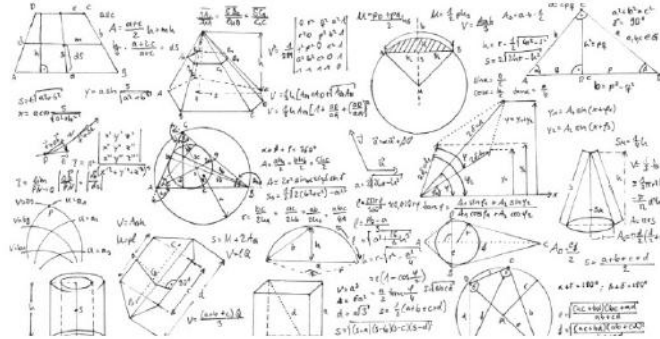


Major in Applied Mathematics

Department of Mathematics
University of California, San Diego

2016-10-10 (updated 2016-11-17)



General Information

- For additional Department of Mathematics assistance:
 - SOPHIA ONWUCHEKWA (AP&M 7409), Student Affairs Assistant*
 - HOLLY PROUDFOOT (AP&M 7409), Director of Instructional Support*
 - JEFFREY SAIKALI (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.*

Major in Applied Mathematics

(Major code: MA 27)

- Major emphasizes mathematics as applied to such fields as probability, statistics, numerical analysis
- Can be preparation for graduate school in applied mathematics or career in industry direct from undergraduate school
- If graduate school is your objective, choose courses (such as MATH 100A-B-C and MATH 140 A-B-C and others) that will prepare you for area of mathematics on which you want to focus your graduate studies

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Major in Applied Mathematics

Curriculum (lower division)

- Calculus and linear algebra: MATH 20A-B-C-D-E and MATH 18 (formerly MATH 20F)

OR

- Honors calculus and linear algebra: MATH 31AH-BH-CH and MATH 20D

-
- Also need one of...

CSE 8A-B (Introduction to computer science; Java) OR

CSE 11 (Introduction to computer science; Java, accelerated pace) OR

ECE 15 (Engineering computation)

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Major in Applied Mathematics

Curriculum (upper division)

- Mathematical Reasoning (MATH 109)
- Linear algebra:
Applied Linear Algebra (MATH 102) OR
Introduction to Numerical Analysis: Linear Algebra (MATH 170A)
- Analysis sequence:
Foundations of Real Analysis (MATH 140A-B) OR
Introduction to Analysis (MATH 142A-B)

continued...

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Major in Applied Mathematics

Curriculum (upper division) continued

- Choose one option:
 - a) MATH 180A-B-C and MATH 181A-B OR
 - b) MATH 180A and MATH 181A-B and one of MATH 181C/181E/185 OR
 - c) MATH 180A-B-C and MATH 185 OR
 - d) MATH 180A and MATH 185 and any two of MATH 170A/170B/170C/175/179
 - e) MATH 183 and any three from MATH 170A/170B/170C/175/179

Descriptions

MATH 180 sequence: Probability theory, stochastic processes

MATH 181 sequence: Mathematical statistics

MATH 183: Statistical methods (stand-alone statistics course)

MATH 185: Introduction to Computational Statistics

MATH 170 sequence: Introduction to numerical analysis

MATH 174, 175, 179: Numerical methods, computational/applied mathematics

continued..

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Major in Applied Mathematics

Curriculum (upper division) continued

- Select one additional sequence...
 - a) From previous slide's list **OR**
 - b) From this list:
 - MATH 110A-120A-130A (partial differential equations; complex analysis; ordinary differential equations)
 - MATH 110A-B (partial differential equations)
 - MATH 120A-B (complex analysis)
 - MATH 152-184A (computing mathematics; combinatorics)
 - MATH 154-184A (discrete mathematics; combinatorics)
 - MATH 171A-B (numerical optimization)
 - MATH 193A-B (actuarial mathematics)

continued...

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Major in Applied Mathematics

Curriculum (upper division) continued

- After all aforementioned, students can take any upper-division mathematics lecture courses to meet minimum 13 four-unit upper division courses required for major
- Up to 12 units of upper division courses can be taken (with approval by petition) from outside mathematics in applied mathematical area

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Major in Applied Mathematics

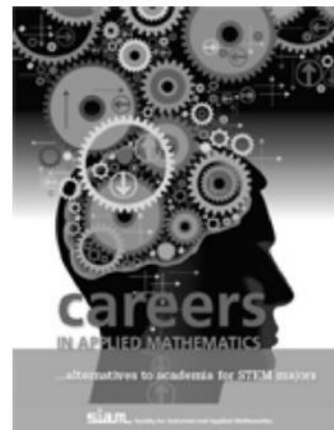
Summary

- Choose approved sequences and electives that will be of value to your future plans; do not just take “easiest” courses or what will allow rush toward graduation
- If you intend to go to graduate school, Department of Mathematics Honors Program project can strengthen your application if you do excellent work; this is as important as doing well in coursework
- If you intend to go directly to industry, next slide has information on recommended publication...

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Employment Possibilities

- The Society for Industrial and Applied Mathematics has a free downloadable book called *Careers in Applied Mathematics... Alternatives to Academia for STEM Majors*
- <http://siam.org/careers/thinking.php>
- Use this book to learn about career possibilities and read the personal career experiences of 18 applied mathematicians
- Next slide: Industries needing applied mathematicians...



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Industries Needing Applied Mathematicians

- Government labs, research offices and agencies
- Federally funded contractors
- Engineering research organizations
- Computer information and software firms
- Energy systems firms
- Electronics and computer manufacturers
- Consulting firms
- Aerospace and transportation equipment manufacturers
- Financial service and investment management firms
- Transportation service providers
- Communications services providers
- Chemical or pharmaceutical manufacturers
- Medical device companies
- Producers of petroleum and petroleum products
- Academic institutions and research institutes
- Consumer products companies

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Final Thoughts

- 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, teachings assistants, and advisors. Establish excellent reputations with them.