

Data Science and Analysis BS, Economics Emphasis

General Education Requirements

Students must satisfy the university general education requirements. Many of the courses for the degree may be used to fulfill math proficiency, information literacy, social science, and math and life/natural sciences requirements. The program recommends students take ENGL 3130, Technical Writing or ENGL 3120, Business Writing, to satisfy the Junior-Level Writing requirement. Emphasis areas may require one of these courses. There is no foreign language requirement for the degree.

Satisfactory/Unsatisfactory Option

Courses required for the major may not be taken on a satisfactory/unsatisfactory basis.

Degree Requirements

The BS in Data Science and Analysis consists of a set of core courses along with an emphasis area.

Core Course

| | | |
|--------------|---|-----|
| MATH 1800 | Analytic Geometry and Calculus I ¹ | 3-5 |
| or MATH 1100 | Basic Calculus | |

Statistics Course **3**

The Introduction to Statistics course should align with the student's Discipline Emphasis Area.

Choose one of the following:

| | |
|-----------------|--|
| SOC/ANTHRO 3220 | Quantitative Data Analysis in Social Science Research |
| BIOL 4122 | Biostatistics |
| ECON 3100 | Economic Data and Statistics |
| CRIMIN 2220 | Statistical Analysis in Criminology and Criminal Justice |
| MATH 1320 | Introduction to Probability and Statistics |
| PSYCH 2201 | Psychological Statistics |
| POL SCI 3000 | Political Analysis |
| SCMA 3300 | Business Analytics and Statistics |

Additional Required Courses

| | | |
|--------------|--|---|
| MATH 4005 | Exploratory Data Analysis with R | 3 |
| CMP SCI 1250 | Introduction to Computing | 3 |
| CMP SCI 4200 | Python for Scientific Computing and Data Science | 3 |
| CMP SCI 4342 | Introduction to Data Mining | 3 |

Total Hours 18-20

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Students interested in the Computer Science emphasis area, the Mathematics Emphasis Area, or in taking additional mathematics courses should take MATH 1800.

Emphasis Area Requirements

| | | |
|------------------------------|--|-----|
| ECON 1001 | Principles of Microeconomics (MOTR ECON 102) | 3 |
| ECON 1002 | Principles of Macroeconomics (MOTR ECON 101) | 3 |
| ECON 4100 | Introduction to Econometrics | 4 |
| ECON 4110 | Applied Econometrics | 4 |
| ECON 4120 | Time Series Econometrics for Economics and Finance | 4 |
| or ECON 4130 | Business and Economic Forecasting | |
| Choose one of the following: | | 3-4 |
| ECON 4040 | Booms and Busts in the Economy: Data and Theory | |
| ECON 4120 | Time Series Econometrics for Economics and Finance (if not used above) | |
| ECON 4130 | Business and Economic Forecasting (if not used above) | |
| ECON 4160 | Geospatial Analysis in the Social Sciences | |

Total Hours 21-22

Learning Outcomes

Upon completion of the program, graduates will be able to:

- Apply knowledge of statistical data collection, analysis and quantitative modeling techniques
- Demonstrate proficiency in industry-standard programming languages that support data acquisition, retrieval and analysis
- Select, apply and build data-based models and visualizations to devise solutions to data science problems
- Effectively communicate technical results and recommendations in various formats to appropriate audiences
- Use economic reasoning to construct models to analyze economic phenomena and evaluate public policy at the micro and macro levels
- Use mathematical models to construct and analyze economic behavior
- Apply statistical concepts and data science methods to analyze real-world problems in economics