

## COURSES IN TECHNOLOGY MANAGEMENT

Note: The following courses are restricted to students enrolling in the Master of Technology Management Programs or the Graduate Diploma Program in Computer Forensics.

### **MTMC 501 Organizational Behavior [2-0-0:2]**

This is a foundation course about the nature of contemporary organizations and the behavior of individuals and groups within them. This course will explore the major theoretical and applied perspectives about organizational behavior with special emphasis on: work motivation, job design and teams, communication, leadership, conflict management, organizational culture, and organizational change. *Exclusion:* MGTO 121

### **MTMC 502 Technology Management [2-0-0:2]**

This course teaches professional students to master the dynamic process of technology innovation. By studying fundamental principles of technology innovation and typical cases in various industries, functions of innovation in firms' competition, sources and performance of disruptive innovation, firms' strategies when faced invading innovation and other important topics are analyzed.

### **MTMC 503 Quality Management [2-0-0:2]**

The course covers the various concepts and principles of quality management especially on Six Sigma techniques. First, basic quality engineering methods and tools will be covered before we introduce the framework of Six Sigma. Six Sigma as a corporation reengineering tool for the simultaneous improvement of quality, cost, customer satisfaction and time to market will be discussed. Following this, different techniques and methodologies of Six Sigma implementation that include DMAIC, SPC, ISO 9000, QFD, and Design of Experiments will be covered. *Exclusion:* EEMT 522

### **MTMC 504 Management Information Systems [3-0-0:3]**

This course includes an introduction to information systems in organizations from the general manager's perspective; managerial and strategic uses of information systems; overview of enabling technologies; and how information systems are developed and managed.

### **MTMC 505 Principles for the Information Economy [2-0-0:2]**

Product and pricing strategies of information products; network effects; complements and the value net; standards; intellectual property rights; government policy and anti-trust constraints. *Exclusion:* ECMT 510

### **MTMC 506 International Macroeconomics [2-0-0:2]**

The course covers the basic theory and application of short run macroeconomics as it has developed since Keynes. The basic framework will be the 'IS-LM' equilibrium method, in which we analyze the major markets that affect the macroeconomy - labor, output, money and foreign exchange markets. This framework will be used to study fiscal and monetary policies.

### **MTMC 507 Operations Management [2-0-0:2]**

Basic principles of managing the production of goods or services and studies some useful tools. The course emphasizes tools and principles that are equally useful in both the service and manufacturing sectors. *Exclusion:* ISMT 561

### **MTMC 508 Managerial Economics [2-0-0:2]**

The course guides professional students to understand the fundamental principles of micro-economic theory and their applications in firms' decision-making. Important topics include price determination in competitive market, demand and supply analysis, production and cost analysis, market structure analysis, risk and uncertainty, etc. *Exclusion:* ECON 511

### **MTMC 509 Corporate Finance and Accounting [2-0-0:2]**

Introduction to corporate financial reporting and the use of financial information in management decision making. Topics include generally accepted accounting principles and concepts, preparation and interpretation of financial statements, project evaluation, budgeting, and performance evaluation.

### **MTMG 501 Logistics Models and Operations [2-0-0:2]**

Facility location; process and materials flow analysis; plant and warehouse layout planning; material handling system design; transportation operations management; network design; resource planning for vehicles and crew; equipment deployment; routing and scheduling. *Exclusions:* MTMG 507, MTMG 508, MTMG 509

### **MTMG 502 Supply Chain Systems [2-0-0:2]**

Introduction to concepts and issues of integrated supply chain management. Methods to design, plan, and deploy a successful supply chain. E-business technologies and supply chain systems.

### **MTMG 503 Strategic Planning and Design for Logistics Management [3-0-0:3]**

Strategic management decision making in global logistics environment; strategic marketing; design and implementation of effective business processes; process reengineering issues; quality management for service industry.

### **MTMG 504 Advanced Supply Chain Management [1-0-0:1]**

An advanced study in supply chain management. Supply chain network; demand management; manufacturing and replenishment in supply chains; information and coordination in supply chains; product variety management.

- MTMG 505 Fundamentals of Transportation Systems [1-0-0:1]**  
Introduction to transportation systems. Overview of transportation planning process; transportation economics; travel demand forecasting and management.
- MTMG 506 Project on Logistics Management Case Study [1 credit]**  
A group study in topics related to global logistics management. Students will engage in real life issues. Each student is required to give a presentation of the topic. The company executive may be invited to attend the presentation.
- MTMG 507 Management Science [2-0-0:2]**  
Concepts and applications of management science, modelling, optimization, project scheduling, forecasting, simulation. *Exclusion:* MTMG 501
- MTMG 508 Transportation Planning and Models [2-0-0:2]**  
Decision models for transportation, service network design, load matching, resource allocation, vehicle and crew scheduling, dispatch policy, and transportation management systems. *Exclusion:* MTMG 501
- MTMG 509 Warehouse Management [1-0-0:1]**  
Facility location, process and materials flow analysis, plant and warehouse layout planning, material handling system design. *Exclusion:* MTMG 501
- MTMG 510 Demand Management [1-0-0:1]**  
Pricing strategy, revenue management, discount allocation, capacity management.
- MTMG 511 Logistics and Supply Chain Management in China [1-0-0:1]**  
Survey of China's transportation and logistics environment: market, regulation, and industries. Opportunities and challenges of supply chain management in China.
- MTMG 512 Strategic Management for Global Logistics [2-0-0:2]**  
Role and contribution of logistics services, elements of logistics strategic plans, marketing channels, customer services strategy, developing logistics networks. *Exclusion:* MTMG 503
- MTMG 600 Special Topics in Global Logistics and Transportation [1-4 credit(s)]**  
Selected topics of current interests. May be repeated for credits if different topics are covered. Topics may include, but is not limited to, freight transportation systems in China, international shipping, legal issues, and impact of E-commerce to logistics.
- MTMG 698 MTM Project in Global Logistics Management [6 credits]**  
A group project carried out under the supervision of a faculty member.
- MTMI 501 Strategy for Corporate Information Systems [2-0-0:2]**  
The role of CIO (Chief Information Officer); planning the information system for corporations in resource management, customer relationship management, logistics, etc.; budgeting, procurement, training, planning for system upgrades; injecting new technologies into existing systems.
- MTMI 502 Electronic Commerce [2-0-0:2]**  
Commercial transactions over private and public networks; efficiency, availability, usability, and security issues. Case studies of major electronic commerce systems.
- MTMI 503 Project Management [3 credits]**  
Issues and techniques in managing a team of analysts and programmers involved in a system development project; topics include group interaction and problem solving, end user involvement, and resource planning.
- MTMI 504 Computer and Communication Security [3-0-0:3]**  
Cryptosystems, symmetric-key and public-key cryptography, cryptanalysis, authentication, message digests, digital signatures, and random number generation. Access controls and firewalls. Applications such as certificate authorities, electronic commerce, smartcards, and digital cash.
- MTMI 505 Internet and Networking Infrastructure [2-0-0:2]**  
A comprehensive description of networking, in particular the Internet, infrastructure including the backbone architecture, roles of different routers, routing methods, traffic characteristics, charging policies, QoS support, and the future trend.
- MTMI 506 Object Oriented System Analysis and Design [2-0-0:2]**  
Overview of object-oriented concepts; using UML to elaborate an interactive software development process; an approach mapping object model to relational database model.
- MTMI 510 Internet, E-Commerce, and IT Security [3-0-0:3]**  
Internet concepts, structure, and protocols; E-Commerce model; payment systems; electronic service delivery; Internet security; PKI; firewall; VPN; computer crimes; copyright protection; social impact; case studies. *Exclusion:* MTMI 518
- MTMI 511 Computer Forensics, Digital Evidence, and Legal Issues [3-0-0:3]**  
Computer forensics; professional ethics; digital evidence preservation and handling; scene of crime; procedures and policies; court presentation; computer crime ordinance; privacy; copyright laws; electronic contract; mock court sessions; case studies.

**MTMI 512 Network Security and Cyber Crime Investigation [3-0-0:3]**

Network protocols; network attacks; IT security management; disaster recovery; contingency plan; vulnerability test; crime identification; tracing; network scanning; interviewing witnesses; case studies. *Exclusion:* MTMI 518

**MTMI 513 Computer Forensics on Computer Systems I [3-0-0:3]**

Operating system concepts and operations; boot process; multi-threading; disk topology; file structure; disk cloning and forensic tools; searching and analysis of digital evidence; data format and encoding; case studies.

**MTMI 514 Computer Forensics on Computer Systems II [3-0-0:3]**

Networked operating system concepts and operations; multi-boot systems; advanced file structures; recoverability; security and auditing; searching and analysis; advanced disk cloning and forensic tools; case studies.

**MTMI 515 Technology Issues in Computer Forensics Investigations [3-0-0:3]**

Computer security and forensics on different technology platforms; database systems; distributed database; case studies. Technology platforms may include smart cards, PDAs, mobile and wireless communications systems, Java and other software engineering technologies. *Backgrounds:* MTMI 510 and MTMI 511 or equivalent

**MTMI 516 Software Development in Java and CORBA [3-0-0:3]**

Fundamentals include language syntax, object-oriented programming, component models, remote method invocation, common object services, applets/servlets, exception handling, multithreading and database interfacing. Standard libraries for input/output, graphics programming, built-in data structures.

**MTMI 517 Web Technology [2-0-0:2]**

Web structure; client side computing; server side computing; web agents and search engines.

**MTMI 518 Security and Forensics in Computing [2-0-0:2]**

Crypto-systems, authentication; digital signatures, public-key infrastructure; access control and firewall; virtual private network; electronic payment system; e-commerce; smartcards; digital cash; IT security management.

**MTMI 519 Database and Data Warehousing [2-0-0:2]**

Principles of database systems; data modeling and database design; relational technology, including storage management, query processing and transaction management; introduction to distributed and parallel database systems; on-line analytical processing and data warehousing, architecture of data warehouse; multidimensional data modeling and data cube; data cleansing and other data warehousing related issues.

**MTMI 520 Database Administration and Performance Tuning [2-0-0:2]**

Data integrity, database security, relational database design with emphasis on physical database design; principles of database performance tuning; tuning indexes, queries, transactions for better performance.

**MTMI 521 Data Mining and Knowledge Management [2-0-0:2]**

Data mining process; data preprocessing, data mining model evaluation, classification models, association analysis, clustering analysis, data mining tools, web mining; web content mining, web structure mining, web usage mining. Knowledge management with logic, rules, cases, Bayesian networks and statistical models. Applications of the above techniques in telecommunications and financial industry.

**MTMI 522 Data Mining and Web Mining [2-0-0:2]**

The data mining process. Data mining tools: decision trees, rule induction, instance-based learning, Bayesian learning, clustering, association rules. Data Mining and the Web: log analysis, sequential data mining, Web structure mining and search engines. Data mining applications in industry: recommendation systems, collaborative filtering, attrition analysis in insurance, financial and telecommunications services, mining user preferences.

**MTMI 523 Software Development in e-Business Application [2-0-0:2]**

Latest technologies in the development and management of e-business applications. These technologies typically include object-oriented modeling, CRM, software infrastructures, security, enterprise information modeling and system planning.

**MTMI 525 Vision and Graphics Technology in Digital Entertainment [1-0-0:1]**

Major innovations in digital entertainment come from the advanced research results in computer vision and graphics. This course will provide both advanced and modern 3D vision and graphics techniques for applications in digital entertainment.

**MTMI 526 Biometrics: Personal Identification and Authentication [1-0-0:1]**

Biometrics is the utilization of some physical traits of an individual to gain access to facilities. Physical traits can be a person's face, iris, fingerprints, hand, voice, etc. This course will cover various biometrics systems. Real world applications will be discussed.

**MTMI 530 Wireless Communication and Networking [2-0-0:2]**

Wireless communication and networking is everywhere. This course will give a basic understanding of the underlying communication mechanisms. The focus will be on popular wireless networks including 2.5G/3G cellular phones, wireless LANs, and Bluetooth technologies.

**MTMI 531 Pervasive Computing [1-0-0:1]**

Pervasive computing, which allows mobile computing devices to configure their services according to their various environments, has rapidly emerged as the next wave of computing. Various system prototypes, context information detection mechanisms, and practical applications will be described.

**MTMI 532 Grid Computing [1-0-0:1]**

Grid computing allows resources from many computers in a network to be virtually shared, managed and accessed across an enterprise, industry or workgroup. This course will cover the grid architecture, grid software, various protocols, security, naming schemes, and applications.

**MTMI 540 Intellectual Property and IT Law [1-0-0:1]**

This course will cover intellectual property foundation, Internet content regulation, patents and copyrights, information security, jurisdiction and online dispute resolution, telecommunication law, cyber rights, media and entertainment law, consumption tax, and privacy and data protection.

**MTMI 600 Topics in Emerging Technologies [1-4 credit(s)]**

Selected topics of current interest not covered by existing courses.

**MTMI 698 MTM Project in Information Technology [6 credits]**

A group project carried out under the supervision of a faculty member.