

INFORMATION & DECISION SCIENCE (INFO)

INFO 101 - Contemporary Business

3 Credits

Prerequisite(s): Can not be used for degree credit by Business Administration majors with more than 60 credits completed toward degree. Special fee. The organization and operation of contemporary business are explored. Students study the operation of the free enterprise system, alternative economic systems, and the various functional areas of business: finance, management, production, and marketing. 3 hours lecture.

INFO 173 - Spreadsheet Modeling for Business Decisions

3 Credits

Special fee. This course emphasizes the development of Microsoft Excel skills and applications. In addition to basic skill building strong emphasis will be placed on business problem analysis and solution development through spreadsheet modeling. Students will also develop skill in presenting models in visual, written, and oral form. Meets Gen Ed - Computer Science. 3 hours lecture.

INFO 209 - Personal Finance

3 Credits

Special fee. This course introduces students to the principles of personal financial management. Using a life cycle view of the role(s) of money at various stages of life, students discover principles underlying decisions such as how to budget, managing consumer credit, managing taxes, selecting investments, planning for retirement, and estate planning. 3 hours lecture.

INFO 230 - Introduction to Business Co-Op Work Exp

3-6 Credits

Prerequisite(s): Sophomore level status (45+ semester hours completed) with a 2.25 minimum grade point average; Business Administration major. This is an introductory cooperative education course which integrates formal classroom study and assignments with a supervised full-time or part-time off-campus employment experience. The purpose of this course is to develop self-awareness and to explore educational and occupational alternatives.

INFO 240 - Statistical Methods in Business

3 Credits

Prerequisite(s): MATH 100 or Placement Through MSU Placement Test. Special fee. This course is a comprehensive introduction to the application of modern statistical methods used in enumerative and analytic studies in business. Topics covered include: use of percentages, proportions, rates, ratios and indices; descriptive statistical methods of data analysis; probability; an introduction to discrete and continuous probability distributions; the normal distribution; classical statistical inference - sampling distributions, confidence interval estimation and hypothesis testing for the mean and the proportion and for differences in two means and differences in two proportions; an introduction to control charts. Spreadsheet software is integrated in all topics. Meets Gen Ed - Mathematics. 3 hours lecture.

INFO 271 - Managerial Statistics

3 Credits

Prerequisite(s): MATH 113 and MATH 114; Business Administration major. Special fee. Analytic statistics which focuses on tools and methods for improving quality. Topics include Deming's fourteen points, descriptive statistics, summary statistical measures, probability and probability distributions, control charts, regression and design of experiments. 3 hours lecture.

INFO 290 - Technology in Business

3 Credits

Prerequisite(s): INFO 173. Special fee. This course provides an introduction to the impacts of information systems on business. The course focuses on business processes and information needs in organizations, the roles of information systems in addressing these needs, and ultimately, providing support for the tactical and strategic directions of the business. The building blocks of information systems (hardware, software, networking, Internet, cloud computing, systems analysis, security, e-business, database systems, enterprise systems, etc.) are presented with an emphasis on how each of these components impacts business processes. 3 hours lecture.

INFO 300 - Integrated Core: Operations Management

3 Credits

Prerequisite(s): BUGN 295. Business Administration or Accounting majors only. Corequisite(s): FINC 300, MKTG 300 and MGMT 300. Special fee. This course is an intro to managerial concepts & quantitative tools required in the design, operation, and control of processes & systems needed to deliver a product or service in a business. Clearly, this material must be integrated with all of the other functional areas of an organization. In addition to examining the operational concepts, theories and tools, the course will include discussions of the interrelationships of these topics and their usefulness in the areas of marketing, management, finance & business strategy. The course will present methods that ensure that business operations are efficient in using as few resources as needed, & effective in meeting customer requirements. Focus will be on managing the processes that convert inputs (in the forms of materials, labor, and energy) into outputs (in the form of goods and/or services). This course incorporates mathematical, statistical, & decision making methods in the analysis of specific business processes & systems. The topics covered include operations strategy, process optimization & management, inventory control, production planning & scheduling, queuing, supply chain management, quality control, decision making, & project management. Computers are used to solve problems involving complex systems. 1 of 4 courses within the Integrated Semester of the undergraduate program. 3 hours lecture.

INFO 301 - Business Decision Making

3 Credits

Prerequisite(s): INFO 173 or CMPT 109; and MATH 106 or 109 or 114 or 116 or 122 or 221; or departmental approval. For Business minors only. Special fee. The underlying theme of the course is business problem solving. This course engages students in employing tools from operations management and management information systems in the solution of business problems. Analysis of quantitative decision-making and information systems from the management point of view will be covered. 3 hours lecture.

INFO 306 - Introduction to Web Development

3 Credits

Prerequisite(s): INFO 310; Business Administration major. Special fee. This course is designed to increase awareness and understanding of the movement to Web-based applications and enterprise-level management information systems as well as electronic commerce. This is a hands-on, lab-based Web page design course with significant exposure to the tools and requirements for the production of such systems. Students will learn to use a variety of development tools such as MS-Front Page, scripting languages such as JavaScript, VBScript and Perl and programming styles to develop both individually and in teams applications that simulate the realities of today's information systems and environment. 3 hours lecture.

INFO 310 - Database Management Systems**3 Credits**

Prerequisite(s): INFO 290; Business Administration major. Special fee. This course provides students an overview of the development, applications and management of database systems in business. Students are given a series of hands-on exercises and projects to practice skills in data analysis, database design, database queries and applications. This course also introduces concepts of database administration and Web based database applications. Previous course INFO 410 effective through Summer 2014. 3 hours lecture.

INFO 315 - Production and Industrial Analysis**3 Credits**

Prerequisite(s): INFO 240 or INFO 271 and MGMT 231; Business Administration majors. Special fee. This course is mainly designed to expose students to production aspects of industries. It will develop theories and applications in the areas of location of facilities, capacity planning, facilities design and layout, designing assembly line production systems, facilities maintenance and materials handling, purchasing, inventory control systems, forecasting demand for products, master scheduling and MRP, scheduling and control systems, and quality and statistical quality control. 3 hours lecture.

INFO 320 - Administrative Business Communications**3 Credits**

Prerequisite(s): Business Administration majors only; and MKTG 240. Special fee. The study of communication processes using special problem applications with a theoretical and practical base. Writing proposals, business correspondence, business plans, and handling electronic messaging are covered. Emphasis is also on using presentation materials to complement interpersonal and organizational communication. This course counts as an elective within the business major for all concentrations in Business Administration. Meets the University Writing Requirement for majors in Business Administration with a Concentration in Management Information Systems or Operations Management. 3 hours lecture.

INFO 321 - Information and Media Management**3 Credits**

Prerequisite(s): Business Administration majors only; and INFO 290. Special fee. Includes study of the criteria and methods by which records are created, stored, retrieved, retained and disposed, as well as attention to study of the managerial considerations necessary for effective selection and utilization of equipment, procedures, and personnel. This course counts as an elective within the business major for all concentrations in Business Administration. 3 hours lecture.

INFO 335 - Computer Applications in Business**3 Credits**

Prerequisite(s): INFO 173 or passing School of Business Computer Proficiency Exam; Business Administration major. Special fee. A course designed to prepare students to make decisions in the selection and utilization of microcomputer systems and appropriate software for a business environment based on identified needs; the factors to consider in the implementation of microcomputers at different levels of an organization; and the characteristics of specific software applications used in the business environment. The course also provides students with hands-on experience with commercial software packages. This course counts as an elective within the business major for all concentrations in Business Administration. 3 hours lecture.

INFO 342 - Information Technology Infrastructure**3 Credits**

Prerequisite(s): INFO 290; Business Administration major. Special fee. This course is a survey of the many and varied hardware, software, service, and human resources that comprise the core of the information technology organization in the enterprise. The major resources are explained and their chief characteristics elaborated. Emphasis throughout the course is placed on the enterprise requirements for IT infrastructure and how each of these resources addresses each requirement. The infrastructure components are presented through the life cycle of resources: planning, selection, acquisition, implementation, operation, evaluation, and refresh. Previous course INFO 282 effective through Summer 2014. 3 hours lecture.

INFO 350 - Quality Improvement**3 Credits**

Prerequisite(s): INFO 240 or INFO 271; Business Administration majors. Special fee. A comprehensive approach to quality in organizations is essential to maintaining competitive position. This course explores current thinking as well as the tools and techniques necessary to implement quality programs. 3 hours lecture.

INFO 351 - Fundamentals of Project Management**3 Credits**

Prerequisite(s): INFO 290; Business Administration major. This course provides an overview of the tools, techniques, and methods used to manage business problems. The entire project life cycle—planning, implementation, control, and evaluation is addressed. Students are required to take the CAPM exam. 3 hours lecture.

INFO 357 - Business Computer Programming**3 Credits**

Prerequisite(s): INFO 342; Business Administration major, Information Technology. Special fee. This course enhances students' ability to use computer programming to solve business problems. Students are introduced to the concepts of object-oriented programming in business applications. 3 hours lecture.

INFO 360 - MIS Co-Op**3 Credits**

Prerequisite(s): INFO 351 and; INFO 310 or INFO 342; Business Administration major. This is an introductory cooperative education course for students studying Management Information Systems. This course will integrate formal classroom study with a supervised full-time, or part-time off-campus employment experience. The purpose of this course is to develop self-awareness and to explore educational and occupational alternatives. 3 hours cooperative education.

INFO 361 - Information Technology Special Projects**3 Credits**

Prerequisite(s): INFO 351 and; INFO 310 or INFO 342; Business Administration major. Special fee. This course provides students with the ability to use their accumulated information systems technology skills and knowledge to complete a real world project. These projects will be identified by the school or department and must include a major information systems component with an external organization. 3 hours lecture.

INFO 363 - Inferential Statistical Methods with Business Applications**3 Credits**

Prerequisite(s): INFO 173, INFO 240, INFO 290 or departmental approval. This intermediate-level statistics course presents a thorough background in key inferential methods of data analysis used in business research. The course begins with an introduction to the process of business research through survey sampling and experimental design. Topics covered include tests for randomness, tests for goodness-of-fit, tests for association, and tests for differences in two or more groups in both a completely randomized setting and randomized block setting where the response variable is either numerical or categorical. Multivariate methods of inference are also developed in the completely randomized setting. Minitab, a statistical software package used to assist in data analysis is integrated throughout the course. 3 hours lecture.

INFO 364 - Regression Modeling in Business**3 Credits**

Prerequisite(s): INFO 173, INFO 240, INFO 290 or departmental approval. Employing least-squares methods, this intermediate-level statistics course presents a thorough background in regression modeling used in business research and provides the underpinnings of predictive analytics in a world of Big Data. A model's assumptions are assessed through graphical residual analysis and confirmatory testing and refinements are made through variable transformations and influence analysis. Other methods of regression modeling of a numerical response variable, including LASSO, quantile regression, and regression trees are also introduced. Similarly, both classification tree methods and the logistic regression model used for predicting the probability of occurrence of some categorical phenomenon based on maximum likelihood methods are also presented. Minitab, a statistical software package used to assist in model building, is integrated throughout the course. 3 hours lecture.

INFO 365 - Foundations of Business Analytics**3 Credits**

Prerequisite(s): INFO 240. Special fee. This is the first course in the business analytics concentration and provides a comprehensive overview of the fundamental concepts and tools of business analytics for improving business decision making and organization performance. The major topics discussed are: (i) the process of business intelligence and business analytics, (ii) the core concepts of "big data" management, (iii) the principles of data visualization and dashboard design, and (iv) the techniques of predictive analytics. Spreadsheet or commercial software is integrated in all topics. 3 hours lecture.

INFO 366 - Managing Big Data**3 Credits**

Prerequisite(s): INFO 310 and INFO 365. Special fee. This course focuses on the management of "big data," the term given to the huge amounts of data that are routinely captured today as byproducts of business operations, transactions, and interactions on social networks. This data is warehoused in various forms in various databases, and designing the process by which data is extracted, transformed, and presented for analysis is key to successful and efficient analysis. Infrastructure choices including cloud computing, ELT vs ETL, and choice of language for distributed processing (Hadoop vs ECL/HPCC etc.) are discussed. 3 hours lecture.

INFO 367 - Structured Data Analytics**3 Credits**

Prerequisite(s): INFO 365; and INFO 366 may be taken as prerequisite or corequisite. Special fee. This is the first of two courses focusing on the techniques of data analytics. In this course students are introduced to analytical techniques for business decision making that are suitable for structured data. Training data, validation data, and out-of-sample validation data for model development and validation are discussed. Popular data mining techniques like decision trees, neural networks, and cluster detection are introduced. Students will use datamining software to analyze realistically large datasets to gain experience with these techniques. 3 hours lecture.

INFO 368 - Unstructured Data Analytics**3 Credits**

Prerequisite(s): INFO 367. Special fee. This is the second of two courses focusing on the techniques of data analytics. In this course students are introduced to analytical techniques for business decision making that are suitable for unstructured data (text, video, audio, etc.). Training data, validation data, and out-of-sample validation data for model development and validation are discussed. The focus of the analytical techniques is on text-mining, but related issues like natural language processing, context analysis, and situational awareness are also discussed. Students will use appropriate data-mining software to analyze realistically large datasets to gain experience with these techniques. 3 hours lecture.

INFO 369 - Decision and Risk Analysis**3 Credits**

Prerequisite(s): INFO 300. This course focuses on developing data driven decision analysis with the focus on optimal efficiency. The course employs lectures, case studies, formulation, and solution of business problems through application of managerial, quantitative and information systems methodology. Mathematical programming models, decision-making and Bayesian analysis, simulation models are learned with the applications in sports analytics, marketing, and portfolio optimization. 3 hours lecture.

INFO 370 - Pricing Analytics and Revenue Management**3 Credits**

Prerequisite(s): INFO 365. This course covers elements of both the theory and the practice of revenue management and pricing, drawing on principles from economics and psychology while maintaining an analytics focus. Students will learn concepts, techniques, and frameworks for assessing and formulating pricing strategies and will explore innovative approaches to setting prices. Course concepts will be reinforced through hands-on simulation exercises, case analysis, and group project work. 3 hours lecture.

INFO 372 - Management Science**3 Credits**

Prerequisite(s): INFO 240, INFO 375 and MGMT 231; Business Administration majors. Special fee. Applied mathematical techniques used to solve a wide variety of problems with special attention to issues, management, and production control. Topics include linear programming, transportation, and assignment algorithms, other optimization techniques, decision theory, simulation, and queuing theory. 3 hours lecture.

INFO 375 - Operations Analysis**3 Credits**

Prerequisite(s): INFO 240 or INFO 271; Business Administration majors. Special fee. An introduction to managerial concepts and quantitative tools required in the design, operation, and control of business systems. This course incorporates mathematical and statistical methods in the analysis of specific business systems and industrial production activities, inventory control, production planning and scheduling, and capital management. Computers are used to solve problems involving complex systems. 3 hours lecture.

INFO 380 - Computer Networks in Business**3 Credits**

Prerequisite(s): INFO 342 or departmental approval; Business Administration major. Special fee. This course enhances students' knowledge of data communications, network design, administrations, and distributed information systems. The concepts essential to the design and application of both communication hardware and software are examined. Emphasis is on the analysis and design of networking applications in business. Management of networks, networking security, cost-benefit analysis, introduction of major emerging networking technologies, and evaluation of connectivity options are also covered. 3 hours lecture.

INFO 386 - Supply Chain Management**3 Credits**

Prerequisite(s): INFO 375; Business Administration majors. Special fee. This course involves the flow of materials and information among all of the firms that contribute value to a product from the source of raw materials to end customers. Relationships among supply chain components and the interface of supply chain activities and other functional areas of business are examined. 3 hours lecture.

INFO 400 - Business Analytics Capstone Practicum**3 Credits**

Prerequisite(s): INFO 368 may be taken as prerequisite or corequisite. Special fee. This is the final requirement of the business analytics curriculum. In this capstone practicum students will work on a collaborative group project that addresses, ideally, a live business problem using the analytical techniques learned in the other courses comprising this major. Students will clearly articulate the business problem and the goals of their chosen analytical approach. They will have access to realistically big data, and an opportunity to appreciate, through application, the possibilities and limitations of these analytical techniques. Students will be expected to understand and communicate the business implications of their analysis to interested stakeholders.

INFO 412 - Management for Information Systems Continuity**3 Credits**

Prerequisite(s): INFO 290; Business Administration major. Special fee. This course provides the knowledge and skills required to complete an in-depth analysis of an organization's information systems and infrastructure needs from planning, control, and strategy to the role of security protection, disaster recovery, and business continuity with reliability engineering, performance management, storage-networking and facility design. In addition to the technical and logistical aspects, the course provides an important framework of the management perspective necessary to plan for and successfully react to operational vulnerability and disruptions in public and private organizations. 3 hours lecture.

INFO 414 - Information Security System Management**3 Credits**

Prerequisite(s): INFO 310. This course provides students an overview of the development, applications and management of information security (IS), business continuity (BC), and disaster recovery (DR) systems in business. Students are given a series of hands-on exercises and projects to practice skills in IS-BC-DR administration, designing, and related infrastructure planning. This course also introduces strategic concerns of local, cyber security administration along with cloud based IS-BC-DR concepts, issues and trends for all businesses. 3 hours lecture.

INFO 416 - Business Process Analysis and Enterprise Systems**3 Credits**

Prerequisite(s): INFO 342; Business Administration major. Special fee. This course provides an in-depth exploration of the design, development, use, control, and maintenance of business processes. Emphasis is placed on the impacts of processes on the effectiveness and efficiency of business operations through business process engineering. Enterprise Resource Planning systems (ERP) are analyzed as attempts to integrate a consistent set of process across an organization. 3 hours lecture.

INFO 440 - Data Analysis and Visualization**3 Credits**

Prerequisite(s): BUGN 280 and INFO 310; Business Administration major. Special fee. This course is a comprehensive introduction to the fundamental concepts and tools needed for participating in the developing discipline/field of business analytics which is aimed at improving business decision making and organization performance. The use of data warehouses to support business analytics is discussed and four core topics of business analytics are covered: (1) Data visualization through dashboard design; (2) Descriptive and inferential methods of data analysis; (3) Big data modeling, and (4) Methods of optimization. The core of business analytics will be developed from three perspectives - descriptive analytics, predictive analytics and prescriptive analytics. Spreadsheet or commercial software is integrated in all topics. 3 hours lecture.

INFO 463 - Essential Research and Data Analysis Methods**3 Credits**

Prerequisite(s): INFO 240 and INFO 173 or permission of department; Business Administration majors. Special fee. Provides a working knowledge of research methodology and includes the fundamentals of both exploratory and confirmatory data analysis useful in business research settings, enabling a focus on understanding and interpreting results and being aware of related ethical issues. Develops the concepts of experimental designs and model building and uses SPSS, a menu-driven statistical software package, throughout. Enhances development of interpersonal skills through the use of projects and assignments emphasizing the importance of teamwork in achieving success in an organizational setting and enhances development of communication skills by emphasizing term team project reports and brief oral presentations. 3 hours lecture.

INFO 470 - Electronic Commerce: Creating Business Value Using Information Technology**3 Credits**

Prerequisite(s): INFO 290. Major within the School of Business and Information Technology majors only. Special fee. This course is designed to provide the student an understanding of the consequences of the introduction of the Internet and the World Wide Web in the way business is conducted. The electronic commerce world is viewed primarily from the point-of-view of MIS. That is, the managerial issues related to the information infrastructure requirements are mainly attended to. Both individuals and organizations have been profoundly affected by related network technologies that have since permutated in form ever since the convergence of advanced communications and information infrastructure and the cable, telephone, television, and telecommunications industries. The student will learn about new forms of business practices in business-to-business, consumer-to-business, and intraorganizational transactions. Specifically, activities in the areas of electronic shopping, publishing, distribution, and collaboration will be explored. The following issues that have arisen as a result of electronic commerce (EC) will be explored: security, authentication, privacy, data encryption, intellectual property rights, freedom of expression using electronic media, fair use policies, legal liabilities, etc. Students will also learn about new organizational forms such as the "virtual" firm that are emerging as a result of EC. 3 hours lecture.

INFO 474 - Business Forecasting**3 Credits**

Prerequisite(s): INFO 240 or INFO 271; Business Administration majors. Special fee. Mathematical and econometric models for short- and long-range business forecasting. Models are evaluated for accuracy and relevance. The computer is used as a tool in developing an automated system. 3 hours lecture.

- INFO 475 - Quantitative Decision Making for Business** **3 Credits**
Prerequisite(s): INFO 372 and INFO 463; Business Administration majors. Special fee. This course is a capstone course for the Quantitative Methods concentrations and is aimed at applying the quantitative methods learned in the prerequisite courses to solve some real world business problems. It will be a project-oriented course. The class time will be used to discuss the problems and their solution strategies rather than learning more techniques. Computerized tools will be used to solve the problems. 3 hours lecture.
- INFO 476 - Data Mining for Business** **3 Credits**
Prerequisite(s): INFO 240 or departmental approval; Business Administration major. Special fee. This course is concerned with data mining concepts and techniques and is designed as a practical introduction to the growing field of Data Mining. This powerful set of analytic techniques is becoming increasingly popular as an information management tool designed to guide decisions under conditions of limited certainty across such diverse fields as marketing, finance, economics, education, epidemiology, psychology, sociology, as well as many others. 3 hours lecture.
- INFO 488 - Business Application with Artificial Intelligent (AI) Systems** **3 Credits**
Prerequisite(s): INFO 290; Business Administration major. Special fee. The course will cover the following topics: knowledge acquisition techniques, knowledge representation, inferencing, case-based reasoning, industrial application, uncertainty issues. 3 hours lecture.
- INFO 490 - Decision Support Systems for Business** **3 Credits**
Prerequisite(s): INFO 290; Business Administration major. Special fee. The course will cover the following topics: decision types and models, heuristics in decision making, the role of data and its collection, group decision making, design of DSS and GDSS, neural computing/learning, uncertainty issues. 3 hours lecture.
- INFO 491 - Independent Study in Information Systems** **3 Credits**
Prerequisite(s): Departmental approval; and INFO 290; Business Administration major. Special fee. A student, under the guidance of a faculty advisor, will conduct an in-depth study on a current topic in information systems. A project report or a research paper will be produced after this study. May be repeated once for a maximum of 6.0 credits as long as the topic is different.
- INFO 492 - Special Topics in Information Systems** **1-3 Credits**
Prerequisite(s): INFO 290 and departmental approval; Business Administration major. Special fee. This course covers the topics in the design, implementation, and applications of information systems. The topics also include various information technologies and their applications. The course may be repeated for credit as long as the "special topic" in each course differs from topics previously taken. May be repeated once for a maximum of 6.0 credits as long as the topic is different.
- INFO 496 - Advanced Systems Analysis and Design** **3 Credits**
Prerequisite(s): INFO 351 and INFO 416 and INFO 440; Business Administration major. Special fee. This course is an advanced (capstone) project-oriented exposition of the MIS knowledge to application system development process. Emphasis is placed on information analysis and the logical specification of the system and project management. SDLC, systems development process and systems development tools, etc., are covered. The student is guided to develop a formal design document as a project. 3 hours lecture.
- INFO 501 - Statistical Methods** **3 Credits**
Prerequisite(s): Course in undergraduate calculus; M.B.A. degree students only. Special fee. Introduction to statistical techniques with applications in business decision making and problem solving. Topics include methods of descriptive data analysis, probability and probability distributions, methods of inferential data analysis including estimation and hypothesis testing and an introduction to experimental design principles, correlation, regression model building and an introduction to time series forecasting. 3 hours lecture.
- INFO 502 - Operations Research** **3 Credits**
Prerequisite(s): INFO 501. Special fee. A presentation of many of the applied mathematical techniques used to help make business decisions. Topics include the theory of decisions, linear programming, network analysis, queuing, Markov processes, and simulation. 3 hours lecture.
- INFO 503 - Information Systems** **3 Credits**
Prerequisite(s): M.B.A. degree students only. Special fee. Examines the information requirements of an organization. The differences in the kinds of information needed at the various organizational levels (operational, administrative and strategic) are emphasized. How to plan and implement a comprehensive information system is discussed as well as methods to measure its effectiveness. 3 hours lecture.
- INFO 505 - Production/Operations Management** **3 Credits**
Prerequisite(s): INFO 501, 503, MGMT 505; M.B.A. degree students only. Special fee. Emphasizes human and mechanical productivity in planning a comprehensive and effective production or operations system. Employs a case approach to the study, formulation, and solution of business problems through the application of managerial, quantitative and information systems methodology. 3 hours lecture.
- INFO 530 - Introduction to Business Statistics** **1.5 Credit**
Special Fee. This course is a comprehensive introduction to statistical techniques with applications in business decision making and problem solving used in enumerative studies. Topics include methods of descriptive data analysis with emphasis on understanding and managing variation and an introduction to methods of inferential data analysis. Spreadsheet software is integrated in all topics. 1.5 hours lecture.
- INFO 531 - Business Models** **3 Credits**
Prerequisite(s): INFO 501. Special fee. This is an advanced course in quantitative approaches to managerial decision making. The emphasis will be on simulation models and techniques with applications in finance, production, inventory, and queuing analysis. Computer-based simulation systems will be discussed and tested on the computer. 3 hours lecture.
- INFO 532 - Statistical Inference for Business** **3 Credits**
Prerequisite(s): INFO 501. Special fee. An exploration of intermediate statistical methodologies used for decision making. The theoretical bases for various techniques are presented to create a framework for understanding the assumptions and limitations of inferences made from data. Topics covered will include multivariate probability functions, moment generating functions, sampling distributions; estimation, Neyman-Pearson Lemma, parametric and non-parametric hypothesis tests, and analysis of variance. 3 hours lecture.
- INFO 533 - Stochastic Models** **3 Credits**
Prerequisite(s): INFO 502. Special fee. Stochastic models are descriptions of systems which change in accordance with probabilistic laws. The course focuses on construction rather than solution of models. Simulation solutions and statistical analysis of data from stochastic processes. Applications to business problems are stressed. 3 hours lecture.

INFO 534 - Multivariate Analysis**3 Credits**

Prerequisite(s): INFO 502, 532. Special fee. An introduction to multivariate analysis with an emphasis on the practical application of these techniques. After introducing the multivariate distribution, the following statistical procedures are explored: multiple regression, discriminant analysis, multivariate tests of significance, canonical analysis, factor analysis, and multidimensional scaling. Use of these procedures as managerial tools is fully explored. 3 hours lecture.

INFO 535 - Advanced Information Systems**3 Credits**

Prerequisite(s): INFO 503. Special fee. Conceptual foundations of information systems including the nature of information, the impact of information systems of the organization and managing the information services function. Explores most current technology in the area of operating systems software, including multiprocessing, multiprogramming, virtual storage and other operating systems, as well as applications software systems. 3 hours lecture.

INFO 550 - Total Quality Methods**3 Credits**

Prerequisite(s): INFO 501. Special fee. The philosophy, tools and techniques necessary to properly manage for the control of quality production are of ever increasing importance to business and industry. Quality control, long thought of as only a tool for acceptance sampling, is now expanded and used as a means for improving all phases of any business system. For several decades, Japanese business has successfully utilized these methods to gain new inroads into international markets. This course presents the newest approaches to quality control adapting many of the traditional tools and methods to current problems. 3 hours lecture.

INFO 561 - Applied Business Statistics**1.5 Credit**

Special fee. This course focuses on the development and application of mathematical models and statistical tools to support managerial decision making. The course emphasizes "learning by doing" so that students will be expected to formulate, solve, and interpret a number of different mathematical models and statistical applications. The emphasis is on data-driven decision making applied to diverse industries and functional areas, including accounting, finance, management, operations and marketing. Applications to problems in auditing, advertising, consumer behavior, human resources management, product packaging and planning, portfolio optimization, public health planning, real estate and risk management are shown. Spreadsheets and other software tools are used to solve and analyze the models developed. 1.5 hours lecture.

INFO 562 - Management Science in Business**1.5 Credit**

Special fee. This course focuses on the development and application of various mathematical models used to support managerial decision making. The course employs a case approach to the study, formulation, and solution of business problems through application of managerial, quantitative and information systems methodology. Mathematical programming models, decision-making Bayesian analysis, simulation models, and queuing applications are stressed. 1.5 hours lecture.

INFO 563 - Strategic Information Systems**3 Credits**

Special fee. This course provides students with a fundamental understanding of strategic roles that information technology and information systems (IT/IS) play in providing the tools and resources for managing business operations. It surveys a wide range of IT/IS topics analytically, including IT governance, system development, information resource management and business intelligence, IT/IS impact on business models and decision making, implications of emerging technologies to E-business, security issues and ethical issues in deployment of IT/IS. The course addresses these topics through a managerial, applications-oriented perspective. It emphasizes on aligning IT/IS strategically to goals of business to gain competitive advantages. 3 hours lecture.

INFO 564 - Operations and Supply Chain Management**1.5 Credit**

Special fee. This course provides students with a fundamental understanding of manufacturing and service operations and their role in the organization and in the supply chain. Surveys a wide range of operations and supply chain management topics, including process flow analysis, capacity planning, inventory management, facilities location, and total quality management. The course deals with these topics through a managerial, applications-oriented perspective. The course is integrative in nature, emphasizing the fit and relationship of operations with other functions of the firm. 1.5 hours lecture.

INFO 571 - Discovering and Leveraging Emerging Technologies**1.5 Credit**

Prerequisite(s): INFO 563 or INFO 503. MBA degree students only. Special fee. Technological innovation are a primary source of competitive advantage for firms and impact the way we live and work. Over the past few decades we have seen various technologies revolutionize the business world - from the introduction of the personal computer, to the Internet revolution, and more recently mobile computing and hybrid cars. These revolutions are obvious in hindsight, but it often difficult to determine which technologies will take off and become successful and which have the potential to completely change industries. This course will examine the current state of the high technology field and introduce various methods and frameworks, in order to help determine which technologies are likely to succeed, which will probably fail, and which may lead to radical changes in the business world and in our everyday lives. 1.5 hours lecture.

INFO 572 - Business Analysis**1.5 Credit**

Prerequisite(s): INFO 563 or MGMT 565 or by permission of the MBA Office. MBA degree students only. Special fee. The focus of this course is on how to convert the business needs of a customer into the systems requirements that can be further taken into the design and implementation phases in the development cycle of a software system. Conducting a feasibility analysis (business case) for the proposed information systems or enhancements to an existing information system is the essential part of this course. This is done with the help of tools and techniques of systems analysis. Current Systems Analysis methodologies such as SDLC and Agile will be covered. Change management concepts, processes, and techniques are presented in the context of systems development projects. Pointers to managerial and organizational aspects of information technology projects are provided throughout the course. This course is for individuals aspiring to be analysts or better informed end users of information systems in business. 1.5 hours lecture.

- INFO 573 - Practicum in E-Commerce** **1.5 Credit**
Prerequisite(s): INFO 563 or INFO 503; MBA degree students only. Special fee. This course is designed to provide the student a practical understanding of the consequences of the introduction of the Internet and the World Wide Web in the way business is conducted. The aim of the course is to provide a hand on understanding of how to establish and run an online business. Students will learn about the importance of Web-based commerce by participating in it. The course will address issues such as online market research, building an effective Web presence, search engine marketing, and leveraging the use of other current techniques to drive traffic to a Website. 1.5 hours lecture.
- INFO 574 - Database Management** **3 Credits**
Prerequisite(s): INFO 563; and MBA or Certificate students only. Special fee. This is an introductory course of databases development and deployment in business. It offers students with both theoretical background and hands-on experiences in database design and applications. Students are also introduced with concepts of database management, as well as contemporary trends and issues of database applications in business. This course provides key frameworks for understanding the basics and roles of database development and applications in business. It focuses on problem solving approaches in data modeling, database logical design and information retrieval for business intelligence. 3 hour lecture.
- INFO 575 - Independent Study in Information Systems for Business** **1-3 Credits**
Prerequisite(s): Departmental approval. MBA degree students only. Special fee. Under faculty guidance and supervision, this tutorial course is open to students who wish to pursue individual study and research in a particular discipline. May be repeated once for a maximum of 6.0 credits as long as the topic is different.
- INFO 576 - Enterprise Systems Management** **1.5 Credit**
Prerequisite(s): INFO 563 may be taken as prerequisite or corequisite. MBA or Certificate students only. This course provides advanced techniques to help you manage complex enterprise systems, also referred to as enterprise information systems. It focuses on how to architect, design, and implement IT infrastructure in an enterprise. The course can help you learn how to manage new technologies in information systems and handle problem situations as they arise. You could also learn to use new software applications that you could use on the job. Topics include: Information structures, Business communication and networks, Information systems analysis, Information technology (IT) architecture, IT strategy, Enterprise systems management, legacy and Commercial-Off-The-Shelf systems integration and related topics. 1.5 hours lecture.
- INFO 577 - Selected Topics in Information Systems for Business** **1-3 Credits**
Prerequisite(s): Departmental approval. MBA degree students only. Special fee. An in-depth study of a selected topic, issue, problem or trend in information systems for business. The specific subject matter is not offered as an existing regular course or deserves more time-emphasis than is possible in a regular course. When offered, topics and prerequisites are announced in the course schedule book. May be repeated eight times for a maximum of 12 credits as long as the topic is different. 1 - 3 hours lecture.
- INFO 578 - Systems Development Life Cycle Management** **1.5 Credit**
Prerequisite(s): MBA or Certificate Students Only. Special fee. 1.5 hours lecture.
- INFO 579 - Agile Systems Development Management** **1.5 Credit**
Prerequisite(s): MBA or Certificate Students Only. Reducing cycle-time to bring products to the market in a shorter time has been the driving challenge for product development teams. Increasing economic pressures due to globalization, shrinking markets, commoditization, and competition, has made this challenge a reality and not an option any more. Managing this reality without compromising the product quality and performance requires an agile systems development and management approach. Agility includes flexibility, adaptability, and nimbleness in business processes, systems design and development, manufacturing, and strategy. This course is designed to provide the students an ability to understand the methods, processes, and tools for managing agile systems design and development projects. 1.5 hours lecture.
- INFO 580 - Risk Analysis and Management** **1.5 Credit**
Prerequisite(s): MBA or Certificate Students Only. Special fee. Risk analysis and management focuses on planning for risks and evaluating probability consequences in the business setting. The class will cover wide array of business decision problems with the help of computation models, and available data. We will use solver and simulation tools that will help us analyze the complex business problems in an intuitive, informative manner. You will be able to make managerial decisions that are based on cutting edge analytics modeling. 1.5 hours lecture.
- INFO 581 - Enterprise Architecture and Data Management** **3 Credits**
Enterprise architecture identifies the main components of an organization and the ways in which these components work together. The components include performance and strategy, people, business capabilities, applications, technology, knowledge and information, as well as financial and other resources. This course provides advanced techniques to help you manage complex data driven enterprise systems architecture. It focuses on how to architect, design, and implement IT infrastructure in an enterprise to support data strategy. The course can help you learn how to manage new technologies in information systems and handle problem situations as they arise. Management of enterprise data architecture is addressed including data structures, conceptual data modeling, logical data modeling, structured query language (SQL), and physical optimization of high performance data architecture. 3 hours lecture.
- INFO 582 - Decision Analysis and Optimization** **3 Credits**
Prerequisite(s): INFO 589 may be taken as prerequisite or corequisite. Decision Analysis and Optimization will cover wide array of business decision problems with the help of computation models. We will use solver and data analysis tools that will help us analyze the complex business problems in an intuitive, informative manner. Students will be able to make managerial decisions that are based on cutting edge analytics modeling. This course will introduce the principles and techniques of applied mathematical modeling for managerial decision-making. 3 hours lecture.
- INFO 583 - Introduction to Business Analytics** **3 Credits**
Prerequisite(s): INFO 530 or equivalent; and INFO 563 may be taken as prerequisite or corequisite. MBA or Certificate students only. This is the first course in the business analytics concentration and provides a comprehensive overview of the fundamental concepts and tools of business analytics for improving business decision making and organization performance. The major topics discussed are: • the process of business intelligence and business analytics, • the core concepts of "big data" management, • the principles of data visualization and dashboard design, and • the techniques of predictive analytics. Spreadsheet or commercial software is integrated in all topics. 3 hours lecture.

INFO 584 - Data Analytics and Visualization**3 Credits**

Prerequisite(s): INFO 583; MBA or Certificate students only. Special fee. Through data exploration and visualization, large amounts of complex information can be communicated clearly via graphic designs. Visuals are simpler to understand, have a stronger impact, are engaging for a wider audience and significantly improve comprehension, communication and decision-making. Visualization provides one means of combating information overload, as a well-designed visual can simplify perceptual inferences and improve comprehension, memory, and decision making. Furthermore, visual representations may help engage more diverse audiences in the process of analytic thinking and decision making. The course will cover basic modern techniques in data analysis and visualization for risk and decision making, and help develop and enhance skills in data exploration, manipulation and visualization. In this course we will study techniques and algorithms for creating effective visualizations based on principles from graphic design, visual art and cognitive science. 3 hours lecture.

INFO 585 - Advanced Business Analytics**3 Credits**

Prerequisite(s): INFO 583; MBA or Certificate students only. Special fee. This is an advanced course focusing on the techniques of data analytics. In this course students are introduced to analytical techniques for business decision making that are suitable for both structured and unstructured data (text, video, audio, etc.). Training data, validation data, and out-of-sample validation data for model development and validation are discussed. Analytical techniques of text-mining, natural language processing, context analysis, and situational awareness are discussed. Students will use appropriate data-mining software to analyze realistically large data sets to gain experience with these techniques. Popular data mining techniques like decision trees, neural networks, and cluster detection are introduced. 3 hours lecture.

INFO 586 - Pricing Analytics and Revenue Management**3 Credits**

Prerequisite(s): INFO 590. Corequisite(s): INFO 583. This course provides analytics students with proven concepts, techniques, and frameworks for assessing and formulating pricing strategies. Students will learn the process of making pricing decisions and explore innovative approaches for setting prices. The course covers elements of both the theory and the practice of revenue management and pricing, drawing on principles from economics and psychology while maintaining an analytics focus. Course concepts will be reinforced through hands-on simulation exercises, case analysis, and group project work. 3 hours lecture.

INFO 587 - Big Data Analytics**3 Credits**

This is an advanced course in the MS in Business Analytics program. It provides a hands-on introduction to the state-of-the-art Big Data modeling technologies and techniques. 3 hours lecture.

INFO 588 - Capstone Practicum in Business Analytics**3 Credits**

This is the final requirement of the business analytics curriculum. In this internship students will work on a collaborative group or individual project that addresses, ideally, a live business problem using the analytical techniques learned in the other courses comprising this major. Students will clearly articulate the business problem and the goals of their chosen analytical approach. They will have access to realistically big data, and an opportunity to appreciate, through application, the possibilities and limitations of these analytical techniques. Students will be placed in companies and expected to understand and communicate the business implications of their analysis to interested stakeholders.

INFO 589 - Applied Statistics for Business Analytics**3 Credits**

This course is aimed at providing analytics students with a basic knowledge of statistical concepts and methods that are needed to perform important business functions requiring data analysis, such as business forecasting, trend analysis, and exploring patterns and hidden opportunities. The focus is on using the tools and techniques to extract useful information out of data and to make correct interpretations, rather than their mathematical structure or derivation. Hands-on exercises will be used to reinforce learning by taking advantage of the built-in statistical functions in MS Excel and Tableau. 3 hours lecture.

INFO 590 - Decision Risk Modeling**3 Credits**

Prerequisite(s): INFO 589 may be taken as prerequisite or corequisite. This course focuses on using powerful spreadsheet features to model complex business situations characterized by risk with the goal of facilitating and informing decision making. The course covers • the basics of the modeling process with Excel • decision making models incorporating risk • building simulation models and using them to aid decision making under uncertainty • spreadsheet add-ins that facilitate modeling and optimization. 3 hours lecture.