# 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.

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<th>Time</th>
<th>Days</th>
<th>Location</th>
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</table>
| 60247 | Lecture   | 1GR     | 09:30 AM
- 10:50 AM  | TR   | 103 - Transportation Building | Stepanov, A |

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 Ito's lemma.

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| 60249 | Lecture   | 1UG     | 09:30 AM
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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 Ito's lemma.

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<tr>
<td>63951</td>
<td>Online</td>
<td>RB2</td>
<td>ARRANGED -</td>
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<td>Brunner, R</td>
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Credit Hours: 3 hours  
Advanced Data Science  
Restricted to Statistics or Statistics & Computer Science major(s) or minor(s). Not intended for students with Freshman class standing.

Topic: Advanced Data Science  
This section is NOT controlled by the Department of Statistics. It meets with INFO 490 section RB2 (CRN 64015) and IS 490 section RB2 (CRN 67578). Please contact INFO with any questions. This class is an asynchronous, online course. NOTE: Students must be registered by 4 pm on Wednesday January 17, 2018. No new students will be allowed to register for this class after that.  
Description: 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.