# Computer Engineering
## Technical Electives
### Prior to Spring 2022

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS/IDEA 310H</td>
<td>Design Thinking Toolbox: Mixed Reality Design</td>
<td>3</td>
<td>CS253 or IDEA210</td>
<td>F, Even</td>
</tr>
<tr>
<td>CS 314</td>
<td>Software Engineering</td>
<td>3</td>
<td>CS253 with a minimum grade of C</td>
<td>F, S</td>
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<tr>
<td>CS 320¹</td>
<td>Algorithms--Theory and Practice</td>
<td>3</td>
<td>CS165 with a minimum grade of C; CS220 with a minimum grade of C; MATH160 with a minimum grade of C; MATH229 with a minimum grade of C; MATH369 with a minimum grade of C</td>
<td>F, S</td>
</tr>
<tr>
<td>CS 345</td>
<td>Machine Learning Foundations and Practice</td>
<td>3</td>
<td>CS165 with a minimum grade of C; CS152 with a minimum grade of C or CS220 with a minimum grade of C; ECE/STAT303 with a minimum grade of C</td>
<td>F, S</td>
</tr>
<tr>
<td>CS 356</td>
<td>Systems Security</td>
<td>3</td>
<td>CS253 with a minimum grade of C or CS370 with a minimum grade of C</td>
<td>F, S</td>
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<tr>
<td>CS 4XX (except CS457 and CS470)</td>
<td>Any CS course at the 400 level</td>
<td>4</td>
<td>Varies - check course description for details</td>
<td>F, S, SS</td>
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<tr>
<td>CS 5XX</td>
<td>Any CS course at the 500 level</td>
<td>4</td>
<td>Varies - check course description for details</td>
<td>F, S</td>
</tr>
<tr>
<td>DSCI 475</td>
<td>Topological Data Analysis</td>
<td>2</td>
<td>MATH369 or DSCI369</td>
<td>S</td>
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<tr>
<td>ECE 340</td>
<td>Electromagnetics for Computer Engineering</td>
<td>3</td>
<td>ECE202 with a minimum grade of C; MATH161 with a minimum grade of C</td>
<td>F</td>
</tr>
<tr>
<td>ECE 4XX (except ECE532)</td>
<td>Any ECE course at the 400 level</td>
<td>3-4</td>
<td>Varies - check course description for details</td>
<td>F, S</td>
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<tr>
<td>ECE 495²</td>
<td>Independent Study</td>
<td>1-3</td>
<td>Varies - check course description for details</td>
<td>F, S, SS</td>
</tr>
<tr>
<td>ECE 5XX (except ECE532)</td>
<td>Any ECE course at the 500 level</td>
<td>3-4</td>
<td>Varies - check course description for details</td>
<td>F, S</td>
</tr>
<tr>
<td>ENGR 380A4</td>
<td>Engineering Data Analytics</td>
<td>3</td>
<td>ECE102 or ECE103</td>
<td>S</td>
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<tr>
<td>MATH 360</td>
<td>Mathematics of Information Security</td>
<td>3</td>
<td>MATH161; MATH229 or MATH369</td>
<td>S</td>
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<tr>
<td>MATH 450</td>
<td>Intro to Numerical Analysis I</td>
<td>3</td>
<td>CS156 or CS163 or CS164 or CS253 or MATH151; MATH255 or MATH261</td>
<td>F</td>
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<tr>
<td>MATH 451</td>
<td>Intro to Numerical Analysis II</td>
<td>3</td>
<td>CS156 or CS163 or CS164 or CS253 or MATH151; MATH340 or MATH345</td>
<td>S</td>
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<tr>
<td>MATH 460</td>
<td>Information and Coding Theory</td>
<td>3</td>
<td>MATH360; MATH369 or MATH366</td>
<td>S</td>
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<tr>
<td>MATH 480A1</td>
<td>Post Quantum Cryptography</td>
<td>3</td>
<td>MATH360 or MATH366 or MATH466; MATH369 or MATH469</td>
<td>S</td>
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<tr>
<td>MECH 564</td>
<td>Fundamentals of Robot Mechanics &amp; Controls</td>
<td>3</td>
<td>MECH 417 (will substitute ECE411 and ECE455 - must take both)</td>
<td>S</td>
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<tr>
<td>MECH 580B3</td>
<td>Orbital Mechanics</td>
<td>3</td>
<td>MATH340; PH142</td>
<td>S, Even</td>
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<tr>
<td>MECH 580B4</td>
<td>Trajectory and Performance</td>
<td>3</td>
<td>MATH340; PH142</td>
<td>S, Even</td>
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<tr>
<td>STAT 421</td>
<td>Introduction to Stochastic Processes</td>
<td>3</td>
<td>MATH229 or MATH369; STAT420 (will substitute ECE303/STAT303 for STAT420)</td>
<td>S</td>
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</tbody>
</table>

¹ CS320 may count as a Technical Elective ONLY when ECE332 is also taken. ECE332 will be applied towards the Junior Year requirement. The course cannot count as credit towards both requirements.

² A total of 3 credits of Independent Study may apply towards degree requirements. This includes credits awarded for ECE395 and ECE495 combined.

Last Updated December 2021