## Mathematics

**MATH 490  Advanced Topics in Mathematics**  credit: 1 TO 4 hours.

Deals with selected topics and applications of mathematics; see Class Schedule or department office for current topics. 1 to 4 undergraduate hours. 1 to 4 graduate hours. May be repeated with approval. Prerequisite: Consent of instructor.

<table>
<thead>
<tr>
<th>CRN</th>
<th>Type</th>
<th>Section</th>
<th>Time</th>
<th>Days</th>
<th>Location</th>
<th>Instructor</th>
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</thead>
<tbody>
<tr>
<td>41817</td>
<td>Lecture-Discussion</td>
<td>E13</td>
<td>01:00 PM - 01:50 PM</td>
<td>MWF</td>
<td>156 - Henry Administration Bldg</td>
<td>Song, R</td>
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Credit Hours: 3 hours
Stoch Proc for Fin & Insurance
Emphasizes techniques of stochastic processes and introductory applications to actuarial science, finance and economics. Topics include conditional probability and expectation, Markov Chains, reliability theory, Brownian motion and simulations

| 45683   | Lecture-Discussion | E14     | 01:00 PM - 01:50 PM| MWF  | 156 - Henry Administration Bldg | Song, R    |

Credit Hours: 4 hours
Stoch Proc for Fin & Insurance
Restricted to MS:App Mth-Actuarial Sci -UIUC.
This section is restricted to graduate students in Actuarial Science. Additional work of substance will be assigned by Prof. Song beyond the work done by students in section E13.

| 45118   | Lecture-Discussion | ECC     | 02:00 PM - 02:50 PM| MWF  | 447 - Altgeld Hall          | Duursma, I |

Credit Hours: 3 hours
Error-Correcting Codes
Topic: Error-Correcting Codes See http://www.math.uiuc.edu/timetable/ for the full course description. Prerequisite: Linear Algebra
In this course we discuss the mathematical principles that allow information to be stored or transmitted reliably in the presence of errors. A variety of methods is presented that cover a wide range of current applications, including cloud storage and data transfer over networks. Results from combinatorics, graph theory and algebra will be introduced and then used to construct codes and to analyse code performance. Topics include algebraic decoding of Reed-Solomon codes, probabilistic decoding of codes on graphs, trellis decoding of convolutional codes, codes for distributed storage, multicast network coding, belief propagation for low-density parity-check codes, and secure codes for channels with eavesdroppers.

| 38036   | Lecture-Discussion | RAD     | 05:30 PM - 08:00 PM| R    | 341 - Altgeld Hall          | Proksa, C  |

Credit Hours: 4 hours
Risk Analytics Decision Making
Departmental Approval Required
Practicing actuaries present real-world actuarial projects. Advanced undergraduates and graduate students taking this case study course will combine mathematical knowledge with problem-solving skills to develop solutions and communicate results. This course is currently full. To be added to the waitlist, please fill out this survey https://surveys.illinois.edu/sec/6307724. Priority will be given to Juniors and Seniors.

| 44789   | Lecture-Discussion | SRM     | 09:30 AM - 10:50 AM| MW   | 259 - English Building      | Linders, D |

Credit Hours: 3 hours
Statistics for Risk Modeling
Restricted to Statistics or Mathematics or Actuarial Science major(s). Restricted to students with Junior or Senior class standing. Not intended for Graduate - Urbana-Champaign.

Statistics for Risk Modeling Section restricted to seniors in Actuarial Science until Nov. 9. Restricted to seniors and juniors in Actuarial Science until Nov. 14. Mathematics and Statistics majors may register on November 14 if seats remain. This course may fill quickly and closed overrides are not available.