

FIRST YEAR

FALL SEMESTER

GE A  4	WRIT 150 4	MATH 125 (GE F)  4	CHEM 105aL (GE E)  4	ENGR 102 2
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SPRING SEMESTER

CHE 120 (MATH 125, CHEM 105aL) 3	CHE 205 (MATH 125) 3	MATH 126 or MATH 129 (MATH 125)  4	CHEM 105bL (CHEM 105aL) 4	PHYS 151L (GE E) (MATH 125 or 126 or 226) 4
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SECOND YEAR

FALL SEMESTER

CHE 330 (MATH 226) 3	CHEM 300L (CHEM 105bL) 4	MATH 226 or MATH 229 (MATH 126 or MATH 129) 4	PHYS 152L (PHYS 151L, (MATH 226)) 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	CHEM 322aL (CHEM 105bL) 4	MATH 245 (MATH 226 or MATH 229) 4	APPROVED ELECTIVE 2-3	CHE 350 (CHEM 105bL) 3
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THIRD YEAR

FALL SEMESTER

GEC 4	TECHNICAL ELECTIVE 3	CHEM 430 (CHEM 300L or 322aL, MATH 226, PHYS 151L) 4	CHE 405 (MATH 245) 3	CHE 442 (MATH 245) 3	OPTIONAL ELECTIVE 1
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SPRING SEMESTER

GE B 4	CHE 444aL (CHE 330, 350, 442, (443)) 3	APPROVED ELECTIVE 2-3	CHE 443 (CHE 350, MATH 245) 3	CHE 476 (CHEM 322aL) 3	OPTIONAL ELECTIVE 1-2
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FOURTH YEAR

FALL SEMESTER

GE D  4	CHE 444bL (CHE 350, CHE 443) 3	CHE 445 (CHE 443, MATH 245) 2	CHE 485 (CHE 442, 443) 3	APPROVED ELECTIVE 2-3	WRIT 340 (WRIT 150) 3
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SPRING SEMESTER

GEC 4	CHE 446 (CHE 443, 445, MATH 245) 2	CHE 460L (CHE 120, (MATH 245)) 3	CHE 480 3	CHEMISTRY ELECTIVE 4	OPTIONAL ELECTIVE 2
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MATHEMATICS (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 (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
CHEMISTRY ELECTIVE: CHEM 322bL or 431

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 (54-57 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 405: Probability and Statistics for CHE
CHE 442: Chemical Reactor Analysis
CHE 443: Viscous Flow
CHE 444AL: Chemical Engineering Lab
CHE 444BL: Chemical Engineering Lab
CHE 445: Heat Transfer in ChE Processes
CHE 446: Mass Transfer in ChE Processes
CHE 460L: Chem. Proc. Dynamics & Control
CHE 476: Chemical Engineering Materials
CHE 480: Chem. Process and Plant Design
CHE 485: Computer Aided Process Design
ENGR 102: Engineering Freshman Academy
TECHNICAL ELECTIVE
APPROVED ELECTIVES

* 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 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 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.

TECHNICAL ELECTIVE: Any upper-division CHE course that is not already required.

APPROVED ELECTIVES: 8-9 units of approved electives including CE 205 (2), EE 438L (3), and ISE 460 (3) or BUAD 301 (3) or other courses with department approval.

FIRST YEAR

FALL SEMESTER

GE A  4	WRIT 150 4	MATH 125 (GE F)  4	CHEM 105aL (GE E)  4	ENGR 102 2
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SPRING SEMESTER

CHE 120 (MATH 125, CHEM 105aL) 3	CHE 205 MATH 125 3	MATH 126 or MATH 129 MATH 125  4	CHEM 105bL CHEM 105aL 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4
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SECOND YEAR

FALL SEMESTER

CHE 330 (MATH 226) 3	CHEM 300L CHEM 105bL 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	WRIT 340 WRIT 150 3	MATH 245 MATH 226 or MATH 229 4	CHEM 322aL CHEM 105bL 4	CHE 350 CHEM 105bL 3
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THIRD YEAR

FALL SEMESTER

GE C 4	BISC 320L (GE D) CHEM 105bL 4	CHEM 430 CHEM 300L or 322aL, MATH 226, PHYS 151L 4	CHE 442 MATH 245 3	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	BISC 330L BISC 320L, CHEM 322aL 4	BISC 300L BISC 320L, CHEM 322aL 4	CHE 443 (CHE 350, MATH 245) 3	CHE 444aL (CHE 350, 350, 442, 443) 3
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FOURTH YEAR

FALL SEMESTER

BIOELECTIVE 3-4	CHE 444bL CHE 350, CHE 443 3	CHE 405 MATH 245 or ISE 460 3	CHE 485 CHE 442, 443 3	CHE 445 CHE 443, MATH 245 2	OPTIONAL ELECTIVE 3-4
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SPRING SEMESTER

GE C 4	CHE 446 CHE 443, 445, MATH 245 2	CHE 460L CHE 120, (MATH 245) 3	CHE 480 3	CHE 489 CHE 330, BISC 320L 3	BME 410 CHEM 322aL 3
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MATHEMATICS (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 (8 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)

- 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 (51-52 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
- or **ISE 460:** Engineering Economy
- CHE 442:** Chemical Reactor Analysis
- CHE 443:** Viscous Flow
- CHE 444ABL:** Chem. Engineering Laboratory
- CHE 445:** Heat Transfer in ChE Processes
- CHE 446:** Mass Transfer in ChE Processes
- CHE 460L:** Chemical Process Dynamics
- CHE 480:** Chem. Process and Plant Design
- CHE 485:** Computer-Aided Plant Design
- CHE 489:** Biochemical Engineering
- ENGR 102:** Engineering Freshman Academy
- BIOELECTIVE**

* 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 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 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.

BIOELECTIVE: Approved Bioengineering course or BISC 403

BISC 403: Must have 48 engineering units in order to register for this class

CHEMICAL (ENVIRONMENTAL)

FIRST YEAR

FALL SEMESTER

GE A  4	WRIT 150 4	MATH 125 (GE F)  4	CHEM 105aL (GE E)  4	ENGR 102 2
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SPRING SEMESTER

CHE 120 (MATH 125, CHEM 105aL) 3	CHE 205 MATH 125 3	MATH 126 or MATH 129 MATH 125  4	CHEM 105bL CHEM 105aL 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4
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SECOND YEAR

FALL SEMESTER

CHE 330 (MATH 226) 3	CHEM 300L CHEM 105bL 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	CHEM 322aL CHEM 105bL 4	MATH 245 MATH 226 or MATH 229 4	WRIT 340 WRIT 150 3	CHE 350 CHEM 105bL 3
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THIRD YEAR

FALL SEMESTER

GE C 4	CHEM 430 CHEM 300L or 322aL, MATH 226, PHYS 151L 4	CE 453 (CE 309 or ENE 410) 3	CHE 442 MATH 245 3	PTE 463L MATH 245, CHEM 105aL, PHYS 151L 3	OPTIONAL ELECTIVE 1
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SPRING SEMESTER

GE B 4	ENE 428L or 429 3	CE 463L CE 453, CHEM 105bL 3	CHE 443 (CHE 350, MATH 245) 3	CHE 444aL (CHE 350, 350, 442, 443) 3	OPTIONAL ELECTIVE 2
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FOURTH YEAR

FALL SEMESTER

GE D  4	CHE 405 MATH 245 3	CHE 444bL CHE 350, CHE 443 3	CHE 485 CHE 442, 443 3	CHE 445 CHE 443, MATH 245 2	ISE 460 or BUAD 301 3
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SPRING SEMESTER

GE C 4	CHE 446 CHE 443, 445, MATH 245 2	CHE 460L CHE 120, (MATH 245) 3	CHE 480 3	CHE 486 (CHE 480 or 485) 3	CHE 476 CHEM 322aL 3
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MATHEMATICS (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 (8 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

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 (63 UNITS)

CE 453: Water Quality Control
CE 463L: Water Chemistry and Analysis
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: Prob. and Stats. for Chem. Engr.
CHE 442: Chemical Reactor Analysis
CHE 443: Viscous Flow
CHE 444AL: Chem. Engineering Laboratory
CHE 444BL: Chem. Engineering Laboratory
CHE 445: Heat Transfer in ChE Processes
CHE 446: Mass Transfer in ChE Processes
CHE 460L: Chemical Process Dynamics
CHE 476: Chemical Engineering Materials
CHE 480: Chem. Process and Plant Design
CHE 485: Computer Aided Process Design
CHE 486: Design of Environ. Benign Plants
ENE 428L: Air Pollution Fundamentals
 or **ENE 429:** Air Pollution Control
ENGR 102: Engineering Freshman Academy

ISE 460: Engineering Economy
 or **BUAD 301:** Technical Entrepreneurship
PTE 463L: Trans. Processes in Porous Media

* 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 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 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.

FIRST YEAR

FALL SEMESTER

GE A  4	WRIT 150 4	MATH 125 (GE F)  4	CHEM 105aL (GE E)  4	ENGR 102 2
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SPRING SEMESTER

CHE 120 (MATH 125, CHEM 105aL) 3	CHE 205 MATH 125 3	MATH 126 or MATH 129 MATH 125  4	CHEM 105bL CHEM 105aL 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4
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SECOND YEAR

FALL SEMESTER

CHE 330 (MATH 226) 3	CHEM 300L CHEM 105bL 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	CHEM 322aL CHEM 105bL 4	MATH 245 MATH 226 or MATH 229 4	CHE 350 CHEM 105bL 3	WRIT 340 WRIT 150 3
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THIRD YEAR

FALL SEMESTER

GEC 4	CHEM 430 CHEM 300L or 322aL, MATH 226, PHYS 151L 4	CHE 442 MATH 245 3	CHE 487 CHEM 105aL or MASC 110L 3	OPTIONAL ELECTIVE 4
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SPRING SEMESTER

CHEM 453 CHEM 105bL, 322aL 4	CHE 444aL CHE 330, 350, 442, (443) 3	CHE 443 (CHE 350, MATH 245) 3	MASC 350L CHEM 105aL or MASC 110L, PHYS 152L 3	CHE 391 2	NANOTECH. ELECTIVE 3
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FOURTH YEAR

FALL SEMESTER

GE D  4	CHE 444bL CHE 350, CHE 443 3	CHE 445 CHE 443, MATH 245 2	CHE 485 CHE 442, 443 2	CHE 405 MATH 245 or ISE 460 or BUAD 301 3	CHE 491 CHE 391 2
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SPRING SEMESTER

GEC 4	CHE 446 CHE 443, 445, MATH 245 2	CHE 460L CHE 120, (MATH 245) 3	CHE 480 3	GE B 4	OPTIONAL ELECTIVE 2
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MATHEMATICS (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 (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 or **ISE 460:** Engineering Economy or **BUAD 301:** Technical Entrepreneurship
- 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 485:** Comp.-Aided Chemical Process Design
- CHE 487:** Nanotech and Nanoscale Engineering
- CHE 491:** Nanotech Research for Undergrads
- ENGR 102:** Engineering Freshman Academy

- MASC 350L:** Design, Synthesis and Processing of Engineering Materials
- NANOTECH. ELECTIVE**

*** 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 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 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.

NANOTECH. ELECTIVE: EE/MASC 438L, 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.

FIRST YEAR

FALL SEMESTER

GE A  4	WRIT 150 4	MATH 125 (GE F)  4	CHEM 105aL (GE E)  4	ENGR 102 2
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SPRING SEMESTER

CHE 120 (MATH 125, CHEM 105aL) 3	CHE 205 MATH 125 3	MATH 126 or MATH 129 MATH 125  4	CHEM 105bL CHEM 105aL 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4
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SECOND YEAR

FALL SEMESTER

CHE 330 (MATH 226) 3	CHEM 322aL CHEM 105bL 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	WRIT 340 WRIT 150 3
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SPRING SEMESTER

GE B 4	CHEM 300L CHEM 105bL 4	MATH 245 MATH 226 or MATH 229 4	CHE 350 CHEM 105bL 3	CHE 476 CHEM 322aL 3
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THIRD YEAR

FALL SEMESTER

CHEM 430 CHEM 300L or 322aL, MATH 226, PHYS 151L 4	CHE 405 MATH 245 3	CHE 442 MATH 245 3	PTE 461 (PTE 463L) 3	PTE 463L MATH 245, CHEM 105aL, PHYS 151L 3	OPTIONAL ELECTIVE 2
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SPRING SEMESTER

GE B 4	CHE 444aL CHE 330, 350, 442, (443) 3	PTE 464L PTE 463L 3	CHE 443 (CHE 350, MATH 245) 3	GE C 4	OPTIONAL ELECTIVE 1
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FOURTH YEAR

FALL SEMESTER

GE D  4	CHE 444bL CHE 350, CHE 443 3	CHE 445 CHE 443, MATH 245 2	CHE 485 CHE 442, 443 3	PTE 465L PTE 464L 3	ISE 460 or BUAD 301 3
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SPRING SEMESTER

GE C 4	CHE 446 CHE 443, 445, MATH 245 2	CHE 460L CHE 120, (MATH 245) 3	CHE 480 3	CHEMISTRY ELECTIVE 4	OPTIONAL ELECTIVE 2
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MATHEMATICS (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 (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
CHEMISTRY ELECTIVE: CHEM 322bL or 431

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 (60 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 405: Probability and Statistics for CHE
CHE 442: Chemical Reactor Analysis
CHE 443: Viscous Flow
CHE 444AL: Chemical Engineering Lab
CHE 444BL: Chemical Engineering Lab
CHE 445: Heat Transfer in ChE Processes
CHE 446: Mass Transfer in ChE Processes
CHE 460L: Chemical Process Dynamics
CHE 476: Chemical Engineering Materials
CHE 480: Chem. Process and Plant Design
CHE 485: Computer Aided Process Design
ENGR 102: Engineering Freshman Academy
ISE 460: Engineering Economy
 or **BUAD 301:** Technical Entrepreneurship
PTE 461: Formation Evaluation
PTE 463L: Trans. Processes in Porous Media
PTE 464L: Petroleum Reservoir Engineering
PTE 465L: Drill. Tech. & Subsurface Meth.

* 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 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 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.

FIRST YEAR

FALL SEMESTER

GE A  4	WRIT 150 4	MATH 125 (GE F)  4	CHEM 105aL (GE E)  4	ENGR 102 2
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SPRING SEMESTER

CHE 120 (MATH 125, CHEM 105aL) 3	CHE 205 MATH 125 3	MATH 126 or MATH 129 MATH 125  4	CHEM 105bL CHEM 105aL 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4
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SECOND YEAR

FALL SEMESTER

CHE 330 (MATH 226) 3	CHEM 300L CHEM 105bL 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	CHEM 322aL CHEM 105bL 4	MATH 245 MATH 226 or MATH 229 4	WRIT 340 WRIT 150 3	CHE 350 CHEM 105bL 3
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THIRD YEAR

FALL SEMESTER

POLYMER/MATERIALS SCI. ELECTIVE 3	CHEM 430 CHEM 300L or 322aL, MATH 226, PHYS 151L 4	CHE 442 MATH 245 3	CHE 472 3	GE C 4	OPTIONAL ELECTIVE 1
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SPRING SEMESTER

GE B 4	CHEMISTRY ELECTIVE 4	CHE 444aL CHE 350, 350, 442, (443) 3	CHE 443 (CHE 350, MATH 245) 3	CHE 476 CHEM 322aL or MASC 310 3	OPTIONAL ELECTIVE 1
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FOURTH YEAR

FALL SEMESTER

GE D  4	CHE 444bL CHE 350, CHE 443 3	CHE 445 CHE 443, MATH 245 2	CHE 485 CHE 442, 443 3	POLYMER/MATERIALS SCI. ELECTIVE 3	CHE 405 MATH 245 or ISE 460 or BUAD 301 3
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SPRING SEMESTER

GE C 4	CHE 446 CHE 443, 445, MATH 245 2	CHE 460L CHE 120, (MATH 245) 3	CHE 480 3	POLYMER/MATERIALS SCI. ELECTIVE 3	MASC 350L CHEM 105a or CHEM 115a or MASC 110L and PHYS 152 3
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MATHEMATICS (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 (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
CHEMISTRY ELECTIVE: CHEM 322bL or 431

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 (57 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 405: Probability and Statistics for CHE or **ISE 460:** Engineering Economy or **BUAD 301:** Technical Entrepreneurship
CHE 442: Chemical Reactor Analysis
CHE 443: Viscous Flow
CHE 444ABL: Chemical Engineering Lab
CHE 445: Heat Transfer in ChE Processes
CHE 446: Mass Transfer in ChE Processes
CHE 460L: Chemical Process Dynamics
CHE 472: Polymer Science & Engineering
CHE 476: Chemical Engineering Materials or **MASC 310:** Materials Behavior and Processing
CHE 480: Chem. Process and Plant Design
CHE 485: Computer Aided Process Design
ENGR 102: Engineering Freshman Academy
MASC 350L: Nanostructured Materials: Design, Synthesis, and Processing
POLYMER / MATERIALS ELECTIVES

* 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 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 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.

POLYMER/MAT ELECTIVES: Select 9 units from BME 410, CHE 474L, 475, 477, 487, EE 438L, or MASC 440.

CHEMICAL (SUSTAINABLE ENERGY)

FIRST YEAR

FALL SEMESTER

GE A  4	WRIT 150 4	MATH 125 (GE F)  4	CHEM 105aL (GE E)  4	ENGR 102 2
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SPRING SEMESTER

CHE 120 (MATH 125, CHEM 105aL) 3	CHE 205 MATH 125 3	MATH 126 or MATH 129 MATH 125  4	CHEM 105bL CHEM 105aL 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4
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SECOND YEAR

FALL SEMESTER

CHE 330 (MATH 226) 3	CHEM 300L CHEM 105bL 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	CHEM 322aL CHEM 105bL 4	MATH 245 MATH 226 or MATH 229 4	CHE 350 CHEM 105bL 3	WRIT 340 WRIT 150 3
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THIRD YEAR

FALL SEMESTER

GE C 4	CHEM 430 (CHEM 300L or 322aL, MATH 226, PHYS 151L) 4	CHE 442 MATH 245 3	CHE 450 3	OPTIONAL ELECTIVE 4
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SPRING SEMESTER

CHEM TECH. ELECTIVE 4	CHE 444aL (CHE 330, 350, 442, (443)) 3	CHE 443 (CHE 350, MATH 245) 3	CHE 476 CHEM 322a or MASC 350L CHEM 105aL or MASC 110L, PHYS 152L 3	SUSTAINABLE ENERGY ELECTIVE 3	OPTIONAL ELECTIVE 2
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FOURTH YEAR

FALL SEMESTER

GE D  4	CHE 444bL CHE 350, CHE 443 3	CHE 445 CHE 443, MATH 245 2	CHE 485 CHE 442, 443 3	CHE 405 MATH 245 or ISE 460 or *BUAD 301 3	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE C 4	CHE 446 CHE 443, 445, MATH 245 2	CHE 460L CHE 120, (MATH 245) 3	CHE 480 3	GE B 4	OPTIONAL ELECTIVE 2
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MATHEMATICS (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 (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 and Kinetics
- Chemistry Technical Electives:**
- CHEM 322BL:** Organic Chemistry or **CHEM 431:** Physical Chemistry: Quantum Mechanics
- or **CHEM 453:** Advance 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 405:** Applications of Prob. & Stats. for ChE or **ISE 460:** Engineering Economy or **BUAD 301:** Technical Entrepreneurship
- 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 450:** Sustainable Energy
- CHE 460L:** Chemical Process Dynamics & Control
- CHE 476:** Chem. Engineering Materials or **MASC 350L:** Nanostructured Materials: Design, Synthesis and Processing
- CHE 480:** Chem. Process and Plant Design

- CHE 485:** Comp.-Aided Chemical Process Design
- ENGR 102:** Engineering Freshman Academy

* 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 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 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.

SUSTAINABLE ENERGY ELECTIVE (3): Biofuel (CHE 301 or CHEM 488 or CHE 489); Solar (CHE 487 or EE 513); Geothermal (PTE 463L)

*Must have 49 engineering units to be able to take BUAD 301.