Master of Engineering
Core Course in (Offered/other) Research Specializations

Fall 2021/Winter 2022/Not offered this year

Communications; Signal & Image Processing
At least four of the following courses:
1) ECE 502 – Probability and Random Process for Electrical Engineering
2) ECE 540 – Detection and Estimation
3) ECE 541 B1 – Digital Signal Processing
4) ECE 582 – Information Theory and Channel Coding
5) ECE 583 – Digital Communications
6) ECE 644 – Digital Image and Video Processing
7) ECE 684 – Wireless Communication Systems
8) ECE 686 – Wireless Communication Network
9) ECE 740 B01 – Biomedical Image Analysis
10) ECE 740 B02 – Deep Learning in Computer Vision

Software Engineering & Intelligent Systems
At least four of the following courses:
1) ECE 522 – Software Construction, Verification and Evaluation
2) ECE 624 – Fuzzy Set in Human Centric Computing
3) ECE 625 – Data Analysis and Knowledge Discovery
4) ECE 626 – Advanced Neural Networks
5) ECE 627 – Intelligent Web
6) ECE 710 B01 – Wearable Device, IoT, Data Analysis
7) ECE 720 A02 – Data Analytics for Software Engineering
8) ECE 720 A03 – Metaheuristic Optimization
9) ECE 740 A02 – Computer and Robotic Vision
10) ECE 740 B02 – Deep Learning in Computer Vision

Integrated Circuits and Systems; Solid State Electronics; Computer Engineering
At least four of the following courses:
1) ECE 511 – Digital ASIC Design
2) ECE 512 – Digital System Testing and Design
3) ECE 547 – Fundamentals of Solid-State Devices
4) ECE 551 – Design CMOS Analog Integer Circuit
5) ECE 553 – Digital Integrated Circuit Design
6) ECE 558 – Microfabrication & Nanofabrication Topics I
7) ECE 559 – Microfabrication and Nanofabrication Topics II
8) ECE 644 B1 – Digital Image and Video Processing (only for Computer Engineering stream)
9) ECE 646 B1 – Organic Electronics
10) ECE 710 B01 – Wearable Device, IoT, Data Analysis
11) ECE 720 A03 – Metaheuristic Optimization
12) ECE 750 800 – Design of CMOS Radio-Frequency Integrated Circuits
13) ECE 750 B02 – Devices for sensing applications
14) ECE 750 B03 – Nanobiotechnological Systems
Energy Systems
At least four of the following courses:
1) **ECE 530 A2** – Power Qual/Dist Analysis
2) **ECE 531** – Industrial Drives
3) **ECE 560** – Modern Control Theory
4) **ECE 561** – Nonlinear Control Systems
5) **ECE 633** – Modeling and Simulation of Electromagnetics Transient in Electrical Circuit
6) **ECE 635** – Power Converter Renewable Energy System
7) **ECE 636** – Voltage Source Converters
8) **ECE 730 800** – Smart Grid Fundamentals
9) **ECE 730 A01** – Power Converter System Design
10) **ECE 730 A03** – High-Voltage DC (HVDC) Systems

Control Systems
At least four of the following courses:
1) **ECE 560** – Modern Control Theory
2) **ECE 561** – Nonlinear Control Systems
3) **ECE 664** – Nonlinear Control Design with Application
4) **ECE 665** – Multivariable Robust Control
5) **ECE 740 A02** – Computer and Robotic Vision
6) **ECE 760 B1** – Optimal Control and Estimation
7) **ECE 760 B2** – Robotics: Modeling, Planning and Control
8) **CH E 662** – Process Identification
9) **CH E 694** – Optimal Control

Electromagnetics & Microwaves
1) **ECE 576** – Advanced Engineering Electromagnetics
2) **ECE 577** – Antenna Theory and Design
3) **ECE 578** – Microwave and Millimeter-wave Circuits

Biomedical Engineering
1) **ECE 644 B1** – Digital Image and Video Processing
2) **ECE 691** – Biomedical Optics
3) **ECE 692** – Ultrasound Imaging
4) **ECE 710 B01** – Wearable Device, IoT, Data Analysis
5) **ECE 740 B01** – Biomedical Image Analysis
6) **ECE 740 B02** – Deep Learning in Computer Vision

Photonics & Plasmas; Microsystems & Nanodevices
1) **ECE 558** – Microfabrication & Nanofabrication Topics I
2) **ECE 559** – Microfabrication & Nanofabrication Topics II
3) **ECE 571** – Optical and Quantum Electronics
4) **ECE 572 B1** – Nonlinear Optics
5) **ECE 673** – Laser Applications
6) **ECE 675** – Plasma Engineering
7) **ECE 770 A01** – Laser-plasma Interactions
8) **ECE 770 B01** – Nanoscale Optics
9) **ECE 770 B02** – Silicon Photo Integrated Circuits