## CHEMICAL (NANOTECHNOLOGY)

### FIRST YEAR

<table>
<thead>
<tr>
<th>SEMESTER</th>
<th>COURSES</th>
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</table>
| FALL SEMESTER  | GE A  
WRIT 150  
MATH 125 (GE F)  
CHEM 105aL (GE E)  
ENGR 102 |
| SPRING SEMESTER| CHE 120  
MATH 126 or MATH 129  
CHEM 105BL  
PHYS 151L (GE E)  
OPTIONAL ELECTIVE |

### SECOND YEAR

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<tr>
<th>SEMESTER</th>
<th>COURSES</th>
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| FALL SEMESTER  | CHE 330  
CHEM 300L  
MATH 226 or MATH 229  
PHYS 152L  
CHE 205 |
| SPRING SEMESTER| GE B  
CHEM 322aL  
CHEM 105aL or MASC 110L  
PHYS 151L (GE E)  
OPTIONAL ELECTIVE |

### THIRD YEAR

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<tr>
<th>SEMESTER</th>
<th>COURSES</th>
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</table>
| FALL SEMESTER  | GE C  
CHE 430  
CHE 442  
CHE 487  
OPTIONAL ELECTIVE |
| SPRING SEMESTER| CHEM 453  
CHE 444aL  
CHE 443  
MASC 350L  
CHE 391 |

### FOURTH YEAR

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<tr>
<th>SEMESTER</th>
<th>COURSES</th>
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| FALL SEMESTER  | GE D  
CHE 444bL  
CHE 445  
CHE 485  
CHE 491  
OPTIONAL ELECTIVE |
| SPRING SEMESTER| GE C  
CHE 446  
CHE 460L  
CHE 480  
GE B  
OPTIONAL ELECTIVE |

### MATHEMATICS (16 UNITS)
- MATH 125: Calculus I
- MATH 126 or MATH 129: Calculus II
- MATH 226 or MATH 229: Calculus III
- MATH 243: Mathematics of Phys. and Engr.

### PHYSICS (8 UNITS)
- PHYS 151L: Mechanics and Thermodynamics
- PHYS 152L: Electricity and Magnetism

### CHEMISTRY (24 UNITS)
- CHEM 105AL: General Chemistry
- CHEM 105BL: General Chemistry
- CHEM 300L: Analytical Chemistry
- CHEM 322AL: Organic Chemistry
- CHEM 430: Physical Chemistry: Thermodynamics & Kinetics
- CHEM 453: Advanced Inorganic Chemistry

### GENERAL EDUCATION (32 UNITS)
- GE A: The Arts (1 Course)
- GE B: Humanistic inquiry (2 Courses)
- GE C: Social Analysis (2 Courses)
- GE D: Life Sciences (1 Course)
- GE E: Physical Sciences (1 Course)
- GE F: Quantitative Reasoning (1 Course)
- GE G, H: Global Perspectives (2 Courses)*
- GESM: General Education Seminar (1 Course)*

### WRITING (7 UNITS)
- WRIT 150: Writing and Critical Reasoning
- WRIT 340: Advanced Writing

### ENGINEERING (54 UNITS)
- CHE 120: Intro. to Chemical Engineering
- CHE 205: Numerical Methods in Chemical Engineering
- CHE 330: Chemical Engr. Thermodynamics
- CHE 350: Intro. to Separation Processes
- CHE 391: Intro. to Nanotechnology Research
- CHE 405: Applications of Prob. & Stats. for CHE
- CHE 442: Chemical Reactor Analysis
- CHE 443: Viscous Flows
- CHE 444ABL: Chemical Engineering Lab
- CHE 445: Heat Transfer in CHE Processes
- CHE 446: Mass Transfer in CHE Processes
- CHE 460L: Chemical Process Dynamics & Control
- CHE 480: Chem. Process and Plant Design
- CHE 483: Comp.-Aided Chemical Process Design
- CHE 487: Nanotech and Nanoscale Engineering
- CHE 491: Nanotech Research for Undergrads
- ENGR 102: Engineering Freshman Academy

### SPECIAL NOTES
- Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 22 for more information.
- GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See page 21 for more information and consult your academic advisor for detailed assistance.

- OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

- NANOTECH. ELECTIVE: EE/MASC 431L, CHE 489, or CHE/PTE 463L.

- CHE 391, 491: Technical electives may be taken in place of these courses. Contact the department for approved courses.