MSCoE Tracks

Program Core Requirements:
ECE 690-Computer Systems Architecture & CIS 610-Data Structures and Algorithms

Computer Architecture and Systems
Required:
ECE 658-VLSI Design I
ECE 692- Embedded Computing Systems

Electives:
ECE 605-Discrete Event Dynamic Systems
ECE 609-Artificial Neural Networks
ECE 648-Digital Microelectronics
ECE 650-Electronic Circuits
ECE 657-Semiconductor Devices
ECE 683-Computer Network Design and Analysis
ECE 685-Network Interface Design
ECE 686-Instrumentation Sys. and Microprocessors
ECE 689-Digital Sys. Design for Machine Arithmetic
ECE 699-ST: Design for Testability Principles
ECE 758-VLSI Design II
ECE 785-Parallel Processing Systems
CIS 630-Operating System Design
CIS 633-Distributed Systems
CIS 636-Compiling System Design
CIS 641-Formal Languages and Automata
CIS 661-Systems Simulation
CIS 665-Algoalgorithmic Graph Theory
CIS 668-Parallel Algorithms

VLSI System Design
Required:
ECE 658-VLSI Design I
ECE 758-VLSI Design II

Electives (15 to 18 credits):
ECE 605-Discrete Event Dynamic Systems
ECE 650-Electronic Circuits
ECE 660-Control Systems I
ECE 664-Real-Time Computer Control Systems
ECE 666-Control Systems II
ECE 783-Computer Communication Networks
ECE 785-Parallel Processing Systems
CIS 630-Operating System Design
CIS 631-Data Management System Design
CIS 641-Formal Languages and Automata
CIS 665-Algoalgorithmic Graph Theory
IE 605-Engineering Reliability

Intelligent Systems
Required:
ECE 605-Discrete Event Dynamic Systems
ECE 609-Artificial Neural Networks

Electives (15 to 18 credits):
ECE 601-Linear Systems
ECE 640-Digital Signal Processing
ECE 643-Digital Image Processing I
ECE 673-Random Signal Analysis
ECE 783-Computer Communication Networks
ECE 785-Parallel Processing Systems
CIS 630-Operating System Design
CIS 631-Data Management System Design
CIS 657-Prin. of Interactive Computer Graphics
CIS 665-Algoalgorithmic Graph Theory
CIS 670-Artificial Intelligence
CIS 672-Expert System Methods and Design
CIS 759-Advanced Image Processing and Analysis
CIS 780-Computer Vision
IE 605-Engineering Reliability
ME 628-Machine Vision Principles and Applications

Microprocessor-Based Systems
Required:
ECE 686-Instrumentation Systems and Microprocessors
ECE 688-Microcontrollers in Instrumentation

Electives (15 to 18 credits):
ECE 605-Discrete Event Dynamic Systems
ECE 612-Computer Methods Applied to Power Systems
ECE 650-Electronic Circuits
ECE 660-Control Systems I
ECE 664-Real-Time Computer Control Systems
ECE 666-Control Systems II
ECE 783-Computer Communication Networks
ECE 785-Parallel Processing Systems
CIS 630-Operating System Design
CIS 631-Data Management System Design
CIS 635-Computer Programming Languages
CIS 637-Real-Time Systems
CIS 641-Formal Languages and Automata
CIS 661-Systems Simulation
CIS 662-Model Analysis and Simulation
IE 605-Engineering Reliability
**Computer Networking**

*Required:*
ECE 683-Computer Network Design and Analysis  
ECE 637-Introduction to Internet Engineering  

*Electives (15 to 18 credits):*
ECE 605-Discrete Event Dynamic Systems  
ECE 636-Computer Networking Laboratory  
ECE 639-Principles of Broadband Networks  
ECE 642-Communication Systems I  
ECE 645- Wireless Networks  
ECE 673-Random Signal Analysis  
ECE 677-Optimization Techniques  
ECE 681-Broadband Packet Switches  
ECE 685-Network Interface Design  
ECE 742-Communication Systems II  
ECE 745-Advanced Wireless Networks  
ECE 783-Computer Communication Networks  
CIS 630-Operating System Design  
CIS 631-Data Management System Design  
CIS 633-Distributed Systems  
CIS 637-Real-Time Systems  
CIS 665-Algorithmic Graph Theory  
IE 605-Engineering Reliability

Other courses may be used as electives with the permission of MS CoE Program Advisor. **No more than three non-ECE courses** are permitted within the 30-credit MSCoE degree program requirements.