Master of Science in Technology Management

Program overview

The Master of Science in Technology Management (MSTM) program is offered by the Department of Decision and Information Sciences (DIS) within the Charlton College of Business at the University of Massachusetts Dartmouth. This is a science, technology, engineering and mathematics (STEM) designated program that makes international students with F-1 visa eligible to apply for 24-month extension of Optional Practical Training (OPT). It is designed with the primary goal of helping engineers and business managers appreciate and comprehend the complexity of management challenges in today’s technology-driven and globalized business world.

The intended audiences include both experienced engineers who would like to advance their careers in management, and business managers who are facing challenges of implementing complicated enterprise level systems. Graduates should be well prepared to lead their organizations to respond rapidly and innovatively to the challenges in the dynamic, technology-driven, and competitive global business environment.

The program consists of 30 credit hours (24 credits for required core courses and 6 credits for required elective courses). The three foundation courses are required but not counted toward the degree. The program can be pursued either full-time or part-time.

Faculty and principal areas of expertise

Dan Braha, PhD, Tel Aviv University, Israel: Complex Socio-Engineered Systems, interplay between natural and large-scale human-made systems, the structure and dynamics of complex networks, and in particular dynamic network analysis.

Catharine Curran, PhD, New Mexico State University; marketing to children, privacy, public policy, the application of market orientation to traditionally non-market based professions and the effect of a market driven economy on the professions of law, medicine and education.

Chen Du, DBA, Boston University: executive compensation, corporate governance, earnings management, risk taking, and investment.

Laura Forker, PhD, Arizona State University; healthcare management & policy, process management, supply chain management.

Kellyann Kowalski, PhD, University of Rhode Island; role theory, with specific interests in balancing work and family roles, managing diversity, and telecommuting.

Yuzhu (Julia) Li, PhD, University of Central Florida; project management, particularly project teamwork processes, technology mediated learning, and the use of IT in organizations.

Ling Lin, DBA, Boston University: institutional investors, accounting conservatism, earnings management, audit quality, and auditor independence.

José-Domingo Mora, Ph.D, Simon Fraser University: Social influence and group behavior in the context of electronic media audiences, Use of social media by organizations, Statistical modeling of consumer behavior.

Duong Nguyen, PhD, Florida International University; asset pricing, microstructure, and corporate finance.

Christopher Papenhausen, PhD, University of Minnesota; effects of managerial behaviors and personality on strategic decision-making.

Satya Parayitam, PhD, Oklahoma State University; cognitive, affective conflict and interpersonal trust in strategic decision making process.

Bharatendra Rai, PhD, Wayne State University; business analytics & data/text mining, applied statistics, quality and reliability engineering, analyzing big data, multivariate applications.

Timothy Shea, DBA, Boston University; knowledge sharing, the global divide, implementation issues around ERP’s, and the delivery and management of web-based learning and teaching technologies.

Zhengzhong Shi, PhD, University of Toledo; open source software and open-source community, IS strategy, IS outsourcing, e-commerce.

Soheil Sibdari, PhD, Virginia Polytechnic Institute and State University; stochastic modeling in operations, economics, and statistics; modeling and analysis of logistics systems; airline-industry problems; using simulation, mathematical programming, and statistical analysis.

Gopala Vasudevan, PhD, New York University; corporate finance, mergers, global and industrial diversification, corporate downsizing, equity capital, private equity, and bankruptcy and financial distress.

Gang Wang, Ph.D, Rutgers University; supply chain optimization, supplychain sustainability, supplychain dynamics, and supply chain finance, combinatorial optimization, optimal control, non-smooth optimization, and approximation algorithms.

Shouhong Wang, PhD, McMaster University; business intelligence and analytics, semantic web, information systems design research, and business education.

D. Steven White, DBA, Cleveland State University; green business, seafood marketing and logistics, international services marketing, service exporting, global and social entrepreneurship, international marketing, global e-commerce, open source applications in global business and international business education.

Jia Wu, PhD, Rutgers University; accounting information systems and auditing, and analytical controls in continuous auditing.

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Program strengths and highlights

The unique combination of operations management and management information system courses in the MSTM curriculum helps students understand operational strategy and processes. The program also provides them with technological perspectives to be innovative in solving operational problems and executing operational strategies.

Charlton College of Business is AACSB accredited - the international gold standard. Only 10% of business schools have all undergraduate and graduate programs accredited by AACSB.

The MSTM program provides high value, affordability, and high quality class experiences with maximum flexibility.

The MSTM courses are taught by very active scholars in their academic fields supplemented by a cadre of seasoned practitioners.

The MSTM program requires 30 credit hours that can be completed in one calendar year.

The MSTM electives may be chosen from Charlton College of Business and the College of Engineering with a wide range of courses for students to customize the program to suit their individual needs.

Application requirements

The following are general admission requirements. Exceptions and waivers will be considered on a case-by-case basis with all the application materials as a package.

1. Undergraduate Degree: Official transcripts. A minimum overall GPA of 3.0 is required.
2. GMAT exam (or equivalent): can be waived (more details enclosed). During the last academic year the average GMAT score of the students in the MBA program was 510. The LSAT may also be substituted for the GMAT.
3. Candidates whose Bachelor’s degree was not earned in an approved English language country must submit either the TOEFL exam (minimum score of 72 internet-based or 533 paper-based) or IELTS exam (minimum band score of 6.0).
4. Requires all other University admissions requirements, including two letters of recommendation, preferably one from a faculty member and one from an employer.

GMAT score may be waived for applicants who have

- An earned baccalaureate degree (or the equivalent of a USA baccalaureate degree) in any major/discipline from an accredited college/university with a cumulative GPA of at least 3.00 on a 4.00 scale. Minimum documentation required: Official transcript (if you earned UMass Dartmouth baccalaureate degree, the official transcript will be obtained on your behalf).
- At least five (5) years of managerial/supervisory work experience. Minimum documentation required: Letter of recommendation from at least one (1) employer (preferably current employer) and resume which cites months and years of all employment, all employer(s) name(s), all job title(s), and specific description(s) of managerial/supervisory duty(ies).
- A professional license or certificate that requires a test of field-specific knowledge (e.g., CPA, CFA, CPSM, etc.) and is relevant to the degree program. Minimum documentation required: Copy of license or certificate.
- An earned graduate degree (master’s or doctoral) in any major/discipline from an accredited college/university. Minimum documentation required: Official transcript.
- An earned Graduate Certificate from the Charlton College of Business at the University of Massachusetts Dartmouth with a cumulative GPA of at least 3.30. Minimum documentation required: Official transcript (will be obtained on your behalf).

To earn a degree

No more than three MSTM course credits of grades below a B may be counted toward the MSTM, and no graduate degree will be awarded to any student whose overall cumulative grade point average falls below 3.0. Other policies, as contained in the UMass Dartmouth graduate catalog, will also apply as appropriate.

Application Deadlines:

<table>
<thead>
<tr>
<th>Fall semester</th>
<th>Spring semester</th>
<th>Test requirement</th>
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<tbody>
<tr>
<td>May 1 (int'l students)</td>
<td>October 1 (int'l students)</td>
<td>GMAT or waiver</td>
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<tr>
<td>July 1 (full-time)</td>
<td>December 1 (full-time)</td>
<td>GMAT or waiver</td>
</tr>
<tr>
<td>August 1 (part-time)</td>
<td>December 15 (part-time)</td>
<td>GMAT or waiver</td>
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Program Curriculum Outline

Major Required (Core) Courses (Total courses required = 8)

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>POM 651 Creating Value Through Ops Analysis</td>
<td>3</td>
</tr>
<tr>
<td>POM 677 Logistics Strategy and Management</td>
<td>3</td>
</tr>
<tr>
<td>POM 681 Business Analytics and Data Mining</td>
<td>3</td>
</tr>
<tr>
<td>POM 682 Technology Management Strategies</td>
<td>3</td>
</tr>
<tr>
<td>MIS 650 Information Technology Management</td>
<td>3</td>
</tr>
<tr>
<td>MIS 676 Managing Projects for Technology</td>
<td>3</td>
</tr>
<tr>
<td>MIS 681 Business Intelligence and Knowledge</td>
<td>3</td>
</tr>
<tr>
<td>MIS 685 Enterprise System: Theory and Practice</td>
<td>3</td>
</tr>
<tr>
<td>Core Credits Required</td>
<td>24</td>
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Other/Elective Course Choices (Total courses required = 2)

<table>
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<tr>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ACT 650 Accounting for Decision Making</td>
<td>3</td>
</tr>
<tr>
<td>MIS 675 Digital Economy and Commerce</td>
<td>3</td>
</tr>
<tr>
<td>POM 679 Management of Health Care Operations</td>
<td>3</td>
</tr>
<tr>
<td>POM 685 International Supply Chain Management</td>
<td>3</td>
</tr>
<tr>
<td>POM 683 Managing Supply Chains in Healthcare</td>
<td>3</td>
</tr>
<tr>
<td>MGT 659 Strategic Management</td>
<td>3</td>
</tr>
<tr>
<td>MKT 650 Marketing Strategy</td>
<td>3</td>
</tr>
<tr>
<td>Other Approved Engineering or/MBA courses</td>
<td>3</td>
</tr>
<tr>
<td>(case by case)</td>
<td></td>
</tr>
<tr>
<td>Elective Credits Required</td>
<td>6</td>
</tr>
</tbody>
</table>

Curriculum Summary

Total number of courses required for the degree: 10
Total credit hours required for degree: 30

Prerequisite or Additional Requirements (as needed):

<table>
<thead>
<tr>
<th>Course Title</th>
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<tbody>
<tr>
<td>ACT 500 Financial Accounting</td>
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<tr>
<td>FIN 500 Finance and Economics for Managers</td>
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<tr>
<td>POM 500 Statistical Analysis</td>
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Selected Course Descriptions

Foundation

ACT 500 Financial Accounting
Stresses the principles and practices of external financial reporting, with particular emphasis on balance sheet valuations and their relationship to income determination. Reviews basic accounting concepts and the essentials of the accounting process. Covers the application of present value techniques to accounting valuations. Studies in depth the measurement and disclosure problems associated with cash receivables, inventories, fixed assets and intangibles. Alternative accounting procedures and their impact on financial statements are also examined.

FIN 500 Finance and Economics for Managers
Examines the most applicable principles of micro and macro-economics for the application of economic theory for the manager. Topics include optimization techniques applied to consumer choice firm behavior, pricing and the study of the market structure. Both ethical and international issues are addressed.

POM 500 Statistical Analysis
A case study approach involving the following statistical concepts: descriptive statistics, probability, sampling, probability distribution, statistical estimation, chi-square testing, analysis of variance and simple regression-correlation analysis.

Core Courses (24 credits)

POM 651 Creating Value Through Operations Analysis
Techniques for the analysis and improvement of the value-adding activities of an organization. Such activities are called by a number of names: processes, operations, production or just plain "work." Value is added only when the output from a process meets the needs of customers, both internal and external. The course focuses on the efficient and effective management, in both manufacturing and service environments, of processes (a set of tasks or activities that contribute to delivering products and services in order to meet customers' needs, whereby inputs are transformed into outputs thereby adding value).

POM 677 Logistics Strategy and Management
Understand and analyze the concepts of logistics and supply chain management. Topics include customer service, inventory management, information systems, order fulfillment, transportation, third-party logistics, warehousing and supply chain strategy. Emphasis will be placed on providing logistical support for procurement, manufacturing and distribution.

POM 681 Business Analytics and Data Mining
Introduction to business analytics and data mining. Topics covered include data mining, exploratory data analysis, methods for classification and prediction, affinity analysis, multiple regression, logistic regression, discriminant analysis, and clustering. Applications of business analytics and data mining methodologies to a wide variety of real world business data are included.

POM 682 Technology Management Strategies
An exploration of economic analysis and corporate finance concepts when it interacts with the adoption of new technology. Students are required to have basic macroeconomic and finance knowledge. This course considers new technology evaluation; cost of capital; firm valuation with new technology; the financial decision interaction with technology choice; strategic consideration and economic analysis; the short and long term economic analysis of technology adoption. The concepts that are analyzed in relation to organization problems are market domination, risk profile and analysis, the resolution of new technology risk, and market efficiency. The validity of analytical tools is tested based on the analysis of financial instruments and sustainable and non-sustainable market inefficiencies.

MIS 650 Information Technology Management
Introduction to the information technology used in modern organizations. The course is designed to provide a technical understanding of information technology, practical experience and management perspectives on its utilization in organizations.

MIS 676 Managing Projects for Technology
Managing projects from an organizational perspective. Introducing project management with an emphasis in Technology. Consistent with the Project Management Body of Knowledge guide, the major topics include aligning the projects with organizational strategies, managing project process groups, and building project manager's competence. Technological tools of managing projects will be introduced.

MIS 681 Business Intelligence and Knowledge Management
Business intelligence (BI) and knowledge management (KM) issues facing technology management today and information technology needed to solve managerial problems using BI and KM. Concepts of BI and KM, processes of BI and KM, and the integration of BI and KM are discussed.

MIS 685 Enterprise System: Theory and Practice
To study a variety of management issues related to enterprise systems (ES). ES is the central nervous system in any modern organizations. To
help students effectively use and manage this central nervous system, this course will cover key ES management issues based upon both classic and most recent case/research studies through discussing topics such as the fit between enterprise systems and organizations, knowledge transfer between consultants and organizations, performance evaluation of enterprise systems, and enterprise system selection and implementation issues, etc. Besides conceptual discussions, a real-world enterprise system (a proprietary system or an open source system) will be used to help students obtain hands-on experiences and facilitate the learning process by linking theory with practice.

Sample Electives (6 credits)

**ACT 650 Accounting for Decision Making**
Interpretation of corporate financial reporting by external users of financial statements. Students examine the form and content of financial statements and the methods used to account for assets, liabilities, capital, cash flows and other information reported in conformity with accounting principles. While pure financial accounting focuses on the external interpretation of corporate financial reporting, this course includes internal reporting for managerial decision-making. Management planning and control techniques, basic cost analysis, capital budgeting and activity-based management are encompassed in the course.

**MIS 672 Digital Economy and Commerce**
Electronic commerce is in its infancy and changing rapidly as new technologies emerge. This course provides a detailed review of the production, marketing and distribution of digital information products and applied microeconomic analysis to examine some of the radically new business models emerging from web-based businesses.

**POM 679 Management of Health Care Operations**
Analysis of service operations and contemporary policy issues related to health care. Health care costs, financing, quality, economics, health information technology and other topics that affect the efficiency and effectiveness of health care are examined from a multidisciplinary perspective that embraces both business and policy disciplines.

**POM 675 International Supply Chain Management**
Management of the flow of materials into, through, and out of operations in an international context. The course investigates how to manage such complexities as long distances, currency fluctuations, variable infrastructures, diverse cultures, political instability, and dissimilar legal systems. The value-adding activities of procurement, manufacturing/operations, and logistics/distribution are conceptualized as one integrated supply chain. By understanding various facets of the supply chain, this course will provide sufficient insight to analyze the challenges of configurations and coordination in a global environment.

**MGT 659 Strategic Management**
The course examines competitive factors impacting firms and the design of a competitive global strategy. Primary emphasis is on managerial skill development focused on enhancing effective organizational operations in today’s globally competitive environment. The course analyzes components of a strategic plan: formulating, implementing, and controlling its execution and evaluating its success in a global context.

**MKT 650 Marketing Strategy**
Strategy formulation for determining what marketing strategy can realistically accomplish, identifying internal and external factors that must be considered in developing longer term strategies, setting realistic marketing and financial objectives and organizing for successful implementation of strategies. Students undertake assignments that allow them to examine both successful and unsuccessful strategies.

Available Engineering Courses
(Approved by Program Committee/Director)