Master of Engineering:
Core Courses in Identified Research Areas
August 2016

Biomedical Engineering
1) BME 320 – Human Anatomy and Physiology: Cells and Tissue
2) ECE 405 – Biophysical Measurement and Instrumentation
3) ECE 440 – Digital Image Processing
4) BME 513 – Intro to Medical Imaging

Communications; Signal & Image Processing
1) ECE 502 – Probability and Random Process for Electrical Engineering
2) ECE 540 – Detection and Estimation
3) ECE 583 – Digital Communications
4) ECE 541 – Digital Signal Processing

Computer Engineering; Integrated Circuits and Systems
1) ECE 511 – Digital ASIC Design
2) ECE 512 – Digital System Design and Design for Testability
3) ECE 553 – Digital Integrated Circuit Design

Depending on the student’s project, one of the following courses will also be required:
4a) ECE 541 – Digital Signal Processing
4b) ECE 551 – Design of CMOS Analog Integrated Circuits
4c) ECE 521 – Software Requirements Engineering and Software Design
4d) ECE 583 – Digital Communications
4e) ECE 625 – Data Analysis and Knowledge Discovery
4f) ECE 643 – Multimedia Signal Processing
4g) ECE 651 – Design of CMOS Radio-Frequency Integrated Circuits
4h) ECE 683 – Broadband Digital Communications

Control Systems
1) ECE 560 – Modern Control Theory
2) ECE 561 – Nonlinear Control Systems
3) ECE 540 – Detection and Estimation
4) ChE 662 – System Identification
**Electromagnetics & Microwaves**
1) ECE 576 – Advanced Engineering Electromagnetics
2) ECE 578 – Advanced Microwave and Millimeter-wave Circuits
3) ECE 577 – Antenna Theory and Design

**Energy Systems**
1) ECE 531 – Industrial Drives
2) ECE 633 – Modeling and Simulation of Electromagnetic Transient in Electrical Circuit
3) ECE 636 – Dynamics and control of power converters
4) ECE 730 A4 – Adv. Topics in Energy Systems: Power Electronics Applications in AC and DC Systems

**Microsystems & Nanodevices**
1) ECE 558 – Microfabrication & Nanofabrication Topics I
2) ECE 559 – Microfabrication & Nanofabrication Topics II

**Photonics & Plasmas; Solid State Electronics**
1) ECE 558 – Microfabrication & Nanofabrication Topics I
2) ECE 546 – Semiconductor fundamentals for Device Applications
3) ECE 770 – Optics for Microsystems
4) ECE 673 – Laser applications or ECE 675 Plasma Engineering

**Software Engineering & Intelligent Systems**
1) ECE 623 – Data Exploration and Evolutionary Computing
2) ECE 624 – Fuzzy Set in Human Centric Computing
3) ECE 625 – Data Analysis and Knowledge Discovery
4) ECE 626 – Advanced Neural Networks