## Class Schedule - Fall 2015

### Electrical and Computer Engineering

**ECE 598 Special Topics in ECE** credit: 0 TO 4 hours.

Subject offerings of new and developing areas of knowledge in electrical and computer engineering intended to augment the existing curriculum. See Class Schedule or departmental course information for topics and prerequisites. May be repeated in the same or separate terms if topics vary.

<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>65005</td>
<td>Lecture</td>
<td>KSH</td>
<td>12:30 PM - 01:50 PM</td>
<td>MW</td>
<td>2013 - Electrical &amp; Computer Eng Bldg</td>
<td>Haran, K</td>
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</tbody>
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Credit Hours: 4 hours

Electrical Machine Design

Restricted to Graduate - Urbana-Champaign.

Prerequisites: ECE 431, Electric Machinery, or permission of instructor. A number of emerging transportation, energy, and industrial electric power applications offer an opportunity for electrical machine designers to contribute improved solutions. The new applications can open up the design space for unconventional machine types, leveraging new materials, manufacturing processes and power electronics. Electrical machine design is a highly multidisciplinary process, which requires a good understanding of complex trade-offs, and both analytical and numerical tools for best results. This course will attempt to prepare electrical and mechanical engineers for this opportunity by focusing on the multidisciplinary electrical machine design process. It will build on fundamentals covered in ECE 330 and 431 to equip students with the tools and concepts needed to perform the design of practical electromechanical devices. Fundamental principles of energy conversion, applicable to all types of electric machinery, are first reviewed. Basic design rules, analytical formulae and the use of numerical design tools will then be introduced, and experience gained through a hands-on design project. Multi-disciplinary electromagnetic, thermal and mechanical design trade-offs will be highlighted and explained with practical examples.

| 61468 | Lecture | MR     | 02:00 PM - 03:20 PM | TR   | 2013 - Electrical & Computer Eng Bldg | Raginsky, M |

Credit Hours: 4 hours

Statistical Learning Theory

Restricted to Graduate - Urbana-Champaign.

Prerequisites: ECE 534 or equivalent. Advanced graduate course on modern probabilistic theory of adaptive and learning systems. The following topics will be covered: basics of statistical decision theory; concentration inequalities; supervised and unsupervised learning; empirical risk minimization; complexity-regularized estimation; generalization bounds for learning algorithms; VC dimension and Rademacher complexities; minimax lower bounds; online learning and optimization. Along with the general theory, the course will discuss applications of statistical learning theory to signal processing, information theory, and adaptive control. Basic prerequisites include probability and random processes, calculus, and linear algebra. Other necessary material and background will be introduced as needed.

| 65161 | Lecture | PH     | 12:30 PM - 01:50 PM | MW   | 3015 - Electrical & Computer Eng Bldg | Hanumolu, P |

Credit Hours: 4 hours

Integ. Cir. for High Speed

Restricted to Graduate - Urbana-Champaign.

Prerequisites: ECE483 or equivalent. This course focuses on the design of circuits and systems for modern high-speed serial and parallel links. Analysis and simulation techniques to incorporate channel and circuit-level non-idealities in the evaluation of link performance will be discussed. Architectures to implement transmitters, receivers, equalizers, timing generation and recovery circuits will be described in detail.