MASTER OF ENGINEERING IN WIRELESS COMMUNICATIONS AND COMPUTER NETWORKS

Wireless communications and computer networks are a rapidly growing field which requires state-of-the-art engineering skills including wireless network protocols and standards, energy-efficient networking, modeling and performance analysis of distributed and mobile network computing, and cognitive radio networks. In this program, students will be exposed to the core of network communications, gain latest applied computer network techniques including data security and privacy, ability to design embedded system architecture for wireless communication systems and applications, and fundamentals of wireless radio communications and signal analysis.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Minimum Credits Required</td>
<td>30</td>
</tr>
<tr>
<td>Maximum 400-Level Credit</td>
<td>12</td>
</tr>
<tr>
<td>Minimum 500-Level+ Credit</td>
<td>18</td>
</tr>
<tr>
<td>Maximum 700-Level Credit</td>
<td>4</td>
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**Core Courses (select 4 courses)** (12)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ECE 403</td>
<td>Digital &amp; Data Comm Systems</td>
<td>3</td>
</tr>
<tr>
<td>or ECE 513</td>
<td>Commctn Engrg Fundamentals</td>
<td></td>
</tr>
<tr>
<td>ECE 517</td>
<td>Wireless Ntwrk Protocols/Stand</td>
<td>3</td>
</tr>
<tr>
<td>or ECE 544</td>
<td>Wireless and Mobile Networks</td>
<td></td>
</tr>
<tr>
<td>ECE 401</td>
<td>Communication Electronics</td>
<td>3</td>
</tr>
<tr>
<td>or ECE 525</td>
<td>RF Integrated Circuit Design</td>
<td></td>
</tr>
<tr>
<td>ECE 503</td>
<td>5G Wireless Network</td>
<td>3</td>
</tr>
<tr>
<td>or ECE 504</td>
<td>Wireless Comm Sysrm Design</td>
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</tbody>
</table>

**Communication Elective** (3-4)

Select minimum 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE 403</td>
<td>Digital &amp; Data Comm Systems</td>
<td>3</td>
</tr>
<tr>
<td>ECE 406</td>
<td>Wireless Communications System</td>
<td>3</td>
</tr>
<tr>
<td>or ECE 504</td>
<td>Wireless Comm Sysrm Design</td>
<td></td>
</tr>
<tr>
<td>ECE 421</td>
<td>Microwave Circuits and Systems</td>
<td>3-4</td>
</tr>
<tr>
<td>or ECE 423</td>
<td>Microwave Crcrt&amp;Sysnts w/Lab</td>
<td></td>
</tr>
<tr>
<td>ECE 503</td>
<td>5G Wireless Network</td>
<td>3</td>
</tr>
<tr>
<td>ECE 511</td>
<td>Analysis Random Signals</td>
<td>3</td>
</tr>
<tr>
<td>ECE 513</td>
<td>Commctn Engrg Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>ECE 514</td>
<td>Digital Commctn Principles</td>
<td>3</td>
</tr>
<tr>
<td>ECE 515</td>
<td>Modern Digital Communications</td>
<td>3</td>
</tr>
<tr>
<td>ECE 516</td>
<td>Coding Distributed Storage Sys</td>
<td>3</td>
</tr>
<tr>
<td>ECE 519</td>
<td>Coding Reliable Communications</td>
<td>3</td>
</tr>
<tr>
<td>ECE 520</td>
<td>Info Theory and Applications</td>
<td>3</td>
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</tbody>
</table>

**Computer Networks Elective** (3-4)

Select minimum 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE 407</td>
<td>Intro Comp Ntwks with Lab</td>
<td>3-4</td>
</tr>
<tr>
<td>or ECE 408</td>
<td>Intro to Computer Ntwks</td>
<td></td>
</tr>
<tr>
<td>ECE 517</td>
<td>Wireless Ntwrk Protocols/Stand</td>
<td>3</td>
</tr>
<tr>
<td>ECE 541</td>
<td>Perform Eval Compt Ntwrk</td>
<td>3</td>
</tr>
<tr>
<td>ECE 543</td>
<td>Computer Network Security</td>
<td>3</td>
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**Electrical and Computer Engineering Elective** (6-10)

Select 2 to 3 courses from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE 429</td>
<td>Intro to VLSI Design</td>
<td>4</td>
</tr>
<tr>
<td>ECE 501</td>
<td>AI and Edge Computing</td>
<td>3</td>
</tr>
<tr>
<td>ECE 529</td>
<td>Advncd VLSI Systems Dsgn</td>
<td>3</td>
</tr>
<tr>
<td>ECE 563</td>
<td>AI in Smart Grid</td>
<td>3</td>
</tr>
<tr>
<td>ECE 565</td>
<td>Compt Vision Image Processing</td>
<td>3</td>
</tr>
<tr>
<td>ECE 566</td>
<td>Machine and Deep Learning</td>
<td>3</td>
</tr>
<tr>
<td>ECE 569</td>
<td>Digital Signal Processing II</td>
<td>3</td>
</tr>
</tbody>
</table>

**Communication Electronics Elective** (3-4)

Select minimum 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE 401</td>
<td>Communication Electronics</td>
<td>3</td>
</tr>
<tr>
<td>ECE 421</td>
<td>Microwave Circuits and Systems</td>
<td>3</td>
</tr>
<tr>
<td>or ECE 423</td>
<td>Microwave Crcrt&amp;Sysnts w/Lab</td>
<td></td>
</tr>
<tr>
<td>ECE 425</td>
<td>Anlys Dsgn Intgrtd Circuits</td>
<td>3</td>
</tr>
<tr>
<td>ECE 525</td>
<td>RF Integrated Circuit Design</td>
<td>3</td>
</tr>
<tr>
<td>ECE 570</td>
<td>Fiber Optic Communication Syst</td>
<td>3</td>
</tr>
<tr>
<td>ECE 576</td>
<td>Antenna Theory</td>
<td>3</td>
</tr>
<tr>
<td>ECE 578</td>
<td>Microwave Theory</td>
<td>3</td>
</tr>
<tr>
<td>ECE 589</td>
<td>CAD of Analog IC</td>
<td>3</td>
</tr>
</tbody>
</table>

**Computer and Embedded Computing Elective** (3-4)

Select minimum 1 course from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE 441</td>
<td>Microcomputers/Embedded Comp</td>
<td>4</td>
</tr>
<tr>
<td>ECE 510</td>
<td>IoT and Cyber Physical Systems</td>
<td>3</td>
</tr>
<tr>
<td>ECE 518</td>
<td>Computer Cyber Security</td>
<td>3</td>
</tr>
<tr>
<td>ECE 528</td>
<td>Application Software Design</td>
<td>3</td>
</tr>
<tr>
<td>ECE 584</td>
<td>VLSI Archs Sgnl Prcs Commctnts</td>
<td>3</td>
</tr>
<tr>
<td>ECE 585</td>
<td>Computer Org and Design</td>
<td>3</td>
</tr>
<tr>
<td>ECE 586</td>
<td>Hardwr Security &amp; Adv Comp Arc</td>
<td>3</td>
</tr>
<tr>
<td>ECE 587</td>
<td>Hardware Software Codesign</td>
<td>3</td>
</tr>
<tr>
<td>ECE 590</td>
<td>Object-Oriented Program &amp; ML</td>
<td>3</td>
</tr>
</tbody>
</table>