# CHEMICAL (BIOCHEMICAL)

## FIRST YEAR

### FALL SEMESTER
- GE A 4
- WRIT 150 4
- MATH 125 (GE F) 4
- CHEM 105aL (GE E) 4
- ENGR 102 2
- CHE 120 [MATH 125, CHEM 154L] 3
- CHE 205 MATH 125 3
- MATH 126 or MATH 129 4
- CHEM 105bL (GE E) 4
- PHYS 151L (GE F) or 126 or 129 4

### SPRING SEMESTER
- CHE 330 [CHEM 104] 3
- CHEM 300L 4
- MATH 226 or MATH 229 4
- PHYS 152L or PHYS 151L 4
- OPTIONAL ELECTIVE 3
- WRIT 340 4
- MATH 245 4
- CHEM 322aL CHEM 102C 4
- CHE 350 CHEM 105bL 3

## SECOND YEAR

### FALL SEMESTER
- GE C 4
- BISC 320L (GE D) 4
- CHEM 430 CHEM 130, CHEM 143 4
- CHE 442 3
- OPTIONAL ELECTIVE 3
- BISC 330L 4
- BISC 300L 4
- CHE 443 3
- CHE 444aL 3

### SPRING SEMESTER
- GE B 4
- BISC 330L 4
- BISC 300L 4
- CHE 443 3
- CHE 444aL 3

## THIRD YEAR

### FALL SEMESTER
- GE C 4
- CHE 44bL CHEM 144B, CHEM 144C 3
- CHE 405 or CHEM 460 T/R NS 3
- CHE 485 CHEM 144B, 144C 3
- CHE 445 CHEM 144B, MATH 256 2
- OPTIONAL ELECTIVE 3
- CHE 446 CHEM 142, CHEM 146, CHEM 146A 2
- CHE 460L 3
- CHE 480 3

### SPRING SEMESTER
- GE C 4
- CHE 446 2
- CHE 460L 3
- CHE 480 3
- CHE 489 CHEM 142, CHEM 146, CHEM 146A 3
- BME 410 3

## FOURTH YEAR

### FALL SEMESTER
- BIOELECTIVE 3-4
- CHE 44bL CHEM 144B, CHEM 144C 3
- CHE 405 or 15E 460 T/R NS 3
- CHE 485 CHEM 144B, 144C 3
- CHE 445 CHEM 144B, MATH 256 2
- OPTIONAL ELECTIVE 3
- CHE 446 CHEM 142, CHEM 146, CHEM 146A 2
- CHE 460L 3
- CHE 480 3
- CHE 489 CHEM 142, CHEM 146, CHEM 146A 3
- BME 410 3

### MATHS (16 UNITS)
- MATH 125: Calculus I
- MATH 126 or MATH 129: Calculus II
- MATH 226 or MATH 229: Calculus III
- MATH 245: Mathematics of Phys. and Engr.

### PHYSICS (6 UNITS)
- PHYS 151L: Mechanics and Thermodynamics
- PHYS 152L: Electricity and Magnetism

### CHEMISTRY (20 UNITS)
- CHEM 105aL: General Chemistry
- CHEM 105bL: General Chemistry
- CHEM 300L: Analytical Chemistry
- CHEM 322aL: Organic Chemistry
- CHEM 430: Physical Chemistry: Thermodynamics & Kinetics

### BIOLOGY (12 UNITS)
- BISC 300L: Intro. to Microbiology
- BISC 320L: Molecular Biology
- BISC 330L: Biochemistry

### 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)

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

### ENGINEERING (15-19 UNITS)
- BME 410: Intro. to Biomaterials
- 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 405: Applications of Probability & Statistics for Chemical Engineers
- CHEM 460: Engineering Economy
- CHEM 442: Chemical Reaction Analysis
- CHEM 443: Viscous Flow
- CHEM 444AB: Chem. Engineering Laboratory
- CHEM 445: Heat Transfer in CHE Processes
- CHEM 446: Mass Transfer in CHE Processes
- CHEM 460L: Chemical Process Dynamics
- CHEM 480: Chem. Process and Plant Design
- CHEM 485: Computer-Aided Plant Design
- CHEM 489: Biochemical Engineering

### SPECIAL NOTES
- Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 1 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 GEMS 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 elective courses. These courses are not required.

- BIOELECTIVE: Approved Bioengineering course or BISC 403

- BISC 403: Must have 4B engineering units in order to register for this class.