# Chemical (Nanotechnology)

## First Year
### Fall Semester
- GE A
- WRIT 150
- MATH 125
- CHEM 105aL (GE E)
- ENGR 102

### Spring Semester
- CHE 120 (MATH 125; CHEM 154L)
- CHE 205 (MATH 125)
- MATH 126 or MATH 129
- CHEM 105bL (GE E)
- PHYS 151L (GE E)

## Second Year
### Fall Semester
- CHE 330
- CHEM 300L
- MATH 226 or MATH 229
- PHYS 152L
- OPTIONAL ELECTIVE

### Spring Semester
- GE B
- CHEM 322aL
- CHEM 300L
- MATH 245
- CHE 350
- WRIT 340

## Third Year
### Fall Semester
- GE C
- CHEM 430
- MATH 245, MATH 226
- CHE 442
- CHE 487
- OPTIONAL ELECTIVE

### Spring Semester
- CHEM 453
- CHE 444aL
- MASC 350L
- MASC 350L, PHYS 152L
- CHE 391
- NANO TECH ELECTIVE

## Fourth Year
### Fall Semester
- GE D
- CHE 444bL
- CHE 445
- CHE 485
- CHE 405 or ISE 460 or BUAD 301
- CHE 491

### 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)*
- GESEM: 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 or ISE 460: Engineering Economy
- CHE 406: Technical Entrepreneurship
- CHE 442: Chemical Reactor Analysis
- CHE 443: Viscous Flows
- CHE 444bL: 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

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## *Special Notes*

Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE C 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 pp. 16-17 for more information and consult your advisor for detailed assistance.

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

NANO TECH ELECTIVE: EE/MASC 438L, CHE 469, or CHE/PITE 433L.

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