University of Arkansas
College of Engineering

INEG/OMGT 5433 - Cost Estimation Models

Instructor: Eric Specking

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Office Hour: 1) Tuesdays 7:00 PM Central Time Zone through Blackboard collaborate (found at the bottom of "Weekly Lessons" section OR 2) Flexible based upon contacting instructor via email to setup an appointment

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Course Description:

This course is an overview of cost estimation techniques and methodologies applied to manufacturing and service organizations. Accomplished through detailed analysis of the cost estimation development process and various cost estimation models. Topics include data collection and management, learning curves, activity based costing, detailed and parametric estimation models, and handling risk and uncertainty. Prerequisite: INEG 2313 or OMGT 4853.

Required Textbook:

Engineering Economics of Life Cycle Cost Analysis (1st edition) by John Vail Farr and Isaac Faber, CRC Press, ISBN 0-13-978-1138606784, 2018.

Supplemental Reading:

http://onlinestatbook.com/2/index.html

Purpose:

The skills and competencies required for engineers and project managers to perform an engineering economic analysis with life cycle costs is vast (economics, cost management, technical acumen, engineering depth, quantitative ability, accounting, external relationships, and compliance). **This course focuses on a sub-section of these skills and concepts that addresses how to develop, analyze, and use cost estimation models to enable decision making.**

Course Objectives:

To achieve the course purpose, students at the end of the course should have mastered fundamental concepts and principles to:

1. Describe the need and challenges of cost estimation.
2. Explain the life-cycle-cost model process.
3. Use life-cycle-cost models to track technical and profitability aspects of a project

4. Demonstrate the use of various methodologies for the cost estimation of complex projects, which includes:
    a. Data collection and normalization,
    b. Inflation and index numbers,
    c. Basic data analysis,
    d. Learning curve analysis,
    e. Manufacturing estimating tools and techniques (parametric estimation techniques, learning curves)
    f. Software estimating tools and techniques,
    g. Economic analysis techniques (time value of money, net-present value (NPV), return on investment (ROI), Internal rate of return (IRR), payback period, and cost benefit analysis), and
    h. Cost and schedule risk analysis (simulation)
5. Communicate the results and analysis of a life-cycle-cost model

Student Assessment:

Students learn the material through reading (reading assignments), seeing (instructional videos), and doing (homework and project). I will assess your knowledge through reading quizzes (7), homework assignments (7), exams (2), and a project (model and video presentation). Students should start each week by completing the reading assignment, and then take the reading quiz. Students can take each reading quiz an unlimited number of times. The highest grade of all attempts will be used for each corresponding quiz grade. Be sure to utilize the Video Library on the left-hand menu. This is a great resource to review each lesson topic and corresponding textbook readings and videos. Students should use the reading and video content to complete the homework. The exams and project will test students' ability to apply key concepts. The exam 1 covers weeks 1-4, while the project and exam 2 are comprehensive.

- Blackboard (learn.uark.edu) contains the details for all reading quizzes, homework assignments, exams, and the project.
- All reading homework assignments, exams, and project deliverables are due by 11:59 PM CDT on the designated due date.
- Reading quizzes should be completed within the given week to maximize learning, but are open throughout the entire semester.
- Collaboration is permitted on assignments, but students should work on each assignment independently. Collaboration should be used to help the student learn and complete problems for which the student is struggling.
- Exams are open book and notes with a 2-hour limit. Students are permitted and encouraged to create and use premade excel templates (no Internet). All tests are proctored by ProctorU, which requires scheduling the exam at least 72 hours in advance. You can learn more by going to https://online.uark.edu/self-paced/proctored-exams.php.
- Course project deliverables include a life-cycle cost model and 10 min recorded presentation. Project and presentation grading rubric is found on Blackboard with the project description.

Grading:

According to the UA instructions for reporting final grades, they generally will reflect the following:

A – (90.0%+)

B – (80.0%+)

C – (70.0%+)

D – (60.0%+)

F – (any grade below 60%)

Grade Breakdown:

Reading Quiz	9%
Assignments	18%
Exam 1	26%
Exam 2	22%
Project	20%
Surveys	5%
Total	**100%**

Instructor Feedback and Response:

I generally respond to emails within 24 hours during the week and within 48 hours on weekends. Grades for assignments are usually available within 72 hours after the due date, but large projects or complex activities could take longer.

Inclusive Learning:

I believe that everyone in my class should feel safe. I commit to offer a safe space for all of my students, no matter sexual orientation, gender identity, race, ethnicity, age, ability, disabilities, socioeconomic background, nationality, or religious beliefs. I will not tolerate Acts of insensitivity or discrimination.

The University provides me with your legal name, but I am happy to honor all request to address you by an alternative name or gender pronoun. Please advise me of your preference early in the semester.

Your success in this class is important to me. I want you to be able to master the learning objectives seen through the developed outcomes, but I acknowledge that we all learn differently. If there are aspects of this course that prevent you from learning or exclude you, please let me know as soon as possible. Together we can develop strategies to meet both your needs and the course requirements.

If you need an accommodation, please arrange to discuss this with me during the first two weeks of class or as soon as possible upon diagnosis. Students must be registered with the Center for Educational Access (http://cea.uark.edu/; 575-3646; 104 Arkansas Union; ada@uark.edu) and provide an official Accommodation Letter from the Center for Educational Access for accommodations.

Academic Dishonesty:

"Each University of Arkansas student is required to be familiar with and abide by the University's 'Academic Integrity Policy' which may be found at The Office of the Provost website. Students with questions about how these policies apply to a particular course or assignment should immediately contact their instructor."

Dropping this Class:

Situations can arise that warrant dropping a class. However, please see me before you drop the class so we can properly assess whether this is in your best interest. Often times things may not be as bad as they seem. Please do not drop without talking to me first.

Late Work:

I understand that most of you are working full-time while taking this class. In an effort to create a more inclusive learning environment, I will allow all students to have a total of 24 cumulative hours for late work. This late work policy is for **assignments only**. I will use the ceiling of every time stamp to calculate the number of late hours for each assignment and subtract them from your 24 hours. Once you reach zero, no late work will be accepted. An automatic zero will be recorded for that grade.

The project and test must still be complete on time. The exam must be scheduled in advanced through ProctorU.