MS Degree in Applied & Computational Mathematics

Contact:
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rit.edu/study/applied-and-computational-mathematics-ms
What & Why

• What do you get out of MS degree
  • Advanced understanding of mathematics
  • In-depth knowledge of a particular branch
  • Advanced training and skills
What & Why

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• Why should you pursue MS degree
  • You love math, and want to learn more
  • You are not sure if you want to pursue a PhD, thus you want to see if graduate school is right for you
  • You want to gain additional skills for career
  • You gain experience
Careers

• Areas
  • Pursue PhD
  • Actuary
  • Investment/Quantitative analyst
  • Sports analysis
  • Teaching
  • Operations research analyst
  • Statistician
  • Data scientist/analyst
Careers

• Areas
  • Pursue PhD
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• Recent Alumni
  • Software Engineer – Microsoft
  • Data Science & Analytics – Daimler Trucks North America
  • Lecturer – University of Rhode Island
  • Basketball Operations Analyst – Sacramento Kings
  • Pursuing PhD in Math Modeling at RIT
Curriculum

• Thesis option
  • 30 credits
  • Grad Seminar I & II
  • 3 Core Courses
  • 4 Electives
  • 7 Research Credits
  • Thesis defense

• Project option
  • 30 credits
  • Grad Seminar I & II
  • 3 Core Courses
  • 5 Electives
  • 4 Research Credits
Core Courses

- MATH601 – Methods of Applied Math
- MATH602 – Numerical Analysis I
- MATH605 – Stochastic Processes
- MATH622 – Math Modeling I
- MATH645 – Graph Theory
- MATH722 – Math Modeling II
Math Electives

https://digitalarchive.rit.edu/xmlui/bitstream/handle/1850/21276/Graduate_Course_Descriptions2018.pdf?sequence=1

- MATH625 – Applied Inverse Problems
- MATH631 – Dynamical Systems
- MATH633 – Measure Theory & Elements of Functional Analysis
- MATH646 – Combinatorics
- MATH655 – Biostatistics
- MATH671 – Number theory
- MATH702 – Numerical Analysis II
- MATH712 – Numerical Methods for PDEs
- MATH731 – Advanced Dynamical Systems
- MATH735 – Mathematics of Finance I
- MATH736 – Mathematics of Finance II
- MATH741 – Partial Differential Equations I
- MATH742 – Partial Differential Equations II
- MATH761 – Mathematical Biology
- MATH771 – Mathematics of Cryptography
- MATH789 – Special Topics: e.g., high-performance computing, deep learning, complex systems
- MATH831 – Mathematical Fluid Dynamics
Non-Math Electives

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- STAT611 – Statistical Software
- STAT631 – Foundations of Statistics
- DSCI633 – Foundations of Data Science
- CSCI662 – Foundations of Cryptography
- CSCI665 – Foundations of Algorithms
- CSCI762 – Advanced Cryptography
- ISEE601 – Systems Modeling & Optimization
- MECE605 – Finite Elements
- MECE725 – Fundamentals of CFD
Sample curricula

**Financial Math:**
- MATH 606 & 607
- MATH 605, 622, 722
- MATH 735, 736
- STAT 611, 631

**Crypto:**
- MATH 606 & 607
- MATH 622, 645, 722
- MATH 646, 671, 771
- CSCI 662, 665

**Computational science:**
- MATH 606 & 607
- MATH 602, 605, 645
- MATH 702, 712, 789 (HPC)
- CSCI 665

**Industrial math:**
- MATH 606 & 607
- MATH 602, 622, 722
- MATH 601, 631, 741
- STAT 611
- ISEE 601

**PhD:**
- MATH 606 & 607
- MATH 602, 605, 645
- MATH 631, 633, 646, 741
- Thesis
Research Areas

In Grad Seminar I, SMS faculty will give brief overviews of their research. Additionally, a literature review is conducted, usually under the guidance of a selected faculty member. In grad seminar II, a research proposal is created.

• **Discrete Math:**
  • Network science
  • Image analysis

• **Biomedical Math:**
  • Contact lens
  • Imaging

• **Fluid Dynamics:**
  • Polymeric flows
  • Coating

• **Earth Systems Science:**
  • Lake plastic
  • Climate modeling

• **CCRG:**
  • Relativity
  • Multi-messenger astrophysics

• **Statistics:**
  • Data analytics
  • Machine learning
Questions?

[link] rit.edu/study/applied-and-computational-mathematics-ms