

## **MANAGEMENT INFORMATION SYSTEMS COURSES**

### **Student Learning Outcomes<sup>1</sup>**

#### **MIS 180: Principles of Information Systems**

At the end of this course students should be able to:

1. Explain the importance of determining information system requirements for all management levels by describing the differences between various types of information systems.
2. Describe how information systems are developed.
3. Describe the computer revolution and its impact on the way business is conducted.
4. Use critical-thinking skills in identifying information systems problems and investigate existing literature about hardware and software solutions to problems.
5. Know the components and functions of computer systems, both hardware and software.
6. Describe the advances in networking, data communications and the Internet and how they affect the way business is conducted.
7. Identify which information technology tools are used to solve various business problems.
8. Display proficiency solving business problems using modern productivity tools (e.g., spreadsheet, database) or creating custom programs.

#### **MIS 301: Statistical Analysis for Business**

At the end of this course students should be able to:

1. Use data from a sample to make inferences about a population.
2. Apply probability theory in decision making situations.
3. Formulate hypotheses for decision making and research.
4. Analyze data using appropriate statistical techniques.
5. Interpret the results of statistical analysis.
6. Use data analytic software to create visualizations and summary reports of data.

#### **BA 360: Introduction to Operations and Supply Chain Management**

At the end of this course students should be able to:

1. Define the role of operations and supply chain in an organization and its interactions with business functions such as accounting, finance, and marketing.
2. Develop the basic business and operations strategies for increased productivity and competitiveness for service and manufacturing.

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<sup>1</sup> Updated May 2018

3. Use descriptive and optimization models and incorporate cost drivers to improve general business decision making.
4. Identify issues in inventories and resources for an organization and use basic models to improve its management.
5. Design quality management strategies, techniques and tools for improved customer satisfaction.
6. Plan the basic scheduling for project and its management.
7. List and apply lean operations principles.
8. Identify supply chain's strategic impacts on global business.

### **MIS 305: Business Processes, ERP, and Analytics**

At the end of this course student should be able to:

1. Define and explain basic processes used by businesses.
2. Define and explain Enterprise Resource Planning system concepts and be able to contrast an ERP to traditional functionally oriented information systems.
3. Use an ERP system to manage a company.
4. Explain basic concepts of utilizing analytics to generate business intelligence.

### **MIS 306: Information Systems Analysis**

At the end of this course students should be able to:

1. Work in a project-team setting.
2. Perform all aspects of the SDLC planning phase.
3. Perform all aspects of the SDLC analysis phase.
4. Explain the benefits and limitations of the steps and deliverables used in information systems projects.
5. Analyze the competitive advantage that IS projects can bring to an organization.

### **MIS 315: Business Application Programming**

At the end of this course students should be able to:

1. Explain the following concepts and write programs involving most of them:
  - Structured programming principles
  - Data validation techniques
  - Array processing
  - List processing
  - Menus and dialog boxes
  - Multiform projects
  - Visual Basic for database access

- Object-oriented programming (OOP) principles.

### **MIS 375: Information Systems Technology**

At the end of this course students should be able to:

1. Retain currency in the face of rapid technological change by reading and understanding technical literature.
2. Critically and comparatively evaluate technical descriptions of computer hardware and software products.
3. Recognize and evaluate linkages between end - user requirements and underlying hardware and software technologies.

### **MIS 380: Data Management Systems**

At the end of this course students should be able to:

1. Describe how relational databases store business data and provide desired information.
2. Analyze organizational information requirements using the entity-relationship approach and model them as Entity-Relationship Diagrams (conceptual database design).
3. Map an Entity-Relationship Diagram to a relational database (logical database design).
4. Use normal form theory to analyze and improve a database design.
5. Create a database with the ORACLE Database Management System and process complex information using the SQL language.
6. Explain how a DBMS enforces security, recovery from failure, and concurrency control.

### **MIS 396W: Reporting Techniques for Business Professionals**

At the end of this course students should be able to:

1. Apply the essentials of organizing business messages.
2. Gather primary information and interpret it effectively.
3. Prepare short documents for business such as instructions, proposals, and policy and procedure statements.
4. Prepare a substantial analytical report using both primary and secondary research and supported with suitable graphics.
5. Deliver individual and team oral business presentations using appropriate visual support.
6. Design effective visual support for written and oral business presentations.

### **MIS 406: Information Systems Design**

At the end of this course students should be able to:

1. Work in a project-team setting.
2. Perform all aspects of the SDLC design phase.
3. Perform all aspects of the SDLC implementation phase.
4. Explain the benefits and limitations of the steps and deliverables used in systems design and implementation projects.

### **MIS 460: Project Management**

At the end of this course students should be able to:

1. Explain and discuss the phases and knowledge framework for the methods used in project management.
2. Explain the genesis of project, program, and portfolio management and their importance to enterprise success.
3. Conduct a gap analysis by identifying “as is” and “to be” vision of the project.
4. Create a Charter and Scope for a project.
5. Apply project management concepts by working on a team project as project manager or active team member.
6. Use Microsoft Project to link all activities and resources to produce a detailed project schedule and budget.
7. Identify the critical path, calculate its variance and estimate the probability of completing the project within a stated time.
8. Produce and integrate planning for Communication, Human Resources, Quality, Risk, and Procurement.
9. Define project management terms and techniques such as:
  - The triple constraint of project management
  - The project management knowledge areas
  - Tools and techniques of project management such as Cognitive mapping, Process flow charts, Work breakdown structures, Gantt charts, network diagrams, critical path analysis, Cost estimates, Crashing a project, Earned value management, and Leadership and team building.

### **MIS 481: E-Business/Web Development**

At the end of this course students should be able to:

1. Translate a set of business requirements into a functional and interactive Web site.
2. Display a fundamental understanding of some of the major tools and frameworks available for Web development.
3. Apply these skills to any of the major Web development frameworks in use in the industry today.

### **MIS 482: Information Technology Projects**

At the end of this course students should be able to:

1. Analyze the business case for a proposed (new/upgraded) information system.
2. Lead the analysis, design and implementation of a new/upgrade information system using recognized systems development methodology(ies) and tools.
3. Manage the development process using formal project management practices.
4. Document the development process and the project.

### **MIS 483: Networks and Data Communications**

At the end of this course students should be able to:

1. Explain general networking terminologies.
2. Describe software and hardware elements necessary to implement a network.
3. Explain internetworking, transmission media, and network protocols.
4. Discuss and compare major network standards for LAN and WAN and their technical differences.
5. Develop preliminary competence to design, analyze, and implement small-scale networks.
6. Articulate general approaches available to implement security measures on a computer network.
7. Discuss standard architectures, layers, and key protocols of each layer.
8. Explain the Internet architecture.

### **MIS 492: Management of Information Systems**

At the end of this course students should be able to:

1. Describe the major technological, organizational, behavioral, and ethical issues facing today's information systems professional.
2. Describe IT strategy formulation and explain its alignment with organizational strategy.
3. Conduct research on and describe, several current and emerging technologies and explain their impact on corporate performance.
4. Explain the difference between supporting a business with technology and driving a business with technology.
5. Describe ways in which technology can provide an organization with competitive advantages.
6. Describe how technology facilitates and enhances both operational and strategic decision making in an organization.

### **MIS 515: Object-Oriented Programming for Business Applications**

At the end of this course students should be able to:

1. Edit, compile, and execute Object-Oriented Programs.
2. Explain how the object-oriented paradigm provides for information hiding and program re-use.
3. Create classes and objects and combine them into working programs.
4. Solve business problems using an object-oriented solution.

### **BA 623: Statistical Analysis**

At the end of this course students should be able to:

1. Use data from a sample to make inferences about a population.
2. Develop strategies for problem-solving and decision-making using business analytics.
3. Formulate hypotheses for decision making and research.
4. Apply statistical analysis to improve managerial decision making.
5. Critically evaluate statistical findings to determine their usefulness to the organization.
6. Present statistical results using graphics, text, and the spoken word.

### **BA 628: Operations and Supply Chain Management**

At the end of this course students should be able to:

1. Explain the role of operations and supply chain in an organization and its interactions with business functions such as accounting, finance and marketing.
2. Define the basic business and operations strategies for increased productivity and competitiveness for service and manufacturing.
3. Apply descriptive and optimization analytics to improve business decision making.
4. Apply forecasting techniques to estimate future demand.
5. Explain quality management strategies, techniques and tools for improved customer satisfaction.
6. Describe the basic issues and models of inventory and materials management.
7. Apply the basic scheduling techniques for project planning and management.
8. Explain lean operations principles.
9. Elaborate supply chain's strategic impacts on global business.

### **MIS 620: Electronic Business Infrastructures and Big Data Infrastructures**

At the end of this course students should be able to:

1. Explain what big data is, the major drivers in the new big data ecosystem, and the role of a data scientist in modern organizations.

2. Demonstrate the data analytics lifecycle: Discovery, Data Preparation, Model Planning, Model Building, Communicate Results, Communicate Results, and Implementation.
3. Review the existing technologies and infrastructure required for big data analysis and storage.
4. Identify sources of big data in the organization and the internet.
5. Prepare and clean big data for analysis.
6. Apply machine learning and statistical techniques to analyze big data and make classifications or predictions.
7. Critically evaluate the results of big data analysis to communicate impact to business decision making.
8. Present results of big data analysis using visualizations, text, and spoken work.

### **MIS 680: Information Systems Hardware and Software**

At the end of this course students should be able to:

1. Describe the workings of a computer based on the stored program concept: data format, machine code, fetch-execute cycle, addressing.
2. Explain roles, organization, and interactions of the main computer components: CPU, memory, and peripheral devices.
3. Explain Function 1 of the operating system--computer-user interface processing
4. Explain Function 2 of the operating system--hardware resource management:
  - CPU scheduling
  - Memory management
  - Peripheral device management
  - File management.

### **MIS 686: Enterprise Data Management**

At the end of this course students should be able to:

1. Explain how the roles of data professionals such as database administrators and Chief Data Officers support the strategic management and use of data as an organizational asset.
2. Explain the concept of transactions, and explain how and why DBMS enforce security, assure data integrity and persistence, and implement concurrency control.
3. Analyze and model an organization's data, information, and knowledge requirements using tools such as entity-relationship diagrams and UML class diagrams.
4. Create logical designs for relational database in 3rd normal form, and explain how and why physical database designs may deviate from the normal forms.
5. Use SQL statements to create a relational database, to store data in the database, and to retrieve information from the database using an industry standard database management system.

### **MIS 687: Secure Enterprise Networking & Mobile Technologies**

At the end of this course students should be able to:

1. Explain software and hardware elements necessary to implement a secure network.
2. Explain intermediary devices in network architecture and operational mechanisms.
3. Explain internetworking, transmission media, and secure network protocols.
4. Discuss and compare major network standards and their technical differences.
5. Understand fundamentals of cybersecurity in terms of threat types and defense measures on a computer network.
6. Discuss standard architectures, layers, and key protocols of each layer in the distributed network architecture.

### **MIS 688: Information Systems and Strategies in Organizations**

At the end of this course students should be able to:

1. Describe and explain the evolving business and IT environments.
2. Describe strategic information systems planning and decision making in the new networked global economy.
3. Apply theoretical business and information systems models to management and problem-solving situations.
4. Explain the concept of business process reengineering (BPR).
5. Describe ways of measuring organizational IT performance.
6. Describe IT governance and the management of change.
7. Describe the ethical responsibilities of today's IT professional.

### **MIS 691: Decision Support Systems**

At the end of this course students should be able to:

1. Describe decision theory.
2. Explain decision modeling.
3. Identify and define knowledge management terms and concepts.
4. Explain how knowledge management impacts an organization.
5. Describe how to build and implement a Knowledge Management System.
6. Explain Knowledge Management/Knowledge Management System Success.
7. Identify and Discuss issues affecting Knowledge Management.
8. Define and explain decision support systems.
9. Explain decision support technologies.



### **MIS 695: Business System Analysis and Design**

At the end of this course students should be able to:

1. Discuss and describe the principles of software development project management.
2. Discuss and describe the lifecycle approach to systems analysis.
3. Describe the project selection process.
4. Describe and create the various system analysis graphical methods.
5. Discuss the Secure Systems Life Cycle and the integration of security into the systems development process.

### **MIS 697: Project Planning and Development**

At the end of this course students should be able to:

1. Discuss project development processes and methodologies.
2. Define project scope.
3. Develop work breakdown structure.
4. Design project schedule and budget.
5. Determine critical path and critical activities.
6. Explain documentations associated with a project plan.
7. Conduct earned value analysis to monitor project progress.
8. Utilize project management software to generate project plans.

### **MIS 705: Communication Strategies**

At the end of this course students should be able to:

1. Organize and deliver short and longer written documents in a consistent, attractive, well organized fashion that can meet a clear goal.
2. Prepare an executive summary.
3. Deliver an effective individual oral business presentation.
4. Work with another person to deliver an effective team oral presentation.
5. Avoid visual clutter, incorrect or misleading graphic elements, and inappropriate graphic delivery.

### **MIS 744: Seminar in Lean Six Sigma Quality Management**

At the end of this course students should be able to:

1. Identify objectives, measures, targets, and initiatives for improving quality within the general applications of business (including manufacturing, service, and small business), health care, education, and not-for-profit.
2. Analyze business-related data through the use of the Baldrige criteria.

3. Examine quality problems in the business world using various quality concepts and techniques such as PDCA, cause-and-effect diagrams, Pareto charts, DMAIC, DMADV, and other qualitative problem-solving tools.
4. Examine quality problems within organizations using Six Sigma and Lean Six Sigma concepts.
5. Apply statistical tools that are based on probability distributions such as z-tests, t-tests, F-tests, chi-square tests to solve problems and improve decision making.
6. Apply process capability indices for evaluating quality and process capability.
7. Apply statistical process control techniques for evaluating quality.
8. Use statistically related equations and software to demonstrate quality techniques.
9. List a wide array of approaches to examining quality.
10. Apply software tools such as Excel, SPSS, SAS, JMP IN, Minitab, MASS, StatTools, and/or other analytical software to analyze quality issues.
11. Interpret statistical results, charts, graphs, and diagrams and then apply such findings to improve problem solving and managerial decision making.
12. Think critically in quantitative and qualitative problem solving and decision making, applied to a wide range of business settings.
13. Identify components of the Plan-Do-Check-Act (PDCA) process for critical thinking and problem solving in real world situations.
14. Apply the DMAIC (Define, Measure, Analyze, Improve, and Control) approach to address projects for quality improvement.
15. Apply the DMADV (Define, Measure, Analyze, Design, and Verify) approach to address projects for quality improvement.
16. Differentiate among quality tools such as Quality Function Deployment (QFD), kaizen, Pareto, critical to quality (CTQ), control charts, poka yoke, root cause analysis, HosinKanban, SWOT, environmental scan, affinity diagrams, and other such tools.

### **MIS 748: Seminar in Applied Multivariate Analytics**

At the end of this course students should be able to:

1. Analyze business-related data through the use of basic and advanced level statistical tools.
2. Approach problems for which data analysis has potential for testing hypotheses by following systematic approaches to problem solving, using such concepts as PDCA, CE diagrams, and flowcharts, using a wide range of statistical procedures.
3. Construct and evaluate hypotheses through the use of z-tests, t-tests, various analysis of variance designs, bivariate and multiple regression, and nonparametric statistics.
4. Construct and evaluate hypotheses through the use of advanced level statistical procedures, such as judgment analysis, factor analysis, hierarchical grouping, multiple discriminant analysis, multivariate analysis of variance, and other statistical procedures to improve decision making.
5. Identify probabilities associated with statistical results.

6. Differentiate between honest, ethical analyses and distorted misinformation.
7. List approaches to data sampling, design, collection, sampling, and data entry that lead to improved analysis of problems.
8. Apply calculators, computers, and graphical tools to analyze and interpret data.
9. Apply software tools such as Excel, SPSS, SAS, JMP IN, Minitab, Execustat, Statgraphics, MASS, StatTools, Clementine, Clustan, and/or other analytical software to analyze data bases.
10. Interpret statistical software results for problem solving and managerial decision making.
11. Think critically in quantitative and qualitative problem solving and decision making applied to a wide range of settings.
12. Identify baselines, benchmarks, and trends that are useful for comparing an organization's results with various standards.
13. Predict potential strengths and opportunities to improve within an organization through the use of both qualitative and quantitative problem-solving and decision-making techniques and tools.

### **MIS 749: Business Analytics**

At the end of this course students should be able to:

1. Explain the strategic role of business analytics in the organization.
2. Identify and Apply one or more predictive modeling techniques.
3. Identify and Apply one or more classification techniques.
4. Use association analysis to discover relationships between sets of items.
5. Evaluate the effectiveness of business analytics initiative.
6. Present the results of a business analytics initiative using graphics, text, and the spoken word.

### **MIS 750: Strategic Project Management**

At the end of this course students should be able to:

1. Explain strategic frameworks for project management.
2. Assess strategic issues in project selection.
3. Define program and portfolio management.
4. Determine criteria and priority to resolve resource conflicts for multiple projects.
5. Develop program and portfolio risk assessment and mitigation plans.
6. Elaborate cultural and globalization impacts on project team management.
7. Design project organizational structures and project governance.
8. Identify and manage project stakeholders.
9. Explain the role of a project management office.
10. Evaluate project management process maturity.

## **MIS 752: Seminar in Supply Chain and Enterprise Resource Planning**

At the end of this course students should be able to:

1. Discuss core supply chain and enterprise planning concepts using appropriate vocabulary
2. Explain strategy and issues relevant to the implementation and integration of supply chain and enterprise resources
3. Explain how forecast accuracy, SOP, and quality impact the accuracy of the supply chain and enterprise planning effectiveness.
4. Explain the role of lead time, BOM, Inventory, and MPS accuracy play in successful supply chain materials scheduling.
5. Explain the integration of supply chain processes with corporate accounting.
6. Demonstrate hands-on usage of enterprise resources planning technologies.
7. Collaborate with other students to produce reports and presentations displaying knowledge of class concepts.
8. Explain the multifunctional workflow integration necessary to perform many ERP based transactions.
9. Explain the pros and cons associated with corporate ERP systems.
10. Be able to discuss future directions evolving from the ERP systems of today.
11. Explain the growing need for integrating the flow of partners' planning and transactional data to the ERP system.

## **MIS 753: Global Supply Chain Management**

At the end of this course students should be able to:

1. Articulate various supply chain strategies.
2. Develop and assess supply chain configurations.
3. Apply analytics for demand forecast and production planning.
4. Assess global sourcing decisions and strategies.
5. Develop supply chain inventory policies.
6. Understand logistics services and planning.
7. Explain supply chain risk mitigation strategies and tactics.
8. Apply supply chain collaboration frameworks.
9. Measure supply chain performance
10. Explain sustainability issues in global supply chains.

## **MIS 754: Seminar in Operations Strategy**

At the end of this course students should be able to:

1. Explain the role of operations management in the functioning of an organization.

2. Describe of the range of general and technical issues that must be considered in handling operations/manufacturing/supply chain decisions.
3. Formulate an orderly framework in evaluating and recommending changes in the operations/manufacturing/supply chain management strategies.
4. Communicate effectively both orally and in writing.
5. Use problem solving skills effectively in a group setting.

### **MIS 755: Information Systems Security Management**

At the end of this course students should be able to:

1. Explain and describe the various components of security management.
2. Perform a threat analysis and risk assessment for a specified organization.
3. Identify and explain security models and architectures.
4. Describe the various security technologies and methodologies.

### **MIS 790: Directed Readings in Management Information Systems**

At the end of this course, students should be able to:

1. Analyze complex organizational information systems issues presented in case studies or for actual business organizations.
2. Synthesize information from the major areas of the information systems field and use this as basis for making appropriate recommendations to organizations.
3. Organize and present, in written form, complex information technology (IT) related information to both academic and practitioner audiences.