



PNGE 411 - Petroleum Property Valuation

2017/18 Fall

Syllabus

Code 3740411

Prerequisites None

Time & Place W: 9:40-12:30, Classroom TZ-07

Instructor Dr. Emre Artun

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Office hours Open door or by appointment.

Objectives

To acquaint undergraduate students with the techniques commonly used during the application of engineering economics to the decision making process of engineering design with special emphasis on petroleum assets.

Content

Engineering analysis of petroleum properties. Cash-flow model and time value of money. Cash-flow model for petroleum properties. Profitability and decision analysis for investment alternatives.

Outline & weekly schedule

Week	Topics & Activities
Week 1	Ch.1: Introduction
Week 1-2	Ch.2: Engineering Analysis of Petroleum Properties <i>Definition of reserves, deterministic and probabilistic reserves estimation, material balance analysis, decline curve analysis</i>
Week 3-5	Ch.3: Cash-Flow Model and Time Value of Money <i>Time value of money, and the concepts of economic equivalence and interest, interest relations, nominal/effective interest, escalated/constant currency analysis</i>
Week 6	Midterm-1 (Week of Nov. 15)
Week 7-8	Ch.4: Cash-Flow Model for Petroleum Properties <i>Elements of cash-flow for petroleum properties: income, expenditures, taxes, and tax allowances: depreciation, depletion</i>
Week 9-10	Ch.5: Profitability Analysis for Investment Alternatives <i>Defining a project and its alternatives, mutually exclusive/non-mutually exclusive alternatives, evaluation of alternatives, economic indicators: NPV, ROR, DPI equivalent annual cash-flow, profit-to-investment ratio, payout time, graphical methods, investment types and resolution of multiple-ROR cases</i>
Week 11	Midterm-2 (December 13)
Week 12-14	Ch.6: Decision Analysis <i>Introduction to decision analysis, decision hierarchy and influence diagrams, concepts of sensitivity and break-even, tornado and spider diagrams, expected value concept, decision trees, decision quality analysis, value of information</i>

Reference Books

Thompson, R., Wright, J. (1985). *Oil Property Evaluation*. Thompson-Wright Associates.
Ikoku, C.U. (1985) *Economic Analysis and Investment Decisions*, John Wiley and Sons, Inc.
McCray, A. (1975) *Petroleum Evaluation and Economic Decisions*, Prentice-Hall, Inc.
Blank, L., Tarquin, A. (2011) *Engineering Economy*, McGraw-Hill

Course Policies

- Grading Policy
 - 2 Midterm exams: 22.5% each, 45% total (during the Week of Nov. 15 and Dec. 13)
 - Final exam: 35% (Time and location to be announced by Registrar's office)
 - Homework assignments: 12% (problems/projects will be assigned - most of which will be step-by-step engineering/economic analysis of a petroleum asset)
 - Quizzes (unannounced): 8% (4 25-min quizzes)
- Make-up exam: No make-up exam/quiz will be given unless an official excuse is submitted.
- Class announcements: ODTUClass will be used regularly for postings and announcements with at least 24-hours notice. Therefore, students are responsible for checking for their ODTUClass/E-mail inbox everyday.
- Assignments: Assignments will be individually-assigned and group work will not be allowed. While discussion with the instructor and classmates are strongly encouraged, all of the work must be done individually. Rather than emailing questions to the instructor, I encourage you to post your questions to the related forums in ODTUClass. It is not allowed to use someone else's files or data at any step of the calculations. Copied projects will be penalized with a 'zero' grade, and disciplinary action may be taken.
- Conditions for NA grade:
 - failing to take at least 1 midterm examination
 - failing to take the final examination
 - failing to submit at least 50% of the assignments
- Attendance: Attendance will not be taken.
- Make-up exam: No make-up exam will be given unless an official excuse is submitted.
- Final Grading

If the class average for final grades is less than 69, curved grading is going to be utilized based on the overall grade distribution. Otherwise, the final grading will be based on the grade scale indicated in Article 24 of Academic Rules and Regulations for Undergraduate Education determined by the University which can be found in the following web page: <http://ncc.metu.edu.tr/ro/undergraduate-education-regulation>

Academic Integrity

Please note that PNGE 411 adopts METU NCC's Academic Code of Ethics. When a breach of the code of ethics occurs (cheating, plagiarism, deception, etc.) a faculty member has several (non-exclusive) such as giving a 'zero' grade for the relevant exam, project, assignment, and/or a larger part or all of the coursework, giving options a failing letter grade for the course, or forwarding the case to the discipline committee. The METU NCC Academic Code of Ethics and its processes for dealing with academic integrity issues can be found at: http://ncc.metu.edu.tr/sites/default/files/ETHICAL_RULES.pdf