All students except for BE are required to complete the 7 courses in one of the tracks below (i.e., one row of the table), plus a multidisciplinary robotics senior design project, by taking ROBO410, ROBO420, and ROBO430. BE majors will take BE410, BE420, and BE430 to complete their senior design requirements.

<table>
<thead>
<tr>
<th>#</th>
<th>Track</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Electives 11 [tracks which may take each are listed in brackets]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CSSE with Controls 1,2,3</td>
<td>DC Circuits (ECE203)</td>
<td>AC Circuits (ECE204)</td>
<td>Dynamical Systems (ECE205)</td>
<td>Mobile Robotics (ECE425)</td>
<td>Elec</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>CSSE with Hardware 1,2</td>
<td>DC Circuits (ECE203)</td>
<td>AC Circuits (ECE204)</td>
<td>Robotics Engineering (ME435)</td>
<td>Artifical Intelligence (CSSE413)</td>
<td>Elec</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>CSSE with Mechanics 1,2,4</td>
<td>Conservation &amp; Acct. Princ. (ES201)</td>
<td>Mechanical Systems (ES204)</td>
<td>Kinematics (ME403)</td>
<td>Robotics Engineering (ME435)</td>
<td>Elec</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>EE with Programming 6</td>
<td>Data Structures and Analysis (CSSE230)</td>
<td>Robotics Engineering (ME435)</td>
<td>Mobile Robotics (ECE425)</td>
<td>Elec</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>ME with Electronics 7,8,11</td>
<td>Introduction to Logic Design (ECE130)</td>
<td>Electronic Device Modeling (ECE250)</td>
<td>Robotics Engineering (ME435)</td>
<td>Digital Systems (ECE333)</td>
<td>Cap Desn Credits (ROBO4xx)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>ME with Programming 7</td>
<td>Data Structures and Analysis (CSSE230)</td>
<td>Robotics Engineering (ME435)</td>
<td>Mobile Robotics (ECE425)</td>
<td>Cap Desn Credits (ROBO4xx)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11 Electives 11 (tracks which may take each are listed in brackets)
1. CSSE220, 230 already required for CS and SE majors.
2. SE majors should pursue the corresponding domain track.
3. CSSE majors pursuing this track need only 1 additional class to obtain an ECE minor. To do that, they will need ECE203+ECE204.
4. Students in this track will need to obtain electronics experience to satisfy the ME430 prerequisites.
5. CSSE220, ECE130, ECE203, ECE204, ECE333 already required for CPE majors
6. ECE203, ECE204, ECE230, ECE320 already required for EE majors
7. ME430 already required for ME majors. **ME majors must also choose ME406 Controls, not Vibrations, as a restricted elective.**
8. Students in this track will need to take ECE203 and ECE204 instead of ES203 and ECE207, as a prerequisite for ECE250. This is a standard substitution.
9. CSSE221 (Honors) or CSSE120 can substitute here.
10. A student may substitute ME406 Controls. This currently requires a longer list of prerequisites.
11. This list is intended to exclude all robotics electives already required by the student’s chosen major or track.
12. Students in this track need only 1 additional ECE class to obtain an ECE minor. To do that, they will need to take ECE203 + ECE204 instead of ES203 + ECE207.
13. ROBO410, 420 and 430 replaces ECE460, 461, and 462 for ECE majors, ME471, 472, and a 4 credit hour technical elective for ME majors, and CSSE497, 498 and 499 for CSSE majors. CSSE majors must also complete an additional 3-credit technical elective since the ROBO capstone sequence has 3 fewer hours than the CSSE one. BE majors cannot take the ROBO4X0 senior design sequence and must instead take BE410-420-430.
# Multidisciplinary Minor in Robotics Curriculum

## Prerequisite Analysis

To ensure every major can complete a track without overloading, the following criteria apply:

1. **Major**:
   - **CSSE with Controls**
   - **CSSE with Hardware**
   - **CSSE with Mechanics**
   - **CPE**
   - **EE with Programming**
   - **ECE with Sensors**
   - **ECE with Mechanics**
   - **ME with Electronics**
   - **ME with Programming**
   - **BE with Instrumentation**

2. **Track Selection**:
   - **CSSE with Controls**
   - **CSSE with Hardware**
   - **CSSE with Mechanics**
   - **CPE**
   - **EE with Programming**
   - **ECE with Sensors**
   - **ECE with Mechanics**
   - **ME with Electronics**
   - **ME with Programming**
   - **BE with Instrumentation**

3. **Course Replacements**:
   - CSSE120R replaces CSSE120
   - ME430 (FE)
   - ECE203 (TE)
   - ECE204 (TE)
   - ECE205 (FE)
   - ECE425 (AE)
   - ME435 (FE)
   - CSSE413 (AE)
   - ECE250 (AE)
   - EM121 (FE)
   - EP408 (FE)
   - ECE480/414 (AE)
   - ME435 (FE)
   - CSSE230 (TE)
   - CSSE220 (TE)
   - ECE320 (FE)
   - CSSE220 (TE)
   - ECE203 (TE)
   - ME403 (FE)
   - ME403 (TE)
   - ECE204 (TE)
   - ECE203 (TE)
   - ECE204 (TE)
   - ECE205 (FE)
   - ECE425 (AE)
   - ECE480 (BAC)
   - BE597 (BAC)
   - BE350 (BAC)
   - ME435 (FE)
   - ME435 (TE)

4. **Elective Requirements**:
   - Need PH113 (SciE) and MA222 (TE) for Robotics application domain track.
   - Need PH113 (SciE), MA222 (TE) is also desirable. Choose Robotics application domain track.
   - Need PH113 (SciE), MA222 (TE) is also desirable. Choose Mech. Robotics application domain track.
   - If elective is a 400+-level ECE course (an AE), then no overload is required.
   - If elective were 400+-level ECE course (an AE), then they would still have a FE instead of an AE.

5. **Credits Required**:
   - 4 BAC, 3 FE (none remaining)
   - 3 TE, 1 AE, 2 FE (1 AE remaining)
   - 3 TE, 1 AE, 2 FE (none remaining)
   - 2 AE, 2 FE (1 AE remaining)
   - 2 AE, 2 TE, 2 FE (none remaining)
   - 2 AE, 2 TE, 2 FE (none remaining)
   - 2 AE, 2 TE, 2 FE (none remaining)
   - 2 AE, 2 TE, 2 FE (none remaining)
   - 3 TE, 1 AE, 2 FE (none remaining)
   - 3 TE, 1 AE, 2 FE (none remaining)
   - 2 AE, 2 TE, 2 FE (none remaining)

6. **Overload Prevention**:
   - No overload is required.
   - No overload is required.
   - No overload is required.
   - No overload is required.
   - No overload is required.

## Key

<table>
<thead>
<tr>
<th>Key</th>
<th>AE</th>
<th>TE</th>
<th>FE</th>
<th>BAC</th>
<th>SciE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>area elective</td>
<td>technical elective</td>
<td>free elective</td>
<td>BE area concentration</td>
<td>science elective</td>
</tr>
</tbody>
</table>