

# Information and Decision Sciences (IDS)

---

## **IDS 200. Intro to Management Information Systems. 4 hours.**

Introduction to concepts and application of information technology for solving business problems and supporting organizational functions. Includes hands-on instruction on use of computer-based productivity tools. Course Information: Previously listed as IDS 100. Class Schedule Information: During the fall and spring terms, combined section final exam will be held on Thursday of finals week from 3:30 to 5:30 p.m. To be properly registered, students must enroll in one Laboratory-Discussion and one Lecture.

## **IDS 201. Introduction to Business Programming. 3 hours.**

Disciplined computer-assisted problem solving. Structured programming, data types and data structures, modularization. Program design for business information- and decision-support. Course Information: Credit is not given for IDS 201 if the student has credit for MCS 260. Prerequisite(s): IDS 200 and MATH 160 or the equivalent courses. Class Schedule Information: To be properly registered, students must enroll in one Laboratory and one Lecture-Discussion.

## **IDS 270. Business Statistics I. 4 hours.**

Working with business data. Data summarization, visualization, business insights. Probability, sampling distributions, confidence intervals, hypothesis testing and introduction to linear regression. Use of software for data visualization and analysis. Course Information: Prerequisite(s): MATH 165 or MATH 180 or MATH 181. Class Schedule Information: To be properly registered, students must enroll in one Lecture and one Discussion.

## **IDS 312. Business Project Management. 3 hours.**

An integrative approach to learning how projects contribute to the strategic goals of the organization. Major issues: selecting projects, project management techniques and tools, budgeting, monitoring, risk mitigation, and interpersonal skills.

## **IDS 313. Internet Applications in Business. 3 hours.**

Internet business applications in entrepreneurship, finance, accounting, and marketing. Assessing business problems, planning Internet-based solutions, and understanding web tools. Students interested in further studies can continue with IDS 413.

## **IDS 331. Business Analysis Using Spreadsheets. 3 hours.**

Analyzing business cases using spreadsheet software. Effective and efficient use of Excel. Spreadsheet automation using Visual Basic for Applications. Course Information: Extensive computer use required. Prerequisite(s): IDS 200. Recommended background: ACTG 210.

## **IDS 355. Operations Management. 3 hours.**

Application of management sciences to the planning and design of production, distribution, and service systems. Course Information: Prerequisite(s): ENGL 161. Class Schedule Information: During the fall and spring terms, combined section final exam will be held on Thursday of finals week from 3:30 to 5:30 p.m. To be properly registered, students must enroll in one Discussion/Recitation and one Lecture.

## **IDS 371. Business Statistics II. 3 hours.**

Continuation of statistical concepts, techniques for managerial decisions. Analysis of variance, multivariate regression, time series, statistical process control, non-parametric methods. Use of statistical software for data visualization, analysis. Course Information: Prerequisite(s): IDS 270 and MATH 165.

## **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 201 and 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 330; 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 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 the equivalent; 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 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 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 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 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 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 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 determine 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.