Nanoengineering (MR): Nanoelectronics and Nanophotonics Concentration

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
<th>Counts towards</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE 500</td>
<td>Modern Concepts in Materials Science</td>
<td>12</td>
<td>Core Courses</td>
</tr>
<tr>
<td>MSE 565</td>
<td>Introduction to Nanomaterials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSE 791</td>
<td></td>
<td></td>
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<tr>
<td>ECE/CHE 568</td>
<td>Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems</td>
<td></td>
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<tr>
<td>ISE 718</td>
<td>Micro/Nano Scale Fabrication and Manufacturing</td>
<td></td>
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<tr>
<td>MAE 536</td>
<td>Micro/Nano Electromechanical Systems</td>
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Select four of the following courses:

- MSE 500 Modern Concepts in Materials Science
- MSE 565 Introduction to Nanomaterials
- MSE 791
- ECE/CHE 568 Conventional and Emerging Nanomanufacturing Techniques and Their Applications in Nanosystems
- ISE 718 Micro/Nano Scale Fabrication and Manufacturing
- MAE 536 Micro/Nano Electromechanical Systems

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<th>Code</th>
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<tbody>
<tr>
<td>ECE 530</td>
<td>Physical Electronics</td>
<td>12</td>
<td>Concentration Requirement Courses</td>
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<tr>
<td>ECE/BME 518</td>
<td>Wearable Biosensors and Microsystems</td>
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<td></td>
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<tr>
<td>ECE/MSE 589</td>
<td>Solid State Solar and Thermal Energy Harvesting</td>
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<tr>
<td>ECE 723</td>
<td>Optical Properties Of Semiconductors</td>
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<tr>
<td>CHE 560</td>
<td>Chemical Processing of Electronic Materials</td>
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Select a minimum of four of the following courses:

- ECE 530 Physical Electronics
- ECE/BME 518 Wearable Biosensors and Microsystems
- ECE/MSE 589 Solid State Solar and Thermal Energy Harvesting
- ECE 723 Optical Properties Of Semiconductors
- CHE 560 Chemical Processing of Electronic Materials

- MSE 760 Materials Science in Processing of Semiconductor Devices
- MSE 771 Materials Science of Nanoelectronics

Technical Electives

*Technical Electives* are approved in conjunction with the academic committee.

<table>
<thead>
<tr>
<th>Code</th>
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<th>Hours</th>
<th>Counts towards</th>
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</thead>
<tbody>
<tr>
<td>MSE 760</td>
<td>Materials Science in Processing of Semiconductor Devices</td>
<td>6</td>
<td>Total Hours</td>
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<tr>
<td>MSE 771</td>
<td>Materials Science of Nanoelectronics</td>
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</table>

Total Hours: 30

*Technical Electives* may be ones in the MNAE program not used to satisfy other degree requirements or other technical courses approved by the Director of Graduate Program, Nanoengineering.

Full Professors

Charles M. Balik
Albena Ivanisevic
Thomas H. LaBean
Jagdish Narayan
Joseph B. Tracy
Daryoosh Vashaee
Yaroslava G. Yingling
Yong Zhu

Associate Professors

Rajeev Kumar Gupta

Assistant Professors

Kaveh Ahadi
Wenpei Gao
Srikanth Patala

Practice/Research/Teaching Professors

Claude Lewis Reynolds Jr.

Emeritus Faculty

Elizabeth Carol Dickey

Career Opportunities

Nanotechnological advancements have impacted every technological sector and ultimately may change aspects of our daily lives.
The development of these new technologies requires innovative nanoengineers who are invested in the fields of electronics, materials, chemical technology, biotechnology and biomedical engineering. Graduates of the Master of Nanoengineering program are equipped with a solid foundation in nanoscience and nanotechnology necessary for the development of new products and procedures.

Potential careers associated with nanoengineering are as follows.

- Research and development engineer/scientist
- Biomedical engineer
- Materials engineer/scientist
- Bioinformatics
- Chemist
- Process engineer
- Materials analyst
- Professor
- Medical doctor
- PhD student