

# EMBA-EXECUTIVE ENERGY MBA

## EMBA 5012 Energy Policy and Regulations 2 Credit Hours

Prerequisites: graduate standing, EMBA students only. Examines global energy policy and regulatory development emphasizing: resource access, business-government relations, environmental protection, social responsibility, and sustainability. Topics explored from the perspectives of government, business, citizens and civil society stakeholder groups, emphasizing unique positions of various major energy-producing regions worldwide. (Irreg.)

## EMBA 5021 Hydrocarbon Value Chain - Technology & Innovation 1 Credit Hour

Prerequisite: Graduate standing and EMBA majors only. An introduction to critical aspects of the oil and gas infrastructure value chain with an emphasis on identifying value creation opportunities and strategies, commercial trading activities, policy and regulatory issues, key industry players, and the impacts of technology, innovation, trends, and cycles. Principal focus on crude oil with comparisons and contrasts to natural gas and natural gas liquids value chains. (Irreg.)

## EMBA 5022 Introduction to Energy Accounting 2 Credit Hours

Prerequisite: Graduate standing and EMBA majors only. This course uses concepts from financial accounting and managerial accounting and applies them to specific reporting issues in the energy industry as well as presentation of the information on the financial statements of an oil and gas company. Reviews the accounting cycle with an emphasis on the proper accounting treatment of energy-related activities, actions (e.g., acquisition of mineral interests). (Irreg.)

## EMBA 5031 Organizational Behavior 1 Credit Hour

Prerequisites: graduate standing, EMBA students only. For students responsible for leading and managing HR in the energy industry and seeks to increase students' understanding of individual behavior in organizations. Explores theories and concepts of organizational behavior to address managerial problems. Topics include: management challenges; the use of evidence-based management; managing diversity; motivating, evaluating, and rewarding employees; and creating a positive work environment and achieving personal well-being. (Irreg.)

## EMBA 5042 Energy Economics 2 Credit Hours

Prerequisite: graduate standing, EMBA students only. Economic concepts and analysis as used in managerial decision-making in energy companies with emphasis on demand, supply, market equilibrium, elasticity, perfect competition, external effects and public goods, market power and monopoly, natural monopolies, dominance and economic regulation, mergers, cartels, collusion and antitrust, oligopolistic models, GDP, unemployment rates, and price indices, and the interrelations among the different sectors of the economy. (Irreg.)

## EMBA 5052 Financial Markets and Securities 2 Credit Hours

Prerequisites: graduate standing, EMBA students only. Provides a strong foundation for an understanding of financial markets and the main types of securities traded in these markets. The topics covered in the course include trading structure, risk and return, portfolio theory, asset pricing models, market efficiency and an introduction to the nature and valuation of equities, bonds, and options. (Irreg.)

## EMBA 5062 Quantitative Methods and Models 2 Credit Hours

Prerequisites: graduate standing, EMBA students only. Understanding and applying quantitative methods and models in the context of energy management. The content of this course is organized around three modules: summarizing quantitative data; relating and comparing data; and, predicting outcomes based on sample data. The topics covered in these modules include descriptive statistics, associative statistics, regression, multiple regression, and inferential statistics. (Irreg.)

## EMBA 5072 Corporate Finance 2 Credit Hours

Prerequisites: graduate standing, EMBA students only. Provides students with the analytical and conceptual skills required in the modern practice of corporate financial management in energy organizations. The course will focus on three key areas of financial management: (1) the optimal allocation of capital; (2) the optimal choices for raising capital; (3) the optimal management of risk in conjunction with (1) and (2). Includes application of finance theory to solving real business problems in energy companies, and emphasizes the importance of technology and globalization to the modern practice of finance. (Irreg.)

## EMBA 5082 Strategic Management 2 Credit Hours

Prerequisites: graduate standing, EMBA students only. Examines management decisions and actions to improve an organization's competitiveness in global business environments. Uses a variety of pedagogies to integrate strategies, and students will develop skills to formulate, implement, and evaluate organizational strategies that play across the energy industry in rapidly changing environments. (Irreg.)

## EMBA 5091 Accounting II 1 Credit Hour

Prerequisite: Graduate standing, EMBA 5022, and EMBA majors only. This course will cover Financial Accounting Standards Board (FASB), Generally Accepted Accounting Principles (GAAP), and Securities and Exchange Commission (SEC) financial statement disclosures specific to entities engaged in oil and gas producing activities (referred to as Upstream Entities), accounting for derivatives, and tax issues affecting the energy industry. (Irreg.)

## EMBA 5111 Management Information Systems 1 Credit Hour

Prerequisites: graduate standing, EMBA students only. Managers in energy organization need to understand the pathways for improving performance through IT-enablement and to be active participants in decisions regarding investing in and implementing IT-enabled business solutions and supporting infrastructures. This course provides student with an awareness and understanding of the technologies and issues they are likely to confront in their roles as managers in an energy organization. (Irreg.)

## EMBA 5112 Data, Analytics and Decision-Making 2 Credit Hours

Prerequisite: Graduate standing and EMBA majors only. Develops skills in data analytics including managing data resources, techniques for analysis, visualization, security and privacy, and data-driven decision-making. Particular attention is paid to disruptive technologies, governance, and organizational issues in deepening analytics capabilities in the energy industry. (Irreg.)

## EMBA 5131 Renewable Energy Resources 1 Credit Hour

Prerequisite: Graduate standing and EMBA majors only. Considers interest in renewable energy from the view that meeting global energy demand is "all of the above." Examines traditional energy firms possibly adding alternative energy to its offerings. Provides student with a broad overview of how renewable energy affects markets today, renewable energy technology, and its cost effectiveness compared to other energy sources and its future penetration rate projections. (Irreg.)

- EMBA 5141 Supply Chain Management 1 Credit Hour**  
Prerequisites: Graduate standing, EMBA students only. An overview of supply chain management principles and management considerations vis-a-vis the energy industry. Students are exposed to frameworks to evaluate the efficiency and effectiveness of a supply chain function, methodologies for managing organizational expenditures, and techniques for maximizing value from supply chain operations. Additional topics are: strategic sourcing, inventory management, global sourcing, contract management, and ethics. (Irreg.)
- EMBA 5142 Derivatives and Energy Trading 2 Credit Hours**  
Prerequisite: Graduate standing and EMBA majors only. Provides a comprehensive review of the organization and structure of the market for energy assets and commodities. Topics include trading platforms, pricing issues, forecasting, role and linkage with associated futures, forwards and options contracts, "basis" and spreads, hedging strategies, the principles governing the valuation of these "derivative" securities, and the ways in which these securities can be used effectively. (Irreg.)
- EMBA 5152 Derivative Securities and Markets 2 Credit Hours**  
Prerequisites: graduate standing, EMBA students only. Develop an understanding, both intellectual and practical, of the organization and micro-structure of the markets for forward, futures, and options contracts, the principles governing the valuation of these "derivative" securities, and the ways in which these securities can be used effectively in investment banking, portfolio management, hedging, and risk management. Particular attention is paid to energy derivatives and the perspective of the energy sector. (Irreg.)
- EMBA 5162 Energy Assets and Commodities Trading 2 Credit Hours**  
Prerequisites: graduate standing, EMBA students only. Provides a comprehensive and in-depth review of the market for energy assets and commodities: including trading platforms, pricing issues, forecasting, role and linkage with associated futures, forwards and options contracts, study of "basis" and spreads, and hedging strategies. The course will be anchored solidly within a theoretical conceptual framework and be supported with relevant case studies. (Irreg.)
- EMBA 5182 Enterprise Valuation, Mergers and Acquisitions, and Corporate Restructuring 2 Credit Hours**  
Prerequisite: graduate standing, EMBA students only. The course covers major aspects of M&A and other corporate restructuring transactions; reasons that deals are done, the mechanics of the transactions, the valuation of the firms involved, various aspects of deal structure, the roles and incentives of the parties involved, and related issues. Brings together materials from previous finance courses and links financial decision-making with firm's overall business strategy. (Irreg.)
- EMBA 5191 Marketing Strategy – Changing Energy Mix and New Markets 1 Credit Hour**  
Prerequisite: Graduate standing and EMBA students only. Covers the challenges faced by the energy industry in developing new markets for its products, and how to manage customer and client relations. Students will learn practical marketing tools and how they can be used to affect corporate strategy. Topics include the strategic marketing process, oil, gas and NGL valuation, market segmentation, supply chain and logistics, pricing mechanisms and hedging. (Irreg.)
- EMBA 5201 Managing Change – Role of Leadership 1 Credit Hour**  
Prerequisite: Graduate standing, EMBA students only. Provides a theoretical understanding and skill development necessary for being an effective leader and manage organizational change. Identify ways to become a more effective leader by applying theories of human behavior to solve day-to-day problems of organizational administration. Examines core decision-making challenges, complex change scenarios, and leadership approaches and strategies to manage change in the context of the energy industry. (Irreg.)
- EMBA 5212 Valuation of Hydrocarbon Resources 2 Credit Hours**  
Prerequisite: Graduate standing, EMBA students only. This course brings together concepts to make better economic decisions in the energy industry. Examines ways to evaluate an energy project's economic viability from an investment opportunity and develop the skills needed to make economic evaluations to assess such projects. The participants perform economic evaluations of field development projects and practice creating value during negotiation skills for an oilfield acquisition. (Irreg.)
- EMBA 5222 Corporate Energy Finance 2 Credit Hours**  
Prerequisite: Graduate standing, EMBA students only. Provides students with the analytical and conceptual skills required in the modern practice of corporate financial management in energy organizations. Will focus on three key areas: (1) optimal allocation of capital; (2) optimal choices for raising capital; (3) optimal management of risk in conjunction with (1) and (2), including measuring and managing risks in energy companies. (Irreg.)
- EMBA 5232 Hydrocarbon Law and Regulations 2 Credit Hours**  
Prerequisite: Graduate standing, EMBA students only. From "wellhead to burner-tip" or "shale to sail" - This course will cover the law and regulation related to the full value chain of energy: upstream, midstream (transport, gathering, processing, fractionation); downstream (oil, gas, liquids - petrochem, refining, industrial, commercial, residential). This class will primarily focus on oil and gas but will also cover electric, coal, renewable, and international energy (Irreg.)
- EMBA 5242 Reserve Valuation and Reporting 2 Credit Hours**  
Prerequisites: graduate standing, EMBA students only. Key objectives are learning compliant methods of preparing reserves/resources estimates, learning to estimate and understand the composition of and variables to the estimates, understanding the impact of economics on those estimates, properly classifying those estimates using current industry accepted definitions, and understanding the use of reports. Will discuss utilizing a reserves report as the basis for company modeling projections. (Irreg.)
- EMBA 5251 Electric Utility Fundamentals 1 Credit Hour**  
Prerequisite: Graduate standing and EMBA majors only. This course covers material on basic concepts, terms, and the integration of primary functions in electric utility systems, including an overview of the utility regulatory environment and markets, general business model of regulated and unregulated utilities, and electric generation options and economic dispatch. (Irreg.)
- EMBA 5261 Energy and Environment 1 Credit Hour**  
Prerequisite: Graduate standing and EMBA majors only. An introduction to the global energy industry's past, present, and future, along with the history and current issues/challenges that different regions face. The course provides a broad look at the fundamentals (resources, politics, culture, regulatory, and legal framework, plus environmental issues) that impact world energy supply and demand. (Irreg.)

- EMBA 5271 Energy and Environment II 1 Credit Hour**  
Prerequisite: Graduate standing, EMBA 5261, and EMBA majors only. Introduces energy system from an environmental and human health perspective, and the industry's social license to operate. Examines energy supply and use, its environmental and human health impact and mitigating factors. Discusses energy system organization: how we got here, how it operates, feasible paths going forward, and how to leverage forces of change for a more sustainable energy future. (Irreg.)
- EMBA 5281 Introduction to Energy Systems I 1 Credit Hour**  
Prerequisite: Graduate standing and EMBA in Renewables majors only. This course is designed to help understand the earth's energy system and the potential impact of human activity by providing a broad understanding of the current energy system, its challenges, particularly with respect to the environment, and possible paths to a sustainable energy future. (Irreg.)
- EMBA 5291 Electric Power Systems 1 Credit Hour**  
Prerequisite: Graduate standing and EMBA in Renewables majors only. This course discusses power systems and environmental consequence, electric circuit theory, principles and practices of the electrical power industry. The course provides an understanding of how, in an electricity grid, power generation and power consumption are closely matched; integrating renewable energy resources into the grid; and the business model of regulated and unregulated utilities, generation options, and economic dispatch. (Irreg.)
- EMBA 5301 Transportation and Residential, Commercial & Industrial Energy Systems 1 Credit Hour**  
Prerequisite: Graduate standing and EMBA in Renewables majors only. This course covers the technical and economic structure of energy consumption, and the drivers of energy demand in the transportation, residential, commercial and industrial sectors, which define the set of services that can be supplied by renewable sources in each sector. (Irreg.)
- EMBA 5312 Introduction to Accounting for Renewable Energy 2 Credit Hours**  
Prerequisite: Graduate standing and EMBA in Renewables majors only. This course provides an understanding of the accounting cycle with emphasis on the proper accounting treatment of renewable energy activities; uses accounting concepts and applies them to specific reporting and decision-making issues in renewables; and discusses the analysis and presentation of financial statement information for renewable energy companies and cost systems analysis for product costing, decision making, and cost management. (Irreg.)
- EMBA 5322 Managing Change in Renewables - Strategy and Leadership 2 Credit Hours**  
Prerequisite: Graduate standing and EMBA in Renewables majors only. This course provides an understanding of the implementation of major strategic organizational changes and the fundamental leadership theories and management practices associated with managing change within the energy industry, providing participants with the necessary framework and tools to effectively lead organizational changes, with attention placed on the human side of change and how to plan for and manage change accordingly. (Irreg.)
- EMBA 5331 Accounting for Renewable Energy 1 Credit Hour**  
Prerequisite: Graduate standing and EMBA in Renewables majors only. This course will cover advanced financial topics for renewable energy companies, such as financial statement disclosures specific to entities engaged in renewable energy, depreciation and depreciation reserves, accounting for derivatives, and tax equity and tax benefits for renewable energy industry. (Irreg.)
- EMBA 5341 Cyber-Physical Security and Resilience for Smart Grid 1 Credit Hour**  
Prerequisite: Graduate standing and EMBA in Renewables majors only. This course covers introductory topics in cyber-physical systems security, provides a layered perspective of the smart grid security, and provides an overview of the interactions among system components and the interaction between external forces and the system, breaches and enforcement, standardization, best practices, policies, privacy, and legal issues. (Irreg.)
- EMBA 5351 Renewable Energy Law and Regulations 1 Credit Hour**  
Prerequisite: Graduate standing and EMBA in Renewables majors only. The course will be an introduction to the ethical and regulatory issues as well as the legal framework governing renewable energy production and consumption. (Irreg.)
- EMBA 5361 Introduction to Energy Systems II 1 Credit Hour**  
Prerequisite: Graduate standing, EMBA 5281, and EMBA in Renewables majors only. This course provides a framework for thinking about why energy-related events are happening in the world, what they may mean for future energy use and by extension societal and environmental well-being, and how we might improve our current energy system moving forward. (Irreg.)
- EMBA 5371 Data Analytics and Digitization 1 Credit Hour**  
Prerequisite: Graduate standing and EMBA in Renewables majors only. This course provides a broad-based introduction to the use of data science for understanding sustainability problems and energy systems. Course materials will address developing a foundational understanding of terminology, methods, applications, and tools that are employed across all energy sectors, with emphasis on renewable energy. (Irreg.)
- EMBA 5381 Renewable Energy Analysis and Forecasting 1 Credit Hour**  
Prerequisite: Graduate standing and EMBA in Renewables majors only. To reduce the uncertainty inherent in demand and generation, system operators rely upon load and generation forecasts to balance electricity supply and demand. Generating forecasts are critical to reducing the uncertainty associated with variable renewable energy (RE) generation. This course will provide an overview on forecasting to inform estimates of the level and location of generation in the near future. (Irreg.)
- EMBA 5391 Renewable Energy Project – Business Plan 1 Credit Hour**  
Prerequisite: Graduate standing and EMBA in Renewables majors only. This course provides an overview of preparing a business plan for a renewable energy project and how to evaluate renewable energy project financing and investment opportunities, with particular emphasis on intermittent technologies like solar and wind. (Irreg.)
- EMBA 5402 Renewable Energy Project – Develop, Implement, and Manage 2 Credit Hours**  
Prerequisite: Graduate standing and EMBA in Energy majors only. The course will follow the progression of the development of an energy project, from early-stage site and offtake development issues, through construction and project financing, through operation. Teams determine which renewable energy they want to focus on and develop business propositions accordingly. (Irreg.)
- EMBA 5403 Renewable Energy Project (Capstone) 3 Credit Hours**  
Prerequisite: Graduate standing and EMBA in Renewables majors only. The course will follow the progression of the development of an energy project, from early stage site and offtake development issues through construction and project financing through operation. Teams determine which renewable energy they want to focus on and develop business propositions accordingly. (Irreg.)

**EMBA 5412 Carbon Management: Strategies and Steps 2 Credit Hours**

Prerequisite: Graduate standing and EMBA in Energy majors only. Carbon footprint is the amount of carbon dioxide, or Greenhouse Gas Emissions, that organizations contribute to the environment. This course is on developing and implementing a long-term carbon management plan to provide an organization with strategies and steps that will help prepare the organization for the physical and economic risks of climate change, remaining competitive in a low carbon economy. (Irreg.)

**EMBA 5421 ESG and Sustainability 1 Credit Hour**

Prerequisite: Graduate standing and EMBA in Energy majors only. Sustainability factors are part of the fundamentals needed to attain higher returns, organizational resilience, and stakeholder trust. Environmental, social, and governance (ESG) risks have gained increasing attention, and organizations are seeking to proactively manage and report on their ESG risks. This course will provide an understanding of ESG and how to implement sustainable ESG requirements. (Irreg.)

**EMBA 5431 Financing Hydrocarbon Projects 1 Credit Hour**

Prerequisite: Graduate standing and EMBA in Energy majors only. This course is designed to teach students how to finance hydrogen projects and to provide an understanding of the steps involved in valuation, financing, structuring a deal, addressing carbon footprint issues, and packaging for presentation for securing investments. (Irreg.)

**EMBA 5441 Renewable Energy Technology and Innovation 1 Credit Hour**

Prerequisite: Graduate standing and EMBA in Energy majors only. Innovations in renewable energy encompass all new approaches that help to overcome barriers and result in accelerated deployment of renewables supporting the energy transition. Innovation powers the ongoing transformation of the global energy system. This course provides a broad overview about energy-related innovation and technology issues, and what they may mean for the future of energy and energy transition. (Irreg.)

**EMBA 5451 Renewable Energy Project Valuation 1 Credit Hour**

Prerequisite: Graduate standing and EMBA in Energy majors only. This course introduces valuation concepts and the main factors affecting the valuation of a broad range of renewable energy assets, projects, and business enterprises. (Irreg.)