BACHELOR OF SCIENCE WITH A MAJOR IN ECONOMICS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (http://bulletin.gwu.edu/arts-sciences/#degreeregulationtext) and the following curricular requirements.

Program-specific curriculum:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td><strong>Required</strong></td>
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<tr>
<td>ECON 1011</td>
<td>Principles of Economics I ¹</td>
<td>1</td>
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<tr>
<td>ECON 1012</td>
<td>Principles of Economics II ¹</td>
<td>1</td>
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<tr>
<td>ECON 2103</td>
<td>Intermediate Microeconomic Theory: A Mathematical Approach</td>
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<tr>
<td>or ECON 2101</td>
<td>Intermediate Microeconomic Theory</td>
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<tr>
<td>ECON 2104</td>
<td>Intermediate Macroeconomic Theory: A Mathematical Approach</td>
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<tr>
<td>or ECON 2102</td>
<td>Intermediate Macroeconomic Theory</td>
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<tr>
<td>ECON 2123</td>
<td>Introduction to Econometrics</td>
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<tr>
<td>ECON 4198W</td>
<td>Proseminar in Economics</td>
<td></td>
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<tr>
<td>MATH 1221</td>
<td>Calculus with Precalculus II ²</td>
<td></td>
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<tr>
<td>or MATH 1231</td>
<td>Single-Variable Calculus I</td>
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<tr>
<td>or MATH 1252</td>
<td>Calculus for the Social and Management Sciences</td>
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<tr>
<td>MATH 1232</td>
<td>Single-Variable Calculus II ²</td>
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<tr>
<td>STAT 1111</td>
<td>Business and Economic Statistics I (or equivalent) ²</td>
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<tr>
<td>or STAT 1051</td>
<td>Introduction to Business and Economic Statistics</td>
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<tr>
<td>or STAT 1053</td>
<td>Introduction to Statistics in Social Science</td>
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<tr>
<td><strong>Electives</strong></td>
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<tr>
<td>Two courses (6 credits), completed with a minimum grade of C-, from the following:</td>
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<tr>
<td>CSCI 1041</td>
<td>Introduction to FORTRAN Programming</td>
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<tr>
<td>CSCI 1111</td>
<td>Introduction to Software Development</td>
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<tr>
<td><strong>Additional requirements</strong></td>
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<tr>
<td>CSCI 1121</td>
<td>Introduction to C Programming</td>
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<tr>
<td>CSCI 1131</td>
<td>Introduction to Programming with C</td>
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<tr>
<td>CSCI 1311</td>
<td>Discrete Structures I</td>
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<tr>
<td>CSCI 4314</td>
<td>Discrete Analysis-Computer Science</td>
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<tr>
<td>CSCI 4341</td>
<td>Continuous Algorithms</td>
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<tr>
<td>CSCI 4511</td>
<td>Artificial Intelligence Algorithms</td>
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<tr>
<td>EMSE 2705</td>
<td>Mathematics in Operations Research</td>
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<tr>
<td>EMSE 3701</td>
<td>Operations Research Methods</td>
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<tr>
<td>EMSE 3850</td>
<td>Quantitative Models in Systems Engineering</td>
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<tr>
<td>EMSE 4710</td>
<td>Applied Optimization Modeling</td>
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<tr>
<td>MATH 2184</td>
<td>Linear Algebra I</td>
<td></td>
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<tr>
<td>MATH 2233</td>
<td>Multivariable Calculus ³</td>
<td></td>
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<tr>
<td>MATH 2971</td>
<td>Introduction to Mathematical Reasoning ³</td>
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<tr>
<td>MATH 3342</td>
<td>Ordinary Differential Equations ³</td>
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<tr>
<td>MATH 3410</td>
<td>Mathematics of Finance ³</td>
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<tr>
<td>MATH 4239</td>
<td>Real Analysis I ³</td>
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<tr>
<td>STAT 1129</td>
<td>Introduction to Computing</td>
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<tr>
<td>STAT 2183</td>
<td>Intermediate Statistics Lab/Packages</td>
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<td>STAT 3119</td>
<td>Analysis of Variance</td>
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<tr>
<td>STAT 3187</td>
<td>Introduction to Sampling</td>
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<tr>
<td>STAT 4157</td>
<td>Introduction to Mathematical Statistics I</td>
<td></td>
</tr>
<tr>
<td>STAT 4158</td>
<td>Introduction to Mathematical Statistics II</td>
<td></td>
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<tr>
<td>STAT 4181</td>
<td>Applied Time Series Analysis</td>
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<td>STAT 4188</td>
<td>Nonparametric Statistics Inference</td>
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<tr>
<td>STAT 4189</td>
<td>Mathematical Probability and Applications I</td>
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<tr>
<td>STAT 4190</td>
<td>Mathematical Probability and Applications II</td>
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<tr>
<td>STAT 4197</td>
<td>Fundamentals of SAS Programming for Data Management</td>
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Five additional Economics (ECON) courses (15 credits) numbered between 2000 and 4999. The following guidelines and restrictions apply:

- FINA 3101 and/or FINA 3301 may be used as substitutes for up to two ECON courses; however, credit may not be earned for both FINA 3301 and ECON 2121.
- At least one of the five courses must be taken at the 3000-level. ECON 3098, ECON 3099, FINA 3101, and FINA 3301 may be counted toward the 15 credits of ECON electives, but do not count toward the required minimum of 3 credits of 3000-level courses.
- No more than three courses may be selected from ECON 2169, ECON 2170, ECON 2185, ECON 2198, ECON 3098, and ECON 3198.
- No more than two courses may be selected from ECON 2180, ECON 2181 or ECON 3181, and ECON 2182.

1 Post-matriculation residency requirement: In order for ECON 1011 Principles of Economics I to count towards the major it must be completed at George Washington University with a minimum grade of C-. Students who matriculate with AP or transfer credit for ECON 1011 are exempt from this residency requirement. In order for ECON 1012 Principles of Economics II to count towards the major it must be completed at George Washington University with a minimum grade of C-. Students who matriculate with AP or transfer credit for ECON 1012 are exempt from this residency requirement.

2 The MATH course selected from among MATH 1221 Calculus with Precalculus II, MATH 1231 Single-Variable Calculus I, or MATH 1252 Calculus for the Social and Management Sciences, as well as MATH 1232 Single-Variable Calculus II, must be completed with a minimum grade of C-. Moreover, STAT 1111, or STAT 1051, or STAT 1053 must be completed with a minimum grade of C-.

3 MATH 2233 Multivariable Calculus, MATH 2971 Introduction to Mathematical Reasoning, MATH 3342 Ordinary Differential Equations, MATH 3410 Mathematics of Finance, and MATH 4239 Real Analysis I are strongly recommended for those planning to pursue graduate study in economics.

GENERAL EDUCATION

In addition to the University General Education Requirement, undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (https://advising.columbian.gwu.edu/general-education-courses).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.
SPECIAL HONORS
In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must have a grade-point average of at least 3.5 in economics courses taken at George Washington University. Upon review of the student’s ECON 4198W paper, the student may be recommended for graduation with Special Honors.