### Electrical Engineering Elective Courses:

#### Option Courses Required
- **EEEE-221** Clean & Renewable energy Systems & Sources  
  *Fall*
- **EEEE-321** Energy Conversion  
  *Fall*
- **EEEE-485** Robotics Systems  
  *Fall*
- **EEEE-447** Introduction to Artificial Intelligence  
  *Fall*

#### Applied Electives - UGRD/GRAD Cross listed
- **EEEE-505/605** Modern Optics for Engineers  
  *Spring*
- **EEEE-510/610** Analog Electronics Design  
  *Fall*
- **EEEE-517/617** Microwave Circuits Design  
  *Spring*
- **EEEE-520/620** Design of Digital Systems  
  *Fall/Spring*
- **EEEE-521/621** Design of Computer Systems  
  *Fall*
- **EEEE-522/622** Electric Power Transmission & Distribution  
  *Spring*
- **EEEE-524-624** Advances in Power Systems  
  *Spring*
- **EEEE-529/629** Antenna Theory  
  *Fall*
- **EEEE-530-630** Biomedical Instrumentation  
  *Spring*
- **EEEE-531/631** Biomedical Sensors & Transducers I  
  *Fall*
- **EEEE-532/632** Fundamental Electrophysiology  
  *Spring*
- **EEEE-533/633** Biomedical Signal Processing  
  *Spring*
- **EEEE-536/636** Biorobotics/Cybernetics  
  *Spring*
- **EEEE-546/646** Power Electronics  
  *Spring*
- **EEEE-547/647** Artificial Intelligence Exploration  
  *Fall*
- **EEEE-579/679** Analog Filter Design  
  *Fall*
- **EEEE-583/683** Mechatronics  
  *Fall*
- **EEEE-585/685** Principles of Robotics  
  *Fall*
- **EEEE-587/787** MEMs Evaluation  
  *Spring*
- **EEEE-592/692** Communication Networks  
  *Spring*
- **EEEE-593/693** Digital Data Communication  
  *Spring*
- **EEEE-594/694** Sensor Array Processing for Wireless Comm.  
  *Fall*
- **EEEE-595/695** Optimization Methods for Engineers  
  *Fall*

#### Graduate Electives
- **EEEE-661** Modern Control Theory  
  *Fall*
- **EEEE-663** Real-Time Embedded Systems  
  *Fall/Spring*
- **EEEE-664** Performance Engineering of Real Time & Embedded Sys.  
  *Fall/Spring*
- **EEEE-670** Pattern Recognition  
  *Spring*
- **EEEE-678** Digital Signal Processing  
  *Fall*
- **EEEE-710** Advanced Electromagnetic Theory  
  *Spring*
- **EEEE-711** Advanced Carrier Injection Devices  
  *Spring*
- **EEEE-712** Advanced Field Effect Devices  
  *Spring*
- **EEEE-713** Solid State Physics  
  *Fall*
- **EEEE-715** Photonic Integrated Circuits  
  *Spring*
- **EEEE-718** Design & Characterization of Microwave Systems  
  *Fall*
- **EEEE-720** Advanced Topics in Digital Systems Design  
  *Spring*
- **EEEE-721** Advanced Topics in Computer Systems Design  
  *Spring*
- **EEEE-722** Complex Digital Sys. Veri.  
  *Fall*
- **EEEE-726** Mixed-Signal IC Design  
  *Spring*
- **EEEE-765** Optimal Control  
  *Spring*
- **EEEE-779** Digital Image Processing  
  *Fall*
- **EEEE-781** Image and Video Compression  
  *Spring*
- **EEEE-784** Advance Robotics  
  *Spring*
- **EEEE-794** Information Theory  
  *Spring*
- **EEEE-797** Wireless Communication  
  *Spring*
- **EEEE-798** Software Defined Digital Radio Communications  
  *Spring*

*subject to change*
### 2.14 EE Graduate Course Offerings by Focus Area

<table>
<thead>
<tr>
<th>Core Courses</th>
<th>Fall</th>
<th>Spring</th>
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</table>
| **Required Courses for all focus areas** | EEEE-707 Engineering Analysis  
| **Required Course for all Focus Areas except #3,5,6** | EEEE-602 Random Signal and Noise | EEEE-602 Random Signal and Noise |
| **Focus Area** | | |
| **1 - Communication** | EEEE 692 Communications Networks  
EEEE-629 Antenna Theory and Design  
EEEE-793 Error Detect/Error Correction | EEEE-693 Digital Data Communication  
EEE-694 Sensor Array Processing for Wireless Communications  
EEE-794 Information Theory  
EEE-797 Wireless Communication |
| **2 - Control Systems** | EEEE-661 Modern Control Theory  
EEEE-663 Real-Time Embedded Systems  
EEE 683 Mechatronics | EEEE-664 Performance Engineering of Real-time & Embedded Systems  
EEE-765 Optimal Control |
| **3 - Digital Systems** | EEEE-620 Design of Digital Systems  
EEEE-621 Design of Computer Systems  
EEE 722 Complex Digital Systems Verification | EEEE-620 Design of Digital Systems  
EEE-720 Advanced Topic in Digital Sys Design  
EEE-721 Advanced Topics in Computer Sys Design |
| **4-Electromagnetics, Microwaves and Antenna** | EEEE-629 Antenna Theory & Design  
EEE-718 Des & Characterization of Microwave Systems | EEEE-617 Microwave Circuit Design  
EEE-710 Advanced Electromagnetic Theory  
EEE-693 Digital Data Communication  
EEE-797 Wireless Communication |
| **5- Integrated Electronics** | EEEE-610 Analog Electronics  
EEE-711 Advanced Carrier-Injection Devices  
EEE-713 Solid State Physics  
MCEE-601 Micro Fabrication | EEEE-712 Advanced Field Effect Devices  
EEE-726 Mixed Signal IC Design  
MCEE-732 CMOS Mfg. |
| **6-MEMS** | EEEE-661 Modern Control Theory  
EEE-689 Fundamentals of MEMs  
MCEE-601 Micro Fabrication  
MCEE-770 MEMs Fab  
EEE-662 Electric Power Transmission & Distribution (Elective) | EEEE-646 Power Electronics  
EEE-787 MEMs Evaluations  
EEE-624 Advances in Power Systems (Elective)  
EEE-631 Biomed Sensors & Transducers I (Elective) |
| **7- Robotics** | EEEE-685 Principles of Robotics  
EEE-647 Artificial Intelligence  
EEE-661 Modern Control Theory | EEEE-636 Bio-robotics/ Cybernetics  
EEE-784 Advanced Robotics |
| **8- Signal & Image Processing** | EEEE-678 Digital Signal Processing  
EEE-695 Optimization Methods for Engineers  
EEE-779 Digital Image Processing | EEEE-670 Pattern Recognition  
EEE-694 Sensor Array Processing for Wireless Communications  
EEE-781 Image and Video CompressionEEE-794 Information Theory |

- A selected number of Graduate courses are usually available during the summer semester.
- Graduate level courses taken in Microelectronic Engineering, Computer Engineering or Mechanical Engineering can be counted towards the 3-course requirement in the Controls, Digital Systems, Integrated Electronics or MEMs focus areas.
- Related area courses may be taken from the College of Engineering, the Center for Imaging Science and the Computer Science Department