## Degree Requirements and Restrictions

The Master of Science in Software Engineering is an interdisciplinary program, joint between the Computer Science department and the Electrical and Computer Engineering department.

At least half of the hours must be completed in courses numbered 600 or above.

The Master of Science in Software Engineering is conferred under Plan I or Plan II.

### Plan I (Thesis)

A minimum of 24 semester hours of coursework and the writing of an acceptable thesis is required. At least six hours of thesis credit (CS 699) must be earned. Thesis students substitute the two CS 699 courses for the Capstone Course and one elective. Total hours required is 30 hours.

A student must present his/her thesis and pass an oral examination based on the thesis and related coursework. Plan I students must register for CS 699 each term they receive supervision from their advisor.

### Plan II (Non-Thesis)

A minimum of 30 semester hours of coursework is required.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 617</td>
<td>DES &amp; ANALY OF ALGORITHM</td>
<td>3</td>
</tr>
<tr>
<td>CS 650</td>
<td>SOFT'W ENGINEERING PROC</td>
<td>3</td>
</tr>
<tr>
<td>CS 652</td>
<td>OBJECT-ORIENTED DESIGN</td>
<td>3</td>
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**Choose one of the following:**

- CS 613: COMPUTER ARCHITECTURES
- CS 690: ADVANCED OPERATING SYSTEMS
- CS 536: INTERNALS OF MODERN OPER SYS
- CS 631: ADV COMP SYSTEMS ARCHITECTURE

**Cybersecurity Requirement**

Choose one of the following:

- CS 585: INTRO TO COMPUTER SECURITY
- CPE 549: INTRO TO CYBERSECURITY ENGINRG

**Capstone**

- CPE 657: SOFTWARE STUDIO

**Concentration Areas**

Choose two courses within any one concentration:

- **Big Data and Data Mining**
  - CS 554: INTRO TO CLOUD COMPUTING
  - CS 641: DATA MINING
  - CS 696: SELECTED TOPICS IN CS (ST: Data Visualization)
  - CS 696: SELECTED TOPICS IN CS (Machine Learning (CS 640))
  - CS 696: SELECTED TOPICS IN CS (Big Data Analytics)

**Project Management (ISE 690 is required as one of the two courses)**

- ISE 690: STATISTICAL METHODS FOR ENGR
- EM 660: ENGR MGMT THEORY
- MGT 601: TECH & INNOVATION MGMT
- MKT 604: NEW PRODUCT DEVELOPMENT

**Parallel Programming**

- CPE 512: INTRO PARALLEL PROGRAMMING
- CPE 612: PARALLEL ALGORITHMS
- CPE 613: GEN PURPOSE GPU COMPUTING

**Embedded Systems**
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>CPE 538</td>
<td>REAL TIME &amp; EMBEDDED SYSTEMS</td>
</tr>
<tr>
<td>CPE 523</td>
<td>HARDWARE/SOFTWARE CO-DESIGN</td>
</tr>
<tr>
<td>CPE 621</td>
<td>ADVANCED EMBEDDED SYSTEMS</td>
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<tr>
<td><strong>Advanced Cybersecurity</strong></td>
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<tr>
<td>CPE 649</td>
<td>ADV CYBERSECURITY ENGINEERING</td>
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<tr>
<td>CPE 645</td>
<td>COMPUTER NETWORK SECURITY</td>
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<tr>
<td>IS 663</td>
<td>COMPUTER FORENSICS</td>
</tr>
<tr>
<td><strong>Electives (Must be approved CS or CPE course)</strong></td>
<td><strong>6</strong></td>
</tr>
<tr>
<td><strong>Total Semester Hours</strong></td>
<td><strong>30</strong></td>
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