Electrical Engineering (EE)

Courses

EE 101. Introduction to Electrical Engineering. 3 Credits.
An introduction to the tools and techniques of the electrical engineering discipline including the use of MATLAB and Spice. Introduction to design thinking including teamwork, design specifications, conceptual design, detailed design, design integration, cost estimation and market considerations. F,S.

EE 111. Digital Circuits. 3 Credits.
Introduction to the fundamentals of digital circuit design. Logic gates; Boolean algebra; Karnaugh maps; Mathematical operations; Flip Flops; Counters. Corequisite: EE 111L. F,S.

EE 111L. Digital Circuits Laboratory. 1 Credit.
Introduction to design and implementation of digital electronic circuits. Corequisite: EE 111. F,S.

EE 211. Embedded Systems. 3 Credits.
A study of microcontroller hardware and software, with an emphasis on interfacing the microcontroller with external electronic devices such as transceivers, sensors, and actuators for communications and control within an embedded system. Prerequisite: EE 111 and CSCI 160. S.

EE 221. Electric Circuits I. 3 Credits.
Introduces the foundations of electrical engineering, applying these concepts in developing the fundamentals of energy conversion, electronics and circuit theory. Prerequisite: MATH 165 with a grade of C or better. Corequisite: EE 221L. F,S.

EE 221L. Electric Circuits I Laboratory. 1 Credit.
Introduction to methods of experimental circuit analysis and to proper uses of laboratory equipment. Corequisite: EE 221. F,S.

EE 222. Electric Circuits II. 3 Credits.
Linear electric circuits in the steady state and transient conditions; two-port circuits; Fourier Series single and polyphase systems. Prerequisite: Electrical Engineering major and EE 221 with a grade of C or better. Corequisite: EE 222L. F,S.

EE 222L. Electric Circuits II Laboratory. 1 Credit.
Experimental circuit analysis and proper uses of laboratory equipment. Prerequisite: EE 221L. Corequisite: EE 222. F,S.

EE 292. Sophomore Design. 3 Credits.
Intermediate design thinking incorporating teamwork, design specifications, conceptual design, detailed design, design integration, cost estimation and market considerations . Product design projects are completed and laboratory prototypes are developed and tested by design teams. Oral presentations and written technical reports on the design projects are required. Prerequisite: EE 101, EE 111, and EE 111L. S.

EE 301. Electric Drives. 3 Credits.
A study of variable speed drives and their electronic controls; analysis and synthesis of power electronics through computer simulations and laboratory implementations. Prerequisite: EE 360. S.

EE 304. Computer Aided Measurement and Controls. 3 Credits.
The principles of the use of a computer in a measurement and control environment are presented. Software is designed to drive interfaces to perform measurement and control algorithms. The software and concepts presented are evaluated in a laboratory environment. Prerequisite: Electrical Engineering major and MATH 165. F.

EE 312. Computer Hardware Organization. 3 Credits.
The study of complete computer systems including digital hardware interconnection and organization and various operation and control methods necessary for realizing digital computers and analog systems. Prerequisite: EE 111 and CSCI 160; or consent of instructor. F.

EE 314L. Signal and Systems Laboratory. 1 Credit.
In this laboratory course, students will conduct simulations and experiments related to theory covered in EE 314. The topics include implementation of passive filters, Laplace transform, and z-transform. Corequisite: EE 314. F.

EE 321. Electronics I. 3 Credits.
Fundamentals of semiconductors, nonlinear discrete components such as diodes and transistors, and integrated circuits; analysis and synthesis of simple electronic circuits, including amplifiers. Prerequisite: EE 222. Corequisite: EE 321L. F.

EE 321L. Electronics Laboratory I. 1 Credit.
Practical electronics application and design using theory studied in concurrent third year electrical engineering courses. Prerequisite: EE 222L. Corequisite: EE 321. F.

EE 322. Electronics II. 3 Credits.
Analysis of electronic circuits and systems using discrete components and integrated circuits, digital circuits, active filters, and power amplifiers. Prerequisite: EE 360 and EE 321. S.

EE 330. Electric and Magnetic Fields. 3 Credits.
Field produced by simple distributions of electric charges and magnetic poles, field mapping and application to engineering problems. Prerequisite: EE 222, MATH 266, and PHYS 252 each with a grade of C or better. F,S.

EE 331. Electromagnetic Waves. 3 Credits.
A study of Maxwell's equations, transmission line theory, plane waves in simple media. The phenomena of reflection and refraction at interfaces of two dissimilar materials. Guided electromagnetic waves in single-conductor waveguides. Prerequisite: EE 330. S.

EE 350. Fundamentals of Controls. 3 Credits.
Mathematical modeling and dynamic response of linear control systems; stability analysis; design of linear controllers using the root locus and frequency response techniques. Prerequisite: EE 360 and MATH 266. S.

EE 360. Signals and Systems. 3 Credits.
Passive filters; Laplace transform applications; Fourier transform; Z-transform; Nyquist sampling theorem; other topics as time permits (state variables; introduction to control and communications theory; discrete Fourier transform). Prerequisite: EE 222 and MATH 266. F,S.

EE 385. Engineering Data Analysis. 3 Credits.
This course will provide undergraduate electrical engineering students with an understanding of the principles of engineering data analysis using basic probability theory and basic statistics theory. Students will have the opportunity to apply these concepts to actual engineering applications and case studies. Prerequisite: EE 221 with a grade of C or better. Corequisite: EE 222. F.

EE 392. Junior Design. 3 Credits.
Advanced design thinking including teamwork, design specifications, conceptual design, detailed design, design integration, cost estimation and market considerations. Advanced product design projects are completed and laboratory prototypes are developed and tested by teams. Oral presentations and written technical reports on the design projects are required. Prerequisite: EE 211, EE 222, EE 221L, and EE 292. S.

EE 402. Power Systems I. 3 Credits.
Electric power systems operation, control and economic analysis. Credit for EE 402 will not be given where credit for EE 502 is already received. Prerequisite: EE 222. On demand.

EE 403. Power Systems II. 3 Credits.
Introduction to vibration and dynamics, single degree freedom free vibration, single degree freedom forced vibration, harmonic and periodic excitations; pulse, introduction to viscous and non-viscous damping system, dynamic system identification, numerical methods to determine dynamic response; determination of earthquake response of linear elastic buildings; dynamics of generalized single degree of freedom systems, dynamics of shear buildings, dynamics of multi-degree of freedom systems, modal superposition, modal spectral analysis, structural dynamics in US building code. CE 503 cannot be taken after completing CE 403. Prerequisite: EE 402. On demand.

EE 404. Power Electronics. 3 Credits.
Principles of power electronics switching control circuits. Including AC/DC, DC/DC, DC/AC converters, their harmonics and filtering techniques, and their application in switching power supplies, electric drives, renewable energy systems, etc. Credit will not be given for EE 504 where credit has already been given for EE 404. Prerequisite: EE 321 or consent of instructor. On demand.

EE 407. Renewable Energy Systems. 3 Credits.
This course will provide engineering students with an understanding of the principles of renewable energy conversion systems. Emphasis is on wind, photo-voltaic, hydrogen fuel, and fuel cell energy conversion and storage systems, along with their associated design and control issues. Credit for EE 507 will not be given where credit was already received for EE 407. On demand.

EE 413. Advanced Embedded Systems Design. 3 Credits.
This course provides students with cutting-edge techniques in the design and implementation of advanced embedded systems that involve analog/digital conversion, interrupts, timers, CCP modules, and parallel/serial communications. Credit will not be given for EE 513 where credit has already been given for EE 413. Prerequisite: EE 211 or consent of instructor. On demand.

EE 424. Electronic Circuits. 3 Credits.
Principles, applications, and design of electronic equipment studied from viewpoint of complete systems. Prerequisite: EE 321. On demand.

EE 426. Engineering Systems Reliability. 3 Credits.
This course teaches the basics of reliability engineering concepts and techniques applicable to all engineering disciplines including electrical, mechanical, chemical, geological, aeronautical, and civil. To benefit the most from this course, some basic knowledge of probability and statistics would be helpful but is not necessary as the required background and tools are presented and discussed in the class. Credit for EE 426 will not be given when credit has already been received for EE 526. S, even years.

EE 431. Antennas I. 3 Credits.
Review of vector analysis and Maxwell's equations, wave propagation in unbounded regions, reflection and refraction of waves, fundamental antenna concepts, wire-and aperture-type antennas, wave and antenna polarization, antenna measurements, and computer-aided analysis. Credit for EE 531 will not be given where credit for EE 431 has already been received. Prerequisite: EE 331 or consent of instructor. On demand.

EE 432. Antennas II. 3 Credits.
Physical principles underlying antenna behavior and design as applied to antennas. Credit will not be given for EE 532 where credit has already been given for EE 432. On demand.

EE 435. Microwave Circuit Design I. 3 Credits.
Review of transmission lines and plane waves, analysis of microwave networks and components using scattering matrices, analysis of periodic structures, transmission and cavity type filters, high frequency effects, microwave oscillators, amplifiers, and microwave measurement techniques. Credit for EE 435 will not be given if credit has already been received for EE 535. Prerequisite: EE 331 or consent of instructor. On demand.

EE 441. Communications Engineering. 3 Credits.
Mathematical definition of random and deterministic signals and a study of various modulation systems. Credit will not be given for EE 540 where credit was already received for EE 440. Prerequisite: EE 3630. On demand.

EE 443. Wireless Communications. 3 Credits.
Key concepts, underlying principles, and practical applications of ever-growing wireless and cellular communication technologies. Credit will not be given for EE 541 where credit has already been given for EE 441. Prerequisite: EE 440 or consent of instructor. On demand.

EE 448. Advanced Wireless Communications Engineering. 3 Credits.
A combination of theory and practice underlying principles and practical applications of Wireless Communications. Credit will not be given for EE 548 if credit has already been received for EE 448. Prerequisite: EE 443. On demand.

EE 453. Control Systems I. 3 Credits.
Advanced topics in control systems including nonlinear systems, robust control, optimal control, and pole placement techniques; selective topics from the state of the art. Credit will not be given for EE 543 where credit has already been given for EE 443. Prerequisite: EE 350. On demand.

EE 454. Control Systems II. 3 Credits.
Digital systems representation, analysis and simulation; Z-transform; digital controllers design and realization; microprocessor based controllers. Credit will not be given for EE 554 where credit has already been given for EE 454. On demand.

EE 457. Robotics Fundamentals. 3 Credits.
Fundamentals of robotic systems: modeling, analysis, design, planning, and control. The project provides hands-on experience with robotic systems. Credit will not be given for EE 457 if credit has already been received for EE 557. Prerequisite: MATH 266 or consent of instructor. On demand.

EE 463. Digital Image Processing. 3 Credits.
Digital image retrieval, modification, enhancement, restoration, and storage. Image transformation and computer vision. The associated laboratory provides hands-on experiences. Credit for EE 563 will not be given where credit is already received for EE 463. Prerequisite: CSCI160 and EE 360. On demand.

EE 482. Intelligent Decision Systems. 3 Credits.
Systems and networks will be designed to work in an uncertain environment. Systems will be optimized using Neural Networks and Fuzzy Logic concepts. Credit will not be given for EE 582 where credit has already been given for EE 482. On demand.

EE 483. Engineering Systems Reliability. 3 Credits.
This course teaches the basics of reliability engineering concepts and techniques applicable to all engineering disciplines including electrical, mechanical, chemical, geological, aeronautical, and civil. To benefit the most from this course, some basic knowledge of probability and statistics would be helpful but is not necessary as the required background and tools are presented and discussed in the class. Credit will not be given for EE 583 where credit has already been given for EE 483. On demand.

EE 489. Senior Honors Thesis. 1-8 Credits.
Supervised independent study culminating in a thesis. Repeatable to 9 credits. Repeatable to 9.00 credits. F,S,SS.

EE 490. Electrical Engineering Problems. 1-9 Credits.
Repeatable to maximum of 9 credits. Prerequisite: Approval by departmental faculty member under whom the electrical engineering problem is studied. Repeatable to 9.00 credits. F,S.

EE 492. Senior Design I. 3 Credits.
First course in the two-semester capstone design experience for the electrical engineering undergraduate degree, emphasizing design methodologies, advanced communication, and teamwork. Student teams will select an electronic system to design, capture end-user requirements, and perform component trade studies, resulting in an oral and written critical design review at the end of the semester. Prerequisite: EE 321, EE 321L, EE 330, EE 360, and EE 392. F.

EE 493. Senior Design II. 3 Credits.
Second course in the two-semester capstone design experience for the electrical engineering undergraduate degree, emphasizing design methodologies, oral communication, and teamwork. Student teams will be required to build and test a prototype of the electronic systems designed in EE 480 Senior Design I, and they will prepare written reports and deliver oral presentations on their design choices with critique by the instructor. EE 481 Senior Design II meets the Essential Studies Special Emphasis requirement for Oral Communication (O). Prerequisite: EE 492. S.

EE 502. Power Systems I. 3 Credits.
Electric power systems operation, control and economic analysis. Credit for EE 402 will not be given where credit for EE 502 is already received. On demand.

EE 503. Power Systems II. 3 Credits.
Introduction to vibration and dynamics, single degree freedom free vibration, single degree freedom forced vibration, harmonic and periodic excitations; pulse, introduction to viscous and non-viscous damping system, dynamic system identification, numerical methods to determine dynamic response; determination of earthquake response of linear elastic buildings; dynamics of generalized single degree of freedom systems, dynamics of shear buildings, dynamics of multi-degree of freedom systems, modal superposition, modal spectral analysis, structural dynamics in US building code. CE 503 cannot be taken after completing CE 403. Prerequisite: EE 402. On demand.

EE 504. Power Electronics. 3 Credits.
Principles of power electronics switching control circuits. Including AC/DC, DC/DC, DC/AC converters, their harmonics and filtering techniques, and their application in switching power supplies, electric drives, renewable energy systems, etc. Credit will not be given for EE 504 where credit has already been given for EE 404. Prerequisite: EE 321 or consent of instructor. On demand.

EE 507. Renewable Energy Systems. 3 Credits.
This course will provide engineering students with an understanding of the principles of renewable energy conversion systems. Emphasis is on wind, photo-voltaic, hydrogen fuel, and fuel cell energy conversion and storage systems, along with their associated design and control issues. Credit for EE 507 will not be given where credit was already received for EE 407. On demand.

EE 513. Advanced Embedded Systems Design. 3 Credits.
This course provides students with cutting-edge techniques in the design and implementation of advanced embedded systems that involve analog/digital conversion, interrupts, timers, CCP modules, and parallel/serial communications. Credit will not be given for EE 513 where credit has already been given for EE 413. Prerequisite: EE 211 or consent of instructor. On demand.

EE 514. CMOS VLSI Design and Testing. 3 Credits.
This course is focused mainly on preparing students for VLSI/EDA industry on both front-end and back-end design. Complete IC chip design process including knowledge of fabrication process, technology nodes, hardware design, floor planning and layout, knowledge of electronic design automation tools (EDA softwares) and design, optimization and testing of Integrated Circuits shall be discussed in this course. Students will gain an in-depth comprehension of the design process for Very Large Scale Integrated (VLSI) circuits, equipping them to analyze, design, and implement intricate digital systems on a chip. This includes developing expertise in CMOS technology, digital logic design, layout methodologies, and the application of Electronic Design Automation (EDA) tools. Emphasis will be placed on optimizing performance, power consumption, and area. Ultimately, this will enable students to design and simulate entire VLSI circuits while taking into account practical limitations such as timing analysis and testability. Prerequisite: Basic Knowledge of Transistors and Digital Logic Design. F.

EE 521. Digital Signal Processing. 3 Credits.
Modern methods of digital signal processing will be studied. Techniques that will be used include the recursive and nonrecursive discrete-time filters and the Fourier Transform. Prerequisite: EE 314.

EE 524. Application Specific Integrated Circuit (ASIC) Design. 3 Credits.
To gain an historic perspective of ASIC Design. To familiarize students with the existing IC technology and their attributes. To recognize basic fabrication process, layout, circuit extraction and performance analysis. To understand CAD tools, hardware, systems engineering, and operational issues. Prerequisite: EE 421 or consent of instructor.

EE 531. Antennas I. 3 Credits.
Review of vector analysis and Maxwell's equations, wave propagation in unbounded regions, reflection and refraction of waves, fundamental antenna concepts, wire-and aperture-type antennas, wave and antenna polarization, antenna measurements, and computer-aided analysis. Credit for EE 531 will not be given where credit for EE 431 has already been received. On demand.

EE 532. Antennas II. 3 Credits.
Physical principles underlying antenna behavior and design as applied to antennas. Credit will not be given for EE 532 where credit has already been given for EE 432. Prerequisite: EE 331 or consent of instructor. On demand.

EE 535. Microwave Circuit Design I. 3 Credits.
Review of transmission lines and plane waves, analysis of microwave networks and components using scattering matrices, analysis of periodic structures, transmission and cavity type filters, high frequency effects, microwave oscillators, amplifiers, and microwave measurement techniques. Credit for EE 435 will not be given if credit has already been received for EE 535. On demand.

EE 536. Optical Fiber Communications. 3 Credits.
Propagation in optical fibers, optical receivers, amplifiers, detectors, sources, transmission links, noise consideration, optical fiber communication systems, applications and future developments. Prerequisite: EE 434 or consent of instructor.

EE 541. Communications Engineering. 3 Credits.
Mathematical definition of random and deterministic signals and a study of various modulation systems. Credit will not be given for EE 540 where credit was already received for EE 440. On demand.

EE 543. Wireless Communications. 3 Credits.
Key concepts, underlying principles, and practical applications of ever-growing wireless and cellular communication technologies. Credit will not be given for EE 541 where credit has already been given for EE 441. Prerequisite: EE 540 or consent of instructor. On demand.

EE 548. Advanced Wireless Communications Engineering. 3 Credits.
A combination of theory and practice underlying principles and practical applications of Wireless Communications. Credit will not be given for EE 548 if credit has already been received for EE 448. Prerequisite: Consent of Instructor. On demand.

EE 553. Control Systems I. 3 Credits.
Advanced topics in control systems including nonlinear systems, robust control, optimal control, and pole placement techniques; selective topics from the state of the art. Credit will not be given for EE 543 where credit has already been given for EE 443. Prerequisite: EE 350. On demand.

EE 554. Control Systems II. 3 Credits.
Digital systems representation, analysis and simulation; Z-transform; digital controllers design and realization; microprocessor based controllers. Credit will not be given for EE 554 where credit has already been given for EE 454. Prerequisite: EE 453. On demand.

EE 557. Robotics Fundamentals. 3 Credits.
Fundamentals of robotic systems: modeling, analysis, design, planning, and control. The project provides hands-on experience with robotic systems. Credit will not be given for EE 457 if credit has already been received for EE 557. On demand.

EE 563. Digital Image Processing. 3 Credits.
Digital image retrieval, modification, enhancement, restoration, and storage. Image transformation and computer vision. The associated laboratory provides hands-on experiences. Credit for EE 563 will not be given where credit is already received for EE 463. On demand.

EE 564. Computational Imaging. 3 Credits.
Computational imaging is an interdisciplinary field in computer vision, optics, imaging, and computation. This course will discuss the state of the art in computational imaging. We will first introduce the basics of optics, image formation, human vision, digital camera and digital imaging processing. Then we will continue to learn about compressive imaging, light-field imaging, time-of-flight imaging, computational microscopy and computational display. We will also discuss the emerging research topics such as ultrahigh speed imaging and deep imaging in scattered media. The course is suitable for graduate and advanced undergraduate students. This course is designed to bring together students with various backgrounds in physics, mathematics and computing. There is a strong hands-on research component to the course expecting the students to produce a written report at the end and present their results to the class. Prerequisite: Knowledge of Signals Systems including discrete Fourier Transforms. F.

EE 582. Intelligent Decision Systems. 3 Credits.
Systems and networks will be designed to work in an uncertain environment. Systems will be optimized using Neural Networks and Fuzzy Logic concepts. Credit will not be given for EE 582 where credit has already been given for EE 482. Prerequisite: EE 360 or consent of instructor. On demand.

EE 583. Engineering Systems Reliability. 3 Credits.
This course teaches the basics of reliability engineering concepts and techniques applicable to all engineering disciplines including electrical, mechanical, chemical, geological, aeronautical, and civil. To benefit the most from this course, some basic knowledge of probability and statistics would be helpful but is not necessary as the required background and tools are presented and discussed in the class. Credit will not be given for EE 583 where credit has already been given for EE 483. Prerequisite: Consent of the instructor. On demand.

EE 623. Introduction to Smart Grid I. 3 Credits.
This course is an in-depth study of the ways in which information and communication technologies (ICT) are being deployed to modernize the electric energy infrastructure, i.e. "Smart Grid." In this course we will dene Smart Grid as the use of ICT (in combination with power electronics and policy) to make electricity cleaner, less costly, and more reliable. Prerequisite: EE 313 or graduate student standing. On demand.

EE 624. Introduction to Smart Grid II. 3 Credits.
This is the next sequence of smartgrid course is an in-depth study of the ways in which information and communication technologies (ICT) are being deployed to modernize the electric energy infrastructure, i.e. "Smart Grid." In this course we will dene Smart Grid as the use of ICT (in combination with power electronics and policy) to make electricity cleaner, less costly, and more reliable. Prerequisite: EE 623. On demand.

EE 670. Analytical Foundations of Cyber Security. 3 Credits.
This course provides a solid mathematical foundation for further study in cyber security. Topics include: Set Theory, Discrete Functions and Relations, Permutations and Combinations, Logic and Boolean Algebra, Systems of Linear Equations, Finite Dimensional Vector Spaces, Linear Transformations, Determinants, Matrices, Eigenvalues, Eigenvectors, and Diagonalizability. Prerequisite: Students enrolled/admitted in the MS in Cyber Security program. F,S,SS.

EE 671. Computing Foundations of Cyber Security. 3 Credits.
This course provides a solid programming foundation for further study in cyber security. An introduction to the Python programming language; data structures, analysis of algorithms, and software design topics will be discussed. Prerequisite: Students enrolled/admitted in the MS in Cyber Security program. Prerequisite: Students enrolled/admitted in the MS in Cyber Security program. F,S,SS.

EE 672. Emerging Threats and Defenses. 3 Credits.
Cyber-attacks are a serious economic and security threat. To combat both immediate and future dangers, businesses and governments are investing in cyber security. Understanding trends in cyber-security and how machine-learning techniques defenses can respond to threats is a critical component of protecting networks, infrastructure and users. This course explores the growing challenges of securing sensitive data, networks to defend against malicious acts. F.

EE 673. Applied Cryptography. 3 Credits.
Modern cryptography algorithms are necessary for protection of data storage and communication streams from disclosure and manipulation of information to distrusted or malicious parties. This course explains the inner workings of cryptographic primitives and how to implement them. Assignments will be both theoretical and application based. Experience with C/ C++ programming is required. F.

EE 674. Communication Protocols: OSI model and TCP/IP Protocol Stack. 3 Credits.
Communication between computers and networks uses protocols. This course introduces students to the OSI model and TCP/IP protocol stack. Functions of each layer in the network are explained and their security analyzed. SS.

EE 675. Intrusion Detection Algorithms. 3 Credits.
With the increasing number of cyber-attacks, intrusion detection systems become crucial tools for detecting anomalies and enhancing computers and networks security. This course exposes students to the existing intrusion detection techniques and algorithms, including signature-based and anomaly-based approaches. S.

EE 695. Design Project. 3-6 Credits.
A three to six credit course of engineering design experience involving individual effort and a formal written report. Repeatable to 6 credits. Prerequisite: Restricted to Master of Engineering student candidates and subject to approval by the student's advisor. Repeatable to 6.00 credits. F,S,SS.

EE 750. Internet of Things and Security. 3 Credits.
Internet of Things (IoT) is an emerging field where computing devices are interconnected through the existing internet infrastructure. The IoT has changed the world with new innovative products such as autonomous vehicles, smart home, and smart wearables devices. This course explains the concept of IoT, its applications, networks and communication architectures, and security threats. Prerequisite: Consent of the instructor. On demand.

EE 751. Wireless Sensor Networks. 3 Credits.
This class provides a hands-on introduction to wireless sensor networking. We will start with a discussion of the WSN+ubiquitous computing vision and applications, and also discuss emergent/swarm behavior in distributed and networked systems. We will provide a tutorial on programming wireless sensor network applications in Tinyos. Finally, we will quickly cover protocols for MAC layer, Localization, Routing, Querying, and Tracking. Prerequisite: Consent of the instructor. On demand.

EE 752. Introduction to Autonomous Systems. 3 Credits.
Advanced topics in autonomous and intelligent mobile robots, with emphasis on planning algorithms and cooperative control. Robot kinematics, path and motion planning, formation strategies, cooperative rules and behaviors. The application of cooperative control spans from natural phenomena of groupings such as fish schools, bird flocks, deer herds, to engineering systems such as mobile sensing networks, vehicle platoon. Prerequisite: Consent of the instructor. On demand.

EE 998. Thesis. 1-6 Credits.
Repeatable to 9.00 credits.

EE 999. Dissertation Research. 1-12 Credits.
Dissertation research for Ph.D. EE students. Repeatable. F,S,SS.