Subject: Engineering Economics   Number: 504

Course Title:
Economic Evaluation and Investment Decision Methods / or, Advanced Process Engineering Economics

Section: EBGN504A / CBEN504A

Semester/Year: Spring 2016

Instructor: John Stermole

Contact Information:
Office: Engineering Hall #125/126
Office Phone: (303) 384-2209
Cell: (303) 909-7182
Email: jstermole@me.com  jstermol@mines.edu

Office hours:
Monday: 1:00-3:30
Tuesday: 10:00-12:00
Wednesday: 1:00-3:30
Thursday: 10:00-12:00
Friday: By appointment only

Class meeting days/times: 504; Tuesday/Thursday, 12:30pm – 1:45pm

Class meeting location: HH 202

Web Page/Blackboard link: blackboard.mines.edu

Teaching Assistant: Kelly Shanley

Office: n/a
Cell: 203-913-8307
Email: kshanley@mymail.mines.edu

Instructional activity: 2.5 hours lecture / wk  ___ hours lab  3 semester hours

Course designation: ___ Common Core ___ Distributed Science or Engineering

  X  Major requirement  X Elective ___ Other

Course description from Bulletin:

Time value of money concepts of present, future and annual worth, rate of return, net present value, ratios and break-even analysis applied to before and after-tax economic analysis of mineral, petroleum, and general investments. Related topics on proper handling of (1) inflation and escalation, (2) leverage (borrowed money), (3) risk adjustment of analysis using expected value concepts, (4) mutually exclusive alternative analysis and service producing alternatives, (5) treatment of select expenditures for tax purposes.
Textbook and/or other requirement materials: (3 copies are available in the library and on reserve)


Recommended Textbook: (3 copies are available in the library and on reserve)

- Self Teaching Manual (STM) for Economic Evaluation and Investment Decision Methods, 14th Ed, 2014, by Stermole and Stermole, Investment Evaluations Corporation. STM is also available in Spanish, see J. Stermole.

Student learning outcomes:

- Better understand and manage their personal financial considerations.
- Properly evaluate the economics of corporate investment opportunities.
- Understand project economic sensitivity to various parameters such as taxes.
- Convey to others the meaning of their findings.
- Prepared for the concepts related to time value of money and cash flow on the FE Exam.

Brief list of topics covered:

- Introduction to mathematical and practical concepts of time value of money (tvm).
- Application of tvm concepts to development of decision criteria used to evaluate investments in the natural resource and non-resource industries.
- Proper application of decision criteria to different investment situations.
- Inflation implications to cash flow and decision criteria in economic modeling.
- Introduction to sensitivity & risk analysis techniques emphasizing expected value.
- After-tax cash flow for a variety of investors in industries including the natural resource and non-resource and the economic impact of various financial conditions.
- Proper application and meaning of decision criteria in an after-tax environment.
- Investment applications including understanding concepts and terminology related to bonds, equities, options in equities and commodity futures contracts.

Policy on academic integrity/misconduct:

The Colorado School of Mines affirms the principle that all individuals associated with the Mines academic community have a responsibility for establishing, maintaining an fostering an understanding and appreciation for academic integrity. In broad terms, this implies protecting the environment of mutual trust within which scholarly exchange occurs, supporting the ability of the faculty to fairly and effectively evaluate every student's academic achievements, and giving credence to the university’s educational mission, its scholarly objectives and the substance of the degrees it awards. The protection of academic integrity requires there to be clear and consistent standards, as well as confrontation and sanctions when individuals violate those standards. The Colorado School of Mines desires an environment free of any and all forms of academic misconduct and expects students to act with integrity at all times.

Academic misconduct is the intentional act of fraud, in which an individual seeks to claim credit for the work and efforts of another without authorization, or uses unauthorized materials or fabricated information in any academic exercise. Student Academic Misconduct arises when a student violates the principle of academic integrity. Such behavior erodes mutual trust, distorts the fair evaluation of academic achievements, violates the ethical code of behavior upon which education and scholarship rest, and undermines the credibility of the university. Because of the serious institutional and individual ramifications, student misconduct arising from violations of academic integrity is not tolerated at Mines. If a student is found to have engaged in such misconduct sanctions such as change of a grade, loss of institutional privileges, or academic suspension or dismissal may be imposed.

The complete policy is online.
Grading Procedures:

This class will use a points grading system. All points possible will be outlined on the detailed test outline posted on blackboard "lecture" course. Homework will typically be worth 10, 15, or 20 points but there will be one 30 and one 40 assignment during the Exam #3 segment. The three tests have points outlined in the “Exam Policy” of this syllabus. Total points appearing below are estimates of actual figures to be accrued during the semester. After material has been graded the points will be posted in blackboard where the student may view their total points. Each homework, quiz and test will have marks where the student lost points so the student can learn from their mistakes.

Coursework Return Policy:

Course material including homework and tests will be returned during class in folders that will be available every class. Homework will be returned the following class period or within one week of submittal, while tests will be returned no later than two weeks after the test date. It is the student’s responsibility to retrieve all homework and tests out of the folder. All course material not retrieved by the end of the semester will be recycled.

Absence Policy:

There is no makeup, or bonus work or replacement exams. The only exception to this policy is an absence approved by letter from the Dean of Students or the Department of Athletics. If you know you will be gone on a specific date, it is your responsibility to make alternative plans. We are happy to work with you if you plan ahead and of course, in true emergencies.

Exam Policy:

**Students will be required to show picture ID upon turning in an exam.** All exams will be open textbook only, no solutions manuals or self-teaching manuals allowed. Your exam must be stapled to your work for any possibility of credit. Please note, no bags, cell phones, laptops, will be allowed at your seat during an exam. Baseball hats, and other similar headgear that shields a student's face are not allowed.

<table>
<thead>
<tr>
<th>Exam #1</th>
<th>Chapters 1-3</th>
<th>February 11</th>
<th>100 Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam #2</td>
<td>Chapters 3-6</td>
<td>March 10</td>
<td>125 Pts</td>
</tr>
<tr>
<td>Exam #3</td>
<td>Chapters 7-11</td>
<td>April 28</td>
<td>150 Pts</td>
</tr>
</tbody>
</table>

Total Exams 375 Pts

Homework:

- Homework must be turned in the day it is due to be graded – plan ahead.
- Homework must have a full student name and section ie “John Smith EBGN504”
- No homework will be accepted if it is turned in late, no make up homework will be assigned for missed homework.
- It is the student’s responsibility to make arrangements if the student is going to away when homework is due.
- Homework’s points will be outlined on the detailed test outlines posted on Blackboard

<table>
<thead>
<tr>
<th>Initial Investment Game Report</th>
<th>20 Pts</th>
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</thead>
<tbody>
<tr>
<td>Intermediate Invest. Game Report</td>
<td>30 Pts</td>
</tr>
<tr>
<td>Final Investment Game Report</td>
<td>100 Pts</td>
</tr>
<tr>
<td>Spring Case Study</td>
<td>100 Pts</td>
</tr>
<tr>
<td>Homework/Quizzes</td>
<td>240 Pts</td>
</tr>
</tbody>
</table>

Total Tests 375 Pts

Approximate Total 865 Pts
Based on an estimated 865 points, exams represent 43% of the total grade so participation in all phases of the course is necessary to succeed! Points determine grades, which generally are based on a straight curve 90/80/70, etc. There is no makeup, or bonus work or replacement exams. The only exception to this policy is an absence approved in writing from the Dean of Students or the Department of Athletics. If you know you will be gone on a specific date, it is your responsibility to make alternative plans. I am happy to work with you if you plan ahead and of course in true emergencies.

Blackboard (BB): [http://blackboard.mines.edu](http://blackboard.mines.edu)

You should be automatically registered in Blackboard in the section you are registered in. Your grades in this class will be posted in the appropriate section such as EBGN504A.

Course Schedule:

Each exam will have its own detailed course schedule that will be available on blackboard. Below is an approximate general course outline.

<table>
<thead>
<tr>
<th>Jan/Feb</th>
<th>Text chapters 1, 2 &amp; 3; time value of money &amp; decision criteria</th>
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</thead>
<tbody>
<tr>
<td>Feb/Mar</td>
<td>Text chapters 4, 5 &amp; 6; application of criteria, inflation, sensitivity &amp; risk</td>
</tr>
<tr>
<td>Mar/Apr</td>
<td>Text chapters 7 &amp; 8; after-tax cash flow and analysis of projects</td>
</tr>
<tr>
<td>Apr/May</td>
<td>Text chapters 9, 10 &amp; 11; after-tax applications, replacement, borrowed money</td>
</tr>
</tbody>
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Wall Street Journal (WSJ) Optional Signup

Students can subscribe for the journal at significant savings by signing up at

WSJ.com/spring16

There are 10, 12, 15 and 52-week signup options, you pay the WSJ directly, delivery to your address.