

ENERGY (ENRG)

ENRG 4100 Energy Markets, Economics, and Policy (3)

The course covers a range of energy-related topics including major challenges and policy issues facing the industry and the energy transition underway. The course includes learning energy business models across the spectrum of conventional and renewable energy production, energy economics, the energy policy environment, energy markets, energy technology, and the environment and sustainable development. Students complete group projects including a business case supported debate on high profile energy policies and an individual paper on the future energy systems. The course prepares students to take additional energy business courses to be able to obtain an energy specialization to select undergraduate degrees. Sophomore Standing or Above.

Prerequisite(s): ECON 1020.

ENRG 4110 Energy Financial Modeling (3)

This course makes the connection between learning textbook finance principles and doing real-world valuations and modeling on public companies. The applications are particularly appropriate in equity research, buy side (hedge fund) financial modeling and investment banking. The course focuses on applications in the energy industry, with an emphasis on financial modeling of renewable energy companies (solar industry), energy transition (electric vehicle) companies, as well as traditional energy companies (oil and gas exploration and production). The course focuses on generating pro-forma financial statements and discounted cash flow valuations using excel based spreadsheets. Class members will generate their own financial models and the professor will guide each student, step-by-step, through the models, showing how they can be best approached in Excel. While the course focuses on the energy industry, its focus on the growth area of the energy transition has should help students to also analyze other growth oriented industries or companies. The traditional energy portion is applicable to other cyclical industries such as mining or metals. Students must have a good grasp of Excel before taking this class.

Prerequisite(s): MGSC 3010 and FINE 3010*.

* May be taken concurrently.

ENRG 4150 Electric Vehicles and the Supply Chain (3)

The course covers the businesses, economics, policies, and technologies enabling the electrification of various modes of transportation—road, railroad, marine, air. Sub-segments within each of these modes are adopting electric drivetrains at varying speeds. Currently in the US, transportation accounts for C. 25% of energy consumption and is over 90% fueled by petroleum as its primary energy source. The transition from internal combustion to electric drivetrains is not only capital intensive, but also involves building and scaling new supply chains involving various critical minerals spanning geopolitically sensitive regions of the world. The automotive industry intercepts a wide range of industries—batteries; chemicals and materials; electrical, electronic and mechanical components and parts; engines; fuels; semiconductors; software; among many others such as dealerships, insurance and other service providers—and are subject to several disruptive forces. The pathways legacy players and new entrants take to be aligned with their stakeholders' (communities, consumers, employees, investors, policymakers, etc.) expectations will involve numerous tradeoffs to arrive at good business decisions and investments. The supply chain will likely see a fair number of mergers and acquisitions in the near-term.

Prerequisite(s): FINE 3010.

ENRG 4200 Energy Fundamentals and Trading (3)

The course will cover the fundamentals of renewable and conventional energy production, transportation, processing, power, and the related marketing and trading activities. Structure of physical and financial markets, risk management practices, and portfolio modeling will be covered. The course will cover how the energy markets have evolved as more U.S. federal and local government incentives and mandates have increased the demand of renewable energy sources such as wind, solar, and biomass. The course will include interactive trading in the Freeman School's state-of-the-art trading room, which will focus on the futures market of the New York Mercantile Exchange (NYMEX) to test student-developed trading strategies, mark-to-market models, and risk management tactics used in today's fast-paced energy trading environment. Junior Standing or Above.

Prerequisite(s): MGSC 3010 and FINE 3010.

ENRG 4410 Special Topics (1-3)

This course is based on Industry Projects and gives undergraduate juniors and seniors the opportunity to learn first-hand about the energy industry by participating in a company-sponsored project. During the course, students will work in teams to analyze and research an industry issue, topic or company and prepare a written project report and accompanying presentation. Research material may include company-provided proprietary data which requires students to sign non-disclosure agreements. The final presentation, project reports and case analyses will be judged by both project sponsors and faculty. Students will be assigned to a team to work together on a project which will be their focus throughout the semester. Weekly progress meetings will allow faculty and sponsors to track the progress of the individual projects and allow the students to make "midcourse" corrections.

Prerequisite(s): ECON 1010 and ENRG 4100*.

* May be taken concurrently.

ENRG 4610 Energy Trends: Electric Power Markets (3)

This course covers the fundamental concepts necessary to maintain and operate an efficient, wholesale electric power market. Through in-class simulations, students will apply concepts from operations management, economics, risk management and negotiations to manage physical and financial power portfolios. Lecture topics will include deregulation/industry segmentation, security constrained economic dispatch (including unit commitment and scheduling), locational marginal pricing, resource development (including traditional thermal and renewable resources), and contract negotiation. Instructor-led case studies will review historic successes and failures of deregulated energy firms. Successful completion of this course will provide students with a firm understanding of electric power market operations and portfolio management. Prerequisite(s): ECON 1010 and FINE 3010 and (ENRG 4100, 4110 or 4120).

Prerequisite(s): ECON 1010 and FINE 3010 and (ENRG 4100, 4110 or 4120).

ENRG 4710 Energy Portfolio Management (3)

This course teaches students how to select and analyze companies in the Energy sector and use this knowledge to study and build investment portfolios of energy assets (an Energy sector fund). After taking this course, students should be able to apply to Energy stocks the same key investment concepts and theories that asset management professionals use. Students will learn how professional equity analysts value energy companies; be able to accurately calculate and interpret key quantitative values and evaluate energy assets; apply stock selection criteria to identify investments suitable for an energy sector fund; study and build portfolios using different energy assets and investment styles; and evaluate portfolios against benchmarks and other metrics, including expected return, risk, and other financial measures. Prerequisites: FINE 4110, FINE 4120

Prerequisite(s): FINE 4110 and 4120.

ENRG 4730 Energy Investment Banking (3)

Energy Investment Banking is designed for students who wish to learn about the concepts and practice the methodologies of investment banking with companies in the energy industry. The course builds on the core finance topics covered in Financial Management and covers financial analysis and modeling, valuation, capital raising in the public markets including initial public offerings and bond financings, private placements of debt and equity securities, mergers, acquisitions, and financial advisory services. Students will apply their newly acquired knowledge in practical assignments and presentations that utilize information from publicly traded energy companies operating in a variety of industry segments including renewables, storage, exploration and production, oilfield services, utilities, transportation, and others.

Prerequisite(s): FINE 3010 and MGSC 3010.

ENRG 4890 Service Learning (0-1)

Students complete a service activity in the community in conjunction with the content of a three-credit co-requisite course. Course may be repeated up to unlimited credit hours.

Corequisite(s): ENRG 4411.

Maximum Hours: 99

ENRG 4910 Independent Study (1-3)

Course may be repeated up to unlimited credit hours.

Maximum Hours: 99

ENRG 5380 Business Study Abroad - ENRG (1-20)**ENRG 5390 Business Study Abroad - ENRG (1-20)**

Course may be repeated up to unlimited credit hours.

Maximum Hours: 99

ENRG 7000 Introduction to Energy Markets and Policy (3)

This course serves as the baseline for the Master of Management in Energy degree and introduces multiple aspects of the domestic and international energy industry. The course covers energy fundamentals as well as the business structure for energy production, transportation, and ultimate consumption. Specific energy sources include conventional and unconventional oil and gas resources as well as renewables, such as wind, solar, and hydroelectric. Field trips to multiple energy facilities and plants in the area are integral to the course. This course takes the place of ENRG 7100 for MME students; therefore, ENRG 7100 cannot be taken as an elective for MMEs.

ENRG 7100 Energy Mkts, Inst & Pol (3)

This course covers a range of energy-related topics including major challenges and policy issues facing the industry, history and structure of the industry, company profiles and strategies, energy economics, energy markets, energy regulation, energy technology, and sustainable development. Faculty associated with the Tulane Energy Institute will lecture on the history, structure, and economics of the energy sector and its importance in the growth of modern economies. The course also includes a series of presentations by industry participants including energy economists, sell-side analysts, industry regulators, upstream oil and gas operators, midstream and downstream participants, as well as representatives of the myriad companies that provide services to the direct participants.

ENRG 7110 Energy Modeling (3)

This course makes the connection between learning textbook finance principles and doing real-world valuations and modeling on public companies. The applications are particularly appropriate in equity research, buy side (hedge fund) financial modeling and investment banking. The course focuses on applications in the energy industry, with an emphasis on financial modeling of renewable energy companies (solar industry), energy transition (electric vehicle) companies, as well as traditional energy companies (oil and gas exploration and production). The course focuses on generating pro-forma financial statements and discounted cash flow valuations using excel based spreadsheets. Class members will generate their own financial models and the professor will guide each student, step-by-step, through the models, showing how they can be best approached in Excel. While the course focuses on energy industry, its focus on the growth area of the energy transition should help students to also analyze other growth-oriented industries or companies. The traditional energy portion is applicable to other cyclical industries such as mining or metals. Students must have a good grasp of Excel before taking this class.

Prerequisite(s): ENRG 7000, FINE 6020 or 6050.

ENRG 7120 Energy Data Analysis (3)

This course emphasizes the analysis of different forms of quantitative data in energy markets, energy production, demand, and supply. The course introduces various interpretive analytic approaches, explores their uses, and guides students in applying them to energy data. The danger of using quantitative methods lies in the lack of fundamental understanding of the justification for the use of a procedure, how to use it correctly, and how to properly interpret results. This course addresses these pitfalls. The course covers the process of extracting meaning from data to support evaluation and decision making by using modern spreadsheet technology such as Microsoft Excel. The class explores data sets from Thomson Reuters and LIM and covers their key technical charting tools, employs statistical thinking to provide understanding of the variation in data, and draws insights into relationships that may exist among underlying factors. The course also covers the basics of cash flow analysis and introduces the elements of financial data interpretation.

Prerequisite(s): ENRG 7000.

ENRG 7130 Energy & Environ Economics (3)

In this course, students apply analytical skills to solving problems in energy markets and environmental issues. Students will address business and public policy issues involved in the oil, natural gas, and electric industries including renewable and demand-side resources. Students will analyze capital intensive investment decisions in an era of uncertainty using the At Risk modeling tool. This allows analysts to compute the probability of success of a large investment decision and to identify the key sources of risks that need to be mitigated. Students will study how negative externalities in energy industries are mitigated through regulations. Positive externalities are also studied from the network effects which are the basis of many platform companies. This course is designed to apply micro- and macro-economic principles used in the Chartered Financial Analyst (CFA) Level 1 exam.

Prerequisite(s): ENRG 7000.

ENRG 7150 Electric Vehicles and the Supply Chain (3)

The course covers the businesses, economics, policies, and technologies enabling the electrification of various modes of transportation—road, railroad, marine, air. Sub-segments within each of these modes are adopting electric drivetrains at varying speeds. Currently in the US, transportation accounts for C. 25% of energy consumption and is over 90% fueled by petroleum as its primary energy source. The transition from internal combustion to electric drivetrains is not only capital intensive, but also involves building and scaling new supply chains involving various critical minerals spanning geopolitically sensitive regions of the world. The automotive industry intercepts a wide range of industries—batteries; chemicals and materials; electrical, electronic and mechanical components and parts; engines; fuels; semiconductors; software; among many others such as dealerships, insurance and other service providers—and are subject to several disruptive forces. The pathways legacy players and new entrants take to be aligned with their stakeholders' (communities, consumers, employees, investors, policymakers, etc.) expectations will involve numerous tradeoffs to arrive at good business decisions and investments. The supply chain will likely see a fair number of mergers and acquisitions in the near-term.

Prerequisite(s): ENRG 7000, 7100, FINE 6010, 6060 or 6470.

ENRG 7200 Energy Fund & Trading (3,4)

The course will cover the fundamentals of renewable and conventional energy production, transportation, processing, power, and the related marketing and trading activities. Structure of physical and financial markets, risk management practices, and portfolio modeling will be covered. The course will cover how the energy markets have evolved as more U.S. federal and local government incentives and mandates have increased the demand of renewable energy sources such as wind, solar, and biomass. The course will include interactive trading in the Freeman School's state-of-the-art trading room, which will focus on the futures market of the New York Mercantile Exchange (NYMEX) to test student-developed trading strategies, mark-to-market models, and risk management tactics used in today's fast-paced energy trading environment.

ENRG 7210 Energy Acctng & Valuation (3)

This course covers the fundamentals of the oil and natural gas exploration and production process (E&P or upstream) and the key financial decisions and metrics. The various operational steps and related financial decisions are followed through to their ultimate impact to a public E&P company's external financial statements. Students are able to understand the immediate impact of various decisions on a company's cash and non-cash financial performance which in turn lead to future financial and operational flexibility and success. Prerequisite(s): ENRG 6000 or ACCN 6050.

Prerequisite(s): ACCN 6050 or 6030.

ENRG 7220 Energy Accounting & Financing (3)

This course covers the fundamentals of the oil and natural gas exploration and production process (E&P or upstream) and the key financial decisions and metrics. The various operational steps and related financial decisions are followed through to their ultimate impact to a public E&P company's external financial statements. Students are able to understand the immediate impact of various decisions on a company's cash and non-cash financial performance which in turn lead to future financial and operational flexibility and success.

ENRG 7310 Adv Energy Trading & Finance (3)

The course covers advanced energy trading techniques, including technical analysis, electronic trading algorithms, and the trading of energy derivatives. In addition, the course considers the use of energy derivatives in the area of energy finance, valuations, planning, credit and risk management, and interactive trading in the school's state-of-the-art trading facility.

ENRG 7500 Energy Risk Management (3)

The course balances both the qualitative and the quantitative aspects of the risk in energy markets. The course begins with a broad qualitative look at risk scenarios. For a qualitative perspective, the course draws heavily from Foundations of Energy Risk Management (FERM) and from Managing Energy Risk (MER). For the quantitative aspects such as forwards, MR Models and options, the course relies primarily on Energy and Power Risk Management (EPRM) and Energy Risk (ERVM). Topics covered include the economic impacts of pricing and investment decisions in these industries, privatization of publicly-owned energy assets, regulation of monopolies and antitrust, the transportation and storage of energy commodities, and the economics of renewable energy sources. Major policy trends related to energy production and use, such as deregulation, climate change, and environmental impacts, are critically analyzed. The course focuses on risk management applications from the perspective of an energy company.

Prerequisite(s): ENRG 7110 or FINE 6020.

ENRG 7610 Trading: Wholesale Elec Mkts (3)

This course covers the fundamental concepts necessary to maintain and operate an efficient wholesale electric power market. Through in-class simulations, students will apply concepts from operations management, economics, risk management, and negotiations to manage physical and financial power portfolios. Lecture topics will include deregulation/industry segmentation, security constrained economic dispatch (including unit commitment and scheduling), locational marginal pricing, resource development (including traditional thermal and renewable resources), and contract negotiation. Instructor-led case studies will review historic successes and failures of deregulated energy firms. Successful completion of this course will provide students with a firm understanding of electric power market operations and portfolio management.

ENRG 7730 Energy Investment Banking (3)

Energy Investment Banking is intended for students who wish to be introduced to, to learn about, and to implement the concepts and methodologies of energy investment banking as currently practiced in the investment banking industry. It builds on the core finance topics covered in financial management. Corporate financial strategy will be covered in the context of capital raising alternatives available to actual E&P and oilfield services companies operating in the energy industry. Concepts and methods of valuing energy companies and analyzing, proposing, and completing financing for energy companies will be covered. The financings that will be examined and thoroughly discussed include initial public offerings, follow-on equity offerings, merger and acquisition engagements, long-term debt issuance, and strategic financial advisory services. Students will be required to develop, present, and discuss financing alternatives for selected companies operating in the energy space.

Prerequisite(s): ENRG 7000*, FINE 6020 or 6050.

* May be taken concurrently.

ENRG 7830 Energy Regulation (3)

This course will begin with an overview of the global energy situation in terms of supply and demand as well as balanced projections for the coming decades both here and abroad. It then will proceed to examine the primary sources of energy along with the multi-faceted role of electricity as the central source of secondary energy in our economy. This portion of the course will cover in some detail how these energy sources are used and regulated from economic, reliability, and environmental perspectives. There will therefore be a review of legal and regulatory principles governing fossil fuel extraction and use, the coal industry, nuclear power, a range of renewable energy sources, and finally the regulation of electricity generation, transmission, and distribution. The course will conclude with a brief review of the growing role of conservation and climate change in energy markets here and to some extent abroad. There will be an essay-based final examination and class participation will certainly be encouraged.

ENRG 7840 Energy Industry Projects (3)

Students work in teams on energy projects sponsored by faculty and energy industry executives. Each team is expected to analyze and research an energy industry issue and to prepare written project reports, presentations, or cases. The final project reports, presentations, and cases are evaluated by the project sponsors. Prerequisite: ENRG 7000 or permission of instructor.

Prerequisite(s): ENRG 7000.

ENRG 7850 Renewable & Electric Power Mkt (3)

This seminar-style course provides an in-depth analysis of the wholesale power markets and how the demand for renewables is changing the way the industry operates. Students will analyze key models used in the power sector. These include models of load forecasting, power dispatch with renewables, rate design, and regulatory strategies. Students will gain an understanding of the various ISO/RTO wholesale markets and how changing market rules affect wholesale market performance. Students will also research the current challenges and opportunities for sustainable development in energy use and present case studies in class.

ENRG 7860 Renew Enrg Proj Devl & Finc (3)

This seminar provides a practical introduction to the concepts and analytical frameworks currently utilized in project finance. The course will focus on the renewable energy sub-sector, which is the fastest-growing segment of project finance and is the area with the most numerous current investment opportunities. The course takes a hands-on approach, exposing students wherever possible to real-world investment scenarios and issues confronting practitioners in the sector.

Prerequisite(s): ENRG 7000, FINE 6020 or 6050.

ENRG 7960 Independent Study (1-3)

Independent study: Energy.

ENRG 8010 Energy Economics and Markets (3)

This course discusses global and national markets for oil, natural gas, coal, and renewable energy; examines public policies affecting energy markets including taxation, price regulation and deregulation, and investigates energy efficiency and energy security. Its objective is to help students to develop an understanding of the underlying economics of energy demand, energy supply, energy market structure, energy price mechanisms, and the relationships among energy and politics.

ENRG 8020 Economics of Energy, Env & Mkt (3)

The curriculum is aimed to enable students to systematically grasp basic concepts, basic principles and basic analysis methods of climate economics, environmental economics, and energy economics. Keep abreast of the latest developments and major research directions in the current economics on energy, environment and climate change, new ideas, new methods and new dynamics in various relevant directions; develop the ability to solve practical problems to some extent, and lay a solid foundation for future research and innovation in the field of energy and environmental management.

ENRG 8030 China Enrg System & Transition (3)

This course aims to help students understand the changing trends of the energy sector, the transformation of the energy system and the logic of the evolution of China's energy system by learning basic concepts, theories and methods of energy transition and energy systems. It also aims to provide the "big energy" system thinking and analytical framework for students to understand the trends of China's energy industry in the process of technological change and energy transition.