

ECONOMIC MODELING, AI, AND DATA SCIENCE, MS

Overview

for the Master of Science in Economic Modeling, AI, and Data Science

The Economic Modeling, AI, and Data Science, MS degree (EMAIDS) combines a strong foundation in economics and data science with a discovery-based learning experience.

Students in the EMAIDS program gain a solid grounding in core economic concepts and analytical frameworks, integrated with practical applications in data science and artificial intelligence. Graduates will develop the theoretical knowledge and quantitative skills needed to uncover complex economic relationships, manage and analyze large datasets, and apply AI-enhanced methods for forecasting, classification, and pattern recognition. They will be prepared to deliver evidence-based policy recommendations and strategic solutions across diverse sectors, including business and finance, government, healthcare, and environmental organizations.

Admissions:

The Economic Modeling, AI and Data Science, MS degree program will accept applications starting from August 1st and continuing until April 1st the following year. Candidates must submit a transcript, three letters of reference, a statement of purpose and proof of English proficiency should their country of origin not have English as its home language. The GRE score is also required. Admission decisions are made on a rolling basis, starting in January and ending in April.

Degree Requirements

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Code	Title	Hours
Required Coursework		
ECON 500	Microeconomics	4
ECON 506	Programming for Economic Data Analytics	4
ECON 507	Data Analytics for Applied Economics	4
ECON 508	Econometrics for Data Science	4
Electives (choose 2):		8
ECON 522	Applied Machine Learning in Economics	
ECON 523	Causal Inference and Policy Evaluation	
ECON 524	AI and Econometrics	
One additional 500-level Elective Course in consultation with Program Director		4
Capstone Course		
ECON 509	Capstone Project in Economics and Data Science	4
Total Hours		32

Code	Title	Hours
Additional Requirements		
Minimum GPA:		3.0
Continuous enrollment is required; students not registered for a given semester must apply for a leave of absence.		
The minimum length of stay in the Program is one year (fall and spring semesters plus one summer session).		

Learning Outcomes

for the Master of Science in Economic Modeling, AI, and Data Science

1. **Analytical and Computational Problem-Solving:** Students will formulate, analyze, and solve complex economic problems using mathematical modeling, programming, simulation, advanced data science, and AI-driven techniques. They will identify appropriate tools, define assumptions, and test hypotheses using both theoretical and empirical methods.
2. **Data Proficiency, AI, and Quantitative Reasoning:** Students will acquire, clean, manage, and analyze large and complex datasets. They will apply modern statistical, econometric, machine learning, and artificial intelligence methods to extract insights, evaluate policies, and make predictions—emphasizing reproducibility, transparency, and interpretation of uncertainty.
3. **Integrated Use of Technology, AI Tools, and Programming:** Students will demonstrate proficiency in programming languages (e.g., Python, R, Julia, or Stata) and data visualization tools, incorporating AI-based workflows where appropriate, to automate processes, perform simulations, build models, and communicate findings effectively to both technical and non-technical audiences.
4. **Critical Thinking and Model Evaluation:** Students will critically assess economic models, empirical strategies, and AI/ML algorithms—evaluating underlying assumptions, trade-offs, robustness, and relevance to real-world policy and business challenges. They will compare competing models and identify limitations in their application.
5. **Interdisciplinary and Ethical Awareness:** Students will recognize the interplay between economics, AI, data science, and adjacent disciplines—such as computer science, finance, and public policy—when tackling complex societal and economic problems. They will consider ethical implications of data use, AI-driven decision-making, and policy design.
6. **Communication, Collaboration, and Leadership:** Students will effectively communicate quantitative analyses and AI-enhanced insights through written reports, oral presentations, and visualizations. They will develop teamwork and leadership skills, preparing them to work across disciplines and engage diverse audiences.
7. **Professional Readiness and Application:** Students will apply their skills in professional contexts—through capstone projects, internships, or real-world case studies—demonstrating their ability to address AI- and data-intensive economic problems in industry, government, or international organizations.

Contact Information

for the Master of Science in Economic Modeling, AI, and Data Science

Economics Department

Head of the Department: George Deltas

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Economics Department website (<http://www.economics.illinois.edu/>)

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College of Liberal Arts & Sciences

College of Liberal Arts & Sciences website (<https://las.illinois.edu/>)

Admissions

Graduate College Admissions & Requirements (<https://grad.illinois.edu/admissions/apply/>)