

ECONOMICS

The department of economics has entered into a cooperative agreement with the department of economics of the University of Missouri-St. Louis to offer a master of arts in economics. A maximum of 12 graduate semester hours may be taken at Missouri S&T (with no more than 9 credit hours at the 4000-level).

Management for Sustainable Business

This certificate in management for sustainable business addresses an identified need to provide science and engineering students with business knowledge and professional skills to further their careers in business sustainability. The certificate will focus on building knowledge and competencies, specifically in the area of environmental sustainability of a business organization. The proposed program will provide professionals with the skills necessary for rapidly advancing themselves in the workplace, and more importantly, rapidly advancing the general knowledge base and skill set in their professional workplaces.

The curriculum consists of the following:

ECON 6641	Advanced Foundations of Sustainability
ECON 6642	Global Eco- and Social-preneurship and Innovation
ECON 6643	Advanced Ethical Problems in a Global Environment
Choose one of the following:	
ECON 6440	Advanced Environmental and Natural Resource Economics
ECON 5532/ MIN ENG 5532	Advanced Mining Economics
ECON 6540	Advanced Energy Economics
ECON 5644	Creativity, Innovation, and Sustainability
ENG MGT 5320	Project Management
ENG MGT 5513	Energy and Sustainability Management Engineering
MIN ENG 5742	Environmental Aspects of Mining
MIN ENG 6735	Sustainability In Mining

Bonnie J Bachman, Professor and Director, NSF/Missouri S&T I-Corps Site Program
PHD Rutgers University

Michael C Davis, Associate Professor
PHD University of California-San Diego

Mahelet Fikru, Associate Professor
PHD Southern Illinois University-Carbondale

Gregory Gelles, Professor Emeritus
PHD West Virginia University

Melody Lo, Steinmeyer Edowed Economics Department Chair
PHD Purdue University

Eun Soo Park, Associate Professor
PHD Northwestern University

Radu Pustlenghea, Assistant Teaching Professor
PHD University of Virginia

Yishu Zhou, Assistant Professor
PHD University of Connecticut

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 algebra 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 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 and Econ 1200.

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 1115, Stat 3111, Stat 3113, Stat 3115, or Stat 3117.

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 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 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 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 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 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.