# MATHEMATICAL ECONOMICS MAJOR DEPARTMENT OF ECONOMICS AND BUSINESS and DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE THE COLORADO COLLEGE

#### **OBJECTIVES**

Students majoring in Mathematical Economics (ME) must successfully complete no fewer than 16 units of listed courses in Mathematics (MA) and Economics (EC), including a senior thesis. To solidify basic problem solving skills, all majors must initially take a common set of required courses in economic theory, calculus, linear algebra, and/or differential equations. Contingent on individual course prerequisites, majors may then directly fulfill the elective requirement which undertakes a more advanced treatment of mathematical economics, or complete a sequence of courses that provide exposure to the statistical modeling of data. This major provides strong training for students pursuing private sector careers in investment banking, forecasting, applied mathematics, or finance, as well as graduate work in economics, operations research, and financial engineering.

## **PREREQUISITES**

Students desiring to major in ME are required to pass the following **prerequisites** <u>prior to admission into the major</u>. If a student has not taken all three of these courses, that student may be admitted only if currently scheduled for a later section or by consent of the department chair if mitigating circumstances exist.

To get started with this (and any of our department majors), students will need our gateway courses of Principles of Economics, either as a 2-block course (EC100) or as two separate blocks (EC101 and EC102). If students already took EC201, that counts in place of the two units of Principles of Economics. Students will also need Calculus 1 (MA125 or MA126), and Calculus 2 (MA 129),

EC100	Principles of Economics OR	
EC101	Principles of Microeconomics AND	2 units
EC102	Principles of Macroeconomics	
MA125 or MA126	Calculus 1	1 unit
MA129	Calculus 2	1 unit

International Baccalaureate (IB) Higher Level and Advanced Placement (AP) courses with registrar-approved test scores count as the equivalents of Economics 100, 101 and 102. Those scores, and answers to other IB and AP questions on course equivalents, can be found here: <a href="https://www.coloradocollege.edu/offices/registrar/ap-and-ib-credit.html">https://www.coloradocollege.edu/offices/registrar/ap-and-ib-credit.html</a>.

<u>DISTINCTION IN MATHEMATICAL ECONOMICS</u> is awarded by action of both Departments (Math and Economics & Business) to up to the top 20% of graduating majors based on their GPA within the major with the provision that they have also received an A in Senior Thesis.

## COURSE OF STUDY FOR THE MATHEMATICAL ECONOMICS MAJOR

To graduate as a Mathematical Economics major, students must pass the all-college requirements, while completing major components consisting of eleven units of required courses, three units of electives, and two units of senior thesis for a *total of 16 units* in the major.

# A. Required Courses (total of 11 units)

#### Math (6 Units)

MA125 or MA126	Calculus 1 or equivalent as approved by Math Department	1 unit
MA129	Calculus 2 or equivalent as approved by Math Department	1 unit
MA204	Calculus 3	1 unit
MA217	Introduction to Probability and Statistics	1 unit
MA120	Applied Linear Algebra	1 unit
MA275	Sequences and Series	1 unit
		6 units

#### **Economics (5 Units)**

EC100	Principles of Economics OR	
EC101	Principles of Microeconomics AND	2 units
EC102	Principles of Macroeconomics	
EC301	Microeconomic Theory	1 unit
EC302	Macroeconomic Theory	1 unit
EC403	Econometric Theory	1 unit

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At least one elective from the following list, or other as approved in advance by the Chair of the Department of and Business.    BU317	Economics & At least one eleand Business.	<u> </u>		
At least one elective from the following list, or other as approved in advance by the Chair of the Department of and Business.    BU317	At least one eleand Business.	Riiginegg elective		
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BU317 Investments  dEC343 Environmental Economics II EC344 Industrial Organization EC346 Economics of Labor EC347 Economics of International Trade EC371 Money, Banking, and Financial Markets EC372 Economic Development EC377 Economic of International Finance  Tunit  Mathematics elective  At least one elective from the following list, or other as approved in advance by the chair of the Department of MA237 Statistical Methods 1 MA318 Probability 1 unit  Mathematical Economics elective  At least one elective from the following list, or other as approved in advance by the chair of the Department of MA237 Statistical Methods 1  MA318 Probability 1 unit  Mathematical Economics elective  At least one elective from the following list, or other as approved in advance by the chair of the Department and Business.  EC404 Advanced Topics in Mathematical Economics EC405 Mathematical Economics of Addiction EC406 Mathematical Economics of Game Theory EC407 Mathematical Economics of Growth  1 unit  C496 - Senior Thesis in Mathematical Economics (total of 2 units)  L MINIMUM REQUIRED CREDITS 16 units  At least one can be added to the chair of the Department and Business.  EC406 Senior Thesis in Mathematical Economics of Growth  1 unit  C496 - Senior Thesis in Mathematical Economics (total of 2 units)  L MINIMUM REQUIRED CREDITS 16 units  Student's Signature  At least one clective unless I so choose.		ctive from the following list, or	or other as approved in advance by the C	Chair of the Department of Ec
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EC346   Economics of Labor   EC347   Economics of International Trade   EC371   Money, Banking, and Financial Markets   EC372   Economic Development   EC377   Economics of International Finance   I unit				
EC347 Economics of International Trade EC371 Money, Banking, and Financial Markets EC372 Economic Development EC377 Economic of International Finance  Tunit  Mathematics elective  At least one elective from the following list, or other as approved in advance by the chair of the Department of MA220 Theoretical Linear Algebra MA313 Probability MA318 Ordinary Differential Equations  Tunit  Mathematical Economics elective  At least one elective from the following list, or other as approved in advance by the chair of the Department of MA237 Statistical Methods I  MA318 Ordinary Differential Equations  1 unit  Mathematical Economics elective  At least one elective from the following list, or other as approved in advance by the chair of the Department and Business.  EC404 Advanced Topics in Mathematical Economics EC405 Mathematical Economics of Addiction EC406 Mathematical Economics of Game Theory EC407 Mathematical Economics of Growth  I unit  C496 - Senior Thesis in Mathematical Economics (total of 2 units)  L MINIMUM REQUIRED CREDITS 1 understand the Colorado College Mathematical Economics memts and instructions. I understand that, if departmental requirements are changed after I declare the Mamics major, they will not be retroactive unless I so choose.  Inted Student Name  Date		·	OII	
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