BS – Industrial Engineering

(SC-BS/IE)

Freshman Fall semester	Freshman Spring semester	Sophomore Fall semester	Sophomore Spring semester	Junior Fall semester	Junior Spring semester	Senior Fall semester	Senior Spring semester

Minors in Applied Mathematics or Mathematics or Data Analytics can be completed with a few additional courses.

Contact a COSE Academic Advisor for more information.

Math/Science Electives
(Required 3 hours)

MATH 2358
MATH 3330**
PHYS 2335+2135
PHYS 3315
HON 3392V**

*** - Choose 1 of the starred options if minoring in Mathematics.*
(Check Prerequisites)

MATH 2393
(F,S,Su)
Calculus III

MATH 2471
(F,S,Su)
Calculus I
TCCNS: MATH 2413

MATH 2472
(F,S,Su)
Calculus II
TCCNS: MATH 2414

MATH 3377
(F,S,Su)
Linear Algebra

MATH 3323
(F,S,Su)
Differential Equations
TCCNS: MATH 2320

IE 3360
(F,S)
Methods Engineering & Ergonomics

IE 4310
(F,S)
Statistical Design of Experiments

MFGE 4396
(F,S,Su)
Manufacturing Systems Design

IE 3320
(F,S,Su)
Engineering Statistics

IE 3330
(F,S)
Quality Engineering

IE 4370
(F,S)
Probabilistic Operations Research

PHYS 2325
(F,S)
Mechanics
TCCNS: PHYS 2325
(Previously PHYS 1430)

PHYS 2326
(F,S)
Electricity & Magnetism
TCCNS: PHYS 2326
(Previously PHYS 2425)

ENGR 2301
(F,S,Su)
Statics

ENGR 3311
(F,S)
Mechanics of Materials
TCCNS: ENGR 2332

IE 4393
(F,S)
Industrial Design II
Coreqs are 2 from:
IE 4320 (F,S), IE 4350 (F,S), and MFGE 4396 (S,Su)

CHEM 1335+1135
(F,S,Su)
Engineering Chemistry + Lab
TCCNS: CHEM 1309+1109 or 1409
(Check Prerequisites)

PHYS 2125
(F,S)
Mechanics Lab
TCCNS: PHYS 2125 (or 2425)

PHYS 2126
(F,S)
Electricity & Magnetism Lab
TCCNS: PHYS 2126 (or 2426)

ENGR 3373
(F,S)
Circuits & Devices

IE 3340
(F,S)
Operations Research

IE 4392
(F,S)
Industrial Design I
Coreqs are 2 from:
IE 4310 (F), IE 4355 (F,S), and IE 4370 (F,S)

IE 4350
(F,S)
Supply Chain Engineering

IE 4355
(F,S)
Facilities Planning

IE 4320
(F,S)
Integrated Production Systems

ENGR 1304
(F,S,Su)
Engineering Graphics
(Corequisite: MATH 2417 or 2471 or 2472 or 2393)

IE 1310
(F,S)
Introduction to Industrial Engineering
(Check Prerequisites)

MFGE 2332
(F,S)
Material Selection & Manufacturing Processes

CS 1342
(F,S)
Programming for Scientists & Engineers

ENGR 3315
(F,S,Su)
Engineering Economic Analysis
(Check Prerequisites)

See Page 2 for Advanced Industrial Engineering Elective Options
(9 hours required)
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This is not an official degree audit and it is subject to change. This chart is intended to be used by students who start out at Texas State. Please contact the College of Science and Engineering Undergraduate Advising Center for advising.

Note: In addition to major courses, students must also complete all core and minor requirements (if applicable) and any other requirements for graduation.

KEY:
Arrows indicate prerequisites.
Arrows with dotted lines indicate co-requisites.
Arrows with dash lines are recommended prerequisites.
Courses taught in specific semesters are indicated with the following codes:
F-Fall   Su-Summer Session I or II
S-Spring
Required WI courses: IE 4392, 4393, MFGE 4396, ENG 3303
Additional WI courses: IE 4360

Core courses must be completed:

___ 6 credits Core 010	TXST options: [ENG 1310] & ENG 1320, ENG 1321, ENG 3303, COMM 1310	
___ 3 credits Core 020	IE required course: MATH 2471	
___ 6 credits Core 030	IE required courses: PHYS 2325 & CHEM 1335	
___ 3 credits Core 040	TXST options: PHIL 1305 or 1320	
___ 3 credits Core 050	TXST options: ART 2313, DAN 2313, MU 2313, TH 2313	
___ 6 credits Core 060	TXST options:[HIST 1310/2327/2381] & [HIST 1320/2328/2382]	
___ 6 credits Core 070	TXST options: POSI 2310 & POSI 2320	
___ 3 credits Core 080	IE required course: ECO 2301	
___ 6 credits Core 090, 091, 092, 093, and 094	IE required courses: MATH 2472 & PHYS 2326	

US 1100 may be required for some students. Consult with an advisor regarding course choices.

Advanced Industrial Engineering Electives

(Choose 9 hours from the following)

Data Engineering & Operations Research

- EE 3326 – Numerical & Scientific Data Analysis Using Python
- EE 4331* – Introduction to Machine Learning for Engineering Applications
- IE 3305 – Intro to Data Analysis
- IE 4340* – Non-Linear Optimization
- IE 4342* – Advanced Linear & Integer Programming
- IE 4399D – Heuristic Optimization
- IE 4399F – Introduction to Data Intensive Analysis & Simulation

* - Choose 1 of the starred options if minoring in Data Analytics.
(Check Prerequisites)

Cooperative Education & Undergraduate Research

(Maximum of 3 hours)

- ENGR 3190 – Cooperative Education
- ENGR 3290 – Advanced Cooperative Education
- ENGR 4299 – Engineering Undergraduate Research
- ENGR 4395 – Independent Studies in Engineering

(Check Prerequisites)

Manufacturing Engineering

- MFGE 4367 – Polymer Properties & Processing
- MFGE 4318 – Additive Manufacturing
- EE 4392 – Micro Electronics Manufacturing

Professional Certification Electives

- IE 4399G – Special Topics in Project Management
- IE 4335 – Lean Six Sigma Methodologies

Systems Engineering

- IE 4381 – Introduction to Systems Engineering

Human Factors

- IE 4360 – Human Factors Design

Resilient and Sustainable Operations

- IE 4330 – Reliability Engineering

Other

- EE 4357 – Power Systems

(Check Prerequisites)

To earn a minor in Data Analytics, the following courses must be completed:

- ANLY 2300
- EE 4331 or IE 4340 or IE 4342 must be chosen as an Advanced Industrial Engineering Elective option and to fulfill the algorithms/data mining requirement.
- Required IE major courses will fulfill the remaining minor requirements:
    1. IE 3320 (statistics),
    2. CS 1342 (computer/programming),
    3. IE 3330 & IE 3340 (prescribed electives; IE 4310 & IE 4370 will also meet this requirement).

To earn a minor in Mathematics, students must choose one of the following course options:

- MATH 3330
- HON 3392V

An Applied Mathematics minor can be earned without taking any additional coursework.

Contact a COSE Academic Advisor for more information.