



This course plan is a recommended sequence for this major. Courses designated as critical (!) may have a deadline for completion and/or affect time to graduation. Please see the Program Notes section for details regarding "critical courses" for this particular Program of Study.

!	Course Subject and Title	Credit Hours	Min. Grade <sup>1</sup>	Program GPA <sup>2</sup>	Code	Prerequisites	Notes
<b>Semester One (16-17 Credit Hours)</b>							
	ENGL 101 Critical Reading and Composition	3	C		CC-CMW		
!	MATH 141 Calculus 1 <sup>3</sup>	4	C		CC-ARP	C or better in MATH 112/115/116 or Math placement test score	
!	CHEM 111 General Chemistry I	3	C		CC-SCI	C or better in MATH 111/115/122/141 or higher math or Math placement test; Coreq: CHEM 111L	
!	CHEM 111L General Chemistry I Lab	1	C		CC-SCI	MATH 111 or 115; Prereq or Coreq: CHEM 111	
	ECHE 101 Intro. to Chemical Engineering (or ENCP 101) <i>fall only</i>	2		*	PR		
	Computer Programming Elective <sup>4</sup>	3-4			PR		
<b>Semester Two (18 Credit Hours)</b>							
	ENGL 102 Rhetoric and Composition	3			CC-CMW CC-INF	C or better in ENGL 101	
!	MATH 142 Calculus II	4	C		CC-ARP	C or better in MATH 141	
!	CHEM 112 General Chemistry II	3	C		PR	C or better in CHEM 111, MATH 111/115/122/141 or higher math; Coreq: CHEM 112L	
!	CHEM 112L General Chemistry II Lab	1	C		PR	C or better in CHEM 111/111L/141 Prereq or Coreq: CHEM 112	
!	PHYS 211 Essentials of Physics I	3	C		CC-SCI	C or better in MATH 141; Coreq: PHYS 211L	
!	PHYS 211L Essentials of Physics I Lab	1	C		CC-SCI	Prereq or Coreq: C or better in PHYS 211	
!	ECHE 300 Chemical Process Principles	3	C	*	PR	D or better in MATH 141; Prereq or Coreq: D or better in CHEM 112 or 142	
<b>Semester Three (16 Credit Hours)</b>							
	Professional Development Elective <sup>5</sup>	1		*	PR		
!	ECHE 310 Intro. to Chem. Engr. Thermodynamics (or ENCP 290)	3	C	*	PR	C or better in ECHE 300; Prereq or Coreq: MATH 241	
!	MATH 241 Vector Calculus	3			PR	C or better in MATH 142	
!	CHEM 333 Organic Chemistry I	3	C		PR	C or better in CHEM 112 or CHEM 142	
	Chemistry Lab Electives <sup>6</sup>	2			PR	See Bulletin listing.	
	PHYS 212 Essentials of Physics II	3			PR	C or better PHYS 211 and MATH 142; Coreq: PHYS 212L	
!	PHYS 212L Essentials of Physics II Lab.	1			PR	Prereq or Coreq: C or better in PHYS 212	
<b>Semester Four (18 Credit Hours)</b>							
!	ECHE 311 Chem. Engr. Thermodynamics	3	C	*	PR	C or better in ECHE 310, ENCP 290, CHEM 541, BMEN 290, EMCH 290 or PHYS 306	
!	ECHE 320 Chem. Engr. Fluid Mechanics (or ENCP 360)	3	C	*	PR	D or better in PHYS 211; Prereq or Coreq: D or better in MATH 241	
	ECHE 456 Comp. Methods for Engr. Apps.	3		*	MR	Prereq or Coreq: D or better in MATH 242	
!	MATH 242 Elem. Differential Equations	3	C		PR	C or better in MATH 142	
	CHEM 334 Organic Chemistry II	3			PR	C or better in CHEM 333	
	Carolina Core GHS <sup>7</sup>	3			CC-GHS		
<b>Semester Five (15-18 Credit Hours)</b>							
!	ECHE 321 Heat-Flow Analysis	3		*	MR	C or better in ECHE 320 or ENCP 360 & MATH 242; Prereq or Coreq: D or better in ECHE 456	
!	ECHE 440 Separation Process Design <i>fall only</i>	3		*	MR	C or better in ECHE 300; Prereq or Coreq: ECHE 311	
	ECHE 550 Chem.-Proc. Dynamics & Control <i>fall only</i>	3		*	MR	C or better in ECHE 300 & MATH 242; D or better in ECHE 456	
	Chemistry Elective <sup>9</sup>	3			PR	See Bulletin listing.	
	Carolina Core GSS <sup>7</sup>	3			CC-GSS		
	Carolina Core GFL <sup>12</sup>	0-3			CC-GFL		
<b>Semester Six (15-18 Credit Hours)</b>							
!	ECHE 322 Mass Transfer <i>spring only</i>	3		*	MR	D or better in ECHE 321	
!	ECHE 460 Chemical Engr. Lab 1 <i>spring only</i>	3		*	MR	Prereq or Coreq: ECHE 311 & ECHE 321	
	Engineering Elective <sup>10</sup>	3		*	PR	See Bulletin listing.	
	Technical Elective <sup>11</sup>	3			PR	See Bulletin listing.	
	Carolina Core AIU <sup>7</sup>	3			CC-AIU		
	Carolina Core GFL <sup>12</sup>	0-3			CC-GFL		
<b>Semester Seven (15 Credit Hours)</b>							
!	ECHE 430 Chemical Engineering Kinetics	3		*	MR	C or better in ECHE 311; Prereq or Coreq: D or better in ECHE 321 or BMEN 354	
!	ECHE 461 Chemical Engineering Lab II <i>fall only</i>	3		*	MR	D or better in ECHE 460; Prereq or Coreq: D or better in ECHE 430 & 440	
!	ECHE 465 Chem. Proc. Anal. & Design I <i>fall only</i>	3		*	MR	Prereq or Coreq: D or better in ECHE 430 & 440	
	Technical Elective <sup>11</sup>	3			PR	See Bulletin listing.	

PHIL 325 Engineering Ethics <sup>7</sup>	3			CC-CMS CC-VSR	
<b>Semester Eight (18 Credit Hours)</b>					
ECHE 466 Chemical Process Analysis & Design II <i>spring only</i>	3	*		MR CC-INT	D or better in ECHE 430, 440, 465; Prereq or Coreq: ECHE 322, 567
ECHE 567 Process Safety, Health & Loss Prev. <i>spring only</i>	3	*		MR	Prereq or Coreq: D or better in ECHE 466
Engineering Elective <sup>10</sup>	3	*		PR	See Bulletin listing.
Technical Elective <sup>11</sup>	3			PR	See Bulletin listing.
Technical Elective <sup>11</sup>	3			PR	See Bulletin listing.
Career Elective <sup>8</sup>	3			PR	

### Graduation Requirements Summary

Minimum Total Hours	Minimum Major Requirements Hours	Minimum College & Program Requirements Hours	Minimum Carolina Core Hours	Minimum Institutional GPA
131	33	64	34	2.00

- Regardless of individual course grades, students must maintain a minimum 2.00 cumulative GPA.
- Some colleges require a minimum GPA for major courses. Courses indicated in this column are included in the Chemical Engr. program GPA of 2.00.
- Students who place into MATH 115 will be required to successfully complete it before taking MATH 141.
- Computer Programming Elective (3-4 hours):** CSCE 145, 106.
- A list of acceptable Professional Development Elective courses is maintained in the department office and in the Bulletin. The list includes: ECHE 202 & ECHE 203.
- Chemistry Lab Electives (2 hours):** CHEM 321L (or 322L), 331L (or 333L), 332L (or 334L), 541L, 542L, 550L, 621L.
- The [Carolina Core](#) provides the common core of knowledge, skill and academic experience for all Carolina undergraduate students.
- Career Elective:** The list includes Engineering Electives, Chemistry Electives, Chemistry Lab Electives and all Technical Electives courses, and other courses listed in the bulletin.
- Chemistry Electives (3 hours):** CHEM 321 OR 322, 511, 533, 541, 542, 545, 550, 555, 556, 621, 622, 623, 624, 633, 643, 644, 655.
- Engineering Electives (6 hours):** ENCP 200 (or ECIV 200 or EMCH 200), 201 (or EMCH 201), 210 (or ECIV 210 or EMCH 310), 260 (or ECIV 220 or EMCH 260), 330 (or EMCH 330), 440, 460, 481, 499, 540; **BMEN** 212, 240, 263, 271, 290, 300 and above, except 301 and 303; **CSCE** 211, 212, 240, 274, 313, 317, 520, 567, 582, 587; **ECHE** 202 (or 203), 372, 389, 497, 499, 520, 521, 571, 572, 573, 574, 575, 589; **ECIV** 300 and above, except 360; **ELCT** 220, 221, 222, 300 and above; **EMCH** 300 and above, except 354 and 360.
- Technical Electives (12 hours):** Includes all courses listed as Engineering Electives, Chemistry Electives, & Chemistry Lab Electives as well as **ENCP** 102 (or EMCH 111), 530, 533, 535, 536; **MATH** 300, 374, MATH 500 and above; **STAT** 500 and above except 541 and 591; **BIOL** 101, 101L, 102, 102L, 120, 120L, 200 and above; **ENVR** 231, 321, 331; **GEOL** 300 and above; **MSCI** 300 and above; **PHYS** 300 and above; **CSCE** 145 (unless completed as the Computer Programming Elective), 146, 210, 215, 350; **ACCT** 222; **FINA** 333; **MGMT** 371; **MGSC** 290; **MKTG** 350.
- Students in the College of Engineering & Computing are required to demonstrate proficiency in one foreign language equivalent to the 121 course by 1) a score of two or better on the foreign language placement test; or 2) completion of the 109 & 110 courses in FREN, GERM, LATN, or SPAN or completion of the 121 course in another foreign language. Students who do not place out of the GFL requirement may need to take additional hours to meet this requirement.

### Program Notes:

- Courses identified as "critical" must be completed by the semester in which they are listed in order to ensure a timely graduation due to prerequisite requirements for subsequent required courses.
- All undergraduate students must take a 3-credit course or its equivalent with a passing grade that covers the founding documents. This course may fulfill any requirement in the program of study. Courses that meet this requirement are listed in the academic bulletin.
- A student cannot repeat courses from the College of Engineering and Computing in which they earned a grade of C or better. In addition, a student cannot repeat any course from the College a second time. No more than four courses from the College of Engineering and Computing may be repeated in order to satisfy the requirements for any degree from the College, regardless of satisfactory work. For this purpose, withdrawal from a course with a grade of **W** is not regarded as enrollment in that course. A student that does not satisfactorily complete a degree-required College course within two attempts must change major or transfer out of the College of Engineering and Computing.
- The B.S.E. with Distinction is available to students majoring in chemical engineering who wish to participate in significant research and/or design activities in chemical engineering with a faculty mentor. More details are available on the Bulletin.
- A concentration in Biomolecular Engineering, Energy, Interdisciplinary Engineering, Materials, Environmental Engineering, or Numerical Methods & Computing is available to students majoring in chemical engineering. More details are available in the Bulletin.
- The last 25% of a student's degree must be completed in residence at the University, and at least half of the hours in the student's major courses and in the student's minor courses (if applicable) must be taken at the University.
- Disclaimer: Prerequisites on courses are subject to change. Please refer to Bulletin.

**University Requirements:** Bachelor's degree-seeking students must meet Carolina Core (general education) requirements. For more information regarding these requirements, please visit the [Carolina Core](#) page on the University website.

Codes:	
<b>CC</b>	Carolina Core
<b>CC-AIU</b>	Carolina Core-Aesthetic and Interpretive Understanding
<b>CC-ARP</b>	Carolina Core-Analytical Reasoning and Problem-Solving
<b>CC-CMS</b>	Carolina Core-Effective, Engaged, and Persuasive Communication: Spoken Component
<b>CC-CMW</b>	Effective, Engaged, and Persuasive Communication: Written Component
<b>CC-GFL</b>	Carolina Core-Global Citizenship and Multicultural Understanding: Foreign Language
<b>CC-GHS</b>	Carolina Core – Historical Thinking
<b>CC-GSS</b>	Carolina Core – Social Sciences
<b>CC-INF</b>	Carolina Core – Information Literacy
<b>CC-INT</b>	Carolina Core – Integrative Course
<b>CC-SCI</b>	Carolina Core – Scientific Literacy
<b>CC-VSR</b>	Carolina Core – Values, Ethics, and Social Responsibility
<b>CR</b>	College Requirement
<b>MR</b>	Major Requirement
<b>PR</b>	Program Requirement

Disclaimer: Major maps are only a suggested or recommended sequence of courses required in a program of study. Please contact your academic advisor for assistance in the application of specific coursework to a program of study and course selection and planning for upcoming semesters.