J. DAVID LOWELL PROFESSIONAL PROGRAM IN MINERAL RESOURCES
MNE 697C Mineral Economics: Concepts and Applications
Fall Semester 2010

Instructor: David R. Hammond, PhD, Adjunct Professor
Principal Mineral Economist
Hammond International Group

Credit: 1 credit, 100%

Grade: A, B, C, D, E

Catalog Description:
This course provides students with an overview of the field of mineral economics and introduces key economic theories and methodologies as adapted to mineral commodity analysis. Students are also acquainted with the functional parameters/definitions and operational considerations associated with several of the principal mineral resource categories such as precious and base metals, iron ore and mineral fuels.

Course Objectives:
Obtain a fundamental understanding of the mineral economic theory, nomenclature, and analytical tools/techniques for use in the evaluation/management of mineral resource extraction projects and operations, from exploration through product supply/consumption; gain basic knowledge about the production and marketing structure and industry practices for several specific mineral commodity sectors.

Topics:

Course Introduction – Just What is “Mineral Economics” Anyway?

Basic Mineral Economics Concepts

• Microeconomic Fundamentals
• Resource Scarcity:
• Hotelling Theory & Ricardian Rents
• Measures of Scarcity - Reserves & Resources
• Resource Growth
• Short/Mid/Long Term Commodity Price Drivers
• Resource Demand
  - Intensity of Use
  - Elasticity
  - Commodity/Supply Substitution

Mineral Resources & National Economies

• Importance to GDP
• Drivers of Economic Development
• Environmental Issues
• Sustainability/Resource Exhaustion - The “Resource Curse”
• Role of Government: Property Rights/Environment Regulation/Trades Issues/Taxation
• Supply Risk Considerations

Mineral Industry Organization

• Forms of Competition
• Cartels/Combines/Commodity Agreements/Mergers and Acquisitions
• Impacts of Externalities
• Industry Supply Chains
• Industry Economic Returns: Expectations & Realities
Cost Estimating

- Issues in Mining Cost Estimation
- Frameworks for Cost Analysis and Reporting
- Costs and Reserves
- By/Co/Joint Primary Products
- Impact of Currency Exchange Rates

Mineral Commodity Analysis

- Commodity Cycles
- Real & Nominal Dollar Prices
- Cost Curves
- Demand/Supply Forecasting
  - Short and Long Runs
  - Role of Scrap and Recycle
  - Forecasting Methodologies
  - Forecasting Accuracy

Mineral Commodity Markets

- Market Structures & Exchanges
- Price Formation, Discovery and Behaviors
- Contract Terms & Industry Practice
- Measuring Price Volatility
- Product Transportation & Storage

Managing Commodity Risk

- Risk Mitigation: Country/Commodity/Currency/Technology
- Measuring Volatility
- Hedging Strategies & Mechanics:
  - Forward Sales
  - Futures & Options
  - Other Derivatives

Grading:

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<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tr>
<td>Final Exam</td>
<td>60%</td>
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<tr>
<td>Class contribution</td>
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<td>Paper *</td>
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*Students will submit a concise 4-page paper (exclusive of tables, figures, graphs, and references) on a mineral economics topic which will be assigned by the instructor. The paper will be due approximately weeks after the course lectures.

Recommended Textbooks and References:

Suggested references for course and future use:

Primary Reference Textbook:

Australian Mineral Economics Monograph 24 – A Survey of Important Issues (2006), Philip Maxwell and Pietro Guj (Ed.), published by The Australian Institute of Mining and Metallurgy (AusIMM), Carlton, Victoria, Australia. A CD of this publication can be purchased from AusIMM; website:


Other Reference Texts and Papers:


Vallée, Marcel, with Michel David, Michel Dagbert, Clément Desrochers (2002), Guide to the Evaluation of Gold Deposits, Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Special Volume 45, Montreal,


Mineral Information Data Sources:

American Coal Council: www.americancoalcouncil.org


Goldsheet Mining Directory: www.goldsheetlinks

InfoMine: www.infomine.com

International Copper Study Group: www.icsg.org

International Energy Agency: www.iea.org

International Lead & Zinc Study Group: www.ilzsg.org

International Iron & Steel Institute: www.worldsteel.org

Kitco: www.kitco.com


London Metal Exchange: www.lme.co.uk

Metal Bulletin: www.metalbulletin.com

Natural Resources Canada: www.nrcan.gc.ca

Nickel Institute: www.nickelinstitute.org
Organization for Economic Cooperation & Development (OCED): www.oecd.org/home


USGS (1991), Metal Prices in the United States Through 1998. USGCO.

USGS, Mineral Commodity Summaries (Annual)

The World Bank: www.worldbank.org

World Coal Institute: www.wci-coal.com

World Nuclear Association: www.world-nuclear.org

**Recommended Prerequisites:**

Familiarity with microeconomics/macroeconomics, industrial organization and engineering economics

DRH: 08/10/10