**Statistics and Analytics Master of Science**

**Business Analytics Concentration Course Requirements**

**Required Core Areas (12 hours)**

**Statistical Methods Core:**

* ISYS 5503 Decision Support and Analytics

**Regression Analysis Core (One of the following):**

* ESRM 6423 Multiple Regression
* ISYS 5623 Multivariate Analysis
* ISYS 5203 Regression & Modeling
* ECON 4743 Introduction to Econometrics

**Multivariate Analysis Core (One of the following):**

* ESRM 6453 Multivariate Analysis
* ISYS 5723 Advanced Multivariate Analysis
* ECON 6623 Econometrics II

**Experimental Design Core (One of the following):**

* ESRM 6413 Experimental Design
* ECON 4433 Experimental Economics
* ECON 6913 Experimental Economics

**Required Concentration Courses (9 hours)**

* ISYS 5113 IT Toolkit & Skills Seminar
* ISYS 5833 Data Management Systems
* ISYS 5843 Seminar in Business Intelligence and Knowledge Management

**Electives (9 hours)**

Electives are chosen by the student in consultation with the Business Analytics Concentration Advisor. Electives may be any graduate course approved by the Advisor. Suggested electives include:

* ECON 4433 Experimental Economics
* ECON 4753 Forecasting
* FINN 4133 Advanced Investments
* MKTG 5433 Consumer and Marketing Research
* SCMT 5673 Modeling Retail Consumer
* MGMT 6213 Seminar in Research Methods

**Statistics and Analytics Master of Science**

**Biological Analytics Concentration Course Requirements**

**Required Core Areas (13 hours)**

**Statistical Methods Core** (One of the following)

* STAT 4003/4001L Statistical Methods

**Regression Analysis Core** (One of the following)

* STAT 5313 Regression Analysis

**Multivariate Analysis Core** (One of the following)

* STAT 5353 Methods of Multivariate Analysis

**Experimental Design Core** (One of the following)

* STAT 4373 Experimental Design

**Required Concentration Courses (9 hours)**

* CSCE 5013 Advanced Special Topics in Computer Science or Computer Engineering taken as Introduction to Cluster Computing
* BIOL 5153 Programming for Biologists
* ICYS 5723 Advanced Multivariate Analysis

**Electives (9 hours)**

Chosen by the student in consultation with the concentration advisor:

* CSCE 5073 Data Mining
* CSCE 5203 Advanced Database Management Systems
* CSCE 5213 Bioinformatics
* CSCE 5323 Computer Security
* CSCE 5653 Network Security
* GEOS 4553 Introduction to Raster GIS
* GEOS 5553 Spatial Analysis Using Arc-GIS
* GEOS 5593 Introduction to Geodatabases
* ISYS 5503 Decision Support and Analytics
* ISYS 5833 Data Management Systems
* STAT 5113 Statistical Inference
* STAT 5333 Analysis of Categorical Responses
* STAT 5343 Stochastic Processes
* STAT 5383 Time Series Analysis
* STAT 5413 Spatial Statistics

**Statistics and Analytics Master of Science**

**Computational Analytics Concentration Course Requirements**

**Required Core Areas (12-13 hours)**

**Statistical Methods Core** (One of the following)

* STAT 4003/4001L Statistical Methods
* ISYS 5503 Decision Support and Analytics

**Regression Analysis Core** (One of the following)

* INEG 5393 Applied Regression Analysis for Engineers
* STAT 5313 Regression Analysis I
* ISYS 5623 Multivariate Analysis

**Multivariate Analysis Core** (One of the following)

* STAT 5353 Methods of Multivariate Analysis
* ISYS 5723 Advanced Multivariate Analysis

**Experimental Design Core** (One of the following)

* INEG 5333 Design of Industrial Experiments
* STAT 4373 Experimental Design

**Required Concentration Courses (6 hours)**

* CSCE 4523 Database Management Systems
* One of the following
* CSCE 5073 Data Mining
* CSCE 5063 Machine Learning
* CSCE 4613 Artificial Intelligence

**Electives (12 hours)**

Electives are chosen by the student in consultation with the Computational Analytics concentration advisor. Electives may be any graduate course approved by the Advisor; usually, at least two should be from the CSCE department and all should have a significant computational component.

**Statistics and Analytics Master of Science**

**Educational Statistics and Psychometrics Concentration Course Requirements**

**Required Core Areas (12 hours)**

**Statistical Methods Core** (One of the following)

* ESRM 6403 Educational Statistics and Data Processing

**Regression Analysis Core** (One of the following)

* + ESRM 6423 Multiple Regression
  + INEG 5393 Applied Regression Analysis in Engineering

**Multivariate Analysis Core** (One of the following)

* ESRM 6453 Multivariate Analysis
* STAT 5353 Methods of Multivariate Analysis

**Experimental Design Core** (One of the following)

* + ESRM 6413 Experimental Design
  + STAT 4373 Experimental Design
  + INEG 5333 Design of Industrial Experiments

**Required Concentration Courses (6 hours)**

*Select two courses from the following (with approval of concentration advisor)*

* ESRM 6653 Measurement and Evaluation
* ESRM 5653 Educational Assessment
* ESRM 6753 Advanced Measurement
* ESRM 6993 Seminar in Psychometrics or Evaluation

**Electives (12 hours)**

Electives are chosen from the list below in consultation with the concentration advisor.

* ESRM 6513 Advanced Experimental Design
* ESRM 6523 Advanced Regression Analysis
* ESRM 6993 Seminar
* ECON 5613 Econometrics I
* ECON 6623 Econometrics II
* STAT 4373 Experimental Design
* STAT 5313 Regression Analysis
* ISYS 5723 Advanced Multivariate Analysis
* ISYS 5833 Data Management Systems
* ISYS 5843 Seminar in Business Intelligence and Knowledge Mgmt.
* STAN 600V Master’s Thesis (total 6 hours)

**Statistics and Analytics Master of Science**

**Operations Analytics Concentration Course Requirements**

**Required Core Areas (12-13 hours)**

**Statistical Methods Core** (One of the following)

* STAT 4003/4001L Statistical Methods
* ISYS 5503 Decision Support and Analytics

**Regression Analysis Core** (One of the following)

* INEG 5393 Applied Regression Analysis for Engineers
* STAT 5313 Regression Analysis I
* ISYS 5623 Multivariate Analysis
* ECON 5613 Econometrics I

**Multivariate Analysis Core** (One of the following)

* STAT 5353 Methods of Multivariate Analysis
* ISYS 5723 Advanced Multivariate Analysis
* ECON 6623 Econometrics II

**Experimental Design Core** (One of the following)

* INEG 5333 Design of Industrial Experiments
* STAT 4373 Experimental Design
* ECON 6913 Experimental Economics

**Required Concentration Courses (9 hours)**

* INEG 5613 Optimization Theory I
* INEG 5803 Simulation

Data Mining Course (One of the following)

* ISYS 5843 Business Intelligence and Knowledge Management
* CSCE 5073 Data Mining

**Electives (9 hours)**

Electives are chosen by the student in consultation with the Operations Analytics concentration advisor. Electives may be any graduate course approved by the Advisor. Students wishing to continue their education beyond an MS degree should consider completing an MS Thesis (STAN 600V, 6 hours).

**Statistics and Analytics Master of Science**

**Quantitative Social Sciences Concentration Course Requirements**

**Required Core Areas (12 hours)**

**Statistical Methods Core** (One of the following)

* PLSC 5913 Research Methods in Political Science
* PSYC 5133 Inferential Statistics for Psychology (CC)
* SOCI 5013 Advanced Research Methods

**Regression Analysis Core** (One of the following)

* PLSC 5943 Advanced Research Methods in Political Science (CC)
* SOCI 5313 Advanced Data Analysis
* PSYC 5143 Advanced Descriptive Statistics for Psychology (CC)

**Multivariate Analysis Core** (One of the following)

* PSYC 5143 Advanced Descriptive Statistics for Psychology (CC)
* PLSC 5943 Advanced Research Methods in Political Science (CC)
* STAT 5353 Methods of Multivariate Analysis

**Experimental Design Core** (One of the following)

* PSYC 5133 Inferential Statistics for Psychology (CC)
* ESRM 6413 Experimental Design

*Note: (CC)* *Indicates courses listed across different core course areas. Such courses satisfy only one core area. For more detail, students are recommended to consult with their concentration advisor.*

**Required Concentration Courses (12 hours)**

* ISYS 5723 Advanced Multivariate Analysis
* ECON 6623 Econometrics II
* ECON 4753 Forecasting
* ECON 6633 Econometrics III

**Electives (6 hours)**

Electives are chosen by the student in consultation with the Quantitative Social Sciences concentration advisor. Electives may be any graduate course approved by the Advisor. Students who plan to continue their education beyond an MS degree should consider completing an MS Thesis. Suggested electives include:

* STAN 600V Master’s Thesis
* STAT 5413 Spatial Statistics
* PADM 5913 Policy Analysis
* CSCE 5063 Machine Learning
* ECON 4433 Experimental Economics
* GEOS 4653 GIS Analysis and Modeling
* ISYS 5833 Data Management Systems
* MGMT 6213 Seminar in Research Meth.
* GEOS 5553 Spatial Analysis Using Arc-GIS
* INEG 6613 Computational Research Appl.
* GEOS 5443 Geospatial Applications and Information Science
* SOCI 4013 Special Top. in Sociology – Social Network Analysis
* ISYS 5843 Business Intelligence and Knowledge Management

**Statistics and Analytics Master of Science**

**Statistics Concentration Course Requirements**

**Required Core Areas (12-13 hours)**

**Statistical Methods Core** (One of the following)

* STAT 4003/4001L Statistical Methods

**Regression Analysis Core** (One of the following)

* STAT 5313 Regression Analysis I
* INEG 5393 Applied Regression Analysis for Engineers
* ECON 5613 Econometrics I

**Multivariate Analysis Core** (One of the following)

* STAT 5353 Methods of Multivariate Analysis

**Experimental Design Core** (One of the following)

* STAT 4373 Experimental Design
* INEG 5333 Design of Industrial Experiments

**Required Concentration Courses (12 hours)**

* STAT 5103 Introduction to Probability Theory
* STAT 5113 Statistical Inference
* STAT 5333 Analysis of Categorical Responses
* STAT 639V Topics in Statistics – Statistical Computing

**Electives (6 hours)**

Electives are chosen by the student in consultation with the Statistics Track advisor. Electives may be any graduate course approved by the advisor. Suggested electives include:

* + STAT 4033 Nonparametric Statistical Methods
  + STAT 5343 Stochastic Processes
  + STAT 5383 Time Series Analysis
  + STAT 5413 Spatial Statistics
  + STAT 610V Research in Statistics
  + STAN 600V Master’s Thesis (total 6 hours)