

# SYSTEMS AND CONTROL ENGINEERING, MS (ONLINE)

**Degree:** Master of Science (MS)

**Field of Study:** Systems and Control Engineering

## Admission

The Online MS degree program in Systems and Control Engineering (SCE) is a graduate degree program that targets engineers currently employed in industry. The objective of this program is to provide engineers in industry with technical skills to support modern-day practice in systems and control engineering. The program differs from a traditional Master of Science degree in systems and control engineering by combining: (1) core courses that focus on key systems tools such as signal processing, engineering economic analysis, engineering optimization, and modern control engineering; (2) technical elective courses that allow students to explore the application and practice of systems thinking, systems approach, systems analysis and modern control engineering in areas such as energy systems engineering, biomedical engineering, mechanical engineering, and applied data science; and (3) elective courses that enhance business, management, leadership and teamwork skills to support practicing engineering professionals who must increasingly address a wide range of technical, management, financial and interpersonal skills demanded by an ever-expanding and diverse global industry base.

## Registration

Course registration is performed through the Student Information System (SIS). Each semester before registration, students should update any personal information that may have changed by logging into SIS and editing the appropriate information. All registration holds must be lifted in order to successfully complete the registration process.

## Advising

Upon admission to the graduate program, each graduate student is assigned an academic advisor to assist in registration as well as planning a program of study (Academic Program). The advisor will work with students to plan the proposed program of study (PPoS) that would map out the 10 courses and appropriate schedule to take those courses to help students complete the program in a timely fashion.

## Appeals

Any decision by an academic advisor, or department associate chairperson may be appealed, in writing, to the department associate chairperson who shall present the appeal, with their recommendations, to the faculty at its next regular faculty meeting. The faculty's decision shall be final.

## Graduate Policies

For graduate policies and procedures, please review the School of Graduate Studies section of the General Bulletin.

## Program Requirements

The Master of Science degree program in Systems and Control Engineering requires 30 credit hours of coursework (all courses at the

graduate level, 400-level or above) that include 12 credit hours of online core courses and 18 credit hours of technical electives, taken either online or on-campus. Students must also register for and pass the course ENGR 600 with requirements defined by the student's curricular program.

The program is composed of online and traditional on-campus classes, with core courses aimed at equipping participants with knowledge on how engineering is practiced in contemporary industry, and technical electives that provide depth in a chosen specialty area. All core courses are provided in an exclusively online format. Technical electives can be chosen from Applied Data Science (ADS), Biomedical Engineering (EBME), Engineering Innovation, Management and Leadership (EIML), and Mechanical Engineering (EMAE), which are also offered in an online format. Other technical elective courses are held on campus in the late afternoon or evening hours, and in an online distance-learning format to minimize disruption at the workplace and home. Because the program makes extensive use of computers, participants need to have access to computer facilities.

Code	Title	Hours
<b>Core Courses:</b>		
ECSE 401	Digital Signal Processing	3
ECSE 407	Engineering Economics and Financial Analysis	3
ECSE 408	Introduction to Linear Systems	3
ECSE 416	Convex Optimization for Engineering	3
<b>Technical Electives:</b>		
<i>Choose six of the following:</i>		<b>18</b>
CSDS 438	High Performance Data and Computing	
EBME 401D	Biomedical Instrumentation and Signal Processing	
EBME 410	Medical Imaging Fundamentals	
ECSE 404	Digital Control Systems	
ECSE 411	Applied Engineering Statistics	
ECSE 468	Power System Analysis I	
EMAE 450	Advanced Mechanical Engineering Analysis	
EMAE 481	Advanced Dynamics I	
EMAE 487	Vibration Problems in Engineering	
EMAE 494	Energy Systems	
EPOM 400	Leadership and Interpersonal Skills	
EPOM 401	Introduction to Business for Engineers	
EPOM 403	Product and Process Design and Implementation	
EPOM 409	Master of Engineering Capstone Project	
EPOM 410	Intellectual Property Management and Opportunity Assessment	
EPOM 411	Innovation - the Confluence of Need, Requirements and Creativity	
<b>Total Hours</b>		<b>30</b>