## MICROSYSTEMS AND NANOTECHNOLOGY MINOR

<table>
<thead>
<tr>
<th>Required Courses: select at least 9 credits from these four courses</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSNT 3940 Principles and Applications of Nanotechnology</td>
<td>9</td>
</tr>
<tr>
<td>MSNT 4230 Design, Fabrication, and Simulation of MEMS</td>
<td></td>
</tr>
<tr>
<td>MECHEENG 4980 Current Topics in Engineering (Microfluidics)</td>
<td></td>
</tr>
<tr>
<td>MSNT 4000 Research in Microsystems and Nanotechnology</td>
<td></td>
</tr>
</tbody>
</table>

### Electives

**Chemistry**
- CHEMSTRY 2150 Quantitative Analysis
- CHEMSTRY 3540 Organic Chemistry I
- CHEMSTRY 4630 General Biochemistry
- CHEMSTRY 4130 Physical Chemistry

**Electrical Engineering**
- ELECTENG 3020 Analog Electronics
- ELECTENG 3130 Solid State Electronic Devices
- ELECTENG 3320 Automatic Controls
- ELECTENG 4260 Measurements and Instrumentation

**Engineering Physics**
- ENGRPHYS 3640/ELECTENG 3410 Electric and Magnetic Fields
- ENGRPHYS 3240 Applied Mechanics
- ENGRPHYS 4140 Applied Optics
- ENGRPHYS 4210 Sensor Lab
- ENGRPHYS 4220 Engineering Quantum Mechanics

**Biology**
- BIOLOGY 2040 Cell Biology
- BIOLOGY 3240 Microbiology
- BIOLOGY 3330 Genetics
- BIOLOGY 3530 Biotechnology
- BIOLOGY 4040 Molecular Biology
- BIOLOGY 3620 Immunology
- BIOLOGY 3920 Personalized Learning Experience

**Mechanical Engineering**
- MECHEENG 3040 Engineering Materials
- MECHEENG 3230 Manufacturing Processes
- MECHEENG 3330 Design of Machine Elements
- MECHEENG 4330 Automatic Controls
- MECHEENG 4430 Advanced Materials
- MECHEENG 4440 Failure of Materials
- MECHEENG 4560 Computational Fluid Dynamics
- MECHEENG 4800 Finite Element Method
- MECHEENG 4840 Vibration Systems Design
- MECHEENG 4830 Mechatronics

**Independent Study**
- ELECTENG/ENGRPHYS/MECHENG 4990 Independent Study (needs approval)
- BIOLOGY 4920/CHEMSTRY 4000 Independent Research in Biology (needs approval)

**Total Credits** 18

---

1 The minor requires 18 credits. Nine (9) of these must be unique to the minor, i.e. not counting toward graduation in another discipline.