

B.S. in Systems Engineering

Catalog Year 2024-25

Below is the *advised sequence* of courses for this degree program on Main Campus as of 10/17/2023.

Official degree requirements and course prerequisites are in the University General Catalog; prerequisites are subject to change.

| Course Number and Title | Units | Prerequisites/Enrollment Requirements |
|--|--------------|---|
| 1st Semester | | |
| MATH 122A/B or MATH 125 Calculus I with Applications | 5/3 | Appropriate Math Placement |
| *CHEM 151 Chemical Thinking I or CHEM 161/163 | 4 | Appropriate Math Placement |
| ENGL 101 or 107 or 109H First-Year Composition | 3 | |
| ENGR102A/B Introduction to Engineering or ENGR 102 | 3 | <u>ENGR102A</u> : MATH 112 <u>ENGR102B</u> : Pre- or Co-requisite of MATH 112 or higher; First-Year Status; College of Engineering Major |
| UNIV 101 Intro to the General Education Experience | 1 | |
| Semester Total | 16/14 | |
| 2nd Semester | | |
| MATH 129 Calculus II | 3 | MATH 122B or 125 with C or better |
| *CHEM 152 General Chemistry II or CHEM 162/164 or MSE 110 Solid State Chemistry or MCB 181R/L Intro Biology I | 4 | <u>CHEM 152 and MSE 110</u> : CHEM 151 or 141/143 or 161/163; <u>MCB 181R/L</u> : Appropriate Math Placement Level |
| ECE 101 Programming I or ECE 175 Computer Programming for Engr Applications or CSC 110 Intro to Computer Programming I | 3/4 | <u>ECE 101</u> : Math 112; <u>ECE175</u> : Concurrent Enrollment or completion of MATH 122B or 125; <u>CSC110</u> : MATH 112 with C or better |
| ENGL 102 or 108 First-Year Composition | 3 | ENGL 101 or ENGL 107 |
| *PHYS 141 Introductory Mechanics or PHYS 161H | 4 | MATH 122B or 125 or Appropriate Math Placement Level |
| Semester Total | 17/18 | |
| 3rd Semester | | |
| SIE 250 Introduction to Systems and Industrial Engineering | 3 | MATH 129 |
| MATH 223 Vector Calculus | 4 | MATH 129 with C or better |
| PHYS 241 Introductory Electricity and Magnetism or PHYS 261H | 4 | <u>PHYS 241 or 261H</u> : PHYS 141 or 140 or 161H; MATH 129 or Appropriate Math Placement Level |
| SIE 277 Object-Oriented Modeling and Design | 3 | ECE 175 or CSC 110 |
| General Education: Exploring Perspectives (Humanist) | 3 | |
| Semester Total | 17 | |
| 4th Semester | | |
| SIE 265 Engineering Management I | 3 | MATH 122B or 125 |
| SIE 270 Mathematical Foundations of SIE | 3 | ECE 175 or CSC 110; MATH 129; PHYS 141 |
| SIE 295S Systems and Industrial Engineering Sophomore Colloquium | 1 | SIE 250 or SIE 265 concurrently enrolled |
| MATH 254 Intro to Ordinary Differential Equations | 3 | MATH 129 or 223 with C or better |
| Engineering Minor Course | 3 | |
| General Education: Exploring Perspectives (Artist) | 3 | |
| Semester Total | 16 | |

*Each of the following foundational science courses satisfies the requirements for General Education: Exploring Perspectives (Natural Scientist): CHEM 151 or 152 or 161 or 162; or PHYS 141 or 161H.

Advanced Standing is required for 300- and 400-level engineering courses (see your academic advisor for details).

| Course Number and Title | Units | Comments |
|---|--------------|---|
| 5th Semester | | |
| SIE 305 Introduction to Engineering Probability and Statistics | 3 | |
| SIE 340 Deterministic Operations Research | 3 | |
| ECE 207 Elements of Electrical Engineering or ECE 220 Basic Circuits or AME 230 Thermodynamics or BE 284 Biosystems Thermal Engineering (Fall Only) or CE 214 Statics or CHEE 201 Elements of Chemical Engineering I (Fall Only) | 3-5 | |
| Engineering Minor Course | 3 | |
| Engineering Minor Course | 3 | |
| Semester Total | 15-17 | |
| 6th Semester | | |
| SIE 321 Probabilistic Models in Operations Research | 3 | |
| SIE 330R Engineering Experiment Design | 3 | |
| SIE 370 Embedded Computer Systems | 4 | |
| SIE 454A The Systems Engineering Process | 3 | |
| General Education: Exploring Perspectives (Social Scientist) | 3 | |
| Semester Total | 16 | |
| 7th Semester | | |
| ENGR 498A Interdisciplinary Capstone | 3 | Senior Status, Prerequisite: SIE 454A, SIE 370; Corequisite: SIE 330R, SIE 410A |
| SIE 410A Human Factors & Ergonomics in Design or SIE 411 Human Machine Interaction | 3 | |
| SIE 431 Simulation Modeling and Analysis | 3 | |
| Engineering Minor Course | 3 | |
| **Technical Writing: CE 301 or ENGL 306 or 307 or 308 or SIE 415 | 3 | Consult major advisor for course approval |
| †General Education: Building Connections | 3 | |
| Semester Total | 18 | |
| 8th Semester | | |
| ENGR 498B Interdisciplinary Capstone | 3 | Senior Status |
| Engineering Minor Course | 3 | |
| Engineering Minor Course | 3 | |
| †General Education: Building Connections | 3 | |
| UNIV 301 General Education Portfolio | 1 | |
| Free Elective | 2 | Depends on selection of General Education course, Consult major advisor for course approval |
| Semester Total | 15 | |

†Students should work closely with their academic advisor to select General Education: Building Connections courses; some course work in the major, such as some Technical Elective courses, may also fulfill General Education: Building Connections requirements.

**CE 301 or ENGL 307 or 308 (UWGEC Approved) will fulfill GE Building Connections if taken as a technical writing course.