Master of Engineering:
Core Courses in Identified Research Areas
Fall 2019/Winter 2020

Biomedical Engineering
1) ECE 405 – Biophysical Measurement and Instrumentation (Fall)
2) ECE 440 – Digital Image Processing (Fall)
3) BME 513 – Intro to Medical Imaging (Winter)
4) ECE 691 – Biomedical Optics (Winter)

Communications: Signal & Image Processing
*(four of the following courses)*
1) ECE 502 – Probability and Random Process for Electrical Engineering (Fall)
2) ECE 540 – Detection and Estimation (Fall)
3) ECE 644 – Digital Image and Video Processing (Fall)
4) ECE 583 – Digital Communications (Fall)
5) ECE 684 – Wireless Communication Systems (Winter)
6) ECE 686 – Wireless Communication Network (Winter)

Computer Engineering: Integrated Circuits and Systems
*(two of the following courses)*
1) ECE 511 – Digital ASIC Design (Winter)
2) ECE 512 – Digital System Design and Design for Testability (Fall)
3) ECE 541 – Digital Signal Processing (to be offered in 2020/21)
4) ECE 551 – Design CMOS Analog Integer Circuit
5) ECE 559 – Microfabrication and Nanofabrication Topics II
6) ECE 583 – Digital Communications (Fall)
   Wearable Tech, IoT, Data Analysis (Winter)
8) ECE 720 A3 – Adv. Topics in Software Eng. and Intelligent Systems
   Metaheuristic Optimization (Fall)
9) ECE 750 A3 – Adv. Topics in Integrated Circuits
   Design of CMOS Radio-Frequency Integrated Circuits (Fall)

Control Systems
*(four of the following courses)*
1) ECE 560 – Modern Control Theory (Fall)
2) ECE 561 – Nonlinear Control Systems (Winter)
3) ECE 664 – Nonlinear Control Des with App (Fall)
4) ECE 665 – Multivariable Robust Control (Winter)
5) ECE 760 B2 – Adv. Topics in Control Systems:
   Optimal Control and Estimation (to be offered in 2020/21)
6) ChE 662 – System Identification (Fall)
Electromagnetics & Microwaves
1) ECE 576 – Advanced Engineering Electromagnetics (Winter)
2) ECE 578 – Microwave and Millimeter-wave Circuits (Winter)
3) ECE 577 – Antenna Theory and Design (Winter)

Energy Systems
(four of the following courses)
1) ECE 530 – Power Qual/Dist Analysis (Fall)
2) ECE 531 – Industrial Drives (Winter)
3) ECE 633 – Modeling and Simulation of Electromagnetic Transient in Electrical Circuit (W)
4) ECE 636 – Voltage Source Converters (Winter)
5) ECE 635 – Pwr Converter Renew Energy System (Winter)
6) ECE 730 A2 – Adv. Topics in Energy Systems: Smart Grid Fundamentals (Fall)
7) ECE 730 A3 – Adv. Topics in Energy Systems: Power Converter System Design (Fall)

Microsystems & Nanodevices
1) ECE 558 – Microfabrication & Nanofabrication Topics I (Winter)
2) ECE 559 – Microfabrication & Nanofabrication Topics II (Fall)

Photonics & Plasmas; Solid State Electronics
1) ECE 558 – Microfabrication & Nanofabrication Topics I (Winter)
2) ECE 673 – Laser applications (Winter)
3) ECE 675 – Plasma Engineering (Fall)
(one of the following courses)
4) ECE 770 A2 – Optics for Microsystems (Fall)
5) ECE 770 A3 – Adv. Topics in Photonics Plasma: Interaction of Laser Light with Matter (Fall)

Software Engineering & Intelligent Systems
(four of the following courses)
1) ECE 522 – Software Construction, Verification and Evaluation (Fall)
2) ECE 624 – Fuzzy Set in Human Centric Computing (Fall)
3) ECE 625 – Data Analysis and Knowledge Discovery (to be offered in 2020/21)
4) ECE 626 – Advanced Neural Networks (Winter)
5) ECE 627 – Intelligent Web (Winter)
6) ECE 720 A3 – Adv. Topics in Software Eng. and Intelligent Systems Data Analytics for Software Eng. (Fall)
7) ECE 720 A2 – Adv. Topics in Software Eng. and Intelligent Systems Metaheuristic Optimization (Fall)
8) ECE 720 X01 – Software Social Network