

B.S. IN ENGINEERING SCIENCE

Curriculum Requirements

Code	Title	Credit Hours
Engineering Courses		
CAE 210	Mechanics of Solids I	3
ECE 201	Electrical Circuit Theory	3
ECE 204	Electrical Circuits Laboratory	1
ECE 305	Electronics I	3
ISE 311	Applied Probability and Statistics	3
MAE 111	Introduction to Engineering I	3
MAE 112	Introduction to Engineering II	2
MAE 202	Dynamics	3
MAE 207	Mechanics of Solids II	3
MAE 241	Measurements Laboratory	3
MAE 301	Engineering Materials Science	3
MAE 302	Mechanical Behavior of Materials	3
MAE 303	Thermodynamics	3
MAE 309	Fluid Mechanics	3
MAE 412	System Dynamics	3
Applied Elective		3
Technical Elective		3
Math and Science Courses		
MTH 151	Calculus I for Engineers	5
MTH 162	Calculus II	4
MTH 210	Introduction to Linear Algebra	3
MTH 310	Multivariable Calculus	3
MTH 311	Introduction to Ordinary Differential Equations	3
CHM 121	Principles of Chemistry	4
CHM 113	Chemistry Laboratory I	1
CHM 221	Introduction to Structure and Dynamics	4
CHM 114	Chemistry Laboratory II	1
CHM 201	Organic Chemistry I (Lecture)	3
CHM 205	Chemical Dynamics Laboratory	1
CHM 360	Physical Chemistry I (Lecture)	3
PHY 221	University Physics I	3
PHY 222	University Physics II	3
PHY 223	University Physics III	3
PHY 224	University Physics II Lab	1
PHY 225	University Physics III Lab	1
PHY 350	Intermediate Electricity and Magnetism	3
PHY 351	Intermediate Electricity and Magnetism II	3
or CHM 202	Organic Chemistry II (Lecture)	
PHY 360	Introduction to Modern Physics	3
General Education Requirements		
Written Communication Skills:		
WRS 105	First-Year Writing I	3
WRS 107	First-Year Writing II: STEM	3
Quantitative Skills:		
MTH 151	Calculus I for Engineers (fulfilled through the major)	
Areas of Knowledge:		

Arts and Humanities Cognate	9
People and Society Cognate	9
STEM Cognate (9 credits) (fulfilled through the major)	
Total Credit Hours	127

Suggested Plan of Study

Freshman Year		Credit Hours
Fall		
MAE 111	Introduction to Engineering I	3
WRS 105	First-Year Writing I	3
MTH 151	Calculus I for Engineers	5
PHY 221	University Physics I	3
Credit Hours		14
Spring		
MAE 112	Introduction to Engineering II	2
CAE 210	Mechanics of Solids I	3
WRS 107	First-Year Writing II: STEM	3
MTH 162	Calculus II	4
PHY 222	University Physics II	3
PHY 224	University Physics II Lab	1
Credit Hours		16
Sophomore Year		
Fall		
MAE 207	Mechanics of Solids II	3
CHM 121	Principles of Chemistry	4
CHM 113	Chemistry Laboratory I	1
MTH 210	Introduction to Linear Algebra	3
HA Cognate (HA Elective) ¹		3
PHY 223	University Physics III	3
PHY 225	University Physics III Lab	1
Credit Hours		18
Spring		
MAE 202	Dynamics	3
ECE 201	Electrical Circuit Theory	3
CHM 221	Introduction to Structure and Dynamics	4
CHM 114	Chemistry Laboratory II	1
MTH 310	Multivariable Calculus	3
PS Cognate (PS Elective) ¹		3
Credit Hours		17
Junior Year		
Fall		
ISE 311	Applied Probability and Statistics	3
MAE 303	Thermodynamics	3
MTH 311	Introduction to Ordinary Differential Equations	3
PHY 350	Intermediate Electricity and Magnetism	3
HA Cognate (HA Elective) ¹		3
Credit Hours		15
Spring		
MAE 241	Measurements Laboratory	3
ECE 204	Electrical Circuits Laboratory	1
MAE 309	Fluid Mechanics	3
MAE 301	Engineering Materials Science	3

PS Cognate (PS Elective) ¹		3
	Credit Hours	13
Senior Year		
Fall		
MAE 302	Mechanical Behavior of Materials	3
MAE 412	System Dynamics	3
CHM 360	Physical Chemistry I (Lecture)	3
PHY 360	Introduction to Modern Physics	3
PS Cognate (Adv. PS Elective) ¹		3
	Credit Hours	15
Spring		
PHY 351 or CHM 202	Intermediate Electricity and Magnetism II or Organic Chemistry II (Lecture)	3
ECE 305	Electronics I	3
CHM 205	Chemical Dynamics Laboratory	1
Applied Elective ²		3
Technical Elective ³		3
HA Cognate (Adv. HA Elective) ¹		3
	Credit Hours	16
	Total Credit Hours	124

¹ You must complete a minimum of 1 PS cognate and 1 HA cognate to be selected from the list of available cognates. Each cognate should be a minimum of three courses (9 credit hours).

² Applied electives are advanced courses selected in coordination with the Faculty Advisor and require his/her approval.

³ Technical Electives are advanced courses in mathematics, science or engineering, approved by the Faculty Advisor, as appropriate for individual objectives.

Mission

The mission of the undergraduate engineering science program is to prepare students to become knowledgeable and skilled engineers with an understanding of the ethical and other professional aspects of engineering science.

Goals

1. Fundamental Understanding: Have a sound background in the fundamentals of engineering
2. Meet Industry Expectations: Have the abilities and knowledge expected by industry
3. Academically Prepared: Are prepared to enter graduate and professional degree programs related to engineering science.

Student Learning Outcomes

1. Students will have the ability to communicate effectively, i.e., the skill to convey the ideas and thoughts correctly and do so in an easy to understand and attractive manner.
2. Students will have the ability to apply knowledge of mathematics, science, and engineering fundamentals to formulate and solve relevant engineering problems.
3. Students will have the ability to design a system, component, or process to meet desired needs within realistic constraints such as economics, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.