EMIS

CALL FOR SENIOR DESIGN PROJECTS

FOR MANAGEMENT SCIENCE MAJORS

ENGINEERING MANAGEMENT, INFORMATION, AND SYSTEMS (EMIS)

DEPARTMENT OF THE SMU LYLE SCHOOL OF ENGINEERING

Each spring at SMU's Lyle School of Engineering, teams of Management Science seniors perform consulting projects for local industry, government, and non-profit organizations. The objective of their EMIS 4395 Senior Design course is to put into practice the quantitative decision-modeling methods that they have been studying, as a preview of life after graduation.

Under the direction of their supervising professor, these groups typically:

- meet with client organizations to define and scope a project,
- design solution approaches,
- collect empirical data,
- develop and implement models,
- test and validate the models,
- apply the models to the empirical data,
- draw conclusions, and
- prepare recommendations for their clients.

Typical deliverables to the client are:

- a final report
- formal presentation
- any software created and data gathered

Client responsibilities:

- have suitable semester project involving mathematical or statistical modeling
- have time to meet with team
- provide helpful feedback

EXAMPLE TOPIC AREAS

- Optimization models
- Computer-based simulation models
- Forecasting models
- Decision analysis applications
- Supply-chain management
- Distribution & logistics systems
- Network optimization
- Integrated production and distribution models
- Facilities location and layout
- Non-repetitive operations methods: job-lot manufacturing, aggregate scheduling, job sequencing and scheduling
- Repetitive operations management: line-balancing techniques, queuing/waiting lines
- Project Management
- Inventory/materials management
- MRP systems
- Just-in-time systems
- Quality management/control
- Statistical quality control
- Process improvement and cycle time reduction
- Benchmarking
- System engineering and design
- Financial engineering
- Decision-support systems
- Economic analyses
- Business process modeling

See other side for a sample of previous senior design project clients and topics

Example project descriptions:
http://lyle.smu.edu/emis/design/

If you are interested in a management science team next spring for your organization, contact:
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EXAMPLE MANAGEMENT SCIENCE SENIOR DESIGN PROJECTS AND CLIENTS

CLIENT	PROJECT TITLE
Alcatel Network Systems	Arizona Telecommunications Network Design
American Airlines	Fleet Planning and Substitution Model
American Airlines	Ticket Counter Staffing Simulation for DFW Airport
Baylor University Medical Center	Capacity Planning for the 2RSU Pre-operating Facility
Baylor University Medical Center	Improving Emergency Room Effectiveness via Process Simulation
Brinker International	Production, Distribution, and Capacity Planning Models
Capstone Financial Services	Financial Asset Allocation and Optimization
City of Dallas	Routing Hazardous Materials Through Dallas' Central Business District
City of Dallas: 911 Call Center	Dispatching Model for Mobile Intensive Care Units
Coca-Cola Distribution of N. TX	Real-time Vending Inventory Optimization
Dallas County	A Study of Computer-Assisted Jury Selection
Dallas Police Department, Youth and Family Crimes Division	A Model for Predicting Outcomes and Assessing the Effectiveness of First-Offender Programs
Dallas Water Utilities	Statistical Analysis of Water Main Breaks
Dallas Zoo	Composting Feasibility Study
Federal Reserve Bank of Dallas	Cost-Benefit Analysis of Research Support Systems
Federal Reserve Bank of Dallas	Longitudinal Study and Analysis of U.S. Bank Mergers
Freres Plywood Manufacturing	Optimizing Plywood Product Production
Frito-Lay	Sam's Club-Building Inventory-Level Modeling
Juliette Fowler Home	Automated Generation of Seniors' Activity Schedules to Meet State Guidelines
Kodak	Tracking Productivity at Kodak's Technical Support Center
Lockheed Martin Missiles & Fire Control	Modeling the Infrastructure Impact of an EMP Event
Meals on Wheels	Design and Implementation of a Multiple-Vehicle Routing Scheme (national student paper award winner)
NASA, Johnson Space Center	Production Center Analyses & Recommendations
Pacesetter Natural Gas Marketing	Optimized Natural Gas Contract Portfolio Models
Pagenet	Early-warning System to Predict Network Saturation
Pizza Hut, Inc.	Optimizing Bologna and Wiener Production
Plano ISD	Student Enrollment Forecasting Model
Quest Energy Resources, Inc.	Natural Gas Marketing Strategy Optimization (national student paper award)
Raytheon	Software Purchase Management Model
Skin Ceuticals	Automated Sales Forecasting Model
SMU CSE Department	Optimal Scheduling of Lab Assistants
Southwest Airlines	Modeling the Effect of Kiosk Layout on Passenger Check-in Efficiency
State of Texas	Gulf Freeway Evacuation Model
TestChip Technologies	Engineering Task Scheduling and Assignment Models
Texas Plaza, Irving, TX	Optimal Real Estate Project Phasing (published in Interfaces)
Towers Perrin	Convenience Stores Scheduling System
Unsponsored	Fundamentals: An Envelopment-Analysis Approach to Measuring the Managerial Quality of Mutual Funds
UPS	Sorting Hub Optimization Model
Veterans Administration Hospital, Dallas, TX	Optimized Nurse Scheduling (national student paper award)
Wadley Blood Center	Analysis of Apheresis Donor Program
Williams Technologies	Locating Hubs for a New Transmission Business

More information is available at: faculty.smu.edu/barr/design