IE 335 ENGINEERING COST ANALYSIS & CONTROL

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Course Description

The course will emphasize the tools and techniques applicable for cost analysis and control, including standard costs, variance analysis, cost volume relationships, cost estimation, and utilization of accounting data to control operations.

BSIE/ME Program Educational Objectives

1. Program graduates use the fundamental principles and major areas of Industrial Engineering in their professional practice.
2. Program graduates are lifelong learners pursuing graduate education and professional growth in Industrial Engineering and related fields.
3. Program graduates pursue diverse career paths and advance in various industries.

BSIE/ME Student Outcomes

A. An ability to apply knowledge of mathematics, science, and engineering
B. An ability to design and conduct experiments, as well as to analyze and interpret data
C. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
D. An ability to function on multi-disciplinary teams
E. An ability to identify, formulate, and solve engineering problems
F. An understanding of professional and ethical responsibility
G. An ability to communicate effectively
H. The broad education necessary to understand the impact of engineering solutions in a global and societal context
I. A recognition of the need for and the ability to engage in lifelong learning
J. ***A knowledge of contemporary issues***
K. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

IE 335 Outcomes of Instruction:

1 Define the basic terminology. Learn the terminology, utilize the principles of accounting, and be able to record transactions in the appropriate accounts (f, j, h).
2 Analyze financial statements using a variety of ratios (f, j, h).
3 Identify cost/volume relationships and use cost drivers to compute break-even points or determine profit/loss levels (h, i, j).
4 Perform budgeting and activity-based costing (h, i, j).
5 Demonstrate their possession of written and oral communication skills (g, i, j).
6 Describe and analyze the impact of engineering solutions in global, economic, environmental or societal contexts (g, i, j).

TEXT: Horngren, C.T.,et.al., *Introduction to Management Accounting*, 16th Edition, Pearson, 2014.
Also see Journals such as: Management Accounting, Cost Management, Cost Engineering, Harvard Business Review, Sloan Management Review, Manufacturing Engineering, and Industrial Engineering.
www.prenhall.com/horngren for student resources made available from the publisher with text.

COURSE OUTLINE**

Date	TOPIC	Assignments (I-Individual, G-Group)	Due Date
(1/19)	Introduction- Engineering Cost Analysis Overview- Application, skills & knowledge required. Interaction between engineering, economics, finance and accounting. Behavioral considerations.	**Read Chapter 1/Diagnostic/Quiz/Self Introduction (I)**	(1/25)
		Group Introductions (G)	(1/25)
(1/26)	Basics of financial/cost management. Elements of financial accounting & development of income statements & balance sheets.	**Read Chapter 15, Appendix 15A, 15B (Assignments posted on Canvas) (I)**	(1/30)
		Team Building - Pass around a Story (G)	(2/1)
(2/2)	Continuing on the subject matter of Week 2 - Cash flow statements. Inventory methods.	**Read Chapter 16, Appendix 16A (Assignments posted on Canvas) (I)**	(2/6)
		Team Building - Two truths and a lie (G)	(2/8)
(2/9)	Understanding and analysis of financial statements, Ratio analysis, Difficulties of income measurement **(First Exam Review)**	**Read Chapter 17 (Assignments posted on Canvas) (I)**	(2/13)
		Term Paper Group Topic Choice (G)	(2/15)
(2/16)	**TEST # 1**	**Chapters 1, 15, 16, 17 (I)**	**(2/23)**
(2/23)	Cost- Volume relationships, Cost drivers, Fixed & variable costs, Breakeven points, Volume profit planning & analysis Cost function	**Read Chapter 2 (Assignments posted on Canvas) (I)**	(2/27)
		Term Paper References Due - Library Research Assignment (G)	(2/27)
(3/2)	Development and behavior, Methods of measurement, Application of regression analysis.	**Read Chapter 3 (Assignments posted on Canvas) (I)**	(3/8)
(3/9)	Cost management systems, Cost classification, Job order process, Activity based, Cost driver, Identification and activity based management	**Read Chapter 4 (Assignments posted on Canvas) (I)**	(3/13)
		Project Log/Team Progress Report-1 (G)	(3/15)
(3/16)	**Winter Recess - No Class**		**(3/16-3/22)**
(3/23)	Cost analysis- Marketing applications, Relevant costs, Special orders, Product addition or deletion, Target costing, Pricing decision. **(Second Exam Review)**	**Read Chapter 5 (Assignments posted on Canvas) (I)**	(3/29)
(3/30)	**TEST # 2**	**Chapter 2, 3, 4, 5 (Online)**	**(4/6)**
(4/6)	Cost analysis, Production & operations management application, Opportunity costs, Make or buy, Joint product costs, Sunk & unit costs. Flexible budgets, Standard cost & Variance analysis	**Read Chapter 6 (Assignments posted on Canvas) (I)**	(4/10)
		Term Paper Draft Due (G)	(4/12)
(4/13)	Flexible budgets, Standard cost & Variance analysis	**Read Chapter 7 & 8 (Assignments posted on Canvas) (I)**	(4/17)
(4/20	Cost allocation - Activity based costing, Job order cost systems. **(Final Exam Review)**	**Read Chapter 12 (Assignments posted on Canvas) (I)**	(4/26)
(4/27)	**Term Paper Presentations**	**Term Papers & Presentations Due Live Zoom -Time to be detemrined (G)**	(4/27)
(5/8)	**Reading Day**		
(5/9)	**Reading Day**		
(5/4)	**FINAL EXAM**	**Chapter 6, 7, 8, 12 (Online)**	**(5/4/25)**

***Please read the chapters prior to module** **(Subject to be changed)

Assessment of Learning/Grades

1. Participation – Participation in class discussions is essential to learning, and you will be asked to communicate your thinking via several formats (aloud, homework, and canvas assignments). Participation will be assessed in both lecture and homework participation. You must complete all your tasks in addition to the introduction. Participation is required in 2 forms: 1) Your answer to the question and 2) Your responses to your classmates' answers.

2. Assignment Requirement/Homework – Several homework assignments throughout the semester will require slightly more in-depth work on a topic and application of knowledge. The weekly assignment is expected to be done individually. All assignments will be posted in advance. Please do not go far ahead. For example, you must post your assigned solved problems or answers to questions and case studies by Thursday, 11:58 PM, and Group assignments or any comments on responses by Saturday, 11:58 PM, of that same week. **Note: if you do not submit your assignment by the assigned time, you will automatically get an F for that part of the assignment. Please adhere to this timeline to ensure that you get the best grades for your efforts.**

3. Diagnostic Reflections: You must contribute meaningful, substantive responses demonstrating your understanding of the concepts in the course readings. Your discussion contributions must be grounded in the course content and demonstrate an analytical or evaluative level of comprehension and thought. Participation in diagnostic questions is not an attempt to evoke right or wrong answers. It is an opportunity for you to engage in meaningful dialogue in the online environment and provide further assistance when needed.

4. Group Term paper – Write a term paper that analyzes the cost and impacts of your energy source on the economy overall. The economy may be that of the US (probably you will have more data on this) or the world. (See more detail on term paper information)

5. Exams – There will be three exams that will cover the application and understanding of the material covered in the course. These exams will also require you to apply the skills that we will emphasize.

6. Peer Review – Term Paper Group Evaluation of each person's work or performance within the group

Academic Dishonesty: The course has a zero-tolerance policy for academic dishonesty, including plagiarism and cheating. Instances of dishonesty will be punished by a zero on the assignment and consultation with the office of the Dean of Students to determine if further action is required. If you have any questions about what constitutes plagiarism or cheating, please ask us or refer to the academic integrity code: www.njit.edu/academics/integrity.php. (**See Honor Code**)

Course Grade (Subject to be adjusted)

Your grade for this course will be based on online participation, exams, assignments, and project.

Final Grades Scheme

A > 90%

B+ 85-89%

B 80-84%

C+ 75-79%

C 70-74%

D 60-69%

PERCENTAGE BREAKDOWN

Online Participation/Homework/Quizzes	15%
Exams (1, 2, 3)	65% (**20, 20, 25% Respectively**)
Term Paper	20% (1/5 of which devoted exclusively to the quality and suitability of references as well as peer review)

****Attendance Policy – More than two unexcused absences will result in a failure grade**