ITOM Curriculum

Cox School MBA Program
ITOM 6205. Digital Strategy. The Internet is an increasingly popular medium for businesses to interact with their customers. Empowering customers has provided some companies with significant opportunities. Other companies and industries face stronger competitive challenges from reduced barriers to entry and increased availability of information. This course introduces students to the technological and strategic issues relating to the use of the Internet from a business perspective. The objective of this course is to introduce decision-making tools for how businesses use the Internet. Topics include Internet technologies, strategic implications of e-business, pricing strategy, information-intense products, online marketplaces, and issues of Internet privacy and security.
ITOM 6206. Business Intelligence. In this class, you will gain hands-on experience with Data Warehouses and the peripheral systems commonly associated with them. The technical skills you will develop are essential to your success as a business analyst in a traditional enterprise.

Bryan Smith
ITOM MBA Curriculum

**MBA CORE**

- ITOM 6202 (Dec. Modeling)
- ITOM 6203 (Ops Mgmt)

**Canan Savaskan-Ebert**

**ITOM 6207. Supply Chain Management.** In this course, the supply chain is viewed from the perspective of a general manager. The goal of the course is to understand how supply chain design and planning decisions impact the performance of the firm as well as the entire supply chain. Each class session is a blend of theory presentation and case discussion, during which some spreadsheet modeling and analysis may be required.

**ITOM 6207. Supply Chain Management.** In this course, the supply chain is viewed from the perspective of a general manager. The goal of the course is to understand how supply chain design and planning decisions impact the performance of the firm as well as the entire supply chain. Each class session is a blend of theory presentation and case discussion, during which some spreadsheet modeling and analysis may be required.

- ITOM 6205 Digital Strategy
- ITOM 6206 Business Intelligence
- ITOM 6207 Supply Chain Management
- ITOM 6208 Big Data
- ITOM 6212 Data Visualization
- ITOM 6214 Spreadsheet Models
- ITOM 6215 Database Design
- ITOM 6217 Data Mining
- ITOM 6218 Business Analytics Consulting
- ITOM 6219 Social Media Analytics
- ITOM 6220 Revenue Management
- ITOM 6221 Special Topics in ITOM
- ITOM 6222 Business Forecasting
- ITOM 6224 Service Ops
- ITOM 6225 Project Mgmt
- ITOM 6226 Operations Analytics
- ITOM 6231 Special Topics in ITOM

To Canaan: Your message is clear and well-structured. Keep up the good work.
ITOM 6208. Big Data. In this class, you will gain hands-on experience with Hadoop, the principle Big Data system found in modern enterprises. We will work with foundational Hadoop capabilities, such as Hive and Pig, but also explore emerging technologies such as Spark. Students will have the option of obtaining their Hadoop certification in lieu of a final exam.

Bryan Smith
ITOM 6212. Data Visualization Students perform business analytics and learn to effectively communicate the results in written and oral presentations, including key questions for the analytic communications: What is happening? Why is it happening? What are the next steps?
**ITOM MBA Curriculum**

**MBA CORE**
- 6202 (Dec. Modeling)
- 6203 (Ops Mgmt.)

**Amy Puelz**

**ITOM 6214. Advanced Management Decision Analysis.** The objective of this course is to gain experience using spreadsheets to model and analyze quantitative business problems. It is intended to augment skills for managers in operations, finance, marketing and strategy. The course covers various modeling techniques, including linear programming, nonlinear programming, real options, integer programming and simulation. These techniques are applied to various industries, including operations, technology, finance and marketing. Some of the applications developed in the course pertain to monitoring mutual fund managers, building flexible manufacturing facilities and constructing financial portfolios. The course requires basic comfort with spreadsheets, including fixed and relative cell copying, functions and formatting.
ITOM 6215. Database Design for Business Applications. This course covers fundamental issues in database creation and design. The course begins with mapping data collection in organizations onto a database with the objective of storing data consistently over time then proceeds to study methods for information extraction from databases. In terms of practical skills, the course covers how to import spreadsheet data into Microsoft Access and generate summary reports to answer business questions related to data. The use of homework assignments and an implementation project in Microsoft Access reinforce the design issues and the practical skills covered in the course.
ITOM 6217. Data Mining. This course examines how companies can effectively leverage their information technology resources to gain better operational and competitive intelligence. Several technologies for enhancing organizational intelligence, such as machine learning, neural networks, clustering and association-based reasoning, are surveyed. Considerations that managers must make in applying these technologies to different types of decision and planning problems are discussed using lectures, cases and hands-on exercises with appropriate software.
ITOM 6218. Business Analytics Consulting. A business process is a collection of activities – connected by flows of goods and information – that create value by transforming inputs into (more valuable) outputs through the use of capital and labor. As such, business processes are the key drivers of organizational value creation and performance, competitive advantage, etc. The objective of this course is to teach students skills to model, analyze (for effectiveness, efficiency and internal controls) and redesign business processes. The course focuses particularly on information technology’s role in enabling business processes.
ITOM 6219. Web & Social Media Analytics. This course examines how data from social media service platforms such as Facebook, Linked-In, Twitter and Youtube can be leveraged in analytical models that provide useful insights about a firm’s markets and the effectiveness of its products and services.
**ITOM 6220. Pricing & Revenue Optimization.** Revenue management involves methods for increasing revenue by offering different fares/prices as perishable capacity is consumed. Examples of RM can be found in the airline, hotel, railroad, rental car, and retail fashion businesses, among others. The class covers a variety of topics, including price optimization (with and without capacity constraints), Littlewood’s two-class model, the n-class single resource RM problem, nested controls, bid price controls, heuristic approaches, network capacity control, overbooking models, markdown optimization, and more. Students learn how to implement RM models using dynamic programming and linear programming in Excel.
ITOM MBA Curriculum

MBA CORE
6202 (Dec. Modeling)
6203 (Ops Mgmt.)

Tom Tan

ITOM 6222 Business Forecasting. From forecasting aggregate-level sales to predicting whether a customer will choose a particular product, analytic techniques are used by businesses to make rigorous, data-driven predictions. This course explores analytic models such as deterministic time-trend, exponential smoothing, Holt-Winters, autoregressive exogenous, and Box-Jenkins, among others. Students learn to distinguish between trend and seasonality and to utilize both for making forecasts in such areas as sales and operational planning. The course also covers how to use industry and government metrics and how to present results to management.

6205 DIGITAL STRATEGY
6206 BUSINESS INTELLIGENCE
6207 SUPPLY CHAIN MGMT
6208 BIG DATA
6212 DATA VISUALIZATION
6214 SPREADSHEET MODELS
6215 DATABASE DESIGN
6217 DATA MINING
6218 BUS. ANALYTICS CONSULTING
6219 SOCIAL MEDIA ANALYTICS
6220 REVENUE MANAGEMENT
6222 BUSINESS FORECASTING
6224 SERVICE OPS
6225 PROJECT MGMT
6226 OPERATIONS ANALYTICS
6228 SPECIAL TOPICS IN ITOM
ITOM 6224. Managing Service Operations. The course is designed for students who plan to work in managing service operations within both the “pure” service sector companies and the service functions of manufacturing firms. The course explores the following topics: strategic service vision, design and delivery of services, managing capacity and demand, service quality and productivity, customer service management, technology in service operations, and globalization of services. The course also develops hands-on understanding of some powerful analytical techniques, including process analysis, waiting line models, simulation and yield management.
ITOM 6225. Project Management. Managing projects in a cost-effective and timely manner is one of the most challenging tasks in any organization. Competent project leadership requires an understanding of how to allocate financial, material and time-based resources, and the ability to motivate and maintain the focus of the project team. This course provides relevant project management skills by examining project decisions at three levels: 1) structuring and managing the task and leading the project team in an individual project, 2) aggregating linkages across a portfolio of projects and managing programs, and 3) making alliances across firms, contracting a project and managing open innovation. It introduces tools and concepts that enable project managers to evaluate, manage and execute critical functions of any project while ensuring speed, efficiency and market impact.
ITOM 6226. Operations Analytics. The goal of this course is to examine the role of analytics and analytical models in improving an organization’s operational processes. Decision making under uncertainty will be addressed using static stochastic optimization, two-stage optimization with recourse, and sequential decision making. Optimization models will be used to tackle problems in inventory management, revenue management, supply chain management, project management and new product development. Students will also learn how strategic decisions can be aided by data-driven, analytical models. Some core aspects of business strategy, including external analysis, competitor analysis, and opportunity analysis are also covered.
Business Analytics Conc.

- Fall Mod A
  - Database Management Systems
  - Business Analytics Consulting
  - Data Visualization
  - Customer Loyalty Management

- Fall Mod B
  - Pricing & Revenue Optimization
  - Business Forecasting
  - Understanding what Customers Value

- Spring Mod A
  - Advanced Mgmt. Decision Analysis
  - Business Intelligence
  - Operations Analytics

- Spring Mod B
  - Web & Social Media Analytics
  - Data Mining
  - Managing Big Data
  - Project Management

- Summer
  - Data Mining
  - Business Intelligence
Supply-chain & Operations Management Conc.

- **Fall Mod A**
  - Database Management Systems
  - Service Operations Management
  - Business Analytics Consulting
  - Data Visualization

- **Fall Mod B**
  - Pricing & Revenue Optimization
  - Business Forecasting

- **Spring Mod A**
  - Business Intelligence
  - Advanced Mgmt. Decision Analysis
  - Digital Strategy
  - Operations Analytics

- **Spring Mod B**
  - Web & Social Media Analytics
  - Data Mining
  - Managing Big Data
  - Project Management
  - Supply Chain Management

- **Summer**
  - Data Mining
  - Business Intelligence
Typical Career Paths

• Consulting
  – Management consulting
  – Technology consulting
  – Operations consulting
  – Analytics consulting

• Operations Management
  – Supply chain management and integration
  – Project/process management
  – Running new ventures, small companies

• Analytics managers