Courses by Topic Areas

(As of September 2022)

E01 - Mathematical Methods

- ENCS 6021 Engineering Analysis (4.00)
- ENCS 6111 Numerical Methods (4.00)
- ENCS 6141 Probabilistic Methods in Design (4.00)
- ENCS 6161 Probability and Stochastic Processes (4.00)
- ENCS 6181 Optimization Techniques I (4.00)
- ENCS 6191 Fuzzy Sets and Fuzzy Logic (4.00)

E03 - Systems and Control

- COEN 6561 Foundations of Cyber-Physical Systems (4.00)
- ELEC 6031 Fault Tolerance and Resilience of Cyber-Physical Systems (4.00)
- ELEC 6041 Large-scale Control Systems (4.00)
- ELEC 6061 Real-time Computer Control Systems (4.00)
- ELEC 6091 Discrete Event Systems (4.00)
- ENGR 6071 Switched and Hybrid Control Systems (4.00)
- ENGR 6121 Control of Multi-Agent Systems (4.00)
- ENGR 6131 Linear Systems (4.00)
- ENGR 6141 Nonlinear Systems (4.00)
- ENGR 6412 Autonomy for Mobile Robots (4.00)
- ENGR 7121 Analysis and Design of Linear Multivariable Systems (4.00)
- ENGR 7131 Adaptive Control (4.00)
- ENGR 7181 Digital Control of Dynamic Systems (4.00)
- MECH 6681 Dynamics and Control of Nonholonomic Systems (4.00)

E09 - Professional Leadership Skills

- ENCS 6201 Ethics and Professionalism (1.00)
- ENCS 6031 Cultures of Engineering Practice (4.00)
- ENCS 6041 Creativity, Innovation, and Critical Thinking (4.00)
- ENCS 6042 Communication Techniques for the Innovation Process (4.00)
- ENCS 6821 Development and Global Engineering (4.00)
- ENCS 692 Topics in Engineering and Computer Science (1.00)

E10 - Robotics

- ENGR 6411 Robotic Manipulators I: Mechanics (4.00)
- ENGR 7401 Robotic Manipulators II: Control (4.00)

E42 - Communication Systems and Networks

- COEN 6841 Internet of Things (4.00)
- COEN 6861 Higher Layer Telecommunications Protocols (4.00)
- ELEC 6111 Detection and Estimation Theory (4.00)
- ELEC 6131 Information Theory and Error Control Coding (4.00)
- ELEC 6141 Wireless Communications (4.00)
- ELEC 6151 Information Theory and Source Coding (4.00)
- ELEC 6171 Modelling and Analysis of Telecommunications Networks (4.00)
- ELEC 6181 Real-time and Multimedia Communication over Internet (4.00)
- ELEC 6191 Wireless Sensor and Actuator Networks (4.00)
- ELEC 6821 Fundamentals of Network Security and Management (4.00)
- ELEC 6831 Digital Communications (4.00)
- ELEC 6841 Advanced Digital Communications (4.00)

- ELEC 6851 Telecommunications Networks (4.00)
- ELEC 6871 Fiber-Optic Communication Systems and Networks (4.00)
- ELEC 6881 Fundamentals and Applications of MIMO Communications (4.00)
- ELEC 6891 Broadcast Signal Transmission (4.00)
- ELEC 7151 Broadband Communications Networks (4.00)
- ENCS 6811 Optical Networking: Architectures and Protocols (4.00)

E43 - Micro-Devices and Fabrication Processes

- ELEC 6221 Solid State Devices (4.00)
- ELEC 6231 Design of Integrated Circuit Components (4.00)
- ELEC 6241 VLSI Process Technology (4.00)
- ELEC 6251 Microtransducer Process Technology (4.00)
- ELEC 6261 Optical Devices for High-Speed Communications (4.00)
- ELEC 6271 Nanoscience and Nanotechnology: Opto-Electronic Devices (4.00)
- ELEC 6281 Principles of Solid State Nanodevices (4.00)
- ELEC 6291 Radiation Detectors for Medical Imaging (4.00)

E44 - Fields, Waves and Optoelectronics

- ELEC 6301 Advanced Electromagnetics (4.00)
- ELEC 6311 Radiation and Scattering of Waves (4.00)
- ELEC 6341 Antennas (4.00)
- ELEC 6351 Modern Antenna Theory (4.00)
- ELEC 6361 Acoustics (4.00)
- ELEC 6371 Design of Wireless RF Systems (4.00)
- ELEC 6381 Techniques in Electromagnetic Compatibility (4.00)
- ELEC 6391 Microwave Engineering (4.00)

E45 - Electrical Power Engineering

- ELEC 6411 Power Electronics I (4.00)
- ELEC 6421 Renewable Energy Systems (4.00)
- ELEC 6431 Advanced Electrical Machines and Drives (4.00)
- ELEC 6461 Power Electronics II (4.00)
- ELEC 6471 Hybrid Electric Vehicle Power System Design and Control (4.00)
- ELEC 6481 Computer-Aided Analysis and Design of Electric Machines (4.00)
- ELEC 6491 Controlled Electric Drives (4.00)
- ELEC 7441 Design of Power Electronic Circuits (4.00)
- ELEC 7451 Power System Compensation (4.00)

E47 - Signal Processing

- ELEC 6601 Digital Signal Processing (4.00)
- ELEC 6611 Digital Filters (4.00)
- ELEC 6621 Digital Waveform Compression (4.00)
- ELEC 6631 Video Processing and Compression (4.00)
- ELEC 6641 Two-dimensional Signal and Image Processing (4.00)
- ELEC 6651 Adaptive Signal Processing (4.00)
- ELEC 6661 Medical Image Processing (4.00)
- ELEC 6671 Biological Signal Processing (4.00)

E48 - Computing Systems

- COEN 6211 Biological Computing and Synthetic Biology (4.00)
- COEN 6311 Software Engineering (4.00)
- COEN 6312 Model-Driven Software Engineering (4.00)
- COEN 6313 Programming on the Cloud (4.00)

- COEN 6321 Applied Evolutionary and Learning Algorithms (4.00)
- COEN 6331 Neural Networks (4.00)
- COEN 6341 Embedded Systems Design (4.00)
- COEN 6351 Protocol Design and Validation (4.00)
- COEN 6371 Machine Learning for Cyber-Physical Systems (4.00)
- COEN 6611 Real-time Systems (4.00)
- COEN 6711 Microprocessors and Their Applications (4.00)
- COEN 6721 Fault-Tolerant Distributed Systems (4.00)
- COEN 6731 Distributed Software Systems (4.00)
- COEN 6741 Computer Architecture and Design (4.00)
- COEN 6751 Cyber-Physical Systems Modeling and Design (4.00)
- COEN 6761 Software Testing and Validation (4.00)
- COEN 7741 Advanced Computer Architecture (4.00)
- ENGR 6231 Microfluidic Devices for Synthetic Biology (4.00)

F03 - Microelectronic Systems

- COEN 6501 Digital System Design and Synthesis (4.00)
- COEN 6511 VLSI Circuit Design (4.00)
- COEN 6521 Design for Testability (4.00)
- COEN 6531 ASIC Synthesis (4.00)
- COEN 6541 Functional Hardware Verification (4.00)
- COEN 6551 Formal Hardware Verification (4.00)
- ELEC 6051 Introduction to Analog VLSI (4.00)
- ELEC 6071 Mixed-Signal VLSI for Communication Systems (4.00)
- ELEC 6081 Modern Analog Filter Design (4.00)