



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 ¹ | Program GPA ² | Code | Prerequisites | Notes |
|---|---|--------------|-------------------------|--------------------------|------------------|--|-------|
| Semester One (17 Credit Hours) | | | | | | | |
| | ENGL 101 Critical Reading and Composition | 3 | C | | CC-CMW | | |
| ! | MATH 141 Calculus 1 ³ | 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 | |
| | EMCH 101 Intro. to Mechanical Engineering (or ENCP 101) | 3 | | * | PR | | |
| | Free Elective ⁷ (UNIV 101 recommended) | 3 | | | PR | See Bulletin listing. | |
| Semester Two (17 Credit Hours) | | | | | | | |
| | 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 | |
| | 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 | |
| | EMCH 111 Intro. to Computer-Aided Design (or ENCP 102) | 3 | | * | PR | | |
| | Carolina Core GHS ⁴ | 3 | | | CC-GHS | | |
| Semester Three (15 Credit Hours) | | | | | | | |
| ! | EMCH 200 Statics (or ENCP 200) | 3 | C | * | PR | C or better in MATH 141 | |
| ! | EMCH 201 Intro. to Applied Numerical Methods (cross-listed: ENCP 201, PHYS 311) | 3 | | * | PR | MATH 141; Prereq or Coreq: MATH 142 | |
| | ELCT 220 Electrical Engineering for Non-Majors (or ELCT 221) | 3 | | * | PR | MATH 142; C or better in either ELCT 102 or AESP 265, or D or better in ELCT 220 (ELCT 221) | |
| ! | MATH 241 Vector Calculus | 3 | C | | PR | C or better in MATH 142 | |
| | Carolina Core GSS ⁴ | 3 | | | CC-GSS | | |
| Semester Four (15 Credit Hours) | | | | | | | |
| ! | EMCH 260 Solid Mechanics (or ENCP 260) | 3 | | * | PR | C or better in MATH 241 & EMCH 200 or ENCP 200 | |
| ! | EMCH 290 Thermodynamics (or ENCP 290) | 3 | | * | PR | C or better in PHYS 211 & MATH 142 | |
| | CSCE 206 Sci. Applications Programming | 3 | | | PR | MATH 122 or 141 | |
| ! | MATH 242 Elem. Differential Equations | 3 | C | | PR | C or better in MATH 142 | |
| | Math/Science Elective ⁵ | 3 | | | PR | | |
| Semester Five (16 Credit Hours) | | | | | | | |
| ! | EMCH 310 Dynamics (or ENCP 210) | 3 | | * | MR | C or better in MATH 242 & EMCH 200 or ENCP 200 | |
| ! | EMCH 360 Fluid Mechanics (or ENCP 360) | 3 | | * | MR | C or better in EMCH 200 or ENCP 200 or BMEN 212 & D or better in EMCH 290 or ENCP 290 or BMEN 290 & C or better in MATH 242 | |
| ! | EMCH 361 Mechanical Engineering Lab I | 3 | | * | MR | D or better in EMCH 290, ENCP 290, or BMEN 290. D or better in EMCH 260 or ENCP 260. D or better in EMCH 201 or ENCP 201. D or better in ELCT 220 or ELCT 221. | |
| | EMCH 368 Mechatronics | 4 | | * | MR | D or better in CSCE 206, & ELCT 220 or ELCT 221, & EMCH 260 or ENCP 260 | |
| | Carolina Core VSR ⁴ | 3 | | | CC-VSR | | |
| Semester Six (15 Credit Hours) | | | | | | | |
| ! | EMCH 332 Kinematics | 3 | | * | MR | D or better in EMCH 310 or ENCP 210 | |
| ! | EMCH 354 Heat Transfer | 3 | | * | MR | D or better in EMCH 360 or AESP 265 or ENCP 360 | |
| ! | EMCH 362 Mechanical Engineering Lab II | 3 | | * | MR | D or better in EMCH 361; Prereq or Coreq: D or better in EMCH 360 or AESP 265 or ENCP 360 & D or better in EMCH 310 or ENCP 210 | |
| | EMCH 367 Controls | 3 | | * | MR | D or better in EMCH 368 & either EMCH 310 or ENCP 210 | |
| ! | EMCH 380 Project Management | 3 | | * | MR | C or better in MATH 241 | |
| Semester Seven (15 Credit Hours) | | | | | | | |
| | EMCH 327 Machine Design or EMCH 394 Applied Thermodynamics | 3 | | * | MR | EMCH 260 (EMCH 327); D or better in EMCH 201 or ENCP 201 & D or better in EMCH 290 or ENCP 290 (EMCH 394) | |
| ! | EMCH 371 Materials | 3 | | * | MR | D or better in EMCH 260 or ENCP 260 | |
| ! | EMCH 427 Design I | 3 | | * | MR CC-INT | D or better in EMCH 380; Prereq or Coreq: D or better in EMCH 332, 354, 362, 371, & 368 | |
| | EMCH Elective ⁶ | 3 | | * | PR | See Bulletin listing. | |
| | Math/Science Elective ⁵ | 3 | | | PR | See Bulletin listing. | |

| Semester Eight (15 Credit Hours) | | | | | | |
|---|-----|--|---|--------|--|-------------------------|
| EMCH 377 Manufacturing | 3 | | * | MR | | D or better in EMCH 371 |
| EMCH 428 Design II | 3 | | * | MR | | D or better in EMCH 427 |
| EMCH Elective ⁶ | 3 | | * | PR | | See Bulletin listing. |
| Free Elective ⁷ | 3 | | | PR | | See Bulletin listing. |
| Carolina Core AIU ⁴ | 3 | | | CC-AIU | | |
| Take during any semester (0-9 Credit Hours) | | | | | | |
| Carolina Core CMS ⁴ | 0-3 | | | CC-CMS | | |
| Carolina Core GFL ⁴ | 0-6 | | | CC-GFL | | |

Graduation Requirements Summary

| Minimum Total Hours | Minimum Major Requirements Hours | College & Program Requirements Hours | Minimum Carolina Core Hours | Minimum Institutional GPA |
|---------------------|----------------------------------|--------------------------------------|-----------------------------|---------------------------|
| 125 | 43 | 48 | 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 Mechanical Engineering program GPA of 2.00.
- Students who place into MATH 115 will be required to successfully complete it before taking MATH 141.
- The [Carolina Core](#) provides the common core of knowledge, skill and academic experience for all Carolina undergraduate students. Students are encouraged to complete PHIL 325 Engineering Ethics as an overlay course for VSR and CMS. Students in the College of Engineering and 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 and 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.
- Math/Science Electives** (6 hours): BIOL 110 or 300 and above, CHEM 112 or higher, MATH 300 or higher, PHYS 212 or higher, STAT 506 or higher.
- EMCH Electives** (6 hours): EMCH 308, 441, 460, 497, or any EMCH course numbered 500 or higher.
- Free Elective** (6 hours): Any course taken at the University or transferred in as a University course that does not essentially duplicate a course otherwise applied to the degree. A list of such courses that **cannot** be used as a free elective is maintained in the department office. This list includes: **ENCP** 101, 102, 200, 201, 210, 260, 290, 330, 360, 491, 492; **ECHE** 101, 310, 320, 321; **ECIV** 101, 111, 200, 201, 210, 220, 360; **BMEN** 101, 211, 260; **ELCT** 101.

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

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.