# B.Sc. Software Engineering: Web and Mobile Concentration

## 127 Credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Remedial Course</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>MATH003</td>
<td>Intermediate Algebra</td>
<td><strong>3</strong></td>
<td>None</td>
</tr>
<tr>
<td>ENG050</td>
<td>Grammar &amp; Composition</td>
<td><strong>3</strong></td>
<td>None</td>
</tr>
<tr>
<td><em><strong>Additional Math Course</strong></em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH116</td>
<td>Pre-Calculus</td>
<td>***4</td>
<td>Placement Test or MATH003</td>
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### First Term

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWE100</td>
<td>Introduction to Programming: Python</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>SWE115</td>
<td>Web Programming: HTML5</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MATH143</td>
<td>Calculus 1</td>
<td>4</td>
<td>Placement Test or MATH116 Pre-Calculus</td>
</tr>
<tr>
<td>ENG100</td>
<td>Composition &amp; Critical Thinking</td>
<td>3</td>
<td>Placement Test or ENG050 Grammar &amp; Composition</td>
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### Second Term

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>SWE110</td>
<td>C Programming</td>
<td>3</td>
<td>MATH115 or MATH116</td>
</tr>
<tr>
<td>SWE125</td>
<td>Introduction to Mobile Programming: iOS</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>SCI145</td>
<td>College Physics 1</td>
<td>3</td>
<td>MATH143 Calculus 1</td>
</tr>
<tr>
<td>MATH144</td>
<td>Calculus 2</td>
<td>3</td>
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### Third Term

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
<th>Prerequisites</th>
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</thead>
<tbody>
<tr>
<td>SWE120</td>
<td>Flash Programming</td>
<td>3</td>
<td>None</td>
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<tr>
<td>SWE212</td>
<td>Java Programming</td>
<td>4</td>
<td>SWE110 C Programming</td>
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<tr>
<td>SWE310</td>
<td>Data Structures and Algorithms</td>
<td>4</td>
<td>SWE110 or SWE315</td>
</tr>
<tr>
<td>MATH245</td>
<td>Calculus 3</td>
<td>3</td>
<td>MATH143 Calculus 1</td>
</tr>
<tr>
<td>ENG220</td>
<td>Technical Writing</td>
<td>3</td>
<td>ENG100</td>
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### Fourth Term

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWE221</td>
<td>Linux Programming Environment</td>
<td>3</td>
<td>SWE110 C Programming</td>
</tr>
<tr>
<td>SWE315</td>
<td>C++ Programming: Object Oriented Programming</td>
<td>3</td>
<td>SWE100 or SWE110 or SWE212</td>
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<tr>
<td>MATH310</td>
<td>Discrete Mathematics</td>
<td>3</td>
<td>MATH144 Calculus 2</td>
</tr>
<tr>
<td>ENG250</td>
<td>Speech and Oral Communication</td>
<td>3</td>
<td>As Required</td>
</tr>
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</table>

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<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
<th>Prerequisites</th>
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<tbody>
<tr>
<td><strong>Fifth Term</strong></td>
<td></td>
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</tr>
<tr>
<td>SWE351</td>
<td>Computer Architecture</td>
<td>3</td>
<td>SWE110 C Programming</td>
</tr>
<tr>
<td>SWE352</td>
<td>Embedded Software Systems</td>
<td>3</td>
<td>SWE110 C Programming and MATH143 Calculus 1</td>
</tr>
<tr>
<td>SCI245</td>
<td>College Physics 2</td>
<td>4</td>
<td>MATH143 Calculus 1</td>
</tr>
<tr>
<td>MATH320</td>
<td>Geometry &amp; Transformation</td>
<td>3</td>
<td>MATH144 Calculus 2</td>
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<tr>
<td>General Education Course</td>
<td>See GenEd on page 3 &amp; 4.</td>
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<td>As Required</td>
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<tr>
<td><strong>Sixth Term</strong></td>
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<tr>
<td>SWE445</td>
<td>Advanced C++</td>
<td>3</td>
<td>SWE315 C++ Programming: Object Oriented Programming</td>
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<tr>
<td>SWE340</td>
<td>Software Engineering Methods and Project 1</td>
<td>3</td>
<td>SWE315 C++ Programming: Object Oriented Programming</td>
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<tr>
<td>SWE375</td>
<td>Mobile Programming</td>
<td>3</td>
<td>SWE212 Java Programming or SWE315 C++ Object Oriented Programming</td>
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<tr>
<td>General Education Course</td>
<td>See GenEd on page 3 &amp; 4.</td>
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<td>As Required</td>
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<tr>
<td>General Education Course</td>
<td>See GenEd on page 3 &amp; 4.</td>
<td></td>
<td>As Required</td>
</tr>
<tr>
<td><strong>Seventh Term</strong></td>
<td></td>
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<tr>
<td>SWE475</td>
<td>Mobile Programming Graphics</td>
<td>3</td>
<td>SWE375 Mobile Programming</td>
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<tr>
<td>SWE484</td>
<td>Senior Project 1: Planning</td>
<td>3</td>
<td>As required</td>
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<tr>
<td>INT401</td>
<td>Internship 1 or any advisor approved course</td>
<td>3</td>
<td>As required</td>
</tr>
<tr>
<td>DMM270</td>
<td>Project Management</td>
<td>3</td>
<td>As required</td>
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<tr>
<td>General Education Course</td>
<td>See GenEd on page 3 &amp; 4.</td>
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<tr>
<td><strong>Eighth Term</strong></td>
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<tr>
<td>SWE320</td>
<td>Operating Systems concepts</td>
<td>3</td>
<td>SWE212 Linux programming environment and SWE310 Data Structures and Algorithms</td>
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<tr>
<td>SWE485</td>
<td>Senior Project 2: Execution</td>
<td>3</td>
<td>SWE484 Senior Project 1: Planning</td>
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<tr>
<td>INT401</td>
<td>Internship 1 or any advisor approved course</td>
<td>3</td>
<td>As required</td>
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<tr>
<td>General Education Course</td>
<td>See GenEd on page 3 &amp; 4.</td>
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<td>As Required</td>
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<tr>
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<td>As Required</td>
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# GENERAL EDUCATION REQUIREMENTS

## 45-48 CREDITS

<table>
<thead>
<tr>
<th>Course</th>
<th>Applicable Courses</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG050</td>
<td>Grammar &amp; Composition</td>
<td>**3</td>
<td>None</td>
</tr>
<tr>
<td>MATH003</td>
<td>Intermediate Algebra</td>
<td>**3</td>
<td>None</td>
</tr>
<tr>
<td><strong>Remedial Courses</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH116</td>
<td>Pre-Calculus</td>
<td>**4</td>
<td>Placement or MATH003</td>
</tr>
<tr>
<td><strong>Additional Math Course</strong></td>
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</table>

### BASIC SKILLS – 9 credits in 3 areas

**WRITTEN COMMUNICATION – 3 credits**

<table>
<thead>
<tr>
<th>Course</th>
<th>Applicable Courses</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG100</td>
<td>Composition &amp; Critical Thinking</td>
<td>3</td>
<td>Pass English placement test</td>
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**ORAL COMMUNICATION – 3 credits**

<table>
<thead>
<tr>
<th>Course</th>
<th>Applicable Courses</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG250</td>
<td>Speech and Oral Communication</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>ENG280</td>
<td>Apocalypse &amp; The American Imagination</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>ENG299ST</td>
<td>The Art of Argumentation</td>
<td>3</td>
<td>ENG100</td>
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**CRITICAL THINKING – 3 credits**

<table>
<thead>
<tr>
<th>Course</th>
<th>Applicable Courses</th>
<th>Credits</th>
<th>Prerequisites</th>
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</thead>
<tbody>
<tr>
<td>ENG280</td>
<td>Apocalypse &amp; The American Imagination</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>ENG220</td>
<td>Technical Writing</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>ENG299ST</td>
<td>The Art of Argumentation</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>ENG300-ON</td>
<td>Essentials of Written Communication</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>ENG250</td>
<td>Speech and Oral Communication</td>
<td>3</td>
<td>ENG100</td>
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### HUMANITIES & ARTS – 9 credits in three areas.

**ARTS – 3 credits**

<table>
<thead>
<tr>
<th>Course</th>
<th>Applicable Courses</th>
<th>Credits</th>
<th>Prerequisites</th>
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</thead>
<tbody>
<tr>
<td>HUM120</td>
<td>The Nature and History of Western Art</td>
<td>3</td>
<td>None</td>
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<tr>
<td>HUM122</td>
<td>World Music</td>
<td>3</td>
<td>None</td>
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<tr>
<td>HUM125</td>
<td>Music in Western Culture</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>HUM127</td>
<td>History of Music Technology</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>HUM130</td>
<td>Modern Art History</td>
<td>3</td>
<td>None</td>
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<tr>
<td>HUM140</td>
<td>Modern Art History and Film</td>
<td>3</td>
<td>None</td>
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<tr>
<td>HUM222</td>
<td>Music in the Recorded Age</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>HUM227</td>
<td>Film History</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>HUM228</td>
<td>Video Games and Society</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>HUM228-ON</td>
<td>Video Games and Society</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>HUM230</td>
<td>History of Animation</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>HUM230-ON</td>
<td>History of Animation</td>
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<td>ENG100</td>
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**LETTERS – 3 credits**

<table>
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<th>Applicable Courses</th>
<th>Credits</th>
<th>Prerequisites</th>
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<tbody>
<tr>
<td>ENG 228</td>
<td>Creative Writing</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>ENG227</td>
<td>Scriptwriting</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>ENG230</td>
<td>Classics of the World Stage</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>ENG280</td>
<td>Apocalypse &amp; The American Imagination</td>
<td>3</td>
<td>ENG100</td>
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**WRITTEN COMMUNICATION II – 3 credits**

<table>
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<th>Applicable Courses</th>
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<th>Prerequisites</th>
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<tbody>
<tr>
<td>ENG227</td>
<td>Creative Writing</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>ENG228</td>
<td>Scriptwriting</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>ENG230</td>
<td>Classics of the World Stage</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>ENG280</td>
<td>Apocalypse &amp; The American Imagination</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>ENG220</td>
<td>Technical Writing</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>ENG299-ST</td>
<td>The Art of Argumentation</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>ENG300-ON</td>
<td>Essentials of Written Communication</td>
<td>3</td>
<td>ENG100</td>
</tr>
<tr>
<td>ENG310</td>
<td>Classics of Western Drama</td>
<td>3</td>
<td>ENG100</td>
</tr>
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### SOCIAL SCIENCES – 12 credits in 3 areas

<table>
<thead>
<tr>
<th>HUMAN BEHAVIOR – 3 credits</th>
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<tbody>
<tr>
<td>HUM228</td>
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<tr>
<td>HUM228-ON</td>
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<tr>
<td>ENG280</td>
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<table>
<thead>
<tr>
<th>COMPARATIVE SYSTEMS – 3 credits</th>
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<tbody>
<tr>
<td>HUM200</td>
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<tr>
<td>SSC200</td>
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<td>SSC332</td>
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<table>
<thead>
<tr>
<th>SOCIAL ISSUES – 3 credits</th>
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<tbody>
<tr>
<td>HUM200</td>
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<tr>
<td>SSC200</td>
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### MATH & SCIENCES for Non-Engineering Majors – 9 credits in two areas

<table>
<thead>
<tr>
<th>MATH &amp; SCIENCES for Non-Engineering Majors – 9 credits in two areas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MATH115</strong></td>
</tr>
<tr>
<td>Basic Topics in Mathematics</td>
</tr>
<tr>
<td>Pre-Calculus</td>
</tr>
<tr>
<td>Calculus 1</td>
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<table>
<thead>
<tr>
<th>PHYSICAL &amp; BIOLOGICAL SCIENCES – 6 credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCI100</td>
</tr>
<tr>
<td>SCI110</td>
</tr>
<tr>
<td>SCI130</td>
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<td>SCI145</td>
</tr>
<tr>
<td>SCI200</td>
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<td>SCI220</td>
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### MATH & SCIENCES for Engineering Majors – 11 OR 12 credits in two areas

<table>
<thead>
<tr>
<th>MATH &amp; SCIENCES for Engineering Majors – 11 OR 12 credits in two areas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MATH143</strong></td>
</tr>
<tr>
<td>Calculus 1</td>
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<table>
<thead>
<tr>
<th>PHYSICAL &amp; BIOLOGICAL SCIENCES – 7 or 8 credits</th>
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</thead>
<tbody>
<tr>
<td>SCI115</td>
</tr>
<tr>
<td>College Physics 1 (Required for all engineering students)</td>
</tr>
<tr>
<td>SCI245</td>
</tr>
<tr>
<td>College Physics 2 (Required for SWE)</td>
</tr>
<tr>
<td>SCI220</td>
</tr>
<tr>
<td>Foundations of Musical Acoustics (Required for DAT)</td>
</tr>
<tr>
<td>SCI100</td>
</tr>
<tr>
<td>Basic Concepts in Physics</td>
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<tr>
<td>SCI111</td>
</tr>
<tr>
<td>Science of Motion: Humans, Animals, Objectives</td>
</tr>
<tr>
<td>SCI130</td>
</tr>
<tr>
<td>Basic Concepts of Anatomy and Physiology</td>
</tr>
<tr>
<td>SCI200</td>
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<tr>
<td>General Science: Principles and Trends</td>
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### UPPER-DIVISION GENERAL EDUCATION – 6 credits

<table>
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<th>300-LEVEL GE ELECTIVE – 3 credits</th>
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<tbody>
<tr>
<td>HUM361</td>
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<td>SSC332</td>
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<td>ENG310</td>
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<td>ENG300-ON</td>
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<table>
<thead>
<tr>
<th>SENIOR-LEVEL RESEARCH &amp; WRITING – 3 credits</th>
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<td>HUM400</td>
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