Master of Science in Systems Science & Mathematics (MSSSM)

Either a thesis option or a course option may be selected. The special requirements for these options are as follows:

**Course Option**

The Master of Science in Systems Science & Mathematics (MSSSM) is an academic master's degree that requires 30 unit hours. It is designed for both full-time and part-time students interested in proceeding to the departmental full-time doctoral program and/or an industrial career. Under the course option, students may not take ESE 599 Master's Research. With faculty permission, they may take up to 3 units of graduate-level independent study.

**Thesis Option**

This option is intended for those pursuing full-time study and engaged in research projects. Candidates for this degree must complete a minimum of 24 unit hours of course instruction and 6 unit hours of thesis research (ESE 599); 3 of these unit hours of thesis research may be applied toward the 15 core electrical engineering unit hours required for the MSEE program. Any of these 6 hours of thesis research may be applied as electives for the MSEE, MSSSM, MSDAS, MCEng and MEngR programs. The student must write a master's thesis and defend it in an oral examination.

**Degree Requirements**

- Required courses (15 units) for the MS degree include the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESE 551</td>
<td>Linear Dynamic Systems I</td>
<td>3</td>
</tr>
<tr>
<td>ESE 553</td>
<td>Nonlinear Dynamic Systems</td>
<td>3</td>
</tr>
<tr>
<td>ESE 520</td>
<td>Probability and Stochastic Processes</td>
<td>3</td>
</tr>
<tr>
<td>ESE 415</td>
<td>Optimization¹</td>
<td>3</td>
</tr>
</tbody>
</table>

and one chosen from the following courses:

- ESE 524 Detection and Estimation Theory
- or ESE 544 Optimization and Optimal Control
- or ESE 545 Stochastic Control
- or ESE 557 Hybrid Dynamic Systems

Total Units 15

¹ ESE 516 may be substituted for ESE 415.