Information and Decision Sciences (IDS)

Courses

IDS 400. Programming for Data Science in Business. 3 or 4 hours.
Aims to provide students the knowledge and skills for designing and developing data science applications in various business areas, using a language such as Python. Focuses on programming constructs and use of functions and packages. Course Information: 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Prerequisite(s): IDS 201and basic knowledge of programming at the level of IDS 201 or equivalent. Recommended background: IDS 270.

IDS 401. Business Object Programming using Java. 0-4 hours.
Basic concepts in object-oriented programming such as objects, classes, class inheritance and interfaces, data abstraction and encapsulation, polymorphism, and dynamic binding. Course Information: 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 201 or the equivalent. Class Schedule Information: To be properly registered, students must enroll in one Laboratory and one Lecture-Discussion.

IDS 403. Information Security. 3 or 4 hours.
Examine the field of information security to prepare students for their future roles as business decision-makers. Presents a balance of the managerial and technical aspects of information security. Course Information: 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 200 or the equivalent.

IDS 405. Business Systems Analysis and Design. 3 or 4 hours.
Theory of analysis, design and development of information systems; information management and database management systems; data management and analysis; case studies in systems implementation and evaluation. Course Information: 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 201 or IDS 331.

IDS 406. IDS Consulting Practicum. 3 or 4 hours.
Students interact with businesses or non-profit organizations to design and develop technology, business and analytics-related solutions in IDS areas. Experiential learning on all project phases from investigation and analysis, through presentation. Course Information: 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Prerequisite(s): Knowledge of databases, programming, statistics; or consent of instructor. Recommended background: Senior standing; and familiarity with systems analysis and design.

IDS 410. Business Database Technology. 3 or 4 hours.
Computer software techniques used in business with emphasis on information management and database management systems. Data management and analysis. Major types of database management systems, query languages. Course Information: 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 201 or IDS 331. For BS in Data Science prerequisite is an equivalent course like CS 141.

IDS 412. Distributed Business Systems. 3 or 4 hours.
Organizational aspects and underlying concepts of distributed business systems, decentralization versus centralization issues, costs of distributed computing, and performance evaluation measures. Course Information: 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 201 or IDS 331; and credit or concurrent registration in IDS 410.

IDS 413. Internet Technology and Management. 3 hours.
The technologies of World Wide Web development. Topics include: TCP/IP, HTTP, HTML, HTML authoring, XML, ASP programming, client-side programming, and Web 2.0, web servers, database servers, business application servers and Internet. Course Information: Credit is not given for IDS 413 if the student has credit for IDS 424. Extensive computer use required. Prerequisite(s): IDS 201 or IDS 331; and IDS 410.

IDS 420. Business Model Simulation. 3 or 4 hours.
Simulation analysis of strategic business decision models for investment, marketing, product introduction, and operational policies concerning inventory, production planning, quality assurance and supply chain management. Course Information: 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Credit or concurrent registration in IDS 355; or credit or concurrent registration in IDS 331 or the equivalent.

IDS 422. Text Mining for Business Applications. 3 or 4 hours.
Text mining for business applications. It will cover document representation, text categorization and clustering, basic natural language processing techniques, sentiment analysis, probabilistic topic models and text visualization. Course Information: 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 371 or FIN 330 or ECON 300 or ACTG 392 or STAT 382 or STAT 481; or consent of the instructor.

IDS 435. Optimization for Analytics. 3 or 4 hours.
Optimization methods for machine learning and data science applications in business, engineering, sciences. Core formulations and algorithms for continuous, discrete, dynamic optimization problems. Why algorithms work, and implementation of methods. Course Information: 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 371 or FIN 330 or ECON 300 or ACTG 392 or STAT 382 or STAT 481 and knowledge of programming at the level of IDS 201 or equivalent.

IDS 437. Stochastic Methods. 3 or 4 hours.
Stochastic processes and other applications of probability theory. Use of spreadsheet and other software tools for analysis, simulation and decision theory. Models for business operations and planning, computer systems, transportation, finance. Course Information: 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 355 and IDS 371.

IDS 446. Decision Analysis. 3 or 4 hours.
Prior and posterior distributions; conjugate priors; value of information; applications to decision making in business. Course Information: 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 371.

IDS 450. Supply Chain Planning and Logistics. 3 or 4 hours.
Covers concepts in designing, analyzing, improving, measuring and controlling logistics operations in modern supply chains. Students are presented with logistics concepts, techniques, planning tools, and case studies to facilitate learning. Course Information: 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Prerequisite(s): IDS 355; and IDS 454. IDS 454 can be taken as a corequisite; or consent of the instructor. Recommended background: Prior coursework/experience in operations management.

IDS 451. Enterprise Operations and Supply Chain Systems. 0-4 hours.
Provides an overview of how enterprise business systems operate and are used to manage operations and supply chains in order to make effective business decisions. Course Information: 3 undergraduate hours. 4 graduate hours. May be repeated. Extensive computer use required. Shows students how business processes integrate within an enterprise and across the supply chain. Prerequisite(s): IDS 200 and credit or concurrent registration in IDS 355; or credit or concurrent registration in IDS 532. Class Schedule Information: To be properly registered, students must enroll in one Lecture and one Laboratory.

IDS 452. Sustainability in Supply Chain Management and Operations. 3 hours.
A holistic view of sustainable supply chain operations is introduced. Issues such as pollution, climate change, energy, water scarcity are discussed. LCA analyses, IPAT equation, sustainability index, recycling are covered to address the issues. Course Information: Prerequisite(s): Concurrent registration in IDS 355. Recommended background: Prior coursework/experience in supply chain and operations management and proficiency in Excel.

IDS 453. Supply Chain Management: Sourcing and Procurement. 3 or 4 hours.
The course materials will focus on the fundamental tools, processes and techniques in sourcing and procurement strategies, contract negotiation and management, managing supplier relationships, evaluating supplier performance, and global sourcing. Course Information: 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 355 or IDS 532. Recommended background: Prior coursework/experience in supply chain management.

IDS 454. Introduction to Supply Chain Management. 3 or 4 hours.
Supply Chain Management is studied as an information-intensive, integrated system for managing material flows, logistics and inter-organizational partnership to deliver products and services. Course Information: 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 355.

IDS 455. Data-Driven Decisions for Sustainable Business. 3 or 4 hours.
Leverages an evidence and data-driven approach to convert sustainability goals into decisions, evaluating financial, environmental, and social impacts. Employs a risk-focused perspective to manage short- and long-term objectives. Course Information: 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Prerequisite(s): IDS 400 or equivalent.

IDS 457. Foundations for Sustainable Business. 3 or 4 hours.
Introduction to sustainable business foundations: setting sustainability goals and key performance indicators, governance, stakeholder engagement and communication, strategic operations, technology integration, financial accountability, and reporting. Course Information: Same as ACTG 457 and MGMT 457. Prerequisite(s): ENGL 161.

IDS 460. Causal Inference. 3 hours.
Conceptual foundations and methods for causal inference, using causal diagrams as well as the potential outcomes framework. Identification and estimation of causal effects in randomized control trials and observational studies. Course Information: Extensive computer use required. Prerequisite(s): STAT 481 or IDS 371; and STAT 382 or IDS 462. Recommended Background: Familiarity with statistical packages such as R, Stata, and/or SAS is recommended.

IDS 462. Statistical Software for Business Applications. 3 or 4 hours.
Hands-on experience with statistical software commonly used in industry. Data preparation, advanced statistical methods for business problems - marketing, finance, operations, etc. Interpretation and communication of results to guide decision making. Course Information: 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 371 or FIN 330 or ECON 300 or ACTG 392 or STAT 382 or STAT 481; or consent of the instructor.

IDS 470. Multivariate Analysis. 3 or 4 hours.
Introduction to the structure and analysis of multivariate data. Emphasis on the multivariate normal model. Regression; tests concerning multivariate means, classification; discriminant analysis, principal components. Course Information: 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 371 or FIN 330 or ECON 300 or ACTG 392 or MATH 310 or MATH 320.

IDS 472. Business Data Mining. 3 or 4 hours.
Data mining for business insights and decisions. Classification, trees, random forests, naïve Bayes, clustering, association rules, neural nets, recommender systems, text mining. Hands-on application to problems in finance, marketing, and operations. Course Information: 3 undergraduate hours. 4 graduate hours. Credit is not given for IDS 472 if the student has credit for IDS 572. Prerequisite(s): IDS 371 or FIN 330 or ECON 300 or ACTG 392 or STAT 382 or STAT 481 or the equivalent.

IDS 473. Risk Management and Insurance. 3 hours.
Introduction to risk management. Loan and credit management; credit scoring. Risk measurements and reserves; banking and insurance capital requirements, the BASEL accord, tail events and catastrophic event insurance. Financial contracts and hedging. Course Information: Same as FIN 473. Prerequisite(s): IDS 270 or IE 342 or STAT 381 or PSCH 343 or SOC 401; and FIN 300.

IDS 474. Quality and Productivity Improvement Using Statistical Methods. 3 or 4 hours.
Directed experimentation for quality and productivity improvement, quality surveillance, design and analysis of two-level factorial experiments and multi-level experiments, data transformation. Course Information: 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 371 or consent of the instructor.

IDS 475. Database Accounting Systems. 3 or 4 hours.
Concepts and principles of designing database systems to perform accounting functions, applications of microcomputer accounting software packages systems design tools, and computerized transaction cycles. Course Information: Same as ACTG 475. 3 undergraduate hours. 4 graduate hours. Extensive computer use required. Prerequisite(s): A passing grade in both ACTG 211 and IDS 200.

IDS 476. Business Forecasting Using Time Series Methods. 3 or 4 hours.
Autoregressive, moving average, and seasonal models for time series analysis and business forecasting. Forecasting using multi-variable transfer function models is also included. Course Information: Same as ECON 450. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 371 or ECON 300 or ECON 400; or consent of the instructor.

IDS 478. Regression Analysis. 3 or 4 hours.
Data collection and exploration; model building; variable least squares; residual analysis; variable selection; multicollinearity; ridge regression; nonlinear regression; nonparametric regression. Course Information: 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IDS 371.

IDS 479. Enterprise Risk Management. 3 or 4 hours.
Overview of enterprise-wide risk management strategies and techniques: strategies that firms employ to enhance value and minimize exposure; techniques used to identify, measure, reduce, and transfer risk. Course Information: Same as FIN 479. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): FIN 300; or consent of the instructor. Recommended background: IDS 473 or FIN 473.

IDS 494. Topics in Information and Decision Sciences. 3 or 4 hours.
Topics vary; selected readings; case analysis. Course Information: 3 undergraduate hours. 4 graduate hours. May be repeated up to 1 time(s) if topics vary. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

IDS 495. Competitive Strategy. 4 hours.
Multidisciplinary analysis of organizational strategy and policy using case method and/or business simulation. Assignments involve extensive library research and oral and written reports. Course Information: Credit is not given for IDS 495 if the student has credit in MGMT 495 or ACTG 495 or FIN 495. Prerequisite(s): Senior standing or above Senior standing in the College of Business Administration and completion of all other CBA core courses.

IDS 499. Research Experience. 1-3 hours.
Research experience under the supervision of a faculty member. The faculty member and student will determinne the research project. Each student must submit a written report and each student must participate at a research event on campus. Course Information: May be repeated to a maximum of 9 hours. Students may register in more than one section per term. Prerequisite(s): Consent of the department and the instructor.

IDS 500. Information Systems in Organizations. 4 hours.
Use of information technology in business; planning, management, and strategic use of information technology including the role of enterprise-wide systems, the Internet, and electronic commerce.

IDS 504. Introduction to Electronic Commerce. 4 hours.
Addresses issues on electronic commerce for businesses and consumers, considering topics such as competition, distribuiton, infrastructure on the Internet, shopping, and product characteristics.

IDS 505. Business Information Systems Analysis and Design. 4 hours.
Analysis, design and development of information systems. Management concerns in systems design, development, and evaluation. Course Information: A student who has taken IDS 405 must see an adviser to determine whether another graduate course from IDS, MATH, or CS must be substituted for IDS 505. Prerequisite(s): IDS 500; or consent of the instructor.

IDS 506. Health Information Management and Analytics. 4 hours.
Technologies, applications and use of information systems in healthcare. Electronic health records and how healthcare data is organized by providers and payers. Applications of data analytics and machine learning in healthcare. Course Information: Prerequisite(s): IDS 570 or equivalent. Knowledge of statistical software R, SAS, SPSS etc. Recommended background: A course in data mining: IDS 472 or IDS 572 or equivalent. Consent of instructor required for non-CBA students.

IDS 507. Advanced Systems Analysis and Design Project. 4 hours.
Principles and concepts of analysis, design and development of information systems including project management. Includes a project at an outside company or University office. Course Information: Prerequisite(s): Completion of three MS in MIS core courses or completion of two core MS in MIS and concurrent enrollment in third core course.

IDS 508. E-Commerce Project. 4 hours.
Electronic commerce project initiated by local small and medium enterprises, teaming students with technical or entrepreneurial skills/ interests, supervised by faculty on board of directors. Course Information: Prerequisite(s): IDS 504 or MGMT 558 or MKTG 558; and consent of the instructor.

IDS 509. Foundations of Analytics and AI for Supply Chain and Operations Management. 4 hours.
Covers analytics and artificial intelligence (AI) for decision-making in supply chain and operations, with emphasis on foundations of data, forecasting, simulation, and optimization, and their enhancement via machine learning and generative models. Course Information: Prerequisite(s): IDS 371 or IDS 570; or consent of the instructor. Recommended Background: Previous exposure to spreadsheet tools and methods a plus. Class Schedule Information: To be properly registered, students must enroll in one Lecture-Discussion and one Practice.

IDS 510. Organizational Data Resources. 4 hours.
Data as a competitive resource. Understanding, organizing and utilizing data in enterprises. Data resource development and management. Leveraging data assets. Exploiting the power of data. Understanding regulatory requirements. Course Information: A student who has taken IDS 410 must see an advisor to determine whether another graduate course from IDS, MATH, or CS must be substituted for IDS 510. Prerequisite(s): IDS 500.

IDS 511. Query Processing in Database Systems. 4 hours.
Query processing in deductive databases and in distributed/ parallel databases systems. Course Information: Same as CS 580. Prerequisite(s): CS 480.

IDS 512. Information Systems Project & Program Management. 4 hours.
Theory and practice of managing IS projects based on a life-cycle management model. Technology, organizational behavior, team dynamics and economic analysis in the context of larger organizational strategies. Project plans, budgets, and schedules. Course Information: Extensive computer use required. Prerequisite(s): Introductory information systems course. Recommended background: Advanced information system courses such as databases and system analysis.

IDS 513. Enterprise Components and Web Services. 4 hours.
Exposes students to advances in the technical aspects of electronic business. Topics include WSDL, UDDI, SOAP, Service Quality, Security, and Queuing Models. Course Information: Extensive computer use required.

IDS 514. Management of Information Systems. 4 hours.
Administration, control, and management of computer-based information systems, projects, and relationships with the organization. Scheduling of operations; management of computer professionals; planning and control of the systems activity. Course Information: Prerequisite(s): IDS 505 or IDS 510.

IDS 515. Information Systems Strategy and Policy. 4 hours.
Examines how businesses can leverage IT and digital technologies to maximize business performance. Covers IS strategy formulation, strategy implementation, e-business transformation, Inter-organizational and multi-organizational IS strategies. Course Information: Prerequisite(s): Consent of the instructor.

IDS 516. Data Analytics for Business Professionals. 4 hours.
Hands-on introduction to how data analytics and machine learning drive value in industry. Case studies from healthcare, marketing, operations, finance, or high-tech. Topics include data exploration, predictive models, clustering, recommender systems. Course Information: Credit is not given for IDS 516 if the student has credit in IDS 572, or enrolled in the MS Management Information Systems program or the MS Business Analytics. Prerequisite(s): IDS 270 and IDS 371; or consent of the instructor.

IDS 517. Enterprise Application Development. 4 hours.
The course explores the choices available for building an enterprise application. Topics such as advanced applications design and development tools, methodologies and technologies are covered. Course Information: Extensive computer use required. Prerequisite(s): IDS 201 or IDS 400 and IDS 401 and IDS 410 or the equivalent.

IDS 518. Electronic Marketing. 4 hours.
Overview of the electronic marketing value chain. Internet and web technologies, system design, payment systems, business requirements for e-marketing, design and ethical issues. Course Information: Same as MKTG 518. Prerequisite(s): MKTG 500 or MBA 506 or consent of the instructor.

IDS 519. Topics in Information Systems. 4 hours.
Selected topics in information systems, information management and information technology. Content varies. Topics will be announced. Course Information: May be repeated if topics vary. Prerequisite(s): IDS 505 or IDS 510; and consent of the instructor.

IDS 520. Enterprise Information Infrastructure Planning & Security. 4 hours.
This course introduces students with methods and practices involved in the planning, design and security of information infrastructure commonly found in large and medium enterprises. Course Information: Recommended background: IDS 401, IDS 410 and IDS 405 or equivalent.

IDS 521. Advanced Database Management. 4 hours.
Data analysis for database design; logical data modeling, transaction modeling; implementation models; physical database design; database tuning and performance evaluation; database decomposition; distributed database; database security. Course Information: Prerequisite(s): IDS 410 or equivalent.

IDS 523. Audit and Control of Information Systems. 4 hours.
Modeling and analysis of information systems application in organizations; measurement of effectiveness; strategies for implementation and updating; interface with other management control systems.

IDS 524. Strategic Emergency Management and Continuity Planning. 3 hours.
Introduction to frameworks and methods for designing, developing, implementing, and evaluating for emergency management and business continuity strategies in the public and private sectors. Course Information: No graduation credit given to students enrolled in the Master of Business Administration program. Students who are not in the EMCP program should contact External Education at emcp@uic.edu for approval to register for this course.

IDS 526. Computer Performance Evaluation and Modeling. 4 hours.
Probabilistic, simulation and statistical techniques for modeling computer systems with a view to evaluating their performance. Models of multi-programming systems, multi-access systems input/output systems, priority queues, and paging systems. Course Information: A student who has taken IDS 426 must see an adviser to determine whether another graduate course from IDS, MATH, or CS must be substituted for IDS 526. Prerequisite(s): IDS 532; and IDS 505 or IDS 510.

IDS 529. Seminar on Management Information Systems. 4 hours.
Special research topics in management information systems. Topics vary from term to term depending on the interests of the instructor and students. Course Information: May be repeated if topics vary.

IDS 532. Introduction to Operations Management. 4 hours.
The management of operations for the production and delivery of goods and services. Topics include the management of business processes, projects, production, supply chain, inventory, quality, lay out and job design. Course Information: Credit is not given for IDS 532 if the student has credit in MBA 507 and MBA 509. Prerequisite(s): Admission to the MBA Program.

IDS 534. Project Management. 2 hours.
Teaches the fundamental principles of project management (including an introduction to Agile Techniques) for business related projects in the areas of general business, supply chain and operations management, and information systems. Course Information: Credit is not given for IDS 534 if the student has credit in IDS 512 or MBA 590. Meets eight weeks of the semester. Recommended background: Coursework or experience related to project management.

IDS 535. Vendor Management. 2 hours.
Covers fundamentals of vendor management, including procurement process, vendor selection, contracts, relationship management, and governance. Course Information: Meets eight weeks of the semester. Recommended Background: Coursework like IDS 534 (Project Management) or experience related to project management. Credit is not given in IDS 535 if the student already has credit in MBA 590. Graduation credit is not given to students enrolled in Business Administration.

IDS 540. Marketing Analytics. 4 hours.
Introduces concepts, data analysis techniques and software tools for making key marketing decisions including segmentation, targeting, positioning, forecasting, new product design and resource allocation. Course Information: Same as MKTG 562. Extensive computer use required. Prerequisite(s): MKTG 500 or MKTG 360; or consent of the instructor. Recommended background: MKTG 563.

IDS 541. Disaster Response and Recovery Operations. 3 hours.
Designed to provide the student with the requisite skils to create effective operations, preparedness, and response plans to manage and coordinate private, institutional, and public health emergencies and complex disasters. Course Information: Extensive computer use required. No graduation credit given to students enrolled in the Master of Business Administration program. Students who are not in the EMCP program should contact External Education at emcp@uic.edu for approval to register for this course.

IDS 542. Global Innovation Management. 4 hours.
Provides the student with a survey and case studies of successful innovations, their components, strategies and financial structure. Course Information: Same as MGMT 582. Prerequisite(s): Graduate or professional standing; and consent of the instructor.

IDS 544. Global Sourcing and Logistics. 4 hours.
Covers international logistics, with an emphasis on import/export. Covers international trade theory, international transportation, distribution, business infrastructure and operations. Course Information: Prerequisite(s): IDS 532 or an equivalent course. Recommended Background: Coursework or experience in operations management.

IDS 551. Operations Management in the Service Sector. 4 hours.
Service strategy and design, managing capacity, waiting lines, quality, and revenue in service oriented businesses and online service platforms. Course Information: Extensive computer use required. Prerequisite(s): Credit or concurrent registration in IDS 532 or the consent of the instructor.

IDS 552. Supply Chain Management. 4 hours.
The management of supply chains ranging from their design to operating strategies. Topics include forecasting; sourcing, inventory, and network design models; and logistics and transportation systems. Forecasting and planning tools will be covered. Course Information: Prerequisite(s): Credit or concurrent registration in IDS 532 or the consent of the instructor.

IDS 553. Supply Chain Analytics and Decision Models. 4 hours.
Covers analytics and modeling concepts in logistics and supply chain operations, warehousing and distribution, and transportation. Students are presented with terminology, methods, tools, and case studies to facilitate learning and hands-on training. Course Information: Prerequisite(s): Prerequisite(s): IDS 532 and IDS 509 or consent of instructor. Corequisites: IDS 509 can be taken concurrently with consent instructor. Students can take elective courses in the MS in Supply Chain and Operations Management program concurrently with consent of program advisor. Recommended background: Prior coursework/ experience in operations management. Familiarity with MS Excel.

IDS 555. Applied Supply Chain Strategy and Practice. 4 hours.
Utilizes projects and case studies to synthesize knowledge acquired across the program and learn how to apply learned concepts and skills to practical problems. Addresses operations and supply chain related issues. Course Information: No graduation credit given for IDS 555 to students enrolled in Business Administration. Prerequisite(s): IDS 532 and IDS 552; completion of at least 3 Master of Science in Supply Chain and Operations Management electives courses or consent of program adviser. Recommended Background: Coursework or experience related to operations and supply chain management.

IDS 558. Revenue Optimization and Pricing Analytics. 4 hours.
Explores techniques and strategies for optimizing revenue through pricing analytics and demand management in various industries. Course Information: Recommended Background: Senior undergraduate coursework in Probability and Linear Algebra strongly recommended. Course Information: Extensive computer use required.

IDS 560. Analytics Strategy and Practice. 4 hours.
Projects and case studies on how to apply analytic skills developed in the MS Business Analytics curriculum to practical problems. Analytics related issues in the context of organizational strategy. Course Information: Prerequisite(s): Completion of all three MS in Business Analytics core courses. Or completion of at least two of the MS in Business Analytics core courses and concurrent registration in the third core course.

IDS 561. Analytics for Big Data. 4 hours.
Fundamental concepts of distributed algorithms to analyze large-scale data in various domains; data mining on large data (Mahout, Hadoop) and applications; data storage, query and business intelligence with distributed databases (Hive). Course Information: Extensive computer use required. Prerequisite(s): IDS 572.

IDS 562. Foundations for Sustainable Business. 4 hours.
Introduction to sustainable business foundations: definition of sustainability goals, governance, stakeholder engagement and communication, strategic operations, technology integration, financial accountability, and reporting.

IDS 563. Generative Artificial Intelligence. 4 hours.
Introduces Generative AI basics and its applications in business analytics for strategic decision-making, focusing on practical use and ethical considerations.

IDS 564. Social Media and Network Analysis. 4 hours.
Analytic approaches to help organizations utilize massive social media data for making informed business decisions; sentiment identification; social network analysis; customer behavior analysis, social advertising using machine learning methods. Course Information: Extensive computer use required. Prerequisite(s): IDS 570.

IDS 565. Safety and Ethics in AI. 4 hours.
Investigates the risks and resolutions raised by rapid evolutions in Artificial Intelligence (AI) across personal, societal, and industrial perspectives.

IDS 566. Advanced Text Analytics for Business. 2 hours.
Techniques for mining and analyses of textual information. Natural language processing and machine learning approaches for sentiment and opinion analyses, topics extraction, document clustering, and their application for business decisions. Course Information: Extensive computer use required. Meets eight weeks of the semester. Prerequisite(s): IDS 572.

IDS 567. Business Data Visualization. 2 hours.
Introduction to principles of data visualization for business and the optimal presentation of analytics results. Course Information: Extensive computer use required. Meets eight weeks of the semester.

IDS 568. Managing Machine Learning and Artificial Intelligence Lifecycle and Development. 4 hours.
Managing data science operations. Practices for managing the machine learning lifecycle, from data setup, model generation, continuous integration and delivery, orchestration, and deployment, to health, diagnostics, governance, and business metrics. Course Information: Extensive computer use required. Prerequisite(s): IDS 572 or IDS 575; or consent of the instructor. Recommended background: Prior programming experience.

IDS 569. Reinforcement Learning with Business Applications. 4 hours.
Provides an accessible introduction to modern reinforcement learning (RL) approaches to automated business decision-making in contexts such as marketing, revenue management, pricing, inventory management, and supply chain management. Prerequisite(s): IDS 570 and an upper undergraduate level knowledge of probability.

IDS 570. Statistics for Management. 4 hours.
Survey of statistical methods with applications for business and management. Course Information: Prerequisite(s): Admission to any business graduate program or consent of the instructor.

IDS 571. Statistical Quality Control and Assurance. 4 hours.
The importance of quality in products and services, quality surveillance, Deming's management method, Ishikawa's seven tools, control charts, acceptance sampling, quality improvement using directed experiments. Course Information: Same as IE 571. Prerequisite(s): At least one term of statistics.

IDS 572. Data Mining for Business. 4 hours.
Machine learning, statistics in data mining for business insights. Prediction, classification, trees, random forests, boosting, clustering, regularization, SVM, recommender systems, neural nets, text mining. Application to varied business contexts. Course Information: Credit is not given for IDS 572 if the student has credit for IDS 472. Recommended background: Backgound knowledge in statistics and databases.

IDS 573. Risk Management. 4 hours.
Introduction to risk management. Risk measurements and reserves; banking and insurance capital requirements, the BASEL accord, tail events, catastrophic event insurance, reinsurance. Financial contracts and hedging. Course Information: Same as FIN 573. Prerequisite(s): Credit or concurrent registration in IDS 570 and FIN 500.

IDS 575. Machine Learning and Statistical Methods for Business Analytics. 4 hours.
Generalized Linear Models; Maximum Likelihood and Expectation Maximization; Sampling; Factor Analysis; Support Vector Machines; Random Forests; Boosting; Time Series Analysis; Sampling and Optimization. Course Information: Extensive computer use required. Prerequisite(s): IDS 570.

IDS 576. Deep Learning and Modern Applications. 4 hours.
Advanced machine learning techniques and business applications; backprop; convolutional and recurrent neural networks; embedding and representation learning. variational autoencoders; generative adversarial network; deep reinforcement learning. Course Information: Extensive computer use required. Prerequisite(s): IDS 572 and familiarity with programming in Python.

IDS 577. Research Methodology I. 4 hours.
Use of statistics and computers in research. Data collection and organization, survey sampling, questionnaire design, experimental design. Course Information: Prerequisite(s): IDS 532 or the equivalent and admission to the Ph.D. program in Business Administration.

IDS 578. Research Methodology II. 4 hours.
Data analysis, including estimation, hypotheses testing, non-parametric methods, analysis of variance, regression analysis, economic forecasting, and time series. Course Information: Prerequisite(s): IDS 577 or the equivalent.

IDS 582. Time Series Econometrics. 4 hours.
The role of research in business; forecasting methods and techniques, including models and their applications. Course Information: Same as ECON 537. Prerequisite(s): ECON 534 and at least one statistics course with regression analysis at the 300-level or above.

IDS 583. Business Research and Forecasting II. 4 hours.
The role of research in business; forecasting methods and techniques, including multivariate time series models and their applications. Course Information: Same as ECON 538. Prerequisite(s): ECON 537 or IDS 582; and graduate standing.

IDS 584. Cybersecurity Fundamentals. 4 hours.
Cybersecurity is a foundational course designed to equip students with the essential knowledge and skills required to understand, mitigate, and manage cybersecurity threats and risks. Course Information: By the end of this course, students will have a solid understanding of cybersecurity fundamentals and will be better prepared to contribute to the security efforts of organizations or pursue further studies in cybersecurity. Recommended background: Basic understanding of computer systems and networking concepts and IDS 413 or IDS 520.

IDS 589. Information and Decision Sciences Practicum. 0-4 hours.
Provides an opportunity for students to apply their learning in a practical real-world setting. Students can work on a IDS-related project in a business or a non-profit organizational setting. Involves interaction with the industry and professionals. Course Information: Satisfactory/Unsatisfactory grading only. A maximum of 2 credit hours of IDS 589 awarded toward the MS in Business Analytics, MS in Management Information Systems, and MS in Supply Chain and Operations Management programs. Prerequisite(s): Graduate or professional standing and approval of the department; at least two core courses in the MIS program and simultaneous registration in the third core course.

IDS 594. Special Topics in Information and Decision Sciences. 1-4 hours.
Intensive study of a selected topic. Content varies. Topics are announced. Course Information: Prerequisite(s): Consent of the instructor.

IDS 595. Seminar in Information and Decision Sciences. 1-4 hours.
Topics vary from term to term depending on the interests of the instructor. May be taken for up to four credit hours depending on the outline of the seminar as determined by the instructor. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 8 hours. Students may register for more than one section per term. Prerequisite(s): Admission to the PhD program in Business Administration or the PhD program in Management Information Systems.

IDS 596. Independent Study in Information and Decision Sciences. 1-4 hours.
Independent study under the direction of a faculty member. Course Information: May be repeated. Students may register in more than one section per term. Prerequisite(s): Graduate standing and consent of the instructor.

IDS 599. Ph.D. Thesis Research. 0-16 hours.
Research on topic of the doctoral dissertation. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.