

ECONOMIC ANALYTICS M.S.

Degree: Master of Science

<https://www.towson.edu/cbe/departments/economics/economic-analytics-masters/>

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The Economic Analytics program teaches students to combine economic theory, econometrics, and tools from data science to assess the causal impact of policies, laws, business practices, natural events, and other interventions on economic outcomes of interest. The 33-unit program culminates with a thesis and can be completed in 16 months.

Courses are grouped into foundations, methods, and impact evaluation.

Foundational courses include Economic Theory and Mathematical Economics. These courses teach key concepts and methods that will be applied in subsequent courses.

The four methods courses are broken into two, 2-course sequences in econometrics and computational economics. In the econometrics sequence students will learn how to do statistical analysis applied to economics with an emphasis on techniques for causal inference. Students will use R and/or Stata in those courses. In the computational and machine learning sequence, students will learn to how to use Python to solve economic models; to acquire, clean and analyze data; and to apply machine learning techniques to economics.

Two courses are dedicated to the practice of impact evaluation. A survey course introduces students to a range of topics from the current academic literature to which impact evaluation techniques are applied. This should stimulate ideas for students' thesis. The second course has a narrower topical focus, but goes deeper into how various techniques for causal estimation are applied in practice.

The thesis is the culminating experience in this program. Under the guidance of an advisor, students will independently formulate a research question and apply concepts and tools students have learned in the program to answer it. The thesis can be an extension of hands-on learning projects from other classes. We expect the thesis to be completed in a semester, so the scope and scale of the thesis should be consistent with this timeline.

Graduates of this program are well-trained in methods for causal identification. They are equipped with technical skills that are highly sought after in the workplace. They can conduct independent data analysis and research.

Graduates will be prepared for jobs in sectors such as finance, banking, healthcare, government, consulting, and NGOs in positions such as data analyst, economist, or statistician, among others. This program also serves as a good foundation for those who wish to pursue a Ph.D. in economics or a related field.

Accelerated Bachelor's-Master's Program

The economics department offers Towson undergraduates an accelerated path to the master's degree through the accelerated bachelor's to master's program. Qualified undergraduates may take up to 9 units of graduate course work which can be applied to both the undergraduate and graduate degree. This can save students time—students may be able to complete the master's in as little as 12 months.

It can also save students money since up to 9 units of graduate classes can be completed without paying extra graduate tuition.

Requirements

Admission Requirements

Application deadlines and a full listing of materials required for admission can be found on the website.

The MS in Economic Analytics is a 33-unit master's program which teaches students to combine economic methods with data analytics techniques to assess the causal impact of policies, laws, business practices, natural events, and other interventions on economic outcomes of interest. A thesis is required.

Degree Requirements

| Code | Title | Units |
|-------------------------|--|-----------|
| Required Courses | | |
| ECON 560 | SURVEY OF ECONOMIC ISSUES | 3 |
| ECON 601 | INTRODUCTION TO ECONOMETRICS | 3 |
| ECON 609 | ECONOMIC THEORY | 3 |
| ECON 631 | COMPUTATIONAL ECONOMICS | 3 |
| ECON 632 | MACHINE LEARNING FOR ECONOMICS | 3 |
| ECON 641 | CAUSAL INFERENCE | 3 |
| ECON 643 | IMPACT EVALUATION | 3 |
| ECON 651 | INTRODUCTION TO MATHEMATICAL ECONOMICS | 3 |
| ECON 897 | ECONOMICS THESIS | 6 |
| Elective | Any course at 500-level or higher ¹ | 3 |
| Total Units | | 33 |

¹ Any course in economics will satisfy this requirement, except ECON 690. Select courses from outside the economics department could also satisfy the elective requirement, with consent of Program Director.

Learning Outcomes

Graduates of the Economic Analytics program will:

1. Understand foundational economic concepts and the language of economic analysis.
2. Effectively use existing and emerging technology for economic analysis.
3. Appropriately choose between alternative analytical techniques and research methodologies for a given task.
4. Combine economic models and methods with data science techniques to assess the causal impact of laws, policies, business practices, natural events, and other interventions on economic outcomes of interest.
5. Have the skills necessary to comprehend published economic research papers and to integrate the implications of published research into their own studies.
6. Effectively communicate the results of independent research and analysis.