Learning curves (1).
4. Conduct experimentation, analyze & interpret data (6)
5. Develop more proficient problem solving skills (4).