Energy Management (EMA)

EMA 180, 280 Seminar in Energy Management 1-2 Hours
Meet with leading energy experts from industry and academia to discuss recent developments in technology, policy, law, and business.

EMA 182, 282, 382 Topics in Economics 1-3 Hours

EMA 182.1, 282.1, 382.1 Environmental Economics 1-3 Hours
Explore economic theory and public policy as they apply to environmental problems. Includes the role of market failure in explaining the existence of pollution, alternative strategies for pollution control and environmental management, and global environmental issues.

EMA 182.2, 282.2, 382.2 Managerial Economics 1-3 Hours
Explore energy fundamentals through a detailed examination of the history, structure and functioning of the modern energy industry. Includes models of supply, demand, and transportation; market structure; game theoretic strategies and risk management; environmental issues; and policy and regulation.

EMA 182.9, 282.9, 382.9 Advanced Economics 1-3 Hours

EMA 184, 284, 384 Topics in Finance 1-3 Hours

EMA 184.1, 284.1, 384.1 Energy Markets and Risk Management 1-3 Hours
Study how firms manage their financial risk exposures and how they use derivative securities.

EMA 184.2, 284.2, 384.2 Valuation 1-3 Hours
Explore financial modeling, derivatives in corporate finance, business valuation, and value-based management.

EMA 184.3, 284.3, 384.3 Investments 1-3 Hours
Analyze the investment decision-making process, including asset allocation, security analysis, risk and expected return measurement, asset-pricing models, and international investment.

EMA 184.4, 284.4, 384.4 Advanced Corporate Finance 1-3 Hours
Investigate advanced corporate financial management in the global marketplace, including valuation concepts, optimal capital structure, risk management, corporate control and restructuring, and mergers and acquisitions.

EMA 184.5, 284.5, 384.5 Private Equity Mergers and Acquisitions 1-3 Hours
Examine the application of advanced corporate finance concepts in the private equity markets and mergers and acquisitions.

EMA 184.6, 284.6, 384.6 Energy and Environmental Markets 1-3 Hours
Explore the business and public policy issues that these changes have raised in energy markets, and in the environmental markets to which they are closely tied using tools from economics and finance. Includes the development the political economy of deregulation, the environmental impacts and policies related to energy production and use, market power and antitrust in energy and environmental markets, and the transportation and storage of energy commodities.

EMA 184.7, 284.7, 384.7 Environmental, Social, and Governance Investments 1-3 Hours
Explore a conceptual and theoretical foundation for corporate ESG (Environmental, Social and Governance) policies and actions and investors' preferences regarding such policies and actions including how such policies and actions affect firm performance and investor reactions.

EMA 184.8, 284.8, 384.8 Corporate Finance 1-3 Hours
Explore principles of finance, with application to all aspects of the energy firm; particular attention to cost of capital, investment decisions, management of assets, and procurement of funds.

EMA 184.9, 284.9, 384.9 Advanced Finance 1-3 Hours

EMA 186, 286, 386 Topics in Accounting 1-3 Hours

EMA 186.1, 286.1, 386.1 Financial Accounting 1-3 Hours
Explore transaction analysis, financial statement preparation, and analysis of financial statements.

EMA 186.2, 286.2, 386.2 Cost Accounting 1-3 Hours
Analyze manufacturing costs, and explore the development of cost estimates and preparation of relevant information for management decision making.

EMA 186.3, 286.3, 386.3 Tax Accounting 1-3 Hours
Introduction to the role of taxes in contemporary society and their impact on individuals and business entities, with an emphasis on federal income taxation.

EMA 186.4, 286.4, 386.4 Environmental Accounting 1-3 Hours
Explore the pursuit of the goal of sustainability. Investigate how corporate and government leaders must manage companies and economies in terms of balancing and optimizing the triple bottom line of social, environmental, and economic impacts.

EMA 186.5, 286.5, 386.5 Oil and Gas Accounting 1-3 Hours
Introduction to oil and gas accounting for upstream operations related to exploration and development of oil and gas. Includes accounting principles and procedures for exploration, acquisition, drilling, development and production costs in different phases when searching for producing oil and gas.

EMA 186.6, 286.6, 386.6 Energy Accounting 1-3 Hours
Introduction to accounting for the energy industry. Includes accounting principles and procedures for exploration, acquisition, construction, development and production costs in different phases for a producer of electricity or oil and gas.

EMA 186.7, 286.7, 386.7 Intermediate Accounting 1-3 Hours

EMA 186.9, 286.9, 386.9 Advanced Accounting 1-3 Hours

EMA 188, 288, 388 Topics in Management 1-3 Hours

EMA 188.1, 288.1, 388.1 Negotiations 1-3 Hours
Explore the theories, processes, and practical techniques of negotiation to successfully negotiate and resolve disputes in a variety of situations including interpersonal, group, and international settings. Examine influence and conflict resolution strategies; identify interests, issues, and positions of the parties involved; analyze co-negotiators, their negotiation styles, and the negotiation situations; and manage the dynamics associated with most negotiations.

EMA 188.2, 288.2, 388.2 Entrepreneurship 1-3 Hours
Identify innovations and market opportunities. Explore how to write a business plan, obtain funding, and launch a new company.

EMA 188.3, 288.3, 388.3 Creating and Managing Human Capital 1-3 Hours
Investigate issues related to making human resource decisions in a more effective manner. Explore a strategic perspective, with particular emphasis on the links between human resource decisions and a firm's competitive position.

EMA 188.4, 288.4, 388.4 Strategy 1-3 Hours
Analyze business situations from the point of view of the practicing general manager. Address key tasks involved in general management, including strategic decisions that ensure the long-term health of the entire firm or a major division.

EMA 188.9, 288.9, 388.9 Advanced Strategy 1-3 Hours

EMA 190, 290, 390 Topics in Quantitative Analysis 1-3 Hours

EMA 190.1, 290.1, 390.1 Decision Analysis 1-3 Hours
Study decision-making under risk and with multiple criteria. Focus on strategic decisions and operational decisions using decision trees, simulation and other quantitative tools.

EMA 190.2, 290.2, 390.2 Supply Chain 1-3 Hours
Investigate the operations or production functions, and the skills required for analyzing and solving related problems.

EMA 190.3, 290.3, 390.3 Project Management 1-3 Hours
Explore project management through a proven framework for leading and directing projects and teams to deliver project results within constraints such as schedule, budget, and available resources.

EMA 190.4, 290.4, 390.4 Getting Product to Market and Trading 1-3 Hours
Provide students a basic understanding of the various aspects of the energy supply chain covering the crude oil, natural gas and electric power supply chains with a focus on how energy products are transported from where they are produced to their ultimate markets.

EMA 190.5, 290.5, 390.5 Optimization 1-3 Hours
Frame, formulate, and apply quantitative optimization and descriptive models to management decisions, using spreadsheets and other software.

EMA 190.6, 290.6, 390.6 Information Technology 1-3 Hours
Explore the in-depth treatment of business data processing concerns such as database management, telecommunications, and the development of commercial systems.

EMA 190.7, 290.7, 390.7 Analytics 1-3 Hours
Investigate methods used to model and analyze data. Explore regression models and time-series models and their application in the area of energy.

EMA 190.8, 290.8, 390.8 Operations and Supply Chain 1-3 Hours
Investigate the operations or production functions, and the skills required for analyzing and solving related problems. Explore the use of developed predictive dynamic models in operations planning and operations decision making.

EMA 190.9, 290.9, 390.9 Advanced Analytics 1-3 Hours

EMA 192, 292, 392 Topics in Marketing 1-3 Hours

EMA 192.1, 292.1, 392.1 Energy Consumer Behavior 1-3 Hours
Examine the acquisition and consumption of goods, services, time, and ideas by individuals and groups in the energy industry, including normative and descriptive theories.

EMA 192.2, 292.2, 392.2 Consumer Analysis 1-3 Hours
Introduction to the data and tools used to analyze the business environment and enable marketing decision making. Use real-world data and problems to evaluate strategic market opportunities and assess the impact of marketing decisions in the marketplace.

EMA 194, 294, 394 Topics in Law 1-3 Hours

EMA 194.1, 294.1, 394.1 Law and Agreements 1-3 Hours
Explore contracts and transfers by oil and gas lessees such as assignments, farmouts, operating agreements, purchase and sale agreements, and master service agreements. Consider the oil and gas development on federal, state, and American Indian lands as well as environmental regulation of the petroleum industry.

EMA 194.2, 294.2, 394.2 Real Estate Law and Contracts 1-3 Hours
Explore the legal framework of commercial real estate finance and development, including basic real estate law concepts, legal aspects of financing techniques and instruments, subdivision land-use controls, and the environmental regulation of real estate development.

EMA 194.3, 294.3, 394.3 Domestic Petroleum Transactions 1-3 Hours
Explore the practical aspects of the U.S. oil and gas legal regime, focusing on the relationship between energy companies and regulatory authorities. Investigate bankruptcy, energy finance, and land use control, as well as purchase of domestic oil and gas assets by foreigners.

EMA 194.4, 294.4, 394.4 International Petroleum Transactions 1-3 Hours
Explore international petroleum transactions in the context of a single industry. Includes the various participants and transactions that take place at each stage of the industry, from acquisition of development rights through exploration and production to transportation and marketing.

EMA 194.5, 294.5, 394.5 Environmental Law 1-3 Hours
Introduction to environmental thinking in the context of scarce publicly and privately owned natural resources. Explore the public trust doctrine, relevance of the Tenth Amendment to environmental protection, the National Endowment Policy Act, the Endangered Species Act, and the Fish and Wildlife Coordination Act.

EMA 194.6, 294.6, 394.6 Law and Policy 1-3 Hours
An introduction to the legal and regulatory regimes governing the energy industry, as well as the important economic and political concerns that underlie the regulation of the production and sale of energy.

EMA 194.9, 294.9, 394.9 Advanced Law 1-3 Hours

EMA 196, 296, 396 Topics in Engineering and Science 1-3 Hours

EMA 196.1, 296.1, 396.1 Oil and Gas Capstone 1-3 Hours
Reinforce the interdisciplinary nature of developing petroleum assets. Includes the key stages of project development, such as: acquisition, exploration, development, production, abandonment, and exit.

EMA 196.10, 296.10, 396.10 Technology and Policy 1-3 Hours
Investigate the broad context of energy production and consumption in the U.S. and the world. Discuss past energy trends and fundamentals of energy and power, including fossil fuels and renewable energy sources and technologies. Explore different energy resources, environmental impacts, and societal uses of energy, and evaluate future energy technology options.

EMA 196.11, 296.11, 396.11 Financial Strategies for Energy Firms 1-3 Hours
Perform an integrated analysis of the interaction between the investment and operating policies of a corporation and its financial strategies, with special emphasis on firms in the energy industry.

EMA 196.2, 296.2, 396.2 Electricity Capstone 1-3 Hours
Reinforce the interdisciplinary nature of developing electricity generation assets. Explore the key stages of project development, including site selection, life-cycle analysis, due diligence, permitting, contracting, and financing.

EMA 196.3, 296.3, 396.3 Energy Technology and Policy 1-3 Hours
Explore the understanding of the broad context of energy production and consumption in the U.S. and the world. Discuss past energy trends and fundamentals of energy and power, including fossil fuels and renewable energy sources and technologies. Explore different energy resources, environmental impacts, and societal uses of energy. Evaluate future energy technology options.

EMA 196.4, 296.4, 396.4 Electricity Systems 1-3 Hours
Explore the locational marginal pricing (or nodal) model of organized or centralized day-ahead and real-time electricity markets. Investigate the solution of power flow, formulate optimal dispatch as an optimization problem, consider offer-based economic dispatch, transmission and unit commitment issues. Discuss pricing rules and incentives in markets, particularly in the context of transmission limits. Examine energy and transmission price risk hedging, network models, and capacity adequacy.

EMA 196.5, 296.5, 396.5 Petroleum Systems 1-3 Hours
Introduction to the petroleum system, including source rocks and reservoirs, maturation and migration of hydrocarbons, traps and seals, rock properties, basin, play and prospect risking and assessment and tools for subsurface analysis (wells and seismic) for nontechnical personnel. Examine prospecting strategies and leasing.

EMA 196.6, 296.6, 396.6 Petroleum Engineering 1-3 Hours
Introduction to drilling, reservoir engineering, surface facilities and processing, pipelines, and project abandonment for nontechnical personnel.

EMA 196.7, 296.7, 396.7 Energy Networks 1-3 Hours
Introduction to analysis, design and management of complex integrated systems typically in midstream oil and gas processes and electric grids.

EMA 196.8, 296.8, 396.8 Advanced Electricity Systems 1-3 Hours

EMA 196.9, 296.9, 396.9 Advanced Petroleum Systems 1-3 Hours

EMA 197, 297, 397 Advanced Energy Management 1-3 Hours
Focus on the economics, strategy, business valuation, technology, science, policy and finance specific to the energy industry.