

# ANALYTICS

You have heard the buzzwords: Business Analytics, Big Data, Artificial Intelligence, Machine Learning. Did you know that today's leading companies use them to make business decisions on a daily basis? Through the majors and minors offered by the Department of Analytics, students will learn about these modern tools and apply them to various business scenarios in the areas of finance, marketing, accounting, and management. Our flagship major, Business Analytics, for example, is currently one of the hottest areas in any business segment. The major was intelligently designed by our experienced faculty to complement your existing major through exposure to various data analysis tools and apps.

Our courses offer students valuable hands-on experience, and most include a semester-wide team project, which can involve real organizations as clients. Coursework includes business analytics methods, database systems, business intelligence, data mining, systems analysis and design, and project management. We encourage you to explore the future of business with us now!

## Programs

- Business Analytics Major
- Business Analytics Minor
- Information Systems Major
- Information Systems Minor
- Accounting Information Systems Minor

## Courses

### DATA 2101 Business Analytics 3 Credits

**Prerequisites:** MATH 2217, sophomore standing.

This course introduces basic skills necessary for business analytics such as data analysis and preparation, probability and statistical modeling, data-driven decision making, and persuasion/storytelling with data. Spreadsheets are used as the platform for conducting analyses, performing statistical calculations, and presenting results. Previously BUAN 2101.

### DATA 2980 Internship 1 Credit

**Prerequisite:** Sophomore standing.

Students may take up to two semesters of a department-approved internship. Students must be matriculated in the Dolan School of Business and have a GPA of 2.5 or higher. Previously BUAN 2980.

### DATA 3210 Business Analytics Methods 3 Credits

**Prerequisites:** DATA 2101, junior standing.

This course focuses on quantitative modeling and analyzing business problems using spreadsheet software such as Excel, and data visualization software such as Tableau. Topics include descriptive analytics, visualizing and exploring data, predictive modeling, regression analysis, time series analysis, portfolio decisions, risk management, and simulation. Business models relevant to finance, accounting, marketing, and operations management are set up and solved, with managerial interpretations and "what if" analyses to provide further insight into real business problems and solutions. Previously IS 0210, BUAN 3210.

### DATA 3235 Python Apps for Busn Analytics 3 Credits

**Prerequisite:** DATA 3210.

This course introduces students to business analytics using Python. Students should gain a fundamental understanding of how analytics can be done using Python. Business problems will be used for assignments and projects. Technical topics include reading/writing to files, data types, variables, simple control logic, loops, strings, lists, dictionaries, functions, and structure. Previously IS 0235, BUAN 3235.

### DATA 3260 Database Systems 3 Credits

**Prerequisite:** DATA 2101.

The course begins by covering fundamental database concepts, such as data models, and then moves on to design concepts such as entity-relationship modeling. This essential background leads to in-depth study and hands-on use of the Structured Query Language (SQL) for defining, manipulating, accessing and managing data. A comprehensive semester-wide team project gives students an opportunity to bring together several database design and implementation concepts. Previously IS 0260, BUAN 3260.

### DATA 3335 Sports Analytics 3 Credits

**Prerequisite:** DATA 2101.

Virtually every sport has been improved in recent years with the introduction and widespread acceptance of analytical methods. Analytics help leagues, teams, referees, coaches, athletes, agents, and fans appreciate their favorite sports on a higher level. In this course, students will gain a broad perspective on the methods, findings, impact, and controversies within sports analytics across a variety of sports and e-sports, learn how to analytically evaluate and compare differing perspectives, and practice communicating findings to a non-analytical audience in an impactful and actionable way.

### DATA 3980 Internship 3 Credits

**Prerequisite:** Junior standing.

Students may take up to two semesters of a department-approved internship. Students must be matriculated in the Dolan School of Business and have a GPA of 2.5 or higher. Previously BUAN 3980.

### DATA 4310 Business Intelligence 3 Credits

**Prerequisites:** DATA 3210, DATA 3260.

Business Intelligence (BI) is an umbrella concept covering the processes and methods of collecting, storing, and analyzing data generated from business operations or activities to make informed business decisions. Disparate industries, such as retail, healthcare, and education, have adopted BI for various decision support purposes. Since data in today's business environments is vast in volume and grows at a fast pace, utilizing computerized technologies helps managers make fact-based decisions to support business operations. This course provides an introduction to the use of business intelligence and data visualization in organizations, with emphasis on how data is gathered, stored, analyzed, and used. Topics covered include business intelligence, data warehousing, data visualization, and business reporting. Previously BUAN 4310.

### DATA 4315 Data Mining and Applications 3 Credits

**Prerequisites:** DATA 3210, DATA 3260.

This course provides students with a practical understanding of data mining, applications, techniques, and tools, with a specific focus on business analytics. The pillars of the data mining process (data collection/extraction and mining) are demonstrated with real world examples. Applications of these techniques and tools to different areas are covered. A semester-wide team project provides students with hands-on experience to bring together data mining concepts learned. Previously IS 0315, BUAN 4315.

**DATA 4999 Business Analytics Capstone****3 Credits****Prerequisite:** Senior standing.

This course is the capstone for the business analytics major. Students collaborate on different types of analytical projects of varying scope and complexity. Each student acquires and applies specialized technical and managerial expertise as required for completing the projects. The capstone projects will be real-world, client-oriented, and faculty-guided applications. Supplementary instruction in analytical project design, development, and evaluation is provided on an as-needed basis within the context of the project work. Previously IS 0395, BUAN 4999.

**ISOM 2100 Introduction to Information Systems****3 Credits**

This course helps students understand the role of information systems in the contemporary business environment. It introduces them to the use of information systems concepts and techniques in solving a wide range of business problems. Working in small teams, students develop, analyze, and present solutions to a business problem using information technology. Previously IS 0100.

**ISOM 2101 Operations Management****3 Credits****Prerequisites:** ECON 3278 or MATH 1017 or MATH 2217; sophomore standing.

This course provides the primary exposure to service and manufacturing operations management within the business core curriculum. Topics include process modeling, quality management and control, decision analysis, capacity planning, supply chain management, and project planning and control. Special attention is given to showing how concepts and models presented in lectures and readings apply to real-world business situations. Examples of international operations are studied, and ethical issues are explored within the context of decisions such as where to locate facilities. Previously OM 0101.

**ISOM 2135 Fundamentals of Web Design****3 Credits**

Students learn the theory and practice of front-end web design. Theoretical content will primarily focus on website design, with a heavy emphasis on developing sites that conform to standards and are responsive to the needs of practical applications and mobile devices. Hands-on work will help develop technical skills, such as HTML, CSS, XML, and other web client technologies. Students will learn to use a professional-quality toolset and to follow generally accepted best practices. The course includes weekly web-programming assignments and a semester project. Previously IS 0135.

**ISOM 2140 Project Management****3 Credits****Prerequisite:** ECON 3278 or MATH 1017 or MATH 2217.

This course introduces students to project management and its role in business operations, with applications in such functional areas as accounting, finance, information systems, management, and marketing. Topics include the linkage between projects and organizational strategy, project planning and scheduling, project development and implementation, applying best practices and tools, evaluation methodologies and control techniques, and critical success factors. Special attention is given to showing how concepts and models presented in lectures and readings apply to real-world projects. Previously OM 0140.

**ISOM 2980 Internship****1 Credit****Prerequisite:** Sophomore standing.

Students may take up to two semesters of a department-approved internship. Students must have a GPA of 2.5 or higher. Previously IS 0393-0394.

**ISOM 3240 Systems Analysis and Logical Design****3 Credits****Prerequisite:** BUAN 2101.

Common wisdom dictates, "You can't get a job without experience, and you can't get experience without a job." While having experience helps tremendously in obtaining a job, one can get experience without a job, and that is the goal of this course. In this course, students will attempt to work on a live project with real clients, preferably a client with social goals, i.e., they aim to make a positive impact on the world by helping the less privileged, either directly or indirectly. Working on a real, live project, and interacting with real clients will teach students several of the skills they need as a systems analyst. As the course progresses, students will learn about requirements elicitation, and several diagramming techniques to analyze the system that will be built. Previously IS 0240.

**ISOM 3980 Internship****3 Credits****Prerequisite:** Junior standing.

Students may take up to two semesters of a department-approved internship. Students must have a GPA of 2.5 or higher. Previously IS 0391-0392.

**ISOM 4310 E-Business Applications****3 Credits****Attributes:** INEL International Studies / International Business Elective**Prerequisite:** BUAN 3260 or ISOM 3240.

This course examines e-business applications such as knowledge management, enterprise resource planning (ERP), customer relationship management (CRM), and mobile applications in inter-organizational, national, and global business environments. Students explore new e-business applications, the economics of e-business, value chains and value networks, related legal and ethical issues, information privacy and security, disaster planning and recovery, and the impact of emerging e-business and mobile applications. The course includes a brief introduction to technical architecture, technology, solutions, and financing required for effective e-business applications. Students investigate emerging opportunities, challenges, and trends through interactive team exercises, case studies, and individual research projects and presentations. Previously IS 0310.

**ISOM 4320 Systems Design and Implementation****3 Credits****Prerequisites:** BUAN 3260, ISOM 3240.

Students work in collaborating teams to design and build a networked information system. Emphasis is placed on development as an ongoing iterative and incremental process. Standard CASE tools, design patterns, and business practices are used to ensure proper communication and integration across development teams. Previously IS 0320.

**ISOM 4990 Independent Study****3 Credits**

Students pursue topics of special interest through independent study, research, and/or completion of an information systems project under the supervision of a full-time faculty member. The department chair and dean must approve the work. The student and a faculty project advisor who agrees to conduct the work according to a mutually agreeable schedule must complete an application form. Once the form is completed and submitted to the registrar, the student may register for the course. If any work is expected to occur at any time other than the semester registered, students must obtain the approval of the faculty project advisor and the department chair prior to commencing of any work. Normally, students will complete at least two advanced information systems courses before taking this course. Previously IS 0399.

## Faculty

### Professors

He

### Associate Professors

Huntley

Lee, P.

Maymin

Ozcelik, *chair*

Tao

Vinekar

### Assistant Professors

Lu

Sun

### Lecturers

Brown

Bruck

McCabe

Remediani