### Statistics

**STAT 578  Topics in Statistics**  credit: 4 hours.
May be repeated if topics vary. 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>
</tr>
</thead>
<tbody>
<tr>
<td>36204</td>
<td>Lecture-Discussion</td>
<td>A1</td>
<td>11:00 AM - 12:20 PM</td>
<td>TR</td>
<td>106B8 - Engineering Hall</td>
<td>Qu, P</td>
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Stat Learning in Data Science
Restricted to Graduate - Urbana-Champaign.
For Statistics course registration information: go.illinois.edu/StatisticsRegistration

**TOPIC:** Statistical Learning in Data Science
**Prerequisites:** STAT 410 or STAT 510; and STAT 425. **Description:** Learn to analyze large complex data using advanced statistical learning methods and algorithms. Topics include data exploration and interpretation for structured and unstructured data; large data processing; optimization tools; recommender system; tensor methods; text mining; and imaging analysis. Software used includes R and Matlab. Students will gain practical skills of data mining and knowledge discovery in various applications such as business, political science, biology and medicine.

| 69104   | Lecture-Discussion  | C1      | 02:00 PM - 03:20 PM | TR   | 1022 - Lincoln Hall   | Chatterjee, S |

Modern Stat Estimation Theory
Restricted to Graduate - Urbana-Champaign.
For Statistics course registration information: go.illinois.edu/StatisticsRegistration

This course offers an introduction to the finite sample analysis of modern statistical estimation methods. **Topics** would include High Dimensional Linear Regression, Non Parametric Regression, Large Matrix Estimation and Principal Component Analysis (PCA), Shape/Norm Constrained Estimation and Minimax Lower Bounds (Decision Theoretic). The goal is to present various proof techniques for state-of-the-art methods in the above topics. Essential probability topics such as Concentration of Measure and Empirical Process Theory will be discussed concurrently. A handful of open problems are expected to be encountered and stated in the duration of the course.