

# Analytics Co-Major

33-38 credit hours

Note: In addition to the common core, each co-major is required to complete a particular track of study. These tracks reflect a focus on a particular area of application of analytics or advanced methods.

Required Core Courses (18-19)	Data Management - Structured
<b>Data Description &amp; Summarization</b> <i>Choose One Course: (3-4)</i>	<i>Choose One Path: (9-12)</i>
<b>ISA 225 (3)</b> Principles of Business Analytics <i>Requires ISA 125; MTH 151</i>	<b>1) CSE 148 (3) Business Computing</b>
<b>STA 261 (4)</b> Statistics	<b>2) ISA 235 (3) Information Technology and the Intelligent Enterprise</b> <i>Requires BUS 101; CSE 148</i>
<b>STA 301 (3)</b> Applied Statistics <i>Requires Calc I or II</i>	<b>3) ISA 245 (3) Database Systems and Data Warehousing</b> <i>Requires ISA 235</i>
<b>Regression Models</b> <i>Choose One Course: (3-4)</i>	<b>1) CSE 174 (3) Fundamentals of Programming and Problem Solving</b> <i>Requires MTH 102 or equivalent</i>
<b>ECO 311 (3) Examining Economic Data and Models</b> <i>Requires ECO 201; ECO 202; ISA 225, STA 261, STA 301, or STA 368; MTH 151</i>	<b>2) CSE 271 (3) Object-Oriented Programming</b> <i>Requires CSE 174</i>
<b>ISA 291 (3)</b> Applied Regression Analysis in Business <i>Requires ISA 225</i>	<b>3) CSE 274 (3) Data Abstraction &amp; Data Structures</b> <i>Requires CSE 271; ECE 287; MTH 222 or 251 or equivalent</i>
<b>STA 363 (3) Introduction to Statistical Modeling</b> <i>Requires STA 261, STA 301, STA 368, or ISA205/225</i>	<b>4) CSE 385 (3) Database Systems</b> <i>Requires CSE 274</i>
<b>STA 463 (4) Regression Analysis</b> <i>Requires MTH 222 or 231; STA 401</i>	<b>Visualizing Data and Digital Dashboards</b>
	<b>STA/IMS/JRN 404 (3) Advanced Data Visualization</b> <i>Requires STA 261, 301, 368, or 671, or IMS 261, or ISA 205/225</i>

## TRACK 1: Business Analytics

\*must take ISA 291 as core course

### Required Courses: (9)

**ISA 401 (3)**

Business Intelligence and Data Visualization  
*Requires ISA 245 or CSE 385*

**ISA 414 (3)**

Managing Big Data

*Requires ISA 245 or CSE 385; either ISA 281, 401, 491, STA 402 or 404*

**ISA 491 (3)**

Introduction to Data Mining in Business

*Requires ISA 291, ECO 311, or STA 463*

### Choose Two Electives: (6)

**ISA 281 (3)**

Concepts in Business Programming

**ISA 321 (3)**

Quantitative Analysis of Business Problems

*Requires ISA 291, ECO 311, or STA 463*  
*Fall-only*

**ISA/STA 333 (3)**

Nonparametric Statistics

*Requires ISA 205/225*  
*Offered once a year*

**ISA 365 (3)**

Statistical Monitoring and Design of Experiments

*Requires ISA 205/225 or STA 301, 363, or 368*

**ISA/STA 432 (3)**

Survey Sampling in Business

*Requires ISA 291, ECO 311, or STA 363, 401, or 463*

**ISA 444 (3)**

Business Forecasting

*Requires ISA 291, ECO 311, or STA 463*

**ISA 480 (3)**

Topics in Decision Sciences

*Professor-determined*

**ISA 496 (3)**

Business Analytics Practicum

*Requires ISA 404 or 491*

**STA 402 (3)**

Statistical Programming

*Requires ISA291, ISA/STA333, or STA363, 463, or 672*

**STA 427 (3)**

Introduction to Bayesian Statistics

*STA 463 recommended*

## TRACK 2: Predictive Analytics

### Required Courses:

**STA 402 (3)**

Statistical Programming

*Requires ISA291, ISA/STA333, or STA363, 463, or 672*

**STA 427 (3)**

Introduction to Bayesian Statistics

*STA 463 recommended*

**STA 467 (3)**

Statistical Learning

*Requires STA 463*

**ISA 414 (3)**

Managing Big Data

*Requires ISA 245 or CSE 385; either ISA 281, 401, 491, STA402 or 404*

### Choose One Elective:

**ISA 321 (3)**

Quantitative Analysis of Business Problems

*Requires ISA 291, ECO 311, or STA 463*

**MTH 432 (3)**

Optimization

*Requires MTH 222 and 252 (or equivalents)*

**CSE 372 (3)**

Stochastic Modeling

*Requires STA 301 or 368; STA 401*

## TRACK 3: Geospatial Analytics

### Required Courses:

**GEO 441 (3)**

Geographic Information Systems

**GEO 442 (3)**

Advanced Geographic Information Systems

*Requires GEO 441*

**GEO 460 (1-4)**

Advanced Systematic Geography

### Choose Two Electives:

**GEO 443 (3)**

Python Programming for ArcGIS

*Requires GEO 441*

**GEO 444 (3)**

GIScience Techniques in Landscape Ecology

**GEO 448 (3)**

Techniques and Applications of Remote Sensing

**GEO 460G**

Tools

**IMS 461 (3)**

Advanced 3D Visualization and Simulation

*IMS 222, 259, or 319 recommended*

**ISA 414 (3)**

Managing Big Data

*Requires ISA 245 or CSE 385; either ISA 281, 401, 291, STA 402 or 404*

*Spring-only*