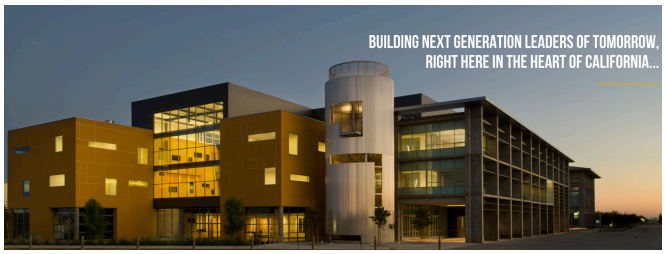
MANAGEMENT ANALYTICS AND DECISION-MAKING (MAD) MINOR

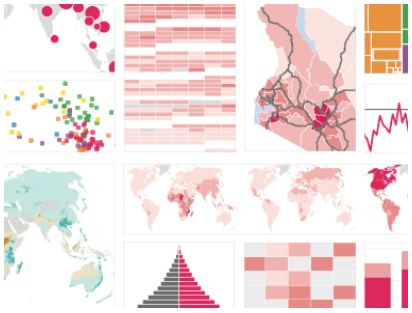
DEPARTMENT OF MANAGEMENT OF COMPLEX SYSTEMS
SCHOOL OF ENGINEERING
UNIVERSITY OF CALIFORNIA, MERCED

The MAD Minor will immerse you in interdisciplinary courses that foster analytical skills, communication skills, and critical thinking about managing data and analytics in complex environments. It will teach you skills that will help you succeed in interdisciplinary environments, solve problems, and manage resources mindful of risk, uncertainty, human dimensions, and sustainability. It will cultivate skills for managing people, data, and the natural world – the interface of all three can help you explore sustainable growth in human and built environments. The MAD Minor will provide you the tools to collect, analyze, manage, visualize and communicate data for diverse management focusing on **People, Planet, and Profit**.



DEVELOPING THE ABILITY TO **WRANGLE, WEAVE, ANALYZE,** AND **COMMUNICATE** USING A WIDE RANGE OF DATA SOURCES — TO AID IN THE **QUANTITATIVE PRACTICE OF EVALUATION AND DECISION-MAKING**

Courses rely on case studies and applied projects to exemplify the diverse challenges encountered when simultaneously seeking profitability, social justice, and environmental sustainability. Data governance and ethical considerations underlie decision-making and resource management. You will be introduced to the fundamentals of entrepreneurial decision-making, ethics of data use and custodianship, and communication. Case studies and project materials are drawn from real management problems from the Central Valley, Sierra Nevada, and Bay Area. You will engage in hands-on, practical experiences with data-driven analytics, professional communication, and entrepreneurship to acquire knowledge needed to understand and manage complex systems, including



- **Critical Thinking and Analytics for Management of Complex Systems.** You will identify and use appropriate analytical, quantitative, and data-oriented techniques and apply reasoning to evaluate case studies for strategic decision-making in a multi-disciplinary setting and in the management of complex systems.
- **Communication of Quantitative Analysis, Results, and Implications.** You will communicate effectively in classroom settings and with business and community stakeholders, preparing and delivering clear, persuasive, and professional oral and written presentations.
- **Leadership and Teamwork in Practice.** You will apply principles and practices of effective leadership and teamwork in classroom and project settings.
- **Ethics and Sustainability.** You will apply knowledge of ethical and legal requirements and of professional, societal and cultural contexts of coupled environments.

The MAD Minor requires a total of 5 four-unit courses, one of which may come from your major. Most MAD Minor courses – with MIST course codes – fulfill GE requirements.

ERNEST & JULIO GALLO MANAGEMENT PROGRAM
INNOVATION • SUSTAINABILITY • TECHNOLOGY

MAD MINOR REQUIREMENTS

Fundamental Requirement [4 units] – Complete the following course:

- MIST 050: Introduction to Entrepreneurship

Core Areas Requirement [12 units] - Complete three courses chosen from the following:

- MIST 130: Statistical Data Analysis and Optimization in R for Decision Support
- MIST 131: Data Governance for Analytics Projects
- MIST 132: Geographic Information Systems Analysis in Management
- MIST 133: Service Innovation
- MIST 134: Methods of Data and Network Science
- MIST 135: Technical Communication and Visualization Skills
- MIST 136: Retailing Management
- MIST 137: Managing Teamwork

Elective Requirement [4 units] - Complete one course chosen from the following:

- BIOE 103: Biosensors and Bioinstrumentation
- BIOE 108: Genetic Engineering
- COGS 103: Introduction to Neural Networks in Cognitive Science
- COGS 104: Complex Adaptive Systems
- COGS 105: Research Methods for Cognitive Scientists
- CSE 100: Algorithm Design and Analysis
- CSE 111: Database Systems
- CSE 120: Software Engineering
- CSE 173/COGS 123: Computational Cognitive Neuroscience
- CSE 175/COGS 125: Introduction to Artificial Intelligence
- CSE 176: Introduction to Machine Learning
- ECON 110: Econometrics
- ENGR 180: Spatial Analysis and Modeling
- ENVE 155: Decision Analysis in Management
- ESS 132: Applied Climatology
- MATH 180: Modern Applied Statistics
- MGMT 180: Entrepreneurship
- ME 135: Finite Element Analysis
- ME 137: Computer Aided Engineering
- ME 141: Linear Controls
- ME 142: Mechatronics
- MSE 104: Engineering Living Systems
- MSE 119: Materials Simulations
- POLI 175: Advanced Analysis of Political Data
- PSY 105: Advanced Research Methods in Psychology
- PSY 171: Psychological Tests and Measurement