

Engineering Science, AE

School of Math, Science and Engineering

Program Description

The Engineering Science AE is designed to prepare students for a rigorous four-year engineering program in most major branches of engineering, such as mechanical, electrical, chemical, civil, aerospace, and nuclear engineering to name only a few. This program focuses on the study of the mathematics, science, and engineering principles and practices from both analysis and design perspectives to ensure students will be successful in four-year engineering programs and prepared to eventually sit for the professional exams they must pass to practice as professional engineers.

Career Opportunities

The Engineering Science AE is designed to prepare students for transfer to a rigorous four-year engineering program in any major branch of engineering, such as mechanical, electrical, chemical, civil, aerospace, and nuclear engineering.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Tackle and complete projects using strong analytical, problem-solving, organizational, communication, and team skills.
- Apply concepts of physics, chemistry, mathematics, and engineering to the design and analysis of mechanical, electrical, chemical, thermal-fluid, and other systems.
- Appreciate the importance of ethics in all aspects of the engineering profession.
- Communicate technical details effectively to others.
- Work independently as well as in team environments

Sugg. Term	Seq #	Course ID	Course Title	Cr	Prereq/Coreq(Co)	Options Available
1st Fall	1	EGX 101	Foundations of Engineering Analysis and Design*	4	MTH 100 or Placement Co: MTH 157 or higher	
	2	MTH 172	Analytical Geometry and Calculus I	4	MTH 109, MTH 167, or MTH 170 (C or better) or Placement	
	3	EGX 105	Engineering Computing and Professional Communication* or Engineering Science Elective	3-4	MTH 157 & MTH 167 or MTH 170 or Placement Co: MTH 172	
	4	CHM 150	General Chemistry I Lecture	3	HS Chemistry (C or better) or CHM 107. MTH 052 or Placement also required	
	5	CHM 151	General Chemistry I Lab*	1	Co: CHM 151	
1st Spring	6	MTH 173	Analytical Geometry and Calculus II	4	MTH 172 (C or better)	
	7	PHY 255	Engineering Physics I*	5	PHY 110 or HS Physics (C or better) Co: MTH 172	
	8	EGX 109	Materials Structure & Properties* or Engineering Science Elective	3-4	CHM 150, CHM 151, and MTH 172 Co: PHY 255	
	9	ENG 161	College Writing	3	ENG 085 with Permission of Instructor, ENG 095 or Placement	
2nd Fall	10	MTH 271	Analytical Geometry and Calculus III	4	MTH 173 (C or better)	
	11	PHY 256	Engineering Physics II*	5	PHY 255	
	12	EGX 201	Statics and Mechanics of Materials* or Engineering Science Elective	3-4	EGX 101, MTH 172 or higher, and PHY 255 Co: MTH 173 or Permission of Instructor	
	13	Elective	Humanities Elective	3-4	Varies	Page 21 Column II or ENG 164 or SPC 155
2nd Spring	14	MTH 276	Ordinary and Partial Differential Equations	4	MTH 173 (C or better) Co: MTH 271	
	15	EGX 205	Dynamic Systems and Rigid-Body Dynamics* or Engineering Science Elective	3-4	EGX 201 and MTH 271 Co: MTH 276	
	16	Elective	Social Science Elective or Engineering Elective	3-4	Varies	Page 21 Column III or ENG 164 or SPC 155
	17	Elective	Engineering Science Elective	3-4	Varies	
	18	Elective	Social Science Elective	3-4	Varies	Page 21 Column III or ENG 164 or SPC 155

Minimum Program Credits

61-69

EGX

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* denotes that the course has an associated two- to four-hour lab

Engineering Science (EGX) Electives:

CHM 160: General Chemistry II Lecture (3 cr/Pre: CHM 150 & CHM 151)

CHM 161: General Chemistry II Lab* (1 cr/Co: CHM 150 & CHM 151)

CHM 260: Organic Chemistry I Lecture (3 cr/Pre: CHM 160 & CHM 161)

CHM 261: Organic Chemistry I Lab* (1 cr/Co: CHM 260)

CHM 270: Organic Chemistry II Lecture (3 cr/Pre: CHM 260 & CHM 261)

CHM 271: Organic Chemistry II Lab* (1 cr/Co: CHM 270)

CPT 145: Introduction to Computer Technology (3 cr)

CPT 160: Introduction to Programming (3 cr)

CPT 163: Java Programming I (3 cr/Pre: CPT 160)

CPT 213: Java Programming II (3 cr/Pre: CPT 163)

CPT 156: Programming with Python (3 cr)

CPT 180: C++ Programming (3 cr/Pre: CPT 160)

CPT 182: Operating Systems (3 cr/Pre: CPT 145)

DFT 105: Technical Drafting I*(4 cr)

DFT 106: Technical Drafting II * 4 cr/Pre: DFT 105)

DFT 258: AutoCAD* (4 cr)

DFT 266: 3D Solid Modeling I: Inventor, Basics* (4 cr)

DFT 267: 3D Solid Modeling II: Inventor Advanced, Solidworks Intro* (4 cr/Pre: DFT 266)

EGX 209: Engineering Thermodynamics (3 cr/Pre: MTH 173 & PHY 255 & EGX 101 & EGX 105/Co: MTH 276)

ELC 106: Electrical Circuits I* (4 cr/Co: MTH 104)

ELC 107: Electrical Circuits II* (4 cr/Pre: ELC 106)

MTH 275: Linear Algebra (3 cr/Pre: MTH 172)

MTH 277: Discrete Mathematics (3 cr/Pre: MTH 172)

PHY 259: Thermodynamics and Fluid Mechanics* (3 cr/Pre:PHY 255))

PHY 258: Modern Physics (3 cr/Pre: PHY 256)