



Subject: Engineering Economics

Number: 321B/321A

Course Title: Engineering Economics

Section: EBG321B, EBG 321A

Semester/Year: Spring 2019

Instructor: Andrew H. Pederson

Contact Information:

Office: Engineering Hall #117

Office Phone: (303) 273-3426

Cell: (253) 320-1485

Email: apederson@me.com apederso@mines.edu

Office hours:

Monday: 9:00 - 12:00

Tuesday: 9:00 - 12:00 & 12:30 - 1:45PM

Wednesday: 9:00 - 12:00

Thursday: 9:00 - 12:00 & 12:30 - 1:45PM

Friday: by appointment only

Class meeting days/times:

Section A; Monday/Wednesday, 3:30 - 4:15 pm

Section B; Tuesday/Thursday, 2:00 – 3:15 pm

504; Monday/Wednesday, 12:30 – 1:45PM

Class meeting location:

Section A; Berthoud Hall 241

Section B; Berthoud Hall 241

EBGN504; Berthoud Hall 243

Web Page/Canvas link: <http://www.Canvas.mines.edu>

Teaching Assistant / Grader:

Graders will be holding limited office hours. Times TBD

Instructional activity: 3 hours lecture hours lab 3 semester hours

Course designation: Common Core Distributed Science or Engineering

Major requirement Elective Other

Course description from Bulletin:

Time value of money concepts of present, future and annual worth, and applied to decision criterion including rate of return, net present value, ratios and break-even analysis applied to both before-tax 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 of Income and service producing alternatives (5) after-tax analysis will explore tax deductions such as depreciation, depletion, amortization, write-offs and impact of taxation on project economics.

Textbook and/or other required materials: (6 copies are available in the library and on reserve)

- Economic Evaluation and Investment Decision Methods, 15th Ed, 2017 by Stermole, Stermole, & Pederson, Investment Evaluations Corporation.

Recommended Textbook: (6 copies are available in the library and on reserve)

- Self-Teaching Manual (STM) for Economic Evaluation and Investment Decision Methods, 15th Ed, 2017, by Stermole, Stermole, & Pederson, Investment Evaluations Corporation.
- STM is also available in Spanish; see A. Pederson

Student learning outcomes: At the conclusion of the class students will...

- 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 inflation, risk, and taxes
- Convey to others the meaning of their findings
- Be 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

Grading Procedures:

This class will use a points grading system. All possible points will be outlined on the detailed test outline posted on Canvas. Homework will typically be worth 20 points but assignments are subject to change so all stated values should be considered as best guesses. The three tests have points outlined in the "Exam Policy" of this syllabus. After material has been graded the points will be posted in Canvas 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.

Course Homework Return Policy:

Homework can be viewed on Canvas with the comments left from the graders. The graders are not allowed to take off points without leaving a comment so please review the comments. Homework will be graded the following class period whenever possible, while tests will be returned no later than two weeks after the test date. Exams will be returned in class. It is the student's responsibility to retrieve all homework and tests. All course material not retrieved by the end of the semester will be shredded.

Absence Policy:

There is no makeup, 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. I am 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 self-teaching manuals are allowed. Your exam must be stapled to your work for any possibility of credit. Please note: no bags or 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.

		Section B	Section A/504	Points
Exam #1	Chapters 1-3	February 7 th	February 6 th	100 Pts
Exam #2	Chapters 3-6	March 14 th	March 13 th	125 Pts
Exam #3	Chapters 7-11	April 25 th	April 24 th	150 Pts
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 i.e. “John Smith EBGN321A”
- 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 be away when homework is due.
- Homework points will be outlined on the detailed test outlines posted on Canvas

Initial Investment Game Report	20 Pts
Intermediate Investment Game Report	30 Pts
Final Investment Game Report	100 Pts
Homework/Quizzes (Approximate Total)	220 Pts
Total Tests	375 Pts
Approximate Total	745 Pts

Based on an estimated 745 points, exams represent 50% of the total grade, so participation in all phases of the course is necessary to succeed! Points determine grades, which 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 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.

All lecture notes, detailed course outlines, related materials such as office hours, this syllabus, etc, will be on Canvas

Along with exam reading and homework assignments, all homework, quiz and exam solutions will be posted on Canvas. Posting of solutions will occur immediately after the Section B class period representing the final lecture in each series. No homework will be accepted after the solutions have been posted. See individual exam outlines for details on assignments.

Course Schedule:

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

January	Text chapters 1, 2 & 3; time value of money & decision criteria
February	Text chapters 4, 5 & 6; application of criteria, inflation, sensitivity & risk
March	Text chapters 7 & 8; after-tax cash flow and analysis of projects

Diversity and Inclusion:

At Colorado School of Mines, we understand that a diverse and inclusive learning environment inspires creativity and innovation, which are essential to the engineering process. We also know that in order to address current and emerging national and global challenges, it is important to learn with and from people who have different backgrounds, thoughts, and experiences.

Our students represent every state in the nation and more than 90 countries around the world, and we continue to make progress in the areas of diversity and inclusion by providing [Diversity and Inclusion programs and services](#) to support these efforts.

Students with Disabilities:

The Colorado School of Mines is committed to ensuring the full participation of all students in its programs, including students with disabilities. If you anticipate or experience any barriers to learning in this course, please feel welcome to discuss your concerns with me. Students with disabilities may also wish to contact Disability Support Services (DSS) to discuss options to removing barriers in this course, including how to register and request official accommodations. Please visit their website at disabilities.mines.edu for contact and additional information. If you have already been approved for accommodations through DSS, please meet with me at your earliest convenience so we can discuss your needs in this course.

Accessibility within Canvas:

Read the [Accessibility Statement](#) from Canvas to see how the learning management system at the Colorado School of Mines is committed to providing a system that is usable by everyone. The Canvas platform was built using the most modern HTML and CSS technologies, and is committed to W3C's Web Accessibility Initiative and [Section 508](#) guidelines.

Discrimination, Harassment, and Title IX:

All learning opportunities at Mines, including this course, require a safe environment for everyone to be productive and able to share and learn without fear of discrimination or harassment. Mines' core values of respect, diversity, compassion, and collaboration will be honored in this course, and the standards in this class are the same as those expected in any professional work environment. (More information can be [found here](#).) **Discrimination or harassment of any type will not be tolerated.** As a participant in this course, we expect you to respect your instructor and your classmates. As your instructor, it is my responsibility to foster a learning environment that supports diversity of thoughts, perspectives and experiences, and honors your identities. To help accomplish this:

- Course rosters are provided to the instructor with the student's legal name. I will honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records.
- If something is said or done in this course (by anyone, including myself) that made you or others feel uncomfortable, or if your performance in the course is being impacted by your experiences outside of the course, please report it to:
 - Me (if you are comfortable doing so)
 - Wellness Center- [Counseling](https://www.mines.edu/counseling-center/) (https://www.mines.edu/counseling-center/)
 - [Speak Up](https://www.mines.edu/speak-up/) (https://www.mines.edu/speak-up/) – Anonymous Option

In this course, we will cultivate a community that supports survivors, prevents interpersonal violence, and promotes a harassment free environment. Title IX and Colorado State law protects individuals from discrimination based on sex and gender in educational programs and activities. Mines takes this obligation seriously and is committed to providing a campus community free from gender and sex-based discrimination. Discrimination, including sexual harassment, sexual violence, stalking, and domestic violence, is prohibited and will not be tolerated within the Mines campus community. If these issues have affected you or someone you know, you can access the appropriate resources on the [Mines Title IX website](#). You can also contact the Mines Title IX Coordinator, Camille Torres, at 303.384.2124 or titleix@mines.edu for more information.

It's on us, all of the Mines community, to engineer a culture of respect.

CARE @ Mines:

If you feel overwhelmed, anxious, depressed, distressed, mentally or physically unhealthy, or concerned about your wellbeing overall, there are resources both on- and off-campus available to you. If you need assistance, please ask for help from a trusted faculty or staff member, fellow student, or any of the resources below. As a community of care, we can help one another get through difficult times. If you need help, reach out. If you are concerned for another student, offer assistance and/or ask for help on their behalf. Students seeking resources for themselves or others should visit care.mines.edu.

Additional suggestions for referrals for support, depending on comfort level and needs include:

- [CARE at Mines](https://care.mines.edu) (care.mines.edu)– for various resources and options, or to submit an online “CARE report” about someone you’re concerned about (email care@mines.edu)
- [CASA](https://www.mines.edu/casa) (https://www.mines.edu/casa) – for academic advising, tutoring, academic support, and academic workshops
- [Counseling Center](https://www.mines.edu/counseling-center/) (https://www.mines.edu/counseling-center/)– for students to call 303-273-3377 for an appointment. There are also online resources for students on the website. Located in the Wellness Center 2nd floor at 1770 Elm St.
- [Health Center](https://www.mines.edu/student-health/) (https://www.mines.edu/student-health/) – students may call 303-273-3381 for appointment. Located in Wellness Center 1st floor at 1770 Elm St.
- [Colorado Crisis Services](http://coloradocrisisservices.org) (http://coloradocrisisservices.org) – for crisis support 24/7, either by phone, text, or in person. Colorado Crisis Services is a great confidential resource, available to anyone by calling 1-844-493-8255, or texting “TALK” to 38255. Walk-in location addresses are posted on the website.

All of these options are available for free for students. The Counseling Center, Health Center, and Colorado Crisis Services are confidential resources. The Counseling Center will also make referrals to off-campus counselors, if preferred.

In an emergency, you should call 911, and they will dispatch a Mines or Golden PD officer to assist.

Absence Policy:

The [Student Absences](#) webpage outlines CSM's policy regarding student absences. It contains information and documents to obtain excused absences.

Note: All absences that are not documented as excused absences are considered unexcused absences. Faculty members may deny a student the opportunity to make up some or all of the work missed due to unexcused absence(s). However, the faculty members do have the discretion to grant a student permission to make up any missed academic work for an unexcused absence. The faculty member may consider the student's class performance, as well as their attendance, in the decision.

In the case of an absence, the student is responsible for determining what work was missed and for putting forth a good faith effort to review the material on their own.

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 and 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 can be found in the [Mines' Policy Library](#).