

**DEPARTMENT OF MINING ENGINEERING
COLLEGE OF MINES AND EARTH SCIENCES
UNIVERSITY OF UTAH**

MG EN 5170 – Mine Administration and Finance

Spring Semester 2024

- 1) **Credits:** 2.0 credit course
- 2) **Lecture:** Tuesdays & Thursdays: 9:10 AM - 10:00 AM; in WBB 102, or online.
- 3) **Instructor:** Charles Kocsis, Ph.D., P.Eng.
- 4) **Contact Information:**
Email: charles.kocsis@utah.edu
Phone: 775-351-3692.

5) Catalog Description:

The **MG EN 5170 Mine Administration & Finance** course is a 2-credits course. The course focuses on the application of accounting and financial procedures to mining engineering projects. Includes discussions with respect to the influence of US and world scale economics on mining activities, and evaluation of financial performance of mining projects.

The course includes lectures (like Power Point presentations), group projects, risk analysis methods and their application to mining projects. The course focuses on discussions with respect to mining company organization, team development, ethical practices in the industry, and strategic planning concepts. Student interim and summary of written applications are also covered.

6) Textbook:

- *Economic Evaluation and Investment Decision Methods* by F. J. Stermole, J. M. Stermole, and A.H. Pederson, 16th edition, 2019 (www.stermole.com).
- Other handout material will be provided.

7) Software:

APEX-Economic Analysis Software for Mining Projects developed by Aventurine Cost Mine Engineering will be used to analyze the viability of mining projects. APEX is designed for prefeasibility level of economic analysis of proposed mining projects. An intermediate level of understanding with respect to *discounted cash-flow* analysis is required to understand and operate the program effectively. In addition, an advanced level of knowledge and understanding of mining engineering principles and the interrelationships between mining, milling, smelting, ore transportation, ore reserves, production rates, and other mining parameters is needed.

The APEX software utilizes an innovative block layering technique that allows the students to construct *cash-flow models* for simple as well as complex mining projects and mine development scenarios. The program can be operated at varying levels of detail, depending upon needs and the level of expertise of the user.

The APEX software includes a powerful risk/uncertainty analysis module whereby important economic indicators such as cash-flow, net present value (NPV), rate of return (ROR) are determined based on varying parameters such as ore grade, development cost, equipment cost, life of the mine, etc.

8) Grading Basis:

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|---------------------|------|
| • Homework Problems | 25 % |
| • Pop Quizzes | 10 % |
| • Term Project | 15 % |
| • Mid-Term Exam | 25 % |
| • Final Exam | 25 % |

9) Grading Policy:

A: (95% - 100 %)

A-: (90% - 94%)

B+: (86% – 89%)

B: (80 – 85%) B-: (75%-79%)

C+: (71% - 74%)

C: (67%-70%)

C-: (63%-66%)

D: (59% - 62%)

E (failing grade): (<59%)

10) Course Objectives:

- Understand mine valuation concepts.
- Learn about financial analysis and time value of money.
- Understand project evaluation methods.
- Understand the components of cash flow.
- Understand the effect of tax on project evaluation and performance.
- Analyze the impact of inflation and inflation escalation on cash flow.
- Learn about procedures that handle risk and uncertainty.
- Analyze specific project evaluation cases - lease/buy, replace/rebuild, improve safety.
- Understand acquisition and how to assess corporate financial strength.

- j) Mine management and administration.
- k) Prepare a report on a project evaluation and present findings using PPT presentations.

11) Primary ABET student outcome for this course:

- (4) An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

ABET Student outcomes describe what students are expected to know and be able to perform by the time of graduation. These relate to the knowledge, skills, and behaviors that students acquire as they progress through the mining engineering program.

12) Relevant Features of the Course:

- a) Homework Assignments: At the end of each section you will be given a set of homework problems to solve. Each set is to be handed in at the stated **due date**.
- b) Exams: There will be two exams, **mid-term** and **final**. The final exam is a comprehensive exam in Mine Administration and Finance.
- c) Quizzes: A short quiz covering issues related to cash flow analysis and project evaluation techniques will be given at the end of each section. In addition, you should be aware of current prices for metals, coal, and energy, as well as cost indices (PPI and CPI).
- d) Term Project: You will be given a mining-focused project to study its economic and financial status. Students will review the project with emphasis on cash flow calculations, key economic indicators (i.e., ROR), and compare them with industry average values. You will need to summarize your findings and submit a written report.
- e) Software Use: The *team-project* as well as part of the final exam (take-home exam) can be carried out using APEX - Economic Analysis Software for Mining Projects developed by Aventurine Cost Mine Engineering.

13) Team Project Instructions and Reporting Guidelines (*Tentative*):

Your report must follow the SME format and include the following elements:

- a) Title page
- b) Executive summary
- c) Brief description of the problem and objective(s)
- d) Body of the report
 - Methods and /or procedures used
 - Sample calculations
 - Results with plots or graphs as required
- e) Discussion and conclusions.

The objective of the preceding format is to introduce and encourage the habit of clearly communicating the results of engineering studies. The results, when not reported clearly are of little or no value and can be even harmful.

14) General Instructions:

- Disruptive behavior in class will not be tolerated.
- Cheating is not permitted. Cheating is defined as attempts to get credit in a way that is dishonest, disrespectful, irresponsible, and unfair.
- Cell phone usage is not permitted.
- Any student needing special accommodations for class or for taking exams must notify the instructor in advance.
- Late assignments will only be accepted when reasonable justification is presented for a new deadline.
- Class attendance is mandatory, and it will be considered for final grading. Please notify the instructor verbally or by email if there is a reasonable/realistic reason to miss a lecture. For missing quizzes, assignments, exams, and lab sessions the grade can be as low as “zero”

15) Term Project Grading

Your term project will be graded over 100 points. Each report is graded on the following basis:

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|-----------------------------|----|---------|
| • Presentation and neatness | 10 | percent |
| • Content | 40 | " |
| • Accuracy/ Evaluation | 20 | " |
| • Discussions/Conclusions | 30 | " |

IMPORTANT STUDENT INFORMATION

Spring Semester 2024

Health Services

University Confidential Resources: Women’s Resource Center, Annex Bldg. Rm 2180, 801-581-8030. Center for Student Wellness, Victim Advocacy, Student Services Bldg. Rm 330, 801-581-7779.

Our advocates are trained to support survivors of sexual and relationship violence.

University Counseling Center, Student Services Bldg., Rm 426, 801-581-6826.

The Center helps students resolve existing problems, prevent potential problems, and develop new skills that will enrich their lives. Services address personal, career, and academic learning issues. Other resources can be found at <https://registrar.utah.edu/handbook/>

Samantha Davis in the Student Epicenter, FASB room 104, and Dean, Peter Trapa, COS building are available resources for any questions or concerns you may have.