IE 335-001 ENGINEERING COST ANALYSIS

T/F 2:30-3:50PM – GITC 2305

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BSIE Program Educational Objectives

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

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 335 Outcomes of Instruction:

1 Learn the terminology and principles of accounting and be able to record transactions in the appropriate accounts.

2 Be able to analyze financial statements using a variety of ratios (1).

3 Learn cost/volume relationships and use cost drivers to compute break-even points or determine profit/loss levels (1, 2).

4 Be able to do budgeting and activity-based costing (1, 2).

5 Demonstrate their possession of written and oral communication skills (3, 4, 5, 7).

6 Use other than cost considerations in economic analysis (3, 4, 7).

TEXT: Horngren, C.T.,et.al., *Introduction to Management Accounting*, 16th Edition, Pearson, 2014.

GRADING: Test 1, Test 2, and Final: 25% each.
Financial Analysis Assignment: 10%
Energy company analysis: 15% (1/3 of which devoted exclusively on the quality and suitability of references)

WEEK	TOPIC	Chapter Homework problems (not collected-solutions presented)
	(Dates are approximate)	
1	Introduction- Engineering Cost Analysis Overview- Application, skills and knowledge required. Interaction between engineering, economics, finance and accounting.	**1**
2	Basics of financial/cost management. Elements of financial accounting and development of income statements and balance sheets.	**15, Appendix 15A 15B** A1, A2, A3, 38,41,42,43
3	Continuing subject matter of Week 2 Cash flow statements. Inventory methods.	**16, Appendix 16A** A1, A2, B3, 55, 57, 59
4	Understanding and analysis of financial statements, Ratio analysis, Difficulties of income measurement	**17 part 2, pp 728-737** B5, 38
5	**TEST # 1**	
6	Cost- Volume relationships, Cost drivers, Fixed and variable costs, Breakeven points, Volume profit planning and analysis	**2** A1, A2, 43,44,45,60
7	Cost function. Development and behavior, Methods of measurement, Application of regression analysis	**3, Appendix 3** 32,35,46,48
8	Cost management systems, Cost classification, Job order process, Activity based, Cost driver, Identification and activity based management.	**4** B1, B2 B3, 41, 42, 43
9	Cost analysis- Marketing applications, Relevant costs, Special orders, Product addition or deletion, Target costing, Pricing decision.	**5** A2, B1, B2, B3, 40
10	**TEST # 2**	
11	Cost analysis, Production and operations management application, Opportunity costs, Make or buy, Joint product costs, Sunk and unit costs. Flexible budgets, Standard cost and Variance analysis	**6** 33, 34 B2, B3, B4, B5, 36, 37
12	Flexible budgets, Standard cost and Variance analysis	**7** B1, 28, 29, 30 **8** A2, 26, 27, 28, 29, 43
	11/26 no class (T->R). 11/27 we have class (W->F)	
13	**No Class on 11/29.** Cost allocation- Activity based costing, Job order cost systems.	**12** 45, 46, B1
14	Process cost systems and overhead, Cost allocation, Analysis and control	**13**
15	Slack: **12/10/24 –Last Class** **FINAL – Time & place to be assigned (12/15 to 12/20)**	

Financial Analysis Assignment

After we finish with the first 1/3 of the course (Chapters 15 to 17), each one of you will be given two publicly traded companies to analyze and make an argument about which one of the two is more worth investing in.

Energy Company Analysis

This is a group assignment. Each group of 3 will be given the name of a publicly traded company in the energy sector (oil, gas, solar, nuclear, electric power, wind) and your job will be to analyze it as if you were financial advisors. You will write a report about the company's future prospects and prepare a short slide presentation about your findings.

Handling of above assignments

What is submitted for the above two assignments will be placed on a Google drive visible by the entire class. Each one of you will have a chance to comment and "grade" all submissions (except of course your own).

Use of AI

This course expects students to work without artificial intelligence (AI) assistance in order to better develop their skills in this content area. As such, AI usage is not permitted throughout this course under any circumstance.

HONOR CODE

- ***"Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf.***

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. ***Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university.*** *If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu"*

Information Literacy Outcomes/Competencies

OUTCOMES		DESCRIPTION
1. Define the research topic and the need for information	IE 335	a. Articulating a research question, problem, or issue. b. Obtaining background information to identify and define key concepts and terminology related to the research (e.g., putting the research question in context). c. Defining a manageable focus and timeline for completing the project. d. Identifying the types of materials that can be used for research (books, journals, Web sites, government documents, primary sources, datasets, media, technical reports, etc. (and that are needed and appropriate for the project. e. Recognizing that information may be limited, unavailable, or may not exist on a given topic.
2. Develop and implement an effective search strategy appropriate for an information need	IE 335	a. Differentiating among the types of reference sources (specialized encyclopedias, article databases, citation indexes, bibliographies, library catalogs, search engines, etc.) and the purposes of each. b. Choosing and accessing appropriate reference sources for a given research question. c. Using search terms appropriate to the research tool and the topic. d. Transferring skills learned in previous research efforts to new projects.
3. Locate and retrieve information	IE 335	a. Using the library's online catalog, online union catalogs, article databases, Web search engines, and other research tools effectively, in print and online. b. Interpreting citations accurately and using appropriate components of a citation to search for the items. c. Recognizing key elements of call numbers and URLs and using them to locate library materials and Web sites.
4. Evaluate information	IE 335	a. Investigating the author's or sponsoring body's expertise, credibility, and points of view. b. Assessing the authority, accuracy, reliability, completeness, and timeliness of the information found in books, articles, Web sites, etc. c. Distinguishing between reliable and unreliable sources of information, scholarly and popular sources, substantiated facts and points of view.
5. Assess the research strategy	IE 335	a. Determining whether the information retrieved is relevant and sufficient for the project or whether additional sources are needed. b. Analyzing successes and failures, revising research topics, and trying different techniques and research tools as needed.
6. Employ principles consistent with the ethical and legal uses of information	IE 335	a. Demonstrating knowledge of the issues regarding intellectual property and plagiarism in a U.S. academic setting. b. Citing and acknowledging sources appropriately. c. Creating accurate references using a consistent citation style.
7. Organize, synthesize, and communicate information	IE 335	a. Examining, categorizing, and storing citations to the materials discovered while conducting research, e.g., in reading and online searching. b. Managing the information selected and the research materials consulted. c. Using and integrating information from a variety of sources appropriate to the research question. d. Presenting the information in an effective and coherent manner to communicate it to others.
8. Effectively navigate the body of knowledge within the student's major discipline	IE 335	a. Recognizing how the literature in the major discipline is organized. b. Distinguishing among primary, secondary, and tertiary sources in the major discipline and their uses. c. Using key research tools and databases in the major discipline.

http://library.njit.edu/docs/njit-info-lit-plan-caa-approved-05-20-2009.pdf