MATH 540  Real Analysis  4
MATH 561  Theory of Probability I  4
MATH 563  Risk Modeling and Analysis  4
STAT 511  Advanced Mathematical Statistics  4
Plus one of the following:  4
MATH 511  Intro to Algebraic Geometry
MATH 518  Differentiable Manifolds I
MATH 525  Algebraic Topology I
MATH 530  Algebraic Number Theory
MATH 531  Analytic Theory of Numbers I
MATH 542  Complex Variables I
MATH 550  Dynamical Systems I
MATH 553  Partial Differential Equations
MATH 570  Mathematical Logic
MATH 580  Combinatorial Mathematics

Students must demonstrate competence in five core courses including the following:

To demonstrate competence, a student must receive a B+ or higher in the course, or pass a written exam on the topic.

MATH 540  Real Analysis  4
MATH 561  Theory of Probability I  4
MATH 563  Risk Modeling and Analysis  4
STAT 511  Advanced Mathematical Statistics  4

Students must demonstrate competence in the following:

MATH 564  Applied Stochastic Processes  4
STAT 425  Statistical Modeling I  3 or 4
FIN 591  Theory of Finance  4

Students must demonstrate competence in two of the following:  8
ASRM 575  Life Insurance and Pension Mathematics  4
ASRM 510  Financial Mathematics  4
ASRM 561  Loss Data Analytics & Credibility  4

Master’s equivalency  32
MATH 599  Thesis Research (0 min applied toward degree)  0

Total Hours required for the degree  96

Other requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
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<tbody>
<tr>
<td>MATH 405, MATH 406, MATH 415, MATH 444, and MATH 499 cannot be counted toward this graduate degree.</td>
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<tr>
<td>64 hours in residence</td>
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<tr>
<td>Masters Degree Required for Admission to PhD</td>
<td>No</td>
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<tr>
<td>Comprehensive Exam Required</td>
<td>Yes</td>
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<tr>
<td>Preliminary Exam Required</td>
<td>Yes</td>
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<tr>
<td>Final Exam/Dissertation Defense Required</td>
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<tr>
<td>Dissertation Deposit Required</td>
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<tr>
<td>Minimum GPA</td>
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