Statistics

STAT 430  **Topics in Applied Statistics**  credit: 3 OR 4 hours.
Formulation and analysis of mathematical models for random phenomena; extensive involvement with the analysis of real data; and instruction in statistical and computing techniques as needed. 3 undergraduate hours. 4 graduate hours. May be repeated with approval. Prerequisite: STAT 410 or STAT 420; 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>60247</td>
<td>Lecture-Discussion</td>
<td>1GR</td>
<td>09:30 AM - 10:50 AM</td>
<td>TR</td>
<td>119 - Materials Science &amp; Eng Bld</td>
<td>Stepanov, A</td>
</tr>
</tbody>
</table>

Credit Hours: 4 hours
Stochastic Processes
Restricted to Graduate - Urbana-Champaign.
For up-to-date information about statistics course registration, please see our registration update pages: go.illinois.edu/StatisticsRegistration

**TOPIC: Stochastic Processes**
Description: A stochastic process is a random process that represents the evolution of some system over time. The course is aimed at advanced undergraduate and beginning graduate students. Topics include discrete-time Markov chains, random walks, continuous-time Markov chains, Poisson processes, birth-and-death processes, renewal processes, queues, Brownian motion (Wiener process), and Itō's lemma.

<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>60249</td>
<td>Lecture-Discussion</td>
<td>1UG</td>
<td>09:30 AM - 10:50 AM</td>
<td>TR</td>
<td>119 - Materials Science &amp; Eng Bld</td>
<td>Stepanov, A</td>
</tr>
</tbody>
</table>

Credit Hours: 3 hours
Stochastic Processes
Restricted to Undergrad - Urbana-Champaign.
For up-to-date information about statistics course registration, please see our registration update pages: go.illinois.edu/StatisticsRegistration

**TOPIC: Stochastic Processes**
Description: A stochastic process is a random process that represents the evolution of some system over time. The course is aimed at advanced undergraduate and beginning graduate students. Topics include discrete-time Markov chains, random walks, continuous-time Markov chains, Poisson processes, birth-and-death processes, renewal processes, queues, Brownian motion (Wiener process), and Itō's lemma.

<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>36200</td>
<td>Lecture-Discussion</td>
<td>2GR</td>
<td>10:00 AM - 10:50 AM</td>
<td>MWF</td>
<td>114 - Transportation Building</td>
<td>Dalpiaz, D</td>
</tr>
</tbody>
</table>

Credit Hours: 4 hours
Basics of Statistical Learning
Restricted to Graduate - Urbana-Champaign.
For up-to-date information about statistics course registration, please see our registration update pages: go.illinois.edu/StatisticsRegistration

**TOPIC: Basics of Statistical Learning**
Description: This course introduces machine learning techniques for prediction, classification, and clustering. There is an emphasis on resampling methods in model building, especially cross validation. Topics include model selection, nonparametric regression, logistic regression, decision trees, support vector machines, dimension reduction and cluster analysis. Prerequisite: A course in linear regression, such as STAT 420 or STAT 425

<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>36199</td>
<td>Lecture-Discussion</td>
<td>2UG</td>
<td>10:00 AM - 10:50 AM</td>
<td>MWF</td>
<td>114 - Transportation Building</td>
<td>Dalpiaz, D</td>
</tr>
</tbody>
</table>

Credit Hours: 3 hours
Basics of Statistical Learning
Restricted to Undergrad - Urbana-Champaign.
For up-to-date information about statistics course registration, please see our registration update pages: go.illinois.edu/StatisticsRegistration

**TOPIC: Basics of Statistical Learning**
Description: This course introduces machine learning techniques for
Topics include model selection, nonparametric regression, logistic regression, decision trees, support vector machines, dimension reduction and cluster analysis. Prerequisite: A course in linear regression, such as STAT 420 or STAT 425

<table>
<thead>
<tr>
<th>Credit Hours: 3 hours</th>
</tr>
</thead>
</table>

Advanced Data Science
Restricted to Statistics or Statistics & Computer Science major(s) or minor(s). Not intended for students with Freshman class standing.

For up-to-date information about statistics course registration, please see our registration update pages: go.illinois.edu/StatisticsRegistration

Students must be registered for this course by 4 pm on Wednesday January 18, 2017. No new students will be allowed to register for this class after that. The materials and deadlines for this course can be found here: https://github.com/lcdm-uiuc/info490-sp17

Extensions to assignment deadlines will NOT be granted so make sure to check the site as soon as you register.

TOPIC: Advanced Data Science Description: This class is an asynchronous, online course. Please see INFO 490 (section RB2, CRN 64015) for more information. This course will introduce advanced data science concepts by building on the foundational concepts presented in INFO 490: Foundations of Data Science. Students will first learn how to perform more statistical data exploration and constructing and evaluating statistical models. Next, students will learn machine learning techniques including supervised and unsupervised learning, dimensional reduction, and cluster finding. An emphasis will be placed on the practical application of these techniques to high-dimensional numerical data, time series data, image data, and text data. Finally, students will learn to use relational databases and cloud computing software components such as Hadoop, Spark, and NoSQL data stores.

Students must have access to a fairly modern computer, ideally that supports hardware virtualization, on which they can install software. This class is open to sophomores, juniors, seniors and graduate students in any discipline who have either taken a previous INFO 490 data science course or have received instructor permission. Restrictions: Not intended for students with Freshman class standing. The STAT 430 section is restricted to statistics students only. Other students would register for INFO 490 section RB2, CRN 64015. Priority registration is restricted to students majoring in Statistics or Statistics & Computer Science. Students minoring in Statistics are expected to be added to the restrictions sometime during the business day December 1, 2016.