

MINE 306: Mineral Property Evaluation

Fall 2014

Instructor: Dr. Aaron Noble, MRB 353A, canoble@mail.wvu.edu

Office Hours: Monday 3:00 - 5:00 PM and open door

Lecture Time/Location: WF 12:00 - 1:15; MRB 105 (CRN: 80625)

Catalog Description: Mineral exploration and reserve estimation, risk management, and engineering economy concepts applied to mineral deposits, including depreciation and depletion. Prerequisites: STAT 211 or STAT 215.

Expected Learning Outcomes: This course is designed to provide an overview of the principles and techniques used in the management and economic evaluation of mining engineering projects. Having successfully completed this course, the student will be able to:

- *Interpret* financial and investment vocabulary to effectively communicate with business colleagues;
- *Calculate* cash flow equivalents using time value of money principles;
- *Derive* fiscal models for the purpose of conducting worth evaluations and comparing various technical alternatives;
- *Apply* tax considerations and book deductions to the economic analysis of mining projects;
- *Analyze* mineral project risk by incorporating basic risk assessment tools (sensitivity analysis, probabilistic analysis, Monte Carlo simulation, etc.) into economic evaluations;
- *Defend* technical alternatives by applying economic and ethical considerations;
- *Identify* exploration techniques and the role of geologic properties in the valuation of coal and mineral projects.

Textbook: Stermole, S.J. and J.M. Stermole. *Economic Evaluation & Investment Decision Methods* (13th Edition). Investment Evaluation Corporation, 2012.

Grading/Assignments: Final grades will be based upon the successful completion of homework, quizzes, and exams. Worksheets will not influence the final grade. On typical weeks, homework will be due by close of business Wednesday and a short quiz will be given during class on Friday. Provisions for dropping quiz and homework grades will be provided by the instructor.

Worksheets	0%
Quizzes (~9)	15%
Homework (~9)	15%
Exams (4)	70%

Letter grades will be assigned on a standard 10 point scale (90 – 100 = *A*; 80 – 89 = *B*; 70 – 79 = *C*; 60 – 69 = *D*; < 59 = *F*).

Attendance: Regular class attendance is both expected and required. Attendance will be recorded daily, and students with less than two absences will receive preference in borderline grade situations. Excused or anticipated absences should be relayed to the instructor at the earliest time. Excuses will be permitted in accordance with the university policy at the final discretion of the course instructor. This instructor believes that class attendance, like many choices in life, can be approached from the perspective of an economic value-based decision, which merits the consideration of short and long-term benefits, resource limitations, time-constraints, and other factors.

West Virginia University and this course instructor honor the diversity of students and respect the needs of students who must miss class to participate in Days of Special Concern. To ensure that the best mutually beneficial arrangements are made, students should notify the instructor by the end of the second week of classes or prior to the first Day of Special Concern, whichever is earlier, regarding Day of Special Concern observances that will affect attendance.

Course Schedule:

Week.	Topic	Stermole Chapters
1.	Introduction	(1)
2.	Time Value of Money	(2)
3.	Interest Rates & Loans	(2)
4.	Worth Assessment	(3)
5.	Exam 1	(1 - 3)
6.	Alternative Comparison	(4, 10)
7.	Taxes & Deductions	(7, 8)
8.	After-Tax Project Valuation	(8, 9, 11)
9.	Exam 2	(4, 7 - 9)
10.	Risk Assessment 1	(6)
11.	Risk Assessment 2	(6)
12.	Risk Assessment 3	(6)
13.	Exam 3	(6)
14.	Exploration	(N/A)
15.	Wrap-up	(N/A)

Professional Registration: As part of the academic and professional development of young mining engineers, the Department of Mining Engineering strongly encourages each student to take the Fundamentals of Engineering (FE) exam and to then follow this by becoming registered as a Professional Engineer (PE). The subject matter covered in this course comprises roughly 10% of the exam.

Data Integrity: Many portions of this class will require significant computer usage. While computer crashes and malfunctions do happen, students should take every initiative to ensure that such misfortune does supersede not the responsibility to complete and submit assignments in a timely manner. All critical documents should be stored in at least two media whether physical or virtual. This instructor STRONGLY recommends real-time online backup and/or cloud storage. Several free options are available online (Google Drive, Microsoft SkyDrive, Dropbox). Any sensitive data or information should be encrypted on physical drives. Should a computer crash occur, inform the instructor immediately to ensure that the appropriate provisions can be made.

Statement of Academic Integrity: The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, this instructor will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the Student Conduct Code http://studentlife.wvu.edu/office_of_student_conduct/student_conduct_code. Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter.