

COMPUTER ENGINEERING (CE)

CE 370. Robotics Modelling and Control. 3 Hours.

This course provides students with an overview of robotic systems and their applications. This course covers robotic forward and inverse kinematics, task and path planning with motion controls, Jacobian matrix, differential motion and robotic statics, redundant robots, mobile robots and multi-robot coordination, and robotic dynamics, position control and force control. The course includes computer simulations. Prerequisites: EE 325.

CE 401. Data Communications & Networks. 3 Hours.

This course provides students with an overview of the concepts and fundamentals of data communication and computer networks. This course covers data communication concepts and techniques in a layered network architecture, communications switching and routing, types of communication, network congestion, network topologies, network configuration and management, network model components, layered network models (OSI reference model, TCP/IP networking architecture) and their protocols, and various types of networks (LAN, MAN, WAN and Wireless networks) and their protocols. The course is supplemented by a practical component. Prerequisites: ENGR 2406 or EE 321 Co-requisites: CE 402.

CE 402. Communication Networks Lab. 1 Hour.

This is a laboratory course that focuses on the design and understanding of communication network protocols. Students will be required to design, apply, analyze, and evaluate communication network protocols. Co-requisites: CE 401.

CE 405. Machine Learning for Engineers. 3 Hours.

This course provides engineering students with an overview of machine learning. This course covers linear regression, linear classification, model and feature selection, neural networks, clustering, and principal components analysis. Prerequisites: MATH 2318 and ENGR 307 or instructor permission.

CE 410. Internet of Things and Cyber Physical Systems. 3 Hours.

This course introduces students to the fundamentals of Internet of Things (IoT) and embedded computing. This course covers IoT applications, wireless protocols, wearable sensors, home environment sensors, behavior detection sensors, data fusion, processing and analysis, data communications, architectural design issues of IoT layers, and security and privacy issues in IoT and cyber physical systems. Prerequisites: ENGR 2304 and ENGR 2305.

CE 440. Computer Vision. 3 Hours.

This course provides students with a broad introduction to computer vision. This course covers camera models, multi-view geometry, reconstruction, some low-level image processing, and high-level vision tasks like image classification and object detection. Prerequisites: CS 310 and EE 325.

CE 490. Senior Design I. 3 Hours.

This course is taken by seniors as the first part of the senior design experience in the semester before CE 491. Projects may involve the design of a device, circuit system, process, or algorithm and topics covered may include the design process, project planning and management, and project costs, and includes aspects of ethics in engineering design, safety, environmental considerations, economic constraints, liability, manufacturing, and marketing. Projects are carried out using a team-based approach and selection and analysis of a design project to be continued in CE 491 is carried out. Written progress reports, a proposal, a final report, and oral presentations are required. Taken in last 30 hours. Open only to Computer Engineering majors. Cross-listed with with EE 490. Prerequisites: Last 30 hours of the degree.

CE 491. Senior Design II. 3 Hours.

Projects involving the design of a device, circuit system, process, or algorithm that have started in the previous semester will be completed. Team solution to an engineering design problem as formulated and initiated in CE 490 will continue to take place. Written progress reports, a final report, design manuals, and oral presentations are required. Open only to Computer Engineering majors. Cross-listed with EE 491. Prerequisites: CE 490.