Mathematics

MATH 453  **Elementary Theory of Numbers**  credit: 3 OR 4 hours.
Basic introduction to the theory of numbers. Core topics include divisibility, primes and factorization, congruences, arithmetic functions, quadratic residues and quadratic reciprocity, primitive roots and orders. Additional topics covered at the discretion of the instructor include sums of squares, Diophantine equations, continued fractions, Farey fractions, recurrences, and applications to primality testing and cryptography. 3 or 4 undergraduate hours. 3 or 4 graduate hours. 4 hours of credit requires approval of the instructor and department with completion of additional work of substance. Prerequisite: MATH 241 or equivalent.

This course satisfies the General Education Criteria for a:
Quantitative Reasoning II

<table>
<thead>
<tr>
<th>CRN</th>
<th>Type</th>
<th>Section</th>
<th>Time</th>
<th>Days</th>
<th>Location</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>32140</td>
<td>Lecture-Discussion</td>
<td>D13</td>
<td>11:00 AM - 11:50 AM</td>
<td>MWF</td>
<td>343 - Altgeld Hall</td>
<td>Baluyot, S</td>
</tr>
</tbody>
</table>

Credit Hours: 3 hours
Quantitative Reasoning II course.

<table>
<thead>
<tr>
<th>CRN</th>
<th>Type</th>
<th>Section</th>
<th>Time</th>
<th>Days</th>
<th>Location</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>32144</td>
<td>Lecture-Discussion</td>
<td>D14</td>
<td>11:00 AM - 11:50 AM</td>
<td>MWF</td>
<td>343 - Altgeld Hall</td>
<td>Baluyot, S</td>
</tr>
</tbody>
</table>

Credit Hours: 4 hours
Quantitative Reasoning II course.
Instructor Approval Required
Restricted to Graduate - Urbana-Champaign.
Graduate students requesting the 4 credit hour section must first register for the 3 hour section. If the instructor is willing to offer extra work to graduate students for the 4-hour section, students can get an approval form from 313 Altgeld Hall between the first day of the semester and the 8th week of the semester

<table>
<thead>
<tr>
<th>CRN</th>
<th>Type</th>
<th>Section</th>
<th>Time</th>
<th>Days</th>
<th>Location</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>32147</td>
<td>Lecture-Discussion</td>
<td>M13</td>
<td>12:30 PM - 01:50 PM</td>
<td>TR</td>
<td>447 - Altgeld Hall</td>
<td>Zaharescu, A</td>
</tr>
</tbody>
</table>

Credit Hours: 3 hours
Quantitative Reasoning II course.

<table>
<thead>
<tr>
<th>CRN</th>
<th>Type</th>
<th>Section</th>
<th>Time</th>
<th>Days</th>
<th>Location</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>32150</td>
<td>Lecture-Discussion</td>
<td>M14</td>
<td>12:30 PM - 01:50 PM</td>
<td>TR</td>
<td>447 - Altgeld Hall</td>
<td>Zaharescu, A</td>
</tr>
</tbody>
</table>

Credit Hours: 4 hours
Quantitative Reasoning II course.
Instructor Approval Required
Restricted to Graduate - Urbana-Champaign.
Graduate students requesting the 4 credit hour section must first register for the 3 hour section. If the instructor is willing to offer extra work to graduate students for the 4-hour section, students can get an approval form from 313 Altgeld Hall between the first day of the semester and the 8th week of the semester