BACHELOR OF ARTS (BA) DEGREE WITH A MAJOR IN MATHEMATICAL ECONOMIC ANALYSIS

Program Learning Outcomes for the BA Degree with a Major in Mathematical Economic Analysis

Upon completing the BA degree with a major in Mathematical Economic Analysis, students will have:

1. Learned various mathematical skills, including the elements of multiple variable calculus, linear algebra, and optimization techniques, and other mathematical methods utilized in technical economic analyses.
2. Learned various statistical and econometric skills, including a thorough knowledge of both theoretical and applied econometrics.
3. Learned the core principles of microeconomics, including supply and demand, utility maximization by consumers and profit maximization by firms, and equilibrium market structures, as well as technical treatments of advanced topics in microeconomics, especially economic applications of game theory.
4. Learned the core principles of macroeconomics, including the macroeconomic effects of monetary and fiscal policy, the nature of the business cycle, and the determinants of growth, and learn alternative approaches to analyzing the performance of the macroeconomy.
5. Learned how the basic economic principles that have been absorbed in the core courses are utilized in the economic analyses of critical policy issues in a wide variety of applied subject areas.

Additionally, students completing the two-semester departmental honors program will have:

1. Learned how to conduct economic research, beginning with framing of a research idea and progressing to a critical review and evaluation of the relevant literature, the construction of an economic model to analyze the issue under consideration, the identification of testable hypotheses, the collection of data and econometric testing of their hypotheses, the presentation of preliminary and final results, and the preparation of a research paper that presents those results.

Requirements for the BA Degree with a Major in Mathematical Economic Analysis

For general university requirements, see Graduation Requirements (https://ga.rice.edu/undergraduate-students/academic-policies-procedures/graduation-requirements/). Students pursuing the BA degree with a major in Mathematical Economic Analysis must complete:

- A minimum of 16 or 17 courses (52 or 56 credit hours), depending on course selection, to satisfy major requirements.
- A minimum of 120 credit hours to satisfy degree requirements.
- A minimum of 60 credit hours outside of major requirements.

- A minimum of 8 courses (26 credit hours) taken at the 300-level or above.
- A maximum of 5 courses (15 credit hours) from study abroad or transfer credit after matriculation at Rice may be applied towards specific major requirements. For additional departmental guidelines regarding transfer credit, see the Policies tab.

The courses listed below satisfy the requirements for this major. In certain instances, courses not on this official list may be substituted upon approval of the major's academic advisor, or where applicable, the department's Director of Undergraduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the major’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier/.) Students and their academic advisors should identify and clearly document the courses to be taken.

### Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the Major in Mathematical Economic Analysis</td>
<td>52-56</td>
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<td></td>
<td>Total Credit Hours Required for the BA Degree with a Major in Mathematical Economic Analysis</td>
<td>120</td>
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### Core Requirements

#### Mathematics and Statistics

- **MATH 101** SINGLE VARIABLE CALCULUS I 3
- **MATH 105** or **MATH 101** AP/OTH CREDIT IN CALCULUS I 3

- **MATH 102** SINGLE VARIABLE CALCULUS II 3
- **MATH 106** or **MATH 102** AP/OTH CREDIT IN CALCULUS II 3

**Select 1 from the following:**

- **MATH 212** MULTIVARIABLE CALCULUS 3-6
- **MATH 221** HONORS CALCULUS III 3
- **MATH 222** and **HONORS CALCULUS IV** 3

**Select 1 course from the following:**

- **ECON 307 / STAT 310** PROBABILITY AND STATISTICS 3-4
- **ECON 308 / STAT 315** PROBABILITY AND STATISTICS FOR DATA SCIENCE 3-4

**DSCI 301**

#### Economics and Econometrics

- **ECON 100** PRINCIPLES OF ECONOMICS 3
- **ECON 200** MICROECONOMICS 4
- **ECON 202** MACROECONOMICS 4
- **ECON 205** APPLIED ECONOMETRICS 4
- **ECON 305** GAME THEORY AND OTHER MICRO TOPICS FOR MTEC MAJORS 3
- **ECON 308** MATHEMATICAL ECONOMICS 4
- **ECON 310 / STAT 376** ECONOMETRICS 4

**Select 1 course from the following:**

- **ECON 496** RESEARCH IN ECONOMIC THEORY 3
- **ECON 497** RESEARCH IN ECONOMETRICS 3

**Elective Requirements**

- **Select 1 course from the following:** 3

- **Select 1 course from the following:** 3-4
Bachelor of Arts (BA) Degree with a Major in Mathematical Economic Analysis

ECON 210  BEHAVIORAL ECONOMICS
ECON 239  LAW AND ECONOMICS
Courses between ECON 343-ECON 495.
ECON 498  HONORS PROGRAM IN ECONOMICS-I
Select 3 courses from ECON 410-ECON 495 and ECON 498.

| Total Credit Hours Required for the Major in Mathematical Economic Analysis | 52-56 |
| Additional Credit Hours to Complete BA Degree Requirements | 4-8 |
| University Graduation Requirements | 60 |

Total Credit Hours 120

Footnotes and Additional Information

* Includes coursework completed as distribution credit, FWIS, LPAR, upper-level, residency (hours taken at Rice), 60 hours outside of the major (if applicable), and any additional academic program requirements. The "hours outside of the major" requirement may include all of the above university requirements.

1. After matriculation: In some cases, transfer credit may be awarded by the economics department for courses completed at other schools after the student has matriculated at Rice. Students may present a maximum of 2 such transfer courses in fulfilling the mathematics and statistics core requirements, and a maximum of 3 such transfer courses in fulfilling the economics/econometrics core requirements and elective requirements combined. (Additional transfer courses may count toward meeting university graduation requirements, but not toward fulfillment of requirements for the major.)

Before matriculation: Credits awarded to transfer students for courses taken prior to matriculation at Rice are not counted against the departmental limit on transfer courses, but all students must complete more than half of their upper-level major coursework (300-level and 400-level courses) at Rice.

2. Students who have received credit for ECON 111 and ECON 113 and have made a grade of B- or better in MATH 102 (taken at Rice University) may substitute any Economics major elective for ECON 100. Students must notify the department's Director of Undergraduate Studies if they wish to exercise this option.

3. As specified in their course descriptions, the following courses do not satisfy the Electives requirement for the major in Mathematical Economic Analysis: ECON 101, ECON 103, ECON 111, ECON 113, ECON 260, ECON 265, ECON 270, ECON 275, ECON 499. In addition, BUSI 343 may be substituted for ECON 343, and STAT 449 may be substituted for ECON 449.

Policies for the BA Degree with a Major in Mathematical Economic Analysis

Program Restrictions and Exclusions

Students pursuing the BA degree with a major in Mathematical Economics Analysis should be aware of the following program restriction:

- Students pursuing the major in Mathematical Economics Analysis may not additionally declare the major in Economics.

Transfer Credit

For Rice University's policy regarding transfer credit, see Transfer Credit (https://ga.rice.edu/undergraduate-students/academic-policies-procedures/transfer-credit/). Some departments and programs have additional restrictions on transfer credit. The Office of Academic Advising maintains the university's official list of transfer credit advisors on their website: https://oaa.rice.edu. Students are encouraged to meet with their academic program's transfer credit advisor when considering transfer credit possibilities.

Departmental Transfer Credit Guidelines

Students pursuing a major in Mathematical Economics Analysis should be aware of the following departmental transfer credit guidelines:

- Requests for transfer credit will be considered by the program director (and/or the program’s official transfer credit advisor) on an individual case-by-case basis.

- No more than 5 courses (15 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards specific major requirements after matriculation at Rice as follows:
  - No more than 2 courses (6 credit hours) of transfer credit may apply towards the mathematics and statistics core requirements
  - No more than 3 courses (9 credit hours) of transfer credit may apply towards the economics/econometrics core requirements and the elective requirements combined

Please Note: Additional transfer courses may count toward meeting university graduation requirements, but not toward fulfillment of requirements for the major. Credits awarded to transfer students for courses taken prior to matriculation at Rice are not counted against the departmental limit on transfer courses, but all students must complete more than half of their upper-level major coursework (300-level and 400-level courses) at Rice.

Additional Information

For additional information, please see the Economics website: https://economics.rice.edu/

Opportunities for the BA Degree with a Major in Mathematical Economic Analysis

Academic Honors

The university recognizes academic excellence achieved over an undergraduate's academic history at Rice. For information on university honors, please see Latin Honors (https://ga.rice.edu/undergraduate-students/honors-distinctions/university/) (summa cum laude, magna cum laude, and cum laude) and Distinction in Research and Creative Work (https://ga.rice.edu/undergraduate-students/honors-distinctions/university/). Some departments have department-specific Honors awards or designations.

Requirements for Departmental Honors

1. To earn departmental honors in economics, students must earn a grade of B+ (3.33 grade points) or better in each semester of the department's two-semester honors program, ECON 498 and ECON 499.

2. The honors program is available to both ECON and MTEC majors.

3. To be admitted to the honors program, students:
   - must have a GPA of 3.67 or better in all courses taken toward fulfilling their departmental major requirements at the beginning of the academic year in which they enter the honors program;
   - must have completed all of the core requirements for their major;
c. must have completed the 400-level course or courses most closely related to their area of research, and
d. must be accepted to the honors program by the professor supervising the program.

4. For additional information, consult the Economics Department Honors Program at https://economics.rice.edu/undergraduate-program/honors-program (https://economics.rice.edu/undergraduate-program/honors-program/).

Additional Information
For additional information, please see the Economics website: https://economics.rice.edu/