# ANALYTICS

You heard the buzzwords: Analytics, Big Data, Artificial Intelligence, Machine Learning. Did you know that today's leading companies use them to make vital business decisions? Business Analytics major and minor students learn about these modern tools and apply them to various business scenarios in the areas of finance, marketing, accounting, and management. The course curriculum was intelligently designed by our experienced faculty to prepare you for a successful career in today's data-driven business environment.

Our courses offer students valuable hands-on experience through projects, some of which involve real clients. Coursework includes business analytics methods, database systems, sports analytics, business intelligence, and data mining. We encourage you to explore the future of business with us right now!

## Programs

- Business Analytics Major
- Business Analytics Minor

## Courses

**DATA 1101 Business Analytics** **3 Credits**
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 DATA 2101.

**DATA 1101L Excel Certification Lab** **0 Credits**
This is a required lab component of DATA 1101 with a focus on Microsoft Excel. The lab is designed to improve students' spreadsheet skills, which is vital in today's job market. The lab also prepares students to pass a certification exam that is offered in a secure, proctored format during the course. A passing grade in this lab corresponds to successful completion of the certification exam.

**DATA 2000 AI** **3 Credits**
**Prerequisite:** DATA 1101.
This course focuses on the practical application of no-code artificial intelligence (AI) tools to solve complex business problems. These tools require no programming, instead emphasizing skills such as prompt engineering and the strategic use of large language models like ChatGPT. Through hands-on weekly projects and a comprehensive final project, students will learn to navigate and apply desktop and cloud-based generative AI tools in application areas including text, images, audio, video, code, and tabular data, preparing them to innovate and lead in the new age of AI.

**DATA 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 ISOM 2140.

**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 1101.
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 BUAN 3210.

**DATA 3235 Python Apps for Business Analytics** **3 Credits**
**Prerequisite:** DATA 1101.
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 BUAN 3235.

**DATA 3260 Database Systems** **3 Credits**
**Prerequisite:** DATA 1101.
This course covers fundamental database concepts, such as tables and queries, using Microsoft Access. Students then gain hands-on knowledge with the industry-standard database language, Structured Query Language (SQL). A semester-wide project helps students bring together learned concepts. Students also learn how to use a popular data analytics software, Alteryx.

**DATA 3335 Sports Analytics** **3 Credits**
**Prerequisite:** DATA 1101.
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 ISOM 3980, BUAN 3980.

**DATA 4000 Python Programming with AI** **3 Credits**
**Prerequisite:** DATA 2000.
This course aims to introduce students to Python programming, leveraging generative AI to enhance learning and practical application. The course will cover fundamental programming concepts, data structures, and logical thinking, while also focusing on the use of AI models to assist in coding and evaluating AI-generated responses. Ultimately, this course aims to prepare students for their future careers by equipping them with valuable technical skills and AI literacy.

**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 BUAN 4315.

**DATA 4990 Independent Study** **3 Credits**
Students pursue topics of special interest through independent study, research, and/or completion of a business analytics project under the supervision of a full-time faculty member. The Department Chair and Dean must approve the work. The student and the faculty project advisor must submit an application to the Registrar before registering 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 should have completed at least two advanced business analytics courses before taking the independent study. Previously ISOM 4990.

**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 BUAN 4999.

# Faculty

## Professors

He

## Associate Professors

Huntley, *vice chair*
Maymin
Ozcelik, *chair*
Tao
Vinekar

## Assistant Professors

Lee
Lu
Wang, K.
Wang, Z.

## Visiting Assistant Professor

Mowerman

## Visiting Assistant of the Practice

Wollowick

## Lecturers

Brown
Bruck
Drummond
Gadze
McCabe
Winston