Business analytics is the emergent capability for organizations in the 21st century. All organizations, regardless of industry, size, or operating environment, generate and manage large volumes of data and information that, used well, inform the decision making and competitive capabilities of the enterprise. The emerging area of analytics is focused on using business data to examine what already happened, to determine or predict what will happen, and to explore or model what should happen. Successful managers across functional areas, whether finance, marketing, operations, human resources, or information systems, need to be able to understand and utilize business analytics in order to manage and lead effectively.

Business analytics draws upon a portfolio of methods and tools including statistics, forecasting, experimental design, data mining, and modeling to turn data into information and insights. The business analytics field includes descriptive, predictive, and prescriptive analytics. Descriptive analytics helps organizations describe what has happened in their operating environment and includes gathering, organizing, tabulating, and communicating historical information, such as how many online subscribers do we have?

Predictive analytics helps organizations understand what to do by uncovering relationships and associations in the available data, and uses techniques such as probability and forecasting to reveal the likelihood of outcomes, such as the number of online subscribers increases when we have banner advertising on search sites. Prescriptive analytics is focused on understanding the causal effects that can be discerned from data sets, and strives to predict what will happen, given a particular course of action, such as if we increase our banner advertising and provide one-click subscribing, how will the number of subscribers change?

The business analytics co-concentration builds upon the Carroll School of Management core with coursework that intersects with and complements many other disciplines. Business analytics is an excellent complement to other concentrations including accounting, operations management, finance, marketing, information systems, or management & leadership.

**Co-Concentration Guidelines**

The business analytics co-concentration is designed to be a second concentration for Carroll School of Management students, who must choose a primary concentration such as marketing, information systems, operations management, management & leadership, accounting, or finance. **Up to one class from the co-concentration course list can be counted toward another concentration.**

Objectives of the undergraduate co-concentration are to develop managers who:

- possess a broad and deep understanding of theories and concepts in business analytics
- are adept at data management and analysis
- understand and utilize quantitative techniques for historical analysis, predictive analysis, modeling, and simulation
- are capable of applying analytical skills and knowledge to address management problems across disciplines and industries

The following two courses are required:

**OPER6604 Management Science (fall & spring)**

**ISYS6640 Analytics & Business Intelligence (fall & spring)**

*Also take one of the following courses:*

**MKTG6620 Marketing Information Analytics (spring)**

**OPER3384 Predictive Analytics (spring)**

*Select two additional courses, excluding any courses taken from above list:*

**OPER3304/OPER6614 Quality Management (spring)**

**OPER3310 Sports Analytics (fall)**

**OPER3384 Predictive Analytics (spring)**

**ISYS3385 Applied Econometrics for Business (spring)**

**OPER6605 Risk Analysis & Simulation (spring)**

**OPER6606/MFIN6606 Forecasting Techniques (fall)**

**OPER6607 Machine Learning for Business Intelligence (spring)**

**ISYS2157 Introduction to Programming in Management (fall & spring) (or can also be met with CSC1101)**

**ISYS3257 Database Systems & Applications (fall & spring)**

**ISYS6621 Social Media and Digital Business (fall & spring)**

**ISYS6625 Geographic Information Systems (fall)**

**MKTG2153 Marketing Research (fall & spring)**

**MKTG6620 Marketing Information Analytics (spring)**
“What’s ubiquitous and cheap? Data. And what is scarce? The analytic ability to utilize that data.” –Hal Varian, Google Chief Economist, Wired Magazine, June 2009

Rather than simply answering questions about what, how, when, and where things have happened, today’s business analysts are able to push the use of data further. They can find out why things are happening and what will happen if identified trends continue, and they are able to model how an organization can use this information to optimize outcomes. Careers that utilize the skills and knowledge of business analytics continue to emerge and grow in all fields and business disciplines.

Students with this co-concentration may pursue careers in consulting, financial services, healthcare services, accountancy, technology management, government, manufacturing, and non-profit organizations. The demand for managers with these skills is strong and continues to increase as firms recognize that they compete not only with new products, good marketing, and skillful finance but by leveraging a high degree of competence in managing their data, information, and business intelligence.

There is no limit to how many courses taken abroad will be allowed for concentration credit. If the courses are judged equivalent and if the proposed courses constitute a reasonable selection, concentration or elective credit will be given.

All students wishing to study abroad must first meet with an advisor from the Office of International Programs. If accepted into the study abroad program and approved by Richard Keeley, Senior Associate Dean of the Undergraduate Program, the student should then see Sam Graves, Chair of the Operations Management Department, for course approvals before going abroad. When students wish to have a course considered they should email or bring a copy of the syllabus and course description for approval.

All approvals must be obtained prior to going abroad. No approvals will be granted after the course has been completed.

ACADEMIC DEPARTMENTS

The business analytics co-concentration is sponsored by the Information Systems, Marketing, and Operations Management Departments and is designed to be truly interdisciplinary. The faculty consists of innovative teachers and productive scholars in these disciplines. The Operations Management department serves as the academic home for the business analytics co-concentration.

We welcome your questions and comments and are always pleased to offer counsel and advice in planning your educational program.