

# **Bachelors of Science-Industrial Engineering**

## Program Description

Industrial engineers design and manage complex systems in the manufacturing and service industries through the integration of people, material, information, capital, energy and equipment. Industrial engineering applies systems modeling and analysis skills to ensure that high-quality products and services are achieved with the optimal use of resources. Industrial engineering focuses on the total picture of developing, producing, delivering and servicing products and services to satisfy customers. The industrial engineer blends knowledge of mathematics, engineering principles, computing technologies, systems modeling and simulation tools and human factors with strong management and communication skills to achieve this goal. This gives an industrial engineer broad knowledge of an organization and provides increased opportunities for advancement into management and leadership.

## Career Opportunities

Graduates in industrial engineering are prepared to design and manage systems for a wide range of organizations. They find exciting career opportunities in all types of manufacturing and service industries, including semiconductor manufacturing, automotive, aerospace, defense, banking, finance, transportation, health care, telecommunications, management consulting and government.

## **Chandler Gilbert Community College Contact**

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## **Arizona State University Contact**

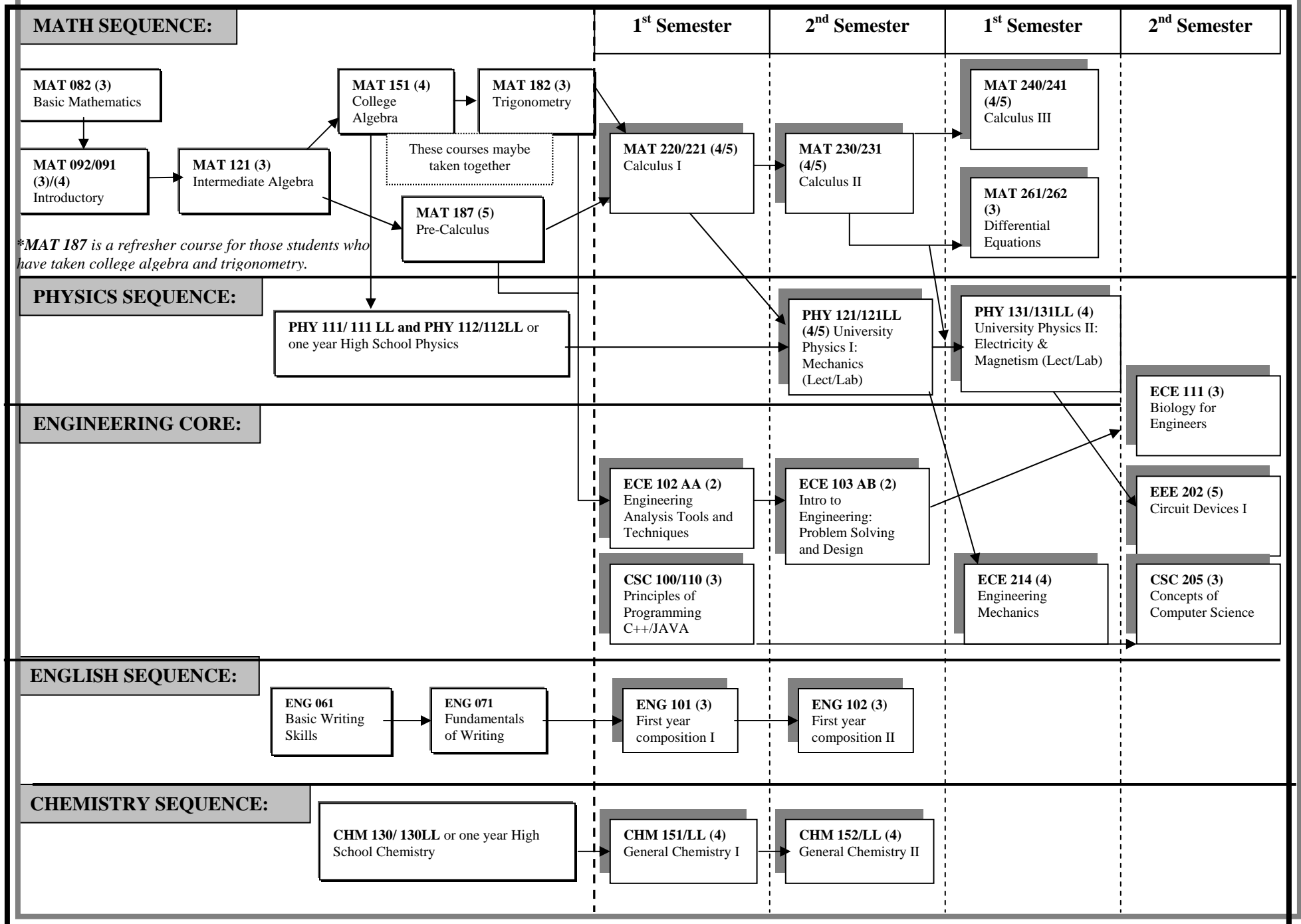
[Mechanical and Aerospace Engineering Program](#) |

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# INDUSTRIAL ENGINEERING

## Prerequisite Courses

## Required Courses





## Industrial Engineering Recommended Study Plan

Year 1		Year 2	
First Semester	Second Semester	Third Semester	Fourth Semester
<b>ECE102 AA (2)</b> Engineering Analysis 1	<b>ECE 103 AB (2)</b> Problem Solving & Design	<b>MAT 261 (3)</b> Differential Equation <u>MAT230</u> <b>MAT275 (3)</b>	<b>ECE111 (3)</b> Biology Requirement <b>BME 111 (3)</b>
ECE102 (2) AND ECE103 (2)= MAE 100 (2)			<b>EEE 202 (5)</b> Circuits 1 <u>pre-co: PHY131, MAT261</u> <b>EEE 202 (4)</b>
<b>MAT 220 (4)</b> Calc 1 <u>Mat 187 or MAT182</u> <b>MAT 265 (3)</b>	<b>MAT 230 (4)</b> Calc 2 <u>MAT 220</u> <b>MAT 266 (3)</b>	<b>MAT 240 (4)</b> Calc 3 <u>MAT 220</u> <b>MAT267 (4)</b>	<b>HU/SB (3)</b>
<b>ENG 101 (3)</b> First Year Composition 1 <b>ENG 101 (3)</b>	<b>ENG102 (3)</b> First Year Composition 2 <b>ENG102 (3)</b>	<b>ECE 214 (4)</b> Mechanics <u>PHY121, pre-co MAT240</u> <b>ECE214 (4)</b>	
<b>CHM 151/LL (4)</b> General Chemistry 1 <u>HS algebra and HS chemistry</u>	<b>CHM 152/LL (4)</b> General Chemistry 2 <u>CHM 151/LL</u>	<b>PHY 131 (4)</b> University Physics 2 <u>PHY 121, MAT 230</u> <b>PHY131 (4)</b>	
CHM151 (4)+CHM152(4)=CHM 114 or CHM 116 (4)		<b>HU/SB (3)</b>	<b>CSC 205 (3)</b> Concepts of Computer Science <u>CSC 100</u>
<b>CSC 100/110 (3)</b> C++/Java	<b>PHY 121 (4)</b> University Physics 1 <u>MAT 220</u> <b>PHY 121 (4)</b>	<b>HU/SB (3)</b>	<b>HU/SB (3)</b>
<b>16</b>	<b>17</b>	<b>18</b>	<b>17</b>

Underlined = Pre-req      *Italic*= ASU Equivalence

According to ASU Industrial Engineering advisement sheet:  
Humanities & Social Sciences (HU/SB) (15 hrs minimum)  
(Required: 1 course upper division; 2 courses from the same dept; 2 depts. or more Represented; plus a minimum of two courses that satisfy three awareness areas: Cultural (C), Global (G), and Historical (H). Double counting is permissible between HU or SB and the awareness areas and also within the awareness areas.)

Course Subject and Title (courses in bold/shading are critical)	Hrs.	Upper Division	Completed ATP: <input type="checkbox"/> Yes <input type="checkbox"/> No		Completed AGEC: <input type="checkbox"/> Yes <input type="checkbox"/> No	
			Transfer Course/Grade	Minimum Grade if Required	Additional Critical Requirement Notes	
<b>TERM ONE: 0-15 CREDIT HOURS</b>						
ASU 101-FSE: The ASU Experience	1	<input type="checkbox"/>			<ul style="list-style-type: none"> <li>Complete at least one of: BME 111; CSE 110 (or 100) with a minimum grade of "C"; IEE 100 with a minimum grade of "C"; MAT 265 with a minimum grade of "C"</li> <li>ASU 101-FSE should be completed first semester.</li> <li>An SAT, ACT, Accuplacer, or TOEFL score determines placement into first-year composition courses</li> <li>ASU Math Placement Exam score determines placement in Mathematics course</li> </ul> ** If ENG 105 a 3 hr applicable elective must also be taken prior to graduation. See Advisor.	
<b>IEE 100: Intro to Engineering Design OR CSE 110: Principles of Programming with Java (or CSE 100: Principles of Programming with C++) (CS)</b>	2 or 3	<input type="checkbox"/>		Grade of C		
<b>BME 111: Engineering Perspectives on Biological Systems</b>	3	<input type="checkbox"/>				
<b>MAT 265: Calculus for Engineers I</b>	3	<input type="checkbox"/>		Grade of C		
<b>ENG 101 or 102: First-Year Composition OR ENG 105: Advanced First-Year Composition** OR ENG 107 or 108: English for Foreign Students</b>	3	<input type="checkbox"/>		Grade of C		
Social & Behavioral Science (SB) AND Cultural Diversity in the US (C), Global Awareness (G) or Historical Awareness (H)	3	<input type="checkbox"/>				
<b>TERM TWO: 16-30 CREDIT HOURS</b>						
<b>IEE 100: Intro to Engineering Design OR CSE 110: Principles of Programming with Java (or CSE 100: Principles of Programming with C++) (CS)</b>	2 or 3	<input type="checkbox"/>		Grade of C	<ul style="list-style-type: none"> <li>Complete               <ul style="list-style-type: none"> <li>- CSE 110 (or 100) with a minimum grade of "C", OR PHY 121 &amp; 122 with a minimum grade of "C"</li> <li>- ENG 101 or 107 or 105 with minimum grade of "C"</li> <li>- IEE 100 with a minimum grade of "C"</li> <li>- MAT 265 with a minimum grade of "C"</li> </ul> </li> </ul>	
<b>MAT 266: Calculus for Engineers II</b>	3	<input type="checkbox"/>		Grade of C		
<b>PHY 121/122: University Physics I/ Laboratory I (SQ)</b>	3/1	<input type="checkbox"/>		Grade of C		
<b>ENG 101 or 102: First-Year Composition OR ENG 105: Advanced First-Year Composition** OR ENG 107 or 108: English for Foreign Students</b>	3	<input type="checkbox"/>		Grade of C		
<b>TERM THREE: 31-45 CREDIT HOURS</b>						
<b>ECN 211: Macroeconomic Principles (SB)</b>	3	<input type="checkbox"/>			<ul style="list-style-type: none"> <li>Complete CSE 110 (or 100) with a minimum grade of "C", PHY 121 &amp; 122 with a minimum grade of "C"</li> <li>Complete ECN 211; BME 111; MAT 266 with a minimum grade of "C"</li> <li>Complete First Year Composition requirement: ENG 101 &amp; 102 or ENG 107 &amp; 108 or ENG 105</li> </ul>	
CSE 205: Concepts of Computer Design and Data (CS)	3	<input type="checkbox"/>				
IEE 210: Introduction to Industrial Engineering	3	<input type="checkbox"/>		Grade of C		
MAT 267: Calculus for Engineers III	3	<input type="checkbox"/>				
PHY 131/132: University Physics II Electricity and Magnetism/ Laboratory II (SQ)	3/1	<input type="checkbox"/>				
<b>TERM FOUR: 46-60 CREDIT HOURS</b>						
<b>IEE 220: Business/Industrial Engineering</b>	3	<input type="checkbox"/>		Grade of C	<ul style="list-style-type: none"> <li>Complete IEE 220 with a minimum grade of "C"</li> </ul> *CHM 113 is a prerequisite and does not apply towards degree credit	
CHM 114: General Chemistry for Engineers OR CHM 116: General Chemistry II *	4	<input type="checkbox"/>				
MAT 242: Elementary Linear Algebra	2	<input type="checkbox"/>				
MAT 275: Modern Differential Equations (MA)	3	<input type="checkbox"/>				
Humanities, Fine Arts & Design (HU) AND Cultural Diversity in the US (C), Global Awareness (G) or Historical Awareness (H)	3	<input type="checkbox"/>				
<b>TERM FIVE: 61-75 CREDIT HOURS</b>						
IEE 300: Economic Analysis for Engineers	3	<input checked="" type="checkbox"/>		Grade of C		
IEE 305: Information Systems Engineering	3	<input checked="" type="checkbox"/>		Grade of C		
IEE 380: Probability and Statistics for Engineering Problem Solving	3	<input checked="" type="checkbox"/>		Grade of C		
IEE 382: Probability & Statistics Lab	1	<input checked="" type="checkbox"/>		Grade of C		
Choose 2: EEE 202: Circuits I (4 hrs) MAE 212: Engineering Mechanics (4 hrs) MSE 250: Structure and Properties of Materials (3 hrs)	7 or 8	<input type="checkbox"/>				
<b>TERM SIX: 76-90 CREDIT HOURS</b>						
IEE 376: Operational Research Deterministic Technology	3	<input checked="" type="checkbox"/>		Grade of C		
IEE 369: Work Analysis and Design (L)	3	<input checked="" type="checkbox"/>		Grade of C		
Choose remaining 1: EEE 202: Circuits I (4 hrs) MAE 212: Engineering Mechanics (4 hrs) MSE 250: Structure and Properties of Materials (3 hrs)	3 or 4	<input type="checkbox"/>				
Humanities, Fine Arts & Design (HU) AND Cultural Diversity in the US (C), Global Awareness (G) or Historical Awareness (H)	3	<input type="checkbox"/>				
<b>TERM SEVEN: 91-105 CREDIT HOURS</b>						
IEE 470: Stochastic Operations Research	3	<input checked="" type="checkbox"/>		Grade of C		
IEE 474: Quality Control	3	<input checked="" type="checkbox"/>		Grade of C		
IEE 475: Simulating Stochastic Systems	4	<input checked="" type="checkbox"/>		Grade of C		
Career Focused Elective	3	<input checked="" type="checkbox"/>				
UD Humanities, Fine Arts & Design (HU) OR Social & Behavioral Science (SB)	3	<input checked="" type="checkbox"/>				
<b>TERM EIGHT: 106-120 CREDIT HOURS</b>						
IEE 461: Production Control	3	<input checked="" type="checkbox"/>		Grade of C		
IEE 490: Project in Design/Development (L)	3	<input checked="" type="checkbox"/>		Grade of C		
IEE Technical Elective	3	<input checked="" type="checkbox"/>		Grade of C		
Career Focused Elective	3	<input checked="" type="checkbox"/>				
Career Focused Elective	3	<input checked="" type="checkbox"/>				

**Graduation Requirements Summary:**

Total Hours Regular Curriculum (120)	Total UD Hrs (45 min)	Total Hrs at ASU (30 min)	Cumulative GPA (2.00 minimum)	Major GPA (2.00 minimum GPA )	Hrs Resident Credit for Academic Recognition (56 min)	Total Comm. College Hrs. (64 Max)

**General University Requirements: Legend**

- General Studies Core Requirements:
  - Literacy and Critical Inquiry (L)
  - Mathematical Studies (MA)
  - Computer/Statistics/Quantitative applications (CS)
  - Humanities, Fine Arts, and Design (HU)
  - Social and Behavioral Sciences (SB)
  - Natural Science-Quantitative (SQ)
  - Natural Science-General (SG)
- General Studies Awareness Requirements
  - Cultural Diversity in the US (C)
  - Global Awareness (G)
  - Historical Awareness (H)
- First-Year Composition

**Additional Notes:**