ECONOMICS (ECON)

ECON 5000 Special Problems (IND 0.0-6.0)
Problems or readings on specific subjects or projects in the department. Consent of instructor required.

ECON 5001 Special Topics (LAB 0.0 and LEC 0.0)
This course is designed to give the department an opportunity to test a new course.

ECON 5010 Seminar (RSD 0.0-6.0)
Discussion of current topics.

ECON 5310 Advanced Mathematical Economics (LEC 3.0)
Marginal analysis, calculus, and linear algebraic systems are applied in selected advanced topics in economics such as price theory, general equilibrium theory, input-output analysis, activity analysis, and game theory. This course is an advanced version of Econ 4310, and will include additional research and project assignments. Credit cannot be obtained for both Econ 4310 and Econ 5310. Prerequisites: Econ 2100, 2200 and Math 1208, Math 3103.

ECON 5337 Financial Mathematics (LEC 3.0)
The course objective is to provide an understanding of the fundamental concepts of financial mathematics. Topics include pricing, assets-liability management, capital budgeting, valuing cash flow, bonds, futures, swaps, options. Preparation for the financial mathematics actuarial exam will be provided. Prerequisites: Math 1215 or Math 1221, Econ 1100 or Econ 1200, and one of the following: Stat 3111, Stat 3113, Stat 3115, Stat 3117 or Stat 5643. (Co-listed with Math 5737).

ECON 5338 Innovation and Value Generation (LEC 3.0)
This course introduces a structured framework for understanding and executing the innovation process, from ideation to implementation. It emphasizes a systematic approach to identifying real-world needs, crafting solutions, and transforming them into impactful outcomes, providing strategies for identifying customer needs and determining innovative solutions. (Co-listed with Chem Eng 5338, Min Eng 5338, and Nuc Eng 5338).

ECON 5360 Data Driven Strategic Insights (LEC 3.0)
This course designates a corporate executive to teach identifying the appropriate data analytics for corporate decision-making using modeling frameworks such as regression analysis, forecasting, Monte Carlo simulation, and optimization. The course utilizes Python and cloud-based software platforms to work with large databases in financial contexts. Prerequisites: Econ 1100, Econ 1200, and Econ 3300, or instructor approval. (Co-listed with Nuc Eng 5360).

ECON 5380 Data Intelligence using Case Studies (LEC 3.0)
This course designates a corporate executive to teach students the processes of data collecting, analyzing, visualization, and statistical tests with case studies from various industries. Students will have the opportunity to do group projects showcasing their ability to apply data intelligence in real-world scenarios using Python programming. Prerequisite: Econ 1100 and Econ 1200, and one of the following: Stat 3111, Stat 3113, Stat 3115, Stat 3117, or Stat 5346, with programming knowledge, or instructor approval.

ECON 5430 Advanced Cost-Benefit Analysis (LEC 3.0)
Investigates the rationale for cost-benefit analysis within a free enterprise setting. Discussion of market efficiency and failure; determination of social costs and benefits; applications of cost-benefit analysis; and, problems remaining in theory and practice. This course is an advanced version of Econ 4430, and will include additional research and project assignments. Credit cannot be obtained for both Econ 4430 and Econ 5430. Prerequisite: Econ 2100.

ECON 5532 Advanced Mining Economics (LEC 3.0)
Mining industry & national economics. Social & economics significance of mined commodities. Marketing of mined commodities. Innovation approaches to mine financing, project loans, and leasing. Mining feasibility studies, government influence & policy, mining industry foreign investment, investment strategies, mining taxation, cost predictions. Case Studies. (Co-listed with MIN ENG 5532).

ECON 5543 Innovation Economics and Finance (LEC 3.0)
This course teaches rapid project development and financing, from an idea to a revenue-generating asset. It covers process ideation, technology/vendor selection, financial modeling, contract structuring, non-recourse financing, and project execution, such as engineering, procurement, construction, and start-up, resulting in a cash-flowing, tradeable annuity. (Co-listed with Chem Eng 5543, Min Eng 5543, and Nuc Eng 5543).

ECON 5644 Creativity, Innovation, and Sustainability (LEC 3.0)
This interdisciplinary course examines the use of innovation as a competitive technological strategy with a sustainability perspective. It explores ways in which individuals, groups, and organizations can become more creative and how leadership and a culture of change can be implemented.

ECON 5648 Innovation to Market (LEC 3.0)
This course provides the tools needed to transform innovative solutions into market-ready products and services, focusing on business model development, value generation, and product management. Students will learn to identify product-market fit, maximize value to customers and users, and launch successful innovations. Prerequisites: Econ 5338 and Econ 5543. (Co-listed with Chem Eng 5648, Min Eng 5648, and Nuc Eng 5648).

ECON 5658 Building Sustainability and Environmental, Social and Governance (ESG) (LEC 3.0)
Across the globe, businesses are increasingly recognizing the importance of sustainability and ESG principles. This course equips students with the knowledge, tool set, and skills needed to understand, implement, and integrate sustainability and ESG practices in various organizational contexts. Prerequisites: Junior or above standing. (Co-listed with Chem Eng 5658, Min Eng 5658, and Nuc Eng 5658).

ECON 5710 Advanced International Trade (LEC 3.0)
Analysis of gains from trade; the effects of factor mobility; effects of trade restrictions on trade flow and income distribution; arguments for restricting trade; and effects of trade on economic development, employment and human capital development. This course is an advanced version of Econ 4710+D1194, and will include additional research and project assignments. Credit cannot be obtained for both Econ 4710 and Econ 5710. Prerequisite: Econ 2100.

ECON 5720 Advanced International Finance (LEC 3.0)
Examination of the international monetary system, the Balance of Payments, the foreign exchange market, futures and options markets; foreign exchange and other risk management for firms, financing from a global perspective and direct foreign investment. This course is an advanced version of Econ 4720, and will include additional research and project assignments. Credit cannot be obtained for both Econ 4720 and Econ 5720. Prerequisite: Econ 2200.

ECON 6000 Special Problems (IND 0.0-6.0)
Problems or readings on specific subjects or projects in the department. Consent of instructor required.

ECON 6010 Seminar (RSD 0.0-6.0)
Discussion of current topics.

ECON 6020 Contemporary Issues in Technology and Innovation (LEC 3.0)
This course explores contemporary trends, challenges, and opportunities in technology and innovation, featuring lectures by various industrial experts. Topics include disruptive technologies, innovation strategies, regulatory and policy impacts, and emerging markets. Students will learn the forces driving change in today¿s global technology landscape. Prerequisites: Graduate standing. (Co-listed with Chem Eng 6020, Min Eng 6020, and Nuc Eng 6020).

ECON 6030 Contemporary Issues in Energy Economics (LEC 3.0)
This course explores the key challenges, trends, and opportunities shaping the future of energy, featuring insights from industry experts. It delves into the complexities of energy transition, decarbonization, policy regulation, and technological innovations, highlighting the forces driving change in the global energy economy. Prerequisites: Graduate standing. (Co-listed with Min Eng 6030 and Nuc Eng 6030).

ECON 6301 Microeconomics: Managerial and Project Economics (LEC 3.0)
This course equips students with microeconomic tools to optimize business outcomes, focusing on pricing strategies and production efficiency across different market structures. Students will learn financial feasibility modeling and incorporate uncertainty to assess the economic viability of engineering and infrastructure projects using key financial metrics. Prerequisites: Graduate standing. (Co-listed with Nuc Eng 6301).

ECON 6302 Macroeconomics: Navigating Risks and Trends (LEC 3.0)
This course explores key macroeconomic forces shaping global markets, including exchange rate volatility, fiscal and monetary policies, geopolitical uncertainty, and trade conflicts. Students will learn to navigate these complexities and interdependencies of global economic forces to improve strategic decision-making toward long-term organizational success. Prerequisites: Graduate standing.

ECON 6337 Financial Mathematics II (LEC 3.0)
Continuation of Math 5737/Econ 5337. Topics include martingales and measures, stopping times, discrete and continuous time finance, Brownian motion, Ito calculus, stochastic differential equations, Black-Scholes-Merton formula, numerical procedures. Prerequisite: Math 5737 or Econ 5337. (Co-listed with Math 6737).

ECON 6355 Econometrics and Forecasting (LEC 3.0)
This course provides an applied perspective on econometric concepts, including causal inference, discrete choice models, and statistical machine learning for forecasting. Additionally, students will be introduced to the practice of econometrics and predictive analytics through real-world applications, using the programming languages R and Stata. Prerequisites: Graduate standing.

ECON 6440 Advanced Environmental and Natural Resource Economics (LEC 3.0)
Optimum use of renewable and non-renewable resources, public goods and common resources, externalities, and quality of the environment; emphasis on public policy related to environmental and natural resource economics. As an advanced version of Econ 4440, it will include additional research assignments. Credit can't be earned for both Econ 4440 and 6440. Prerequisite: Econ 2100.

ECON 6540 Advanced Energy Economics (LEC 3.0)
Market structures. World resource development. Supply and demand analysis on energy production and consumption within domestic and global settings. This course is an advanced version of Econ 4540, and will include additional research and project assignments. Credit cannot be obtained for both Econ 4540 and Econ 6540. Prerequisite: Econ 2100.

ECON 6638 Energy Policy and Economic Analysis (LEC 3.0)
This course focuses on the economic and policy aspects of energy. Topics include energy prices, electricity market mechanisms, renewables, nuclear, alternative fuels, climate change, and the environmental consequences of energy consumption and production. The efficiency of various energy options is compared and discussed for future energy policies. Prerequisites: Graduate standing. (Co-listed with Chem Eng 6638, Min Eng 6638, and Nuc Eng 6638).

ECON 6641 Advanced Foundations of Sustainability (LEC 3.0)
This interdisciplinary course is designed as an introduction to sustainability in commerce. It examines environmental, social, and economic issues in an organized context. Principles, processes and practices in sustainability will be explored. Project or written case study required.

ECON 6642 Global Eco- and Social-preneurship and Innovation (LEC 3.0)
This interdisciplinary course applies an entrepreneurial mindset to the environmental and social opportunities and challenges facing the global community. Topics are examined from multiple perspectives; nonprofit, hybrid, and for-profit organizations. Written case studies required. Research project required. Prerequisites: Econ 6641.

ECON 6643 Advanced Ethical Problems in a Global Environment (LEC 3.0)
Focuses on the international dimension of ethics including corporate responsibility from economic, social, and environmental perspectives. It addresses the ethical challenges of decision-making, stakeholder engagement, and governance at micro-(personal), and meso-(org), and macro-(systems) levels. Case studies will be included as part of the course.
