COURSES FOR INFORMATION SYSTEMS, STATISTICS AND MANAGEMENT SCIENCE

Management Information Systems Courses

MIS200 Fundamentals of Management Information Systems
Hours 3

Business process coordination and decision making through the use of information technology will be explored, emphasizing IT use by organizations in increasingly global markets.

MIS221 Business Programming I
C

Hours 3

This course is an introductory business-focused computer programming course. The course provides students the opportunity to learn analytical problem solving techniques, software development techniques and the syntax of the c# programming language to solve common business problems. Computing proficiency is required for a passing grade in this course. Students are limited to two attempts for this course, excluding withdrawals.

Prerequisite(s): MATH 121 or MATH 125 or MATH 145 or MATH 126 or MATH 146 or MATH 227 or MATH 247

Computer Science

MIS321 Business Programming II
C

Hours 3

A second business programming course for students pursuing the Management Information Systems major. Computing proficiency is required for a passing grade in this course. Students are limited to two attempts for this course, excluding withdrawals.

Prerequisite(s): MIS 221 and (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or EC 112) and (EC 111 or EC 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260

Computer Science

MIS330 Database Administration
Hours 3

Logical data modeling, RDBMS, and their use in the business enterprise are presented. Topics include anomalies/normalization, database-connections performance, n-tier architecture, query operations, stored processes and integrity triggers, and Web applications. Students are limited to two attempts for this course, excluding withdrawals.

Prerequisite(s): MIS 221 and (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or EC 112) and (EC 111 or EC 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260

MIS340 Data Communication in a Global Environment
Hours 3

Enabling international exchange of digital data to support business operations. Cultural, legal, security and operational requirements coupled with international standards evaluated in multiple network architectural configurations supporting transactional knowledge workers, e-business and e-commerce applications. Students are limited to two attempts for this course, excluding withdrawals.

Prerequisite(s): MIS 221 and (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or EC 112) and (EC 111 or EC 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260

MIS405 Enterprise Networking and Security
Hours 3

Data communications and networks; impact on business enterprises and issues pertaining to design and implementation. Security and operational requirements evaluated in multiple network architectural configurations.

Prerequisite(s): MIS 221 and (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or EC 112) and (EC 111 or EC 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260

MIS421 Enterprise Application Development
Hours 3

The study and application of advanced software engineering, application patterns, and file structures. Students design, construct and test software structures for effective information management.

Prerequisite(s): MIS 321 and MIS 330

MIS430 Systems Analysis & Design I
Hours 3

Intermediate-level skills in systems analysis and design techniques are presented. Emphasis is placed on systems development and delivery tools, methods, standards, and processes. Students are limited to two attempts for this course, excluding withdrawals.

Prerequisite(s): MIS 330 and MIS 321

MIS431 Systems Analysis & Design II
Hours 3

Advanced-level skills in systems analysis and design techniques are presented. Emphasis is placed on enterprise-level systems development, creation of tailored methodologies, creation of architectural standards, metrics, and business strategy alignment. Students are limited to two attempts for this course, excluding withdrawals.

Prerequisite(s): MIS 430 and MIS 330

Prerequisite(s) with concurrency: MIS 451

MIS440 Decision Support Systems
Hours 3

This course assesses information and process requirements to support business decisions in organizations. Students conceptualize, design, develop, and deliver model-based information systems designed to support effective managerial decision making.

Prerequisite(s): (EN 101 or EN 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or 112) and (EC 111 or 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260; (MIS 200 or MIS 330) or Permission of Instructor

MIS451 Systems Construction & Implementation II
Hours 3

Development of advanced software engineering skills to develop, deploy, test, document, and assess large-scale IT-based business solutions. Conversion, migration, training, maintenance, and operations plans and budget are emphasized. Students are limited to two attempts for this course, excluding withdrawals.

Prerequisite(s): MIS 430 and MIS 330

Prerequisite(s) with concurrency: MIS 431

MIS460 Applied Cyber Security
Hours 3

This course examines management issues and practical implications related to securing information systems. This course focuses on the Threat Environment, security Policy and Planning, Cryptography, Secure Networks, Access Control, Firewalls, Host Hardening, Application Security, Data Protection, Incident Response, and Networking and Review of TCP/IP. A clear theoretical understanding supports a large practical component where students learn to use contemporary security software to secure and assess information systems and network infrastructure using a hands-on approach.

Prerequisite(s): (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or 112) and (EC 111 or 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260

MIS462 Behavioral Cyber Security
Hours 3

This course is intended to provide students with a solid foundation of information security management, with an emphasis on its human element. As part of this understanding, we will explore how humans, as employees of an organization and consumers of organizational products and services, perceive threats to themselves, their digital assets, their privacy, and to their organizational affiliations. We also explore how these perceptions are operationalized in their behaviors as organizational insiders, serving to either undermine or facilitate security management practices.

Prerequisite(s): (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or 112) and (EC 111 or 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260

MIS464 Organizational Security Management
Hours 3

The course is intended to teach students how to develop and apply an information security management plan to an organization. Topics include governance and security policy, threat and vulnerability management, incident management, risk management, information leakage, crisis management and business continuity, compliance management, and security awareness and security implementation considerations. Students will also be exposed to the national and international policy and legal considerations related to cybersecurity and cyberspace such as privacy, intellectual property, and cybercrime.

Prerequisite(s): (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or 112) and (EC 111 or 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260

MIS466 Introduction to Cybercrime and Digital Forensics
Hours 3

This course introduces the topics of cybercrime and digital forensics. Students will learn different aspects of cybercrime and methods to uncover, protect and analyze digital evidence. They will learn different types of software and hardware tools and use them to perform rudimentary investigations. Cybercrime and digital forensics are increasingly important areas of study. Students will also gain an understanding of evidentiary law from the perspective of first responders. Tools are becoming more powerful and attacks more sophisticated. Consequently, there is a growing need for graduates with the skills to investigate these crimes.

Prerequisite(s): (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or 112) and (EC 111 or 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260

MIS491 Independent Study
Hours 1-3

Students can apply a maximum of 3 credits of MIS 491 toward their degree.

Prerequisite(s) with concurrency: (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or EC 112) and (EC 111 or EC 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260

MIS492 Internship
Hours 1-3

Students are selected through a competitive process for assignments in approved business or public-sector organizations. Students can apply a maximum of 3 credits of MIS 492 toward their degree.

Prerequisite(s): (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or EC 112) and (EC 111 or EC 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260

MIS497 Special Topics
Hours 1-3

Special topics in MIS. Students can apply a maximum of 9 credits of MIS 497 toward their degree.

Prerequisite(s): (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or EC 112) and (EC 111 or EC 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260

MIS501 Application Development for the Data-Driven Organization
Hours 3

This course will highlight one or more core programming languages (e.g., Java, Python) used within modern, data-driven organizations for the purpose of data collection, manipulation, and analysis. The first portion of the course will focus on essential programming knowledge and practices. The second portion of the course will emphasize the development of programmatic solutions, which will acquire data (e.g., web content, social media data, geospatial data, sensor-based data) through the integration of APIs and/or web services as well as ethical scraping techniques and then store the data in a modern backend database.

Prerequisite(s): MIS 502 co-requisite

MIS502 Database Design and Management in the Data-Driven Organization
Hours 3

This course will cover the essentials of database design and management in modern, data-driven organizations. The first portion of the course will focus on relational database design as well as SQL for the storage and access of structured data. The focus of the second portion of the course will highlight modern database structures/systems (e.g., Apache Hadoop, graph databases) as well as their query languages for storing, accessing, and analyzing more unstructured data or data having relationships not easily queried by traditional databases. Additional topics may include data cleansing, query optimization, and extract-transform-load (ETL) processes.

Prerequisite(s): MIS 501 co-requisite

MIS505 Enterprise Networking and Security
Hours 3

Data communications and networks; impact on business enterprises and issues pertaining to design and implementation. Security and operational requirements evaluated in multiple network architectural configurations.

MIS511 Management Information Systems
Hours 1-3

Motivation for, construction of, and application of MIS. Topics include IS strategic alignment, information intensive business processes, and decision making. Business analysis techniques are emphasized for systems such as TPS, e-business, management reporting systems, and data warehouses.

MIS514 Information Tech Bootcamp
Hours 3

In-depth treatment of software engineering techniques for information systems business solutions.

MIS515 Intro to Application Development
Hours 3

This bridge course intends to introduce students into the basics of application development using Python programming language. Students will gain a fundamental understanding of contemporary application development using Python as the programming language. Students will gain proficiency in creating functional Python scripts to build variety of applications in the area of system development. Python provides a simple and versatile development environment suitable for projects ranging from simple scripting applications to large-scale enterprise applications. In addition to core programming fundamentals, the course will also incorporate system development best practices such as team collaboration, version management, documentations, unit testing, styles and standards. In the process, students will explore the multitude of standard libraries available in the Python development ecosystem to accomplish various problem-solving tasks.

MIS516 MIS Practicum
Hours 3

Experiential learning in a dual-coached, commercial IS environment reporting to faculty and organizational management. Projects started during the practicum continue through the remainder of the program.

MIS520 Systems Analysis And Design
Hours 3

Techniques and methodologies of systems analysis and design are introduced, including conducting project scoping, requirements elicitation, requirements definition, and operations specifications.

MIS525 Informatn Systems Project Mgt
Hours 3

Techniques and methodologies of project level scoping, staffing, planning, scheduling, monitoring, and controlling the development of value-added information technology business solutions on time and within budget.

MIS527 Emerging Info Technologies Sem
Hours 3

Course covers fundamental purchasing systems applications, supplier relations and evaluation, strategic planning in purchasing, purchasing techniques, value analysis and cost analysis.

MIS530 Sys Development/Implementation
Hours 3

Techniques and methodologies of project-level systems development and delivery are introduced including interface design, platform constraints, application architecture, testing, quality control, security, and performance evaluation.

Prerequisite(s): MIS 520

MIS531 Health IT
Hours 3

The fragmented healthcare environment is going through a profound shift in its approach to delivering better healthcare services through the implementation of healthcare IT (HIT). This course provides an overview of the healthcare environment and the role of HIT in enabling service delivery capabilities. Specifically, this course is designed to provide students with the knowledge and skill to understand the role of HIT in creating and managing the cross-continuum systems of care. Furthermore, the course prepares students with the knowledge and skills essential to managing HIT and its assimilation in the complex domain of healthcare.

MIS535 Information Systems Consulting
Hours 3

Techniques and methodologies in client relationship management, proposal development, scope negotiation, component-based costing, knowledge management, software module and deliverable integration, systems deployment, and change management.

Prerequisite(s): MIS 520 and MIS 525

Prerequisite(s) with concurrency: MIS 530

MIS540 Dbase Design/Construction/Oper
Hours 3

Emphasizes commercial business application of relational DBMS. Topics include semantic data modeling, normalization, process triggers, enterprise integrated, ODBC, n-tier architecture, e-business application, and performance tuning.

MIS541 Business Analytic Support Sys
Hours 3

System level concepts, methods, tools and techniques for model-driven, data-intensive decision making. Topics include: structuring data, information and knowledge in data warehouses and dat marts, and analytic procedures.

MIS560 Enterprise Integration Methods
Hours 3

Introduction to techniques and methodologies of enterprise-level governance, architecture, analysis, design, procurement, integration and deployment.

MIS561 Applied Cyber Security
Hours 3

This course examines management issues and practical implications related to securing information systems. This course focuses on the Threat Environment, security Policy and Planning, Cryptography, Secure Networks, Access Control, Firewalls, Host Hardening, Application Security, Data Protection, Incident Response, and Networking and Review of TCP/IP. A clear theoretical understanding supports a large practical component where students learn to use contemporary security software to secure and assess information systems and network infrastructure using a hands-on approach.

MIS563 Behavioral Cyber Security
Hours 3

This course provides students with a solid foundation of information security management, with an emphasis on its human element. As part of this understanding, we will explore how humans, as employees of an organization and consumers of organizational products and services, perceive threats to themselves, their digital assets, their privacy, and to their organizational affiliations. We also explore how these perceptions are operationalized in their behaviors as organizational insiders, serving to either undermine or facilitate security management practices.

MIS564 Organizational Security Management
Hours 3

The course is intended to teach students how to develop and apply an information security management plan to an organization. Topics include governance and security policy, threat and vulnerability management, incident management, risk management, information leakage, crisis management and business continuity, compliance management, and security awareness and security implementation considerations. Students will also be exposed to the national and international policy and legal considerations related to cybersecurity and cyberspace such as privacy, intellectual property, and cybercrime.

MIS566 Introduction to Cybercrime and Digital Forensics
Hours 3

This course introduces the topics of cybercrime and digital forensics. Students will learn different aspects of cybercrime and methods to uncover, protect and analyze digital evidence. They will be exposed to different types of software and hardware tools and use them to perform rudimentary investigations. Cybercrime and digital forensics are increasingly important areas of study. Students will also gain an understanding of evidentiary law from the perspective of first responders. Tools are becoming more powerful and attacks more sophisticated. Consequently, there is a growing need for graduates with the skills to investigate these crimes.

MIS591 Independent Study Mgt Info Sys
Hours 3

No description available

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MIS592 Internship In Mgt Info Systems
Hours 3

No description available

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MIS597 Spec Top Mgt Info Systems
Hours 1-6

No description available

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MIS598 Res In Management Info Systems
Hours 1-6

Open to students nearing completion of coursework for the master's degree. A supervised study and investigation of specific problems in management and management information systems.

MIS670 MIS Behavioral and Organizational Theory and Design Research Seminar
Hours 3

The exploration of IS development and delivery research issues. Emphasis is placed on exploring the scientific method, theory building research, and methods of inquiry. Provides a framework for undertaking and evaluating MIS research.

MIS680 Research Seminar II
Hours 3

This doctoral research seminar will provide students with a strong foundation in the theoretical and methodological knowledge required to conduct rigorous security and privacy research projects that lead to manuscripts suitable for publication in leading journals. This knowledge is what we term "procedural knowledge" and, just as you cannot learn how to ride a bike by reading about it, students must engage in actual research activities to learn the requisite knowledge. In this course, students will first critically review security and privacy research publications from the leading MIS journals and then, based on those studies, conceive a full research project, including a relevant set of research questions and a research design appropriate to the questions.

Prerequisite(s): MIS 670 or Instructor Approval

MIS685 MIS Research Design Seminar
Hours 3

This course is an examination of the process of designing and conducting research projects on information systems phenomena. Students will gain an appreciation for the challenges and issues associated with the application of different research methodologies to MIS phenomena.

MIS690 Research Methods Seminar
Hours 3

This seminar is a discussion of the basis and principles of systems modeling and the methods of social science research. The seminar also nurtures the motivation to become a contributor to the organizational sciences and information systems research communities by examining research processes, methodologies, and strategies, the information systems research context, concepts, theories, the application of systems modeling, and the nature of MIS research.

MIS699 Dissertation Research
Hours 1-12

This independent research course partially fulfills required doctoral-level research dissertation hours toward the doctoral degree. Under the guidance of their dissertation advisor, students conduct research toward the completion of their doctoral dissertation. Employing various research techniques and methodologies, students work on theoretical and/or applied research topics with the aim of making a novel contribution to the field.

Operations Management Courses

OM300 Intro Operations Management
C

Hours 3

This course is an introduction to the field of operations management and addresses the design and management of the activities and resources that a firm uses to produce and deliver its products or services. Topics include operations strategy, product and process design, total quality management, statistical quality control, supply chain management, location analysis, forecasting, inventory management, operations planning, and lean/JIT business processes. Computing proficiency is required for a passing grade in this course. Students are limited to three attempts for this course, excluding withdrawals.

Prerequisite(s): ST 260

Computer Science

OM305 Information Technology for Operations Management
C

Hours 3

Introduction to the components of management information systems and applications of computer-based systems to business decisions using Microsoft Excel, SQL, and Python. Computing proficiency is required for a passing grade in this course. Students are limited to two attempts for this course, excluding withdrawals.

Prerequisite(s): (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or EC 112) and (EC 111 or EC 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260

Computer Science

OM310 Introduction to Management Science
Hours 3

Concepts of management science and their application to decision making. Topics include linear programming, transportation models, integer programming, dynamic programming, queuing theory, decision theory, and network models. Students are limited to two attempts for this course, excluding withdrawals.

Prerequisite(s): OM 300 and OM 305

OM321 Prod Planning & Contrl
Hours 3

The planning and control of production and service systems. Attention is given to forecasting, operations planning, scheduling, materials management, and operations control. Students are limited to two attempts for this course, excluding withdrawals.

Prerequisite(s): (EN 101 or EN 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or 112) and (EC 111 or 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260 and OM 300

OM375 Statistical Quality Control
Hours 3

Statistical methods that can be used in control of quality in manufacturing or service industry. Topics include Shewhart control charts for variables and attributes; process capability analysis; acceptance sampling plans; design of experiments; total quality management; and six sigma principles. Emphasis is on understanding, design, implementation, and interpretation of these techniques. Students are limited to two attempts for this course, excluding withdrawals.

Prerequisite(s): (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or EC 112) and (EC 111 or EC 113) and (AC 210 or AC 211) and (LGS 200 or 201) and ST 260

OM417 Logistics Management
Hours 3

Logistics deals with the planning and control of material flows and related information in organizations. This course covers logistics systems planning, organization, and control of these activities with a special emphasis on quantitative aspects of the decisions.

Prerequisite(s): OM 300 and OM 321 or OM 310

OM418 Principles of Global Transportation Management
Hours 3

The course includes review of the key elements of transportation such as modes of transportation, transportation procurement, cost minimization techniques, international trade terms, and emerging techniques.

Prerequisite(s): (EN 101 or EN 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or 112) and (EC 111 or 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260 and OM 300

OM420 Computer Simulation
C

Hours 3

This course teaches the use of simulation as a tool to investigate complex problems, systems, and processes. Fundamental simulation concepts and statistical evaluation are covered through the analysis of existing simulation models and the development of new models. Model development and analysis will be performed using spreadsheet software and a commercially available process simulation software. The primary goal of this course is to help you develop a fundamental understanding of simulation modeling with regard to use, development, and analysis. Another important goal of this course is to develop a more disciplined and rational process in the way you approach management decisions. As a result of this course, you will become more confident in understanding and using simulation models to support management decisions. Computing proficiency is required for a passing grade in this course. Students are limited to two attempts for this course, excluding withdrawals.

Prerequisite(s): OM 305 and OM 310 and OM 321 and OM 375

Computer Science

OM421 Business Analytics for Operations
Hours 3

This course aims to equip undergraduate business students with the fundamental concepts and tools for using data and analytics to solve operations management problems. Students use computer programming and software to manipulate data, conduct analyses, and develop models. This course also teaches Monte Carlo Simulation and Logistic Regression methods with applications on how these methods are used to address business problems. The ultimate learning outcome of this course is to learn how to develop a data-driven solution strategy for a complex business problem and use business analytics methods to generate actionable insights and recommendations to improve business operations or solve a particular problem. Students are limited to two attempts for this course, excluding withdrawals.

Prerequisite(s): OM 305 and OM 375 and OM 310 and OM 321

OM422 Production Scheduling Problems
Hours 3

A broad investigation into a variety of scheduling activities in a variety of environments. Topics include scheduling as applied to projects, job-shops, assembly lines, parallel machine systems, workforce, and transportation. Students are limited to two attempts for this course, excluding withdrawals.

Prerequisite(s): OM 305 and OM 310 and OM 321 and OM 375

OM423 Inventory Management
Hours 3

The basics of inventory control techniques and the role of inventory management within an organization's overall supply chain. This course covers topics including inventory cost components, types and uses of inventory, the process of ordering, planning inventory levels, and metrics associated with inventory management. Students are limited to two attempts for this course, excluding withdrawals.

Prerequisite(s): OM 305 and OM 310 and OM 321 and OM 375

OM427 Purchasing and Sourcing
Hours 3

Course covers fundamental purchasing systems applications, supplier relations and evaluation, strategic planning in purchasing, purchasing techniques, value analysis and cost analysis.

Prerequisite(s): (EN 101 or EN 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or 112) and (EC 111 or 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260 and OM 300

OM450 Process Management & Improvement
Hours 3

An analytical study of strategies, tactics, and techniques for designing, evaluating and analyzing, controlling and improving processes. Emphasis is on topics such as Design for Flexibility, Lean, Six Sigma, Constraint Management will all be included along with process application of OM analytical tools such as simulation, queuing analysis, and value stream mapping.

Prerequisite(s): OM 321

OM492 Internship In Operations Management
Hours 1-3

Students are selected through a competitive process for assignments in approved business or public sector organizations. Students can apply a maximum of 3 credits of OM 492 toward their degree.

Prerequisite(s): (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or EC 112) and (EC 111 or EC 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260

OM497 Special Topics
Hours 1-3

Operations Management special topics course. Students can apply a maximum of 9 credits of OM 497 toward their degree.

Prerequisite(s) with concurrency: (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or EC 112) and (EC 111 or EC 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260

OM500 MGT Science & Spreadsheet Mod
Hours 3

This course provides Operations Management concepts and applications in data-driven decision making. Emphasis is on data clean-up, data analysis, problem formulation, and interpretation of results using spreadsheet-based modeling and solution procedures including optimization and simulation approaches.

Prerequisite(s): ST 509 or ST 560

OM501 Advanced Applied Modeling and Analysis
Hours 3

Building on the foundations of spreadsheet modeling analysis, this course provides a deeper understanding of optimization and simulation. Course topics include discrete optimization, duality and sensitivity, large scale optimization, multi-objective optimization, dynamic programming, and Monte Carlo and process simulations with an emphasis on practical applications. In addition to spreadsheets, the students will learn specialty optimization and simulation software, including heuristic methods and algorithms. Extensive use of software.

Prerequisite(s): OM 500

OM506 Business Spreadsheet Analytics
Hours 1-3

This course provides Operations Management concepts and applications in data-driven decision making. Emphasis is on data clean-up, data analysis, problem formulation, and interpretation of results using spreadsheet-based modeling and solution procedures including optimization and simulation approaches.

Prerequisite(s): ST 509 or ST 560

OM516 Operations Management
Hours 3

This course will address the important concepts and issues related to the design and management of business operations including manufacturing, distribution, logistics, transportation, and service operations. The course will demonstrate how certain quantitative methods can be applied to the analysis and solution of problems that arise in operations management.

OM517 Supply Chain Modeling & Analys
Hours 3

This course provides a framework and quantitative methods for designing, managing, and analyzing the supply chain operations needed to support a firm's business strategy. Students will study the structure of supply chain operations in terms of six supply chain drivers (facilities, inventory, transportation, information, sourcing, and pricing). Students will develop analytical models and analyze the relationship between supply chain structure and performance through case studies and examples.

Prerequisite(s): OM 500 or OM 506

OM522 Operations Scheduling Problems
Hours 3

A broad investigation of a variety of scheduling activities in production, logistics or service environment are discussed. Typical topics include project scheduling, job-shop scheduling, routing related problems and manpower scheduling.

Prerequisite(s): OM 500 or OM 506

OM523 Inventory Management
Hours 3

Principles, models, and techniques for planning, analyzing, and controlling inventory systems are discussed. Topics include in depth analysis of deterministic and stochastic inventory models and their applications. The limitations and usefulness of these models in practice are addressed.

Prerequisite(s): ST 509 or ST 550 or ST 560

OM524 Mfg Sched & Control Systems
Hours 3

An in-depth, analytical study of the systems used in manufacturing planning and control are covered. Alternative approaches used in practice (such as MRP and JIT) are studied.

Prerequisite(s): OM 500 or OM 506; and ST 509 or ST 550 or ST 560

OM525 Effective Quality Management
Hours 3

Provide participants with a broad understanding of philosophies and methods used to enhance organizational effectiveness in a wide range of organizational settings.

OM527 Purchasing and Sourcing
Hours 3

Course covers fundamental purchasing concepts and quantitative techniques for analyzing procurement practices, selecting suppliers, managing supply risk, and improving operational procurement decisions.

Prerequisite(s): OM 500 or OM 506

OM540 Systems Simulation
Hours 3

A study of the management applications of stochastic and deterministic mathematical and computer models in systems design and analysis.

Prerequisite(s): ST 509 or ST 550 or ST 560

OM592 Internship
Hours 3

No description available

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OM596 Capstone Project
Hours 3

This course requires the student to apply his/her knowledge of the field of Operations Management to recognize and model operational problems and/or processes targeted for improvement. Further, the student must provide evidence of his/her abilities to communicate understanding of the problem or process, describe the analysis performed, and organize this material effectively for both a written report and corresponding oral presentation.

OM597 Special Topics in OM
Hours 1-6

No description available

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OM598 Research
Hours 1-6

Open to students nearing completion of coursework for the master's degree. A supervised study and investigation of specific problems in management and operations management.

OM600 Linear Program: Theory & Appli
Hours 3

The theory and application of linear programming are rigorously studied. Software tools such as AMPL and OPL Studio for solving linear programs are introduced.

OM601 Stochastic Decision Models
Hours 3

Probabilistic models in the decision-making process are discussed. Attention is given to the assumptions, development, and administrative implications of dynamic programming, queuing analysis, and decision analysis.

Prerequisite(s): MATH 557

OM602 Nonlinear Modeling and Optimization
Hours 3

Theoretical and applied aspects of nonlinear modeling and optimization such as unconstrained and constrained optimization, duality, barrier and interior point methods, and large-scale optimization.

Prerequisite(s): OM 600

OM603 Integer Modeling and Optimization
Hours 3

Theoretical and applied aspects of integer and discrete modeling and optimization such as valid inequalities, transformations, branch and bound, column generation, and branch and cut.

Prerequisite(s): OM 600

OM620 Production Management Models
Hours 3

A quantitative study of models and procedures used in various decision problems addressed by production and operations managers is completed in this course. Mathematical modeling and optimization software packages are used in solving these models.

Prerequisite(s): OM 500

OM623 Inventory Theory
Hours 3

A rigorous, mathematical treatment of stochastic single- and multi-item inventory models is performed. A numerical analysis and software package is used to implement and analyze such models.

Prerequisite(s): OM 523 and ST 560; or ST 550

OM695 Operations Management Seminar
Hours 1

A learning environment designed to expose Ph.D. students to a wide array of issues and topics related to operations management research.

OM697 Special Topics
Hours 1-6

Special Topics.

OM699 Dissertation Research
Hours 1-12

No description available

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Statistics Courses

ST260 Statistical Data Analysis
C

Hours 3

Introduction to the use of basic statistical concepts in business applications. Topics include extensive graphing; descriptive statistics; measures of central tendency and variation; regression, including transformations for curvature; sampling techniques; designs; conditional probability; random variables; probability distributions; sampling distributions; confidence intervals; and statistical inference. Computer software applications are utilized extensively. Emphasis throughout the course in on interpretation. Computing proficiency is required for a passing grade in this course. Students are limited to three attempts for this course, excluding withdrawals.

Prerequisite(s): MATH 112 or MATH 115 or MATH 121 or MATH 125 or MATH 126 or MATH 145 or MATH 146

Prerequisite(s) with concurrency: MIS 200

Computer Science

ST360 Intermediate Statistical Methods
Hours 3

This course provides a more in-depth exploration of statistical techniques including a much more focused review of inference. Additionally, 6 nonparametric alternatives to common parametric tests will be introduced as well as sampling concepts and basic linear models.

Prerequisite(s): (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or EC 112) and (EC 111 or EC 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) MIS 200 and ST 260

ST440 Statistical Programming and Computing with R
Hours 3

This course explores the syntax of the R language and its capabilities for statistical data analysis, computing, and graphics.

Prerequisite(s): (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or EC 112) and (EC 111 or EC 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260

ST445 Introduction to Statistical Learning and Data Mining
Hours 3

This course offers an introduction to the field of statistical learning, an essential toolkit far making sense of vast and complex data sets.

Prerequisite(s): ST 452

ST450 Statistical Methods in Research I
Hours 3

Development of fundamental concepts of organizing, exploring, and summarizing data; probability; common probability distributions; sampling and sampling distributions; estimation and hypothesis testing for means, proportions, and variances using parametric and nonparametric procedures; power analysis; goodness of fit; contingency tables. Statistical software packages are used extensively to facilitate valid analysis and interpretation of results. Emphasis is on methods and on selecting proper statistical techniques for analyzing real situations.

ST451 Statistical Methods in Research II
Hours 3

Analysis of variance and design of experiments, including randomization, replication, and blocking; multiple comparisons; correlation; simple and multiple regression techniques, including variable selection, detection of outliers, and model diagnostics. Statistical software packages are used extensively to facilitate valid analysis and interpretation of results. Emphasis is on appropriate analysis of data in real situations.

Prerequisite(s): ST 450 or GES 255

ST452 Applied Regression Analysis
Hours 3

Data analysis using multiple linear regression, including residual plots, transformations, hypothesis tests, outlier diagnostics, analysis of covariance, variable selection techniques and co-linearity. Logistic regression uses similarly discussed for dealing with binary valued independent variables.

Prerequisite(s): (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or EC 112) and (EC 111 or EC 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260

ST454 Mathematical Statistics I
Hours 3

Distributions of random variables, moments of random variables, probability distributions, joint distributions, and change of variable techniques.

Prerequisite(s): (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or EC 112) and (EC 111 or EC 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260 and (MATH 227 or MATH 247)

ST455 Mathematical Statistics II
Hours 3

Theory of order statistics, point estimation, interval estimation, and hypothesis testing.

Prerequisite(s): ST 454

ST497 Special Topics
Hours 1-3

Students can apply a maximum of 9 credits of ST 497 toward their degree.

Prerequisite(s): (EN 101 or 120) and (EN 102 or EN 121 or EN 103 or EN 104) and (MATH 121 or MATH 125 or MATH 145) and (EC 110 or EC 112) and (EC 111 or EC 113) and (AC 210 or AC 211) and (LGS 200 or LGS 201) and ST 260

ST509 Stat For Business Appl
Hours 3

A broad introduction to statistical and probabilistic methods useful for managerial decision making. Topics include graphical displays, numerical summaries, basic probability models, confidence intervals, hypothesis testing, and regression analysis.

ST521 Statistical Data Management
Hours 3

Introduction to the management of data using SAS. The collection and management of data from business or scientific research projects are emphasized.

ST522 Adv Statistical Data Mgt
Hours 3

This course provides students with insight and understanding into the advanced aspects of data management. Emphasis will be placed on computer techniques for the preparing and cleaning of data from scientific research projects as well as for business-oriented projects in order to conduct advanced level analyses. Techniques for detecting, quantifying, and correcting data quality will be covered.

Prerequisite(s): ST 521

ST531 Data Mining I
Hours 3

Data mining is the process of selecting, exploring, and modeling large amounts of data to uncover previously unknown patterns of data. Techniques for accomplishing these tasks in a business setting will be discussed.

Prerequisite(s): ST 550 or ST 560 or ST 509

ST532 Advanced Data Mining
Hours 3

A detailed study of data mining techniques including logistic regression, neural networks, decision trees, general classifier theory, and unsupervised learning methods. Mathematical details and computer techniques are examined. The SAS programming language and SAS's Enterprise Miner will be used to accomplish these tasks. Other packages may also be used.

Prerequisite(s): ST 531

ST540 Statistical Programming and Computing with R
Hours 3

This course explores the syntax of the R language and its capabilities for statistical data analysis, computing, and graphics.

Prerequisite(s): ST 260

ST541 Applied Statistical Modeling for Analytics I
Hours 3

Emphasis is on practical methods of statistical data analysis and their interpretation. Topics include simple and multiple linear regression, regression model interpretation, regression diagnostics, transformations on dependent and independent variables, qualitative independent variables, regression inference, strategies for model building, methods for forecasting time series data. Extensive use of statistical software.

Prerequisite(s): ST 560

ST542 Applied Statistical Modeling for Analytics II
Hours 3

Emphasis is on practical methods of statistical data analysis and their interpretation. Topics include design and analysis of experiments (completely randomized design, randomized block design, factorial designs, 2^(k–p) fractional factorial designs, response surface optimization), multivariate inference, dimension reduction, classification, and clustering. Extensive use of statistical software.

Prerequisite(s): ST 541- Applied Statistical Modeling for Analytics 1 (or equivalent)

ST545 Introduction to Statistical Learning and Data Mining
Hours 3

This course offers an introduction to the field of statistical learning, an essential toolkit for making sense of vast and complex data sets.

Prerequisite(s): ST 452 or ST 552 or ST 560

ST547 Data Visualization and Analytics in R
Hours 3

Data visualization is one of powerful tools to explore and understand data. This course is intended to introduce students to useful visualization techniques for data exploration and presentation using the free and open-source R computer programming. Basic syntax and capabilities of the R language are also covered.

Prerequisite(s): ST 550 or ST 560

Prerequisite(s) with concurrency: ST 550 or ST 560 and and Equivalent courses may also be considered; subject to program approval.

ST550 Stat Methods In Res I
Hours 3

Development of fundamental concepts of organizing, exploring, and summarizing data; probability; common probability distributions; sampling and sampling distributions; estimation and hypothesis testing for means, proportions, and variances using parametric and nonparametric procedures; power analysis; goodness of fit; contingency tables. Statistical software packages are used extensively to facilitate valid analysis and interpretation of results. Emphasis is on methods and on selecting proper statistical techniques for analyzing real situations.

ST552 Applied Regression Analy
Hours 3

Modeling issues for multiple linear regression are discussed in the context of data analysis. These include the use of residual plots, transformations, hypothesis tests, outlier diagnostics, analysis of covariance, variable selection techniques, weighted least squares and colinearity. The uses of multiple logistic regression are similarly discussed for dealing with binary-valued dependent variables.

Prerequisite(s): ST 450 or ST 550 or ST 560 or ST 509

ST553 Appld Multivariate Analy
Hours 3

Methods and business applications of multivariate analysis, discriminant analysis, canonical correlation, factor analysis, cluster analysis, and principal components.

ST554 Math Statistics I
Hours 3

Distributions of random variables, moments of random variables, probability distributions, joint distributions, and change of variable techniques.

ST555 Math Statistics II
Hours 3

Theory of order statistics, point estimation, interval estimation, and hypothesis testing.

Prerequisite(s): ST 554

ST560 Statistical Methods
Hours 3

Statistical methods for summarizing data; probability; common probability distributions; sampling and sampling distributions; estimation and hypothesis testing for means, proportions, and variances using parametric and nonparametric procedures; power analysis; goodness of fit; contingency tables; and simple regression and one-way analysis of variance.

ST561 Applied Design Expermnts
Hours 3

An introduction to the design and analysis of experiments. Topics include factorial, fractional factorial, block, incomplete block, and nested designs. Other methods discussed include Taguchi Methods, response surface methods, and analysis of covariance.

Prerequisite(s): GES 400 or GES 500 or BER 540 or CHS 425 or CHS 525 or ST 509 or ST 550 or ST 560

ST575 Statistl Quality Control
Hours 3

Statistical methods useful in control and improvement of manufactured products, including statistical process control with variables and attribute control charts, and process improvement with designed experiments. Emphasis is placed on design, implementation, and interpretation of the techniques.

Prerequisite(s): ST 550 or ST 560 or ST 509

ST591 Independent Study
Hours 3

No description available

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ST592 Internship
Hours 3

No description available

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ST597 Special Topics
Hours 1-6

No description available

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ST603 Advanced Inference
Hours 3

A continuation of ST 555, with emphasis on the general theory of estimation and hypothesis testing and large sample distribution theory.

Prerequisite(s): ST 555

ST610 Linear Models
Hours 3

Gauss-Markov Theorem, solution of linear systems of less than full rank, generalized inverse of matrices, distributions of quadratic forms, and theory for estimation and inference for the general linear model.

ST615 Theory Of Regression
Hours 3

Theory of the general linear regression models and inference procedures, variable selection procedures, and alternate estimation methods including principal components regression, robust regression methods, ridge regression, and nonlinear regression.

Prerequisite(s): ST 610

ST635 Nonparametric Statistics
Hours 3

Theory and applications of various nonparametric statistical methods are covered for one-sample, two-sample, and multi-sample problems. Goodness of fit techniques such as Chi-square and the kolmogorov-Smirnov test are covered along with graphical analysis based on P-P and Q-Q plots. Computer software such as MINITAB, SAS, and STATXACT are used.

ST640 Statistical Computing
Hours 3

Topics include a survey of current statistical software, numerical methods for statistical computations, nonlinear optimization, statistical simulation, and recent advances in computer-intensive statistical methods.

ST645 Advanced Statistical Learning
Hours 3

This course offers theory, methodology and applications of modern statistical learning tools.

Prerequisite(s): ST 552, ST 553, and ST 554 Matrix algebra, Multivariate calculus, Statistical methods, Applied Multivariate Methods or permission of instructor.

ST697 Special Topics
Hours 1-6

Special topics in statistics.

ST698 Research In Statistics
Hours 1-6

Open only to graduate students nearing completion of coursework. Independent study and investigation of specific problems for advanced students of statistics.

ST699 Dissertation Research
Hours 1-12

No description available

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