Joint Major in Mathematics and Economics
Department of Mathematics
University of California, San Diego

2016-10-31 (updated 2016-11-10)

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General Information

- For additional Department of Mathematics assistance:
  
  SOPHIA ONWUKHERHA (AP&M 7409), Student Affairs Assistant
  HOLLY PROUSFOOT (AP&M 7409), Director of Instructional Support
  JEFFREY SAIKAL (AP&M 7431), Undergraduate Advisor

- Advisor walk-in hours at math.ucsd.edu. (Hours subject to change).

- Email mathadvising@math.ucsd.edu or the Virtual Advising Center, vac.ucsd.edu, for simple questions not needing in-person meeting. In all communication, you must mention in the body of your message (1) your full name of record, (2) your PID, and (3) your major.

- Note: The official authority for curricula of degree programs at UC San Diego is the General Catalog at catalog.ucsd.edu.
Joint Major
in Mathematics and Economics
Same major offered by two different departments

- UC San Diego Department of Mathematics offers:
  Joint Major in Mathematics and Economics (MA 33)

- UC San Diego Department of Economics offers:
  Joint Major in Mathematics and Economics (EN 25)

- Above majors have identical curricula

- Differences:
  - Your assigned advisors are in department your major is housed in
  - Department of Mathematics advisors normally only email information
    about internships, other job opportunities, etc. to their students

Purpose of Major
(Major code: MA 33)

- Joint Major in Mathematics and Economics is designed to help prepare people who want to attend graduate school in economics or business administration (including professional management degrees)

- Stay in this major if that is your intended academic path

- For that purpose, this major is better preparation than B.A. in Economics

- Joint major is like two halves of two separate majors. This is very different from double majoring in mathematics and economics.
Nature of Major
(Major code: MA 33)

- Graduate study in economics is heavily mathematical
- If you are not strong in mathematics, you are unlikely to do well in (or enjoy) economics
- In Joint Major in Mathematics and Economics, upper-division course work divided as...
  \approx 50\% \text{ mathematics courses}
  \approx 50\% \text{ economics courses}

Joint Major
in Mathematics and Economics
Curriculum (lower division)

- Calculus and linear algebra: \text{MATH 20A-B-C-D} and \text{MATH 18}
  (formerly \text{MATH 20F})

  \text{OR}

- Honors calculus and linear algebra: \text{MATH 31AH-BH} and \text{MATH 20D}

- \text{Principles of Microeconomics: ECON 1}
- \text{Principles of Macroeconomics: ECON 3}
Joint Major in Mathematics and Economics
Curriculum (upper division)

- Mathematical Reasoning (MATH 109)

- Algebra (select one option):
  Applied Linear Algebra (MATH 102) OR
  Introduction to Numerical Analysis: Linear Algebra (MATH 170A) OR
  Abstract Algebra (MATH 100A-B)

- Analysis (select one option):
  Foundations of Real Analysis I (MATH 140A) OR
  Introduction to Analysis I (MATH 142A)

continued...

Joint Major in Mathematics and Economics
Curriculum (upper division) continued

- Select one option:
  Ordinary Differential Equations I (MATH 130A) OR
  Foundations of Real Analysis II (MATH 140B) OR
  Introduction to Analysis II (MATH 142B)

- Microeconomics (ECON 100A-B-C)

- Econometrics (select one option):
  Econometrics (ECON 120A-B-C) OR
  Introduction to Probability (MATH 180A) and Econometrics (ECON 120B-C) OR
  Introduction to Probability (MATH 180A) and Introduction to Mathematical Statistics I (MATH 181 A) and Econometrics (ECON 120C)

continued...
Joint Major
in Mathematics and Economics
Curriculum (upper division) continued

• Select one of...
  Macroeconomics (ECON 110A-B) OR
  Introduction to Numerical Optimization: Linear and Nonlinear Programming (MATH 171A-B)

• …or two courses from...
  Decisions Under Uncertainty (ECON 171)
  Operations Research (ECON 172A-B). [172A is prerequisite for 172B]

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Joint Major
in Mathematics and Economics
Curriculum (upper division) continued

• Major requires total 15 four-unit, upper division courses in mathematics and economics, with minimum 7 from each department

• Other strongly recommended courses:
  - Ordinary Differential Equations II (MATH 130B)
  - Introduction to Mathematical Statistics II (MATH 181B)
  - Actuarial Mathematics I and II (MATH 193A-B)
  - The Mathematics of Finance (MATH 194)
  - Game Theory (ECON 109)
  - Mathematical Economics (ECON 113)
  - Economic and Business Forecasting (ECON 178)
Final Thoughts (1/2)

- Graduate study in economics is heavily mathematical. Do not plan on studying economics if you dislike mathematics or lack a good aptitude for it.

- Undergraduate courses in calculus, probability theory, statistics, and real analysis will help prepare you for graduate study in economics. Taking more courses in these categories now could strengthen a future application to graduate school in economics.

- Department of Mathematics Honors Program is excellent way to engage in research as an undergraduate student. See http://www.math.ucsd.edu/programs/undergraduate/. This could strengthen an application to graduate school.

Final Thoughts (2/2)

- Choose major not based only on what seems interesting, but on what realistically will help you reach career goals

- Learn all you can now from people in your industry of interest about career you aspire to

- Look for job advertisements at companies in your field of interest; what major/degree qualifications are expected?

- Make the most of your time as a student. Get to know your professors, teaching assistants, and advisors. Establish excellent reputations with them.