**Specimen Curriculum for Chemical Engineering with emphasis in Scientific Computing**

**B.E. in Chemical Engineering with Minor in Scientific Computing and Minor in Chemistry**

<table>
<thead>
<tr>
<th>SOPHOMORE YEAR</th>
<th>Semester hours</th>
<th>FALL</th>
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<tbody>
<tr>
<td>Chem 2221</td>
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<td>Math 2300</td>
<td>Multivariable Calculus</td>
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<td>Math 2420</td>
<td>Methods of Ordinary Differential Equations</td>
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<td>General Physics II</td>
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<td>ChBE 2100</td>
<td>Chemical Process Principles</td>
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<td>ChBE 2200</td>
<td>Chemical Engineering Thermodynamics</td>
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<tr>
<td>ChBE 2250</td>
<td>Modeling and Simulation in Chemical Engineering</td>
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<tr>
<td>ChBE 2900W</td>
<td>Technical Communications for Chemical Engineers</td>
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<td>ChBE 2150†</td>
<td>Molecular and Cell Biology for Engineers</td>
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<td>ChBE 3200</td>
<td>Phase Equilibria and Stage-Based Separations</td>
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<td>ChBE 3250</td>
<td>Chemical Reaction Engineering</td>
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<tr>
<td>ChBE 3300</td>
<td>Fluid Mechanics and Heat Transfer</td>
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<td>ChBE 3350</td>
<td>Mass Transfer and Rate-Based Separations</td>
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<td>ChBE 3600</td>
<td>Chemical Process Control</td>
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<tr>
<td>ChBE 3900W</td>
<td>Chemical Engineering Laboratory I</td>
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<td>CS 2204</td>
<td>Program Design and Data Structures for Sci. Comp.</td>
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<td>SC 3250</td>
<td>Scientific Computing Toolbox</td>
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<tr>
<td>Chem 3300*</td>
<td>Physical Chemistry: Quantum Mechanics</td>
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<td>ChBE 4900W</td>
<td>Chemical Engineering Laboratory II</td>
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<td>ChBE 4950W</td>
<td>Chemical Engineering Process and Product Design</td>
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<td>ChBE 4951W</td>
<td>Chemical Product Design Projects</td>
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<td>ChBE 4959</td>
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<td>Chemical and Biomolecular Engineering elective</td>
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<td>Scientific Computing elective</td>
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*May be replaced by BSCI 2201 or BSC 2520 after completion of ChBE 2150 or BSCI 1510.
†May be replaced by BSCI 1510.
‡May be replaced by open elective hours if ChBE 4830 taken as a scientific computing elective.
<table>
<thead>
<tr>
<th></th>
<th>YEAR 1</th>
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<tr>
<td></td>
<td>Fall</td>
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<td>General Chemistry Chem 1601 3 hours</td>
<td>General Chemistry Chem 1602 3 hours</td>
<td>Organic Chemistry Chem 2221 3 hours</td>
<td>Organic Chemistry Chem 2222 3 hours</td>
<td>Molecular and Cell Biology for Engineers ChBE 2150 3 hours</td>
<td>Chemical Reactor Engineering ChBE 3250 3 hours</td>
<td>Science Elective: Chem 3300* or BSCI 2201 or BSC 2250 3 hours</td>
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<td>General Chemistry Laboratory Chem 1601L 1 hour</td>
<td>General Chemistry Laboratory Chem 1602L 1 hour</td>
<td>Organic Chemistry Laboratory Chem 2221L 1 hour</td>
<td>Organic Chemistry Laboratory Chem 2222L 1 hour</td>
<td>Phase Equilibria &amp; Staged-based Separations ChBE 3200 3 hours</td>
<td>Mass Transfer and Rate-based Separations ChBE 3350 3 hours</td>
<td>Molecular Simulation‡ ChBE 4830 3 hours</td>
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<td>Accelerated Single-Variable Calculus I Math 1300 4 hours</td>
<td>Accelerated Single-Variable Calculus II Math 1301 4 hours</td>
<td>Multivariable Calculus Math 2300 3 hours</td>
<td>Methods of Ordinary Differential Eqs Math 2420 3 hours</td>
<td>Fluid Mechanics &amp; Heat Transfer ChBE 3300 3 hours</td>
<td>Chemical Engineering Laboratory I ChBE 3900W 3 hours</td>
<td>Chemical Engineering Laboratory II ChBE 4900W 3 hours</td>
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<td>Introduction to Engineering ES 1401, 1402, 1403 3 hours</td>
<td>General Physics I Phys 1601 3 hours</td>
<td>General Physics II Phys 1602 3 hours</td>
<td>Chemical Engineering Thermodynamics ChBE 2200 3 hours</td>
<td>Chemical Process Control ChBE 3600 3 hours</td>
<td>Program Design &amp; Data Structures for Scientific Computing CS 2204 3 hours</td>
<td>Chemical Engineering Process and Product Design ChBE 4950W 4 hours</td>
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<td>Liberal Arts Core Elective 3 hours</td>
<td>General Physics Laboratory I Phys 1601L 1 hour</td>
<td>General Physics Laboratory II Phys 1602L 1 hour</td>
<td>Modeling and Simulation in Chem Eng ChBE 2250 3 hours</td>
<td>Scientific Computing Toolbox SC 3250 3 hours</td>
<td>Liberal Arts Core Elective 3 hours</td>
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<td>Programming and Problem Solving CS 1101 or 1104 3 hours</td>
<td>Chemical Process Principles ChBE 2100 3 hours</td>
<td>Technical Communication for Chemical Engineers ChBE 2900W 1 hour</td>
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Total 125 hours

*Chem 3300 is preferred
‡Satisfies 3 hours of ChBE and 3 hours of Scientific Computing electives requirements