ECONOMICS, MASTER OF ARTS (M.A.) WITH A CONCENTRATION IN STATISTICS

Program accreditation
Association to Advance Collegiate Schools of Business (http://www.aacsb.edu)

Program goal
The Master of Arts in Economics is designed to enhance the student’s abilities to use economic modeling to conduct applied analytical and econometric research. Students in this program are expected to demonstrate competence over a rigorous and current core curriculum in microeconomic and macroeconomic theory and in econometrics.

Graduates of the program should be well-qualified to conduct applied economic analysis in either a government or corporate research setting. The program also is an excellent preparation for entry into a doctoral program in economics or finance.

Student learning outcomes
1. Students will use optimization techniques to develop demand and cost conditions from specifications of underlying utility and technology. Specifically, given a simple functional form for utility, students will be able to solve for optimal individual demand and, given a production technology, students will be able to solve for the firm’s cost curves.
2. Students will understand and know how to apply quantitative macroeconomic models.
3. Students will critically evaluate the validity of conclusions drawn from econometric models by others who have access to the primary data. In the AACS B classifications, this is a management-specific goal.

VCU Graduate Bulletin, VCU Graduate School and general academic policies and regulations for all graduate students in all graduate programs
The VCU Graduate Bulletin website documents the official admission and academic rules and regulations that govern graduate education for all graduate programs at the university. These policies are established by the graduate faculty of the university through their elected representatives to the University Graduate Council.

It is the responsibility of all graduate students, both on- and off-campus, to be familiar with the VCU Graduate Bulletin as well as the Graduate School website (http://www.gradle vcu.edu) and academic regulations in individual school and department publications and on program websites. However, in all cases, the official policies and procedures of the University Graduate Council, as published on the VCU Graduate Bulletin and Graduate School websites, take precedence over individual program policies and guidelines.

Degree candidacy requirements
A graduate student admitted to a program or concentration requiring a final research project, work of art, thesis or dissertation, must qualify for continuing master’s or doctoral status according to the degree candidacy requirements of the student’s graduate program. Admission to degree candidacy, if applicable, is a formal statement by the graduate student’s faculty regarding the student’s academic achievements and the student’s readiness to proceed to the final research phase of the degree program.

Graduate students and program directors should refer to the following degree candidacy policy as published in the VCU Graduate Bulletin for complete information and instructions.

Visit the Graduate study section for additional information on degree candidacy requirements. (http://bulletin.vcu.edu/graduate/study/general-academic-regulations-graduate-students/degree-candidacy)

Graduation requirements
As graduate students approach the end of their academic programs and the final semester of matriculation, they must make formal application to graduate. No degrees will be conferred until the application to graduate has been finalized.

Graduate students and program directors should refer to the following graduation requirements as published in the Graduate Bulletin for a complete list of instructions and a graduation checklist.

Visit the Graduate study section for additional information on graduation requirements. (http://bulletin.vcu.edu/graduate/study/general-academic-regulations-graduate-students/graduation-requirements)

Other information
School of Business policies and procedures for graduate master’s degree students are available on the school’s website at business.vcu.edu/graduate-studies/current-graduate-students (http://business.vcu.edu/graduate-studies/current-graduate-students).

Apply online at graduate.admissions.vcu.edu (http://www.graduate.admissions.vcu.edu).

Admission requirements

<table>
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<tr>
<th>Degree</th>
<th>Semester(s) of entry</th>
<th>Deadline dates</th>
<th>Test requirements</th>
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<tbody>
<tr>
<td>M.A.</td>
<td>Fall</td>
<td>Jul 1</td>
<td>GMAT or GRE</td>
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<td>Spring</td>
<td>Nov 1</td>
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<td>Summer</td>
<td>Mar 1</td>
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In addition to the general admission requirements of the VCU Graduate School (http://bulletin.vcu.edu/graduate/study/admission-graduate-study/admission-requirements), applicants to the Master of Arts in Economics degree program with a concentration in statistics must complete various prerequisite courses as enumerated in the degree requirements section. Prerequisite and/or foundation courses may be taken after admission.

Degree requirements
In addition to the VCU Graduate School graduation requirements (http://bulletin.vcu.edu/graduate/study/general-academic-regulations-graduate-students/graduation-requirements), the M.A. in Economics degree with a concentration in statistics requires a minimum of 30 credit hours of 500-
and 600-level course work. The 30 hours must include eight core courses, one restricted elective and one additional approved elective.

Prerequisite and/or foundation courses may be waived for students who present satisfactory equivalent preparation at either the undergraduate or graduate level. This determination is made by the faculty adviser at the time of admission.

**Prerequisite undergraduate course**

MATH 307  
**Multivariate Calculus**

### Curriculum requirements

<table>
<thead>
<tr>
<th>Foundation courses</th>
<th>Required courses</th>
<th>Statistics elective</th>
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<tbody>
<tr>
<td>ECON 500</td>
<td>Concepts in Economics</td>
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<tr>
<td>ECON 501</td>
<td>Introduction to Econometrics</td>
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<tr>
<td>ECON 604</td>
<td>Advanced Microeconomic Theory</td>
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<tr>
<td>ECON 607</td>
<td>Advanced Macroeconomic Theory</td>
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<tr>
<td>ECON 612</td>
<td>Econometrics</td>
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<td>ECON 614</td>
<td>Mathematical Economics</td>
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<tr>
<td>ECON 641</td>
<td>Econometric Time-series Analysis</td>
<td></td>
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<tr>
<td>ECON 642</td>
<td>Panel and Nonlinear Methods in Econometrics</td>
<td></td>
</tr>
<tr>
<td>STAT/BIOS 513</td>
<td>Mathematical Statistics I</td>
<td></td>
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<tr>
<td>STAT/BIOS 514</td>
<td>Mathematical Statistics II</td>
<td></td>
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**Regression models**

- STAT 546  | Linear Models |  
- STAT 623  | Discrete Multivariate Analysis |  
- STAT 643  | Applied Linear Regression |  
- STAT 744  | Regression II |  

**Design of experiments**

- STAT 642  | Design and Analysis of Experiments I |  
- STAT 650  | Design and Analysis of Response Surface Experiments |  
- STAT 742  | Design and Analysis of Experiments II |  

**Time series**

- STAT 613  | Stochastic Processes |  
- STAT 675  | Time Series Analysis I |  

**Machine learning and big data**

- STAT/OPER 636  | Machine Learning Algorithms |  
- STAT/OPER 736  | Mathematics of Knowledge and Search Engines |  

**Bayesian analysis**

- STAT 645  | Bayesian Decision Theory |  
- STAT 745  | Advanced Bayesian Statistics |  

**Quality control**

- STAT/OPER 648  | Systems Reliability Analysis |  
- STAT/OPER 649  | Statistical Quality Control |  

Select additional course from the list of approved statistics electives above, or any course from the list of approved electives below.

- ECON 600:609 |  
- ECON 612:697 |  
- FIRE 600:699 |  
- HADM 602  | Health System Organization, Financing and Performance |  
- HADM 610  | Health Analytics and Decision Support |  
- HCPR 601  | Introduction to Health Policy |  
- INFO 614  | Data Mining |  
- MKTG 600:699 |  
- MGMT 600:699 |  
- PADM 601  | Principles of Public Administration |  
- PADM 603  | Politics and Economics |  
- PADM 609  | Financial Management in Government |  
- PADM 622 | Public Sector Budgeting |  
- PADM 625  | Public Policy Analysis |  
- SCMA 600:699 |  

**Total graduate credit hours required (minimum) 30 (36 if all foundation courses are required)**

**Graduate program director**

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**Program website**: business.vcu.edu/graduate-studies/master-of-arts-in-economics (http://business.vcu.edu/graduate-studies/master-of-arts-in-economics)