Business Analytics

The Bachelor of Science (B.S.) in Business Analytics prepares students for applying data analytics skills, artificial intelligence and machine learning knowledge to strengthen business strategies. Students will understand business and its environment, goals and strategies, recognize and understand business problems, develop questions and models for analysis, use of structured and unstructured data, business analytical techniques, artificial intelligence and machine learning skills to analyze and solve business problems, improving goals and making better decisions for the future.

A major in Business Analytics requires students to earn a minimum grade of C (a grade of C- is not sufficient) in each of the courses taken to satisfy the requirements for the Business Analytics major, and students must earn a minimum 2.0 grade point average for those major courses. For Business Analytics majors, Business Analytics courses completed more than seven calendar years prior to the current term must be repeated.

Bachelor of Science (B.S.) in Business Analytics Degree Requirements

<table>
<thead>
<tr>
<th>Degree Requirements</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Core Curriculum Requirements</td>
<td>39</td>
</tr>
<tr>
<td>Professional Business Core</td>
<td>47</td>
</tr>
<tr>
<td>Requirements for Major in Business Analytics (Minimum grade of C required for all classes in major area) BSAN 401, BSAN 402, BSAN 403, BSAN 404, BSAN 405, BSAN 406, BSAN 407, MGMT 360, MGMT 420, and MGMT 421</td>
<td>30</td>
</tr>
<tr>
<td>Electives (Any additional hours of college-level credit can be used) *</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
</tr>
</tbody>
</table>

* 120 semester hours are required for graduation. Any additional hours of college level credit can be used to equal minimum 120 semester hours required for degree.

Business Analytics Minor

A minor in Business Analytics will prove useful for students in any discipline working with big data or new technologies such as artificial intelligence, especially in applying those technologies in business settings.

Required courses (15 credit hours)
BSAN 401
BSAN 402
BSAN 404
BSAN 406 -AND-
Choose one course from the following four:
BSAN 403
BSAN 405
BSAN 407
MGMT 421 (MGMT 360 is a prerequisite)

A minor from the College of Business and Analytics requires students to earn a minimum grade of C (a grade of C- is not sufficient) in each of the courses taken to satisfy the requirements for their minor. At least nine of the 15 credit hours must be taken at Southern Illinois University Carbondale. An advisor within the College of Business and Analytics must be consulted before selecting this field as a minor.

**Capstone Option for Transfer Students**

The Capstone Option is available to students who have earned an Associate in Applied Science (A.A.S.) degree or have the equivalent certification and who have a cumulative 2.0/4.0 GPA on all accredited coursework prior to the completion of the A.A.S. or certification, as calculated by the transfer institution’s grading policies. The Capstone Option reduces the University Core Curriculum requirements from 39 to 30 hours, therefore reducing the time to degree completion. Students who apply for the Capstone Option will work with the College of Business Advisement Office for approval of the Capstone Option and will complete a personal contract for a degree completion plan.

**Differential Tuition**

The College of Business and Analytics assesses differential tuition for College of Business and Analytics majors. The College of Business and Analytics has a “minor program fee” for majors outside of the College of Business and Analytics that want to declare a minor through the College of Business and Analytics. The minor program fee is equal to 15% of 15 credit hours of applicable tuition for declared College of Business and Analytics minors.

**Business Analytics Courses**

The Bachelor of Science (B.S.) in Business Analytics prepares students for applying data analytics skills, artificial intelligence, and machine learning knowledge to strengthen business strategies.

**BSAN401 - Business Intelligence** This course is an introduction to data-based decision making in business. It examines business problems and the sources of data, applications, infrastructure, tools, and best practices in business intelligence. This course includes information gathering, management, retrieval, and processing to optimize decisions and performance. Credit Hours: 3

**BSAN402 - Data Science I** Introduction to data science. This course introduces the student to the process of data science from data gathering, to data exploration, to data modeling, to communicating the results. Emphasis is on business data and its application to business decision making. Introduction to data science tools and techniques. Prerequisite: BSAN 401 with a grade of C or better. Credit Hours: 3

**BSAN403 - Data Science II** Advanced data science. Extensive exploration of data and its role in organizations. Analysis of large amounts of structured data as well as big data such as text, video, audio, and social media. Use of current analytics tools and techniques for applied data analysis and critical evaluation of next generation statistical techniques. Prerequisite: BSAN 402 with a grade of C or better. Credit Hours: 3

**BSAN404 - Artificial Intelligence in Business** An introduction to artificial intelligence and expert systems and their application to business problems. We explore and implement AI: expert systems, neural nets, and deep learning systems. These systems are becoming critical to organizations as they try to cope with a rapidly changing world that is forcing them to make faster data-based decisions. This course will cover the history, promises, limitations, and future directions of artificial intelligence in business. Prerequisite: BSAN 401 with a grade of C or better. Credit Hours: 3
BSAN405 - Machine Learning in Business Machine learning and its application to business data and business problems. Where AI and expert systems improve human decision making, machine learning is able to progressively improve its performance in detecting patterns in data and applying solutions with minimal human intervention in a rapidly changing environment. Tools, techniques, and processes for developing machine learning systems. Prerequisite: BSAN 404 with a grade of C or better. Credit Hours: 3

BSAN406 - Information Visualization Computer-based information visualization helps people explore data through interactive software in order to gain meaningful and actionable insights. This course will help you to programatically design cognitively useful spatial mapping of data with the purpose of aiding future decision making. This course covers topics including computer graphics and programming, human-computer interaction, semiotics, and cartography. Prerequisite: BSAN 401 with a grade of C or better. Credit Hours: 3

BSAN407 - Ethics of Analytics This course explores the thoughtful balance and wide gaps between what is technically possible, what an organization would like to do, and what is legally allowable. Privacy, confidentiality, security, and data ethics policies and processes. Background and development of codes of data and analytics ethics. Credit Hours: 3

BSAN420 - Analytics of Project Management Application of project management principles for improving business. Coverage includes, but is not limited to: introduction to the principles of project management, Project Management Institute (PMI) guidelines, US and international project management scenarios, and working together as a project management team. Students will work with Project Management Body of Knowledge (PMBOK) guidelines. Students will accrue enough education hours to sit for the PMI CAPM certification. Credit Hours: 3

BSAN421 - Information Systems Analysis and Design Strategies and techniques for structured analysis and design in the development of information systems. System development using structured tools/techniques for describing process flows, data flows, and data structures. Alternative methods of system development are also discussed. Credit Hours: 3

BSAN462 - Working Capital Management Liquidity analysis and management with a focus on managing cash, marketable securities, accounts receivable, inventory, banking relationships and short-term financing. Prerequisite: FIN 361 with a grade of C or better or concurrent enrollment. Restrictions: College of Business and Analytics majors or minors, junior standing or higher; or program approval required. Credit Hours: 3

BSAN463 - Introduction to Applied Econometrics Applications of statistical tools to specific economic problems. Numerous examples will be examined in order to achieve this goal. Emphasis will be given to model misspecification, non-classical estimation techniques, data analysis, and simultaneous equations. This course includes a research project in which students formulate a research question, review literature related to the question, gather relevant data, and provide a research conclusion using tools learned in this and other courses. The student will communicate their research findings via a written paper, and if possible, via an oral presentation. Prerequisite: ACCT/ECON/FIN/MGMT 208 with a grade of C or better or consent of instructor. Credit Hours: 3

BSAN464 - Forecasting and Capital Budgeting Long-term forecasting techniques used in business; alternative approaches to capital structure decisions, cost of capital measurement; and performance measurement for investment decisions including mergers and leasing; explicit consideration of certainty, risk, and uncertainty in investment analysis; theory and applications in private and public sectors. Prerequisite: FIN 361 with a grade of C or better or concurrent enrollment. Restrictions: College of Business and Analytics majors or minors, junior standing or higher; or departmental approval required. Credit Hours: 3

BSAN469 - Financial Analytics and Security Valuation Study of the corporation's financial problems and their causes and solutions. Emphasis given to the impact of these financial problems on how the market values securities. Topics include liquidity and leverage analysis, analysis of profitability, and other financial analysis tools. Prerequisite: FIN 361 with a grade of C or better. Restrictions: College of Business and Analytics majors, junior standing or higher; or school approval required. Credit Hours: 3
BSAN480 - Marketing Research and Analysis  The purpose of this course is to teach you the skills needed to execute marketing research projects or use marketing research information to make better marketing decisions. To do this, the course covers the techniques such as, determining if marketing research is needed, problem definition, research designs, survey design, sampling issues, data collection, and data analysis. The course also covers interpretation of results as well as recommendations for marketing managers/take-aways from the research. The deliverable for this course is a full marketing research report. Prerequisites: MATH 139; ACCT/ECON/FIN/MGMT 208 and MKTG 304 with a grade of C or higher. Restrictions: College of Business and Analytics majors, junior standing; program approval required. Credit Hours: 3

BSAN494 - Data Analysis in Marketing  This course is designed to equip marketing and other business students with the ability to translate data into actionable managerial decisions. Students learn how to manage and analyze data, which is available to organizations more than ever before, through a systematic process which includes data management (preparing data for analysis) and applied quantitative analysis, including statistical models. The focus will be on decisions that marketing managers have to make on a daily basis including marketing mix decisions. Prerequisite: MKTG 480 with a C or better. Credit Hours: 3

BSAN495 - Internship in Business Analytics  Supervised work experience that relates to the student's academic program and career objectives. Course credit can be used to satisfy the 300-400 level CoBA elective. If the student has already satisfied the 300-400 level CoBA elective, the student can apply credit towards the general elective requirement of the BSAN major. Mandatory Pass/Fail only. Not for graduate credit. Restrictions: Business Analytics majors, junior standing or higher. Special approval needed from the School. Student can take course for two semesters. Credit Hours: 3

Business Analytics Faculty

Islam, Md. Shariful, Assistant Professor, Accountancy, Ph.D., Louisiana Tech University, 2019; 2019. Accounting information systems, auditing, data analytics.

Kamran-Disfani, Omid, Assistant Professor, Marketing, Ph.D., University of Missouri-Columbia, 2019; 2019. Data analytics.


Nelson, H. James, Associate Professor, Management, Ph.D., The University of Colorado, 1999; 2005. Analytics, artificial intelligence, information systems.

Perry, Timothy T., Clinical Assistant Professor, Finance, Ph.D., Texas Tech University, 2009; 2019. Financial analytics.

Sylwester, Kevin, Professor, Ph.D., University of Wisconsin-Madison, 1997; 1998. Macroeconomics, Data Science.

Van Alfen, Tyson, Assistant Professor, Finance, Ph.D., University of Kentucky, 2019; 2019. Financial analytics.

Last updated: 02/18/2022

Southern Illinois University
Carbondale, IL 62901
Phone: (618) 453-2121

Catalog Year Statement:
Students starting their collegiate training during the period of time covered by this catalog (see bottom of this page) are subject to the curricular requirements as specified herein. The requirements herein will extend for a seven calendar-year period from the date of entry for baccalaureate programs and three years for associate programs. Should the University change the course requirements contained herein subsequently, students are assured that necessary adjustments will be made so that no additional time is required of them.