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>
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<tr>
<th>CRN</th>
<th>Type</th>
<th>Section</th>
<th>Time</th>
<th>Days</th>
<th>Location</th>
<th>Instructor</th>
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<tbody>
<tr>
<td>64364</td>
<td>Lecture</td>
<td>HH</td>
<td>03:00 PM - 04:20 PM</td>
<td>MW</td>
<td>4070 - Electrical &amp; Computer Eng Bldg</td>
<td>Al-Hassanieh, H</td>
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Credit Hours: 4 hours
Wireless Networks & Mobile Sys
Prerequisites: Maturity in understanding of computer networking and digital communications. One of the following courses: ECE 361 (Digital Communications) or ECE 438 (Communication Networks) or ECE 439 (Wireless Networks). The goal of this course is to introduce students to advanced research topics in wireless networks and mobile communication systems. In each lecture, we will discuss one or two research papers that introduce new wireless designs, algorithms, protocols and applications. The papers are systems oriented and focus on practical challenges and solutions for building wireless and mobile systems. The course will cover the latest research topics including the Internet of Things, cross layer design, interference management, multi-antenna systems, distributed wireless systems, network coding, backscatter communication, full-duplex radios, wireless localization and sensing, wireless security, wireless charging… Student will also learn how to design and build wireless systems through a research oriented course project that focuses on implementation aspects of practical systems.

| 60719  | Lecture | MAB    | 02:00 PM - 03:20 PM | TR   | 3017 - Electrical & Computer Eng Bldg | Belabbas, M      |

Credit Hours: 4 hours
Geometric Control Theory
Restricted to Graduate - Urbana-Champaign.
Prerequisites: ECE 515. This course introduces methods for the study of linear and nonlinear input-output dynamical systems from a geometric viewpoint. Topics include controllability, observability, feedback linearization, stability, and qualitative behavior of nonlinear dynamical systems. Concepts from differential geometry, topology and from Lie theory will be developed as needed. A special emphasis will be given to the study of decentralized control systems and the study of classical and quantum mechanical systems.

| 68079  | Lecture | MS     | 04:00 PM - 05:20 PM | MW   | 3015 - Electrical & Computer Eng Bldg | Huang, J         |

Credit Hours: 4 hours
Adv Memory & Storage Systems
Prerequisites: Maturity in understanding of operating systems, systems architecture, memory and storage systems. One of the following courses: ECE 391, ECE 411, or ECE 511. In this course, we will discuss advanced techniques for building memory and storage systems. The course will cover a variety of latest research topics centered around the memory and storage systems that include the new and emerging hardware architecture, memory/storage systems software, memory-centric applications, near-storage computing, rack-scale storage, storage security and reliability, mobile/wearable/IoT storage, and storage in large-scale data centers. In each lecture, we will discuss 2 research papers for each topic. In addition, we provide 2-4 more papers as optional reading for students who wish to dig deeper into these topics. Through this course, students will learn not only the fundamental concepts of memory and storage systems via the lecture materials, but also the hands-on experience of building and evaluating a memory/ storage-centric system via projects.

| 44223  | Lecture | NB     | 11:00 AM - 12:15 PM | MW   | 2013 - Electrical & Computer Eng Bldg | Borisov, N       |
Credit Hours: 4 hours
Privacy Enhancing Technologies
Restricted to Graduate - Urbana-Champaign.
Title: Privacy Enhancing Technologies. Prerequisites: CS 461/ECE 422 or CS 463/ECE 424 or consent of instructor. A review of both foundational and recent research results in the field of privacy enhancing technologies, including anonymous communications, censorship circumvention, digital currencies, privacy-enhanced credentials, electronic voting, and privacy-preserving computation.