Mathematics

MATH 417  Intro to Abstract Algebra  credit: 3 OR 4 hours.

Fundamental theorem of arithmetic, congruences. Permutations. Groups and subgroups, homomorphisms. Group actions with applications. Polynomials. Rings, subrings, and ideals. Integral domains and fields. Roots of polynomials. Maximal ideals, construction of fields. 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: Either MATH 416 or one of MATH 410, MATH 415 together with one of MATH 347, MATH 348, CS 374; or 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>
</tr>
</thead>
<tbody>
<tr>
<td>32112</td>
<td>Lecture-Discussion</td>
<td>D13</td>
<td>11:00 AM - 11:50 AM</td>
<td>MWF</td>
<td>347 - Altgeld Hall</td>
<td>Reznick, B</td>
</tr>
</tbody>
</table>

Credit Hours: 3 hours
Departmental Approval Required
This section is reserved for students who were in Professor Lerman's Spring 2017 Math 347; for secondary education students; and for Math majors who were previous participants in the Merit Workshop program. Please contact mathadvising@illinois.edu with name, netid, and UIN if you are in one of these groups and wish to register.

<table>
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<tbody>
<tr>
<td>65075</td>
<td>Lecture-Discussion</td>
<td>E13</td>
<td>01:00 PM - 01:50 PM</td>
<td>MWF</td>
<td>145 - Altgeld Hall</td>
<td>Borman, M</td>
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Credit Hours: 3 hours
This course is restricted to Mathematics and Math&CS majors initially, but the restriction will be removed on April 14, 2017 at 1pm.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>65076</td>
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<td>MWF</td>
<td>145 - Altgeld Hall</td>
<td>Borman, M</td>
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Credit Hours: 4 hours
Departmental Approval Required
Restricted to Graduate - Urbana-Champaign.
Departmental approval forms will be available in 313 Altgeld Hall beginning on the first day of the semester until the 8th week of the semester.

<table>
<thead>
<tr>
<th>CRN</th>
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<th>Instructor</th>
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<tbody>
<tr>
<td>32108</td>
<td>Lecture-Discussion</td>
<td>F13</td>
<td>02:00 PM - 02:50 PM</td>
<td>MWF</td>
<td>345 - Altgeld Hall</td>
<td>Leininger, C</td>
</tr>
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</table>

Credit Hours: 3 hours
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<th>Instructor</th>
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<tbody>
<tr>
<td>32110</td>
<td>Lecture-Discussion</td>
<td>F14</td>
<td>02:00 PM - 02:50 PM</td>
<td>MWF</td>
<td>345 - Altgeld Hall</td>
<td>Leininger, C</td>
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<tbody>
<tr>
<td>32103</td>
<td>Lecture-Discussion</td>
<td>M13</td>
<td>09:30 AM - 10:50 AM</td>
<td>TR</td>
<td>141 - Altgeld Hall</td>
<td>Dutta, S</td>
</tr>
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Credit Hours: 3 hours
This course is restricted to Mathematics and Math&CS majors initially, but the restriction will be removed on April 14, 2017 at 1pm.
| 32106 | Lecture-Discussion | M14 | 09:30 AM - 10:50 AM | TR | 141 - Altgeld Hall | Dutta, S |

Credit Hours: 4 hours  
Departmental Approval Required  
Restricted to Graduate - Urbana-Champaign.  
Departmental approval forms will be available in 313 Altgeld Hall beginning on the first day of the semester until the 8th week of the semester.