

Bachelors of Science-Computer System Engineering

Program Description

The computer systems engineering program is concerned with the analysis, design and evaluation of computer systems, both hardware and software. The program emphasizes computer organization and architecture, digital hardware design, operating systems and systems programming. Computer engineers often find themselves focusing on problems or challenges that result in new state-of-the-art products that integrate computer capabilities. They work on the manufacturing of computer hardware, from chips to device controllers, including computer networks for the transmission of data and multimedia, design, development, planning, supervision of manufacturing of computer hardware and testing. Computer engineers also focus on the interface between different pieces of hardware and strive to provide new capabilities to existing and new systems or products. The work of a computer engineer is grounded in hardware, from circuits to architecture, and also focuses on operating systems and software. Computer engineers must understand computer architecture, computer interfacing, logic design, microprocessor system design, system requirements and design.

Career Opportunities

Computer systems engineers are employed in industry, government, education and consulting and are concerned with the design, selection and installation of hardware and software components of a computer system. Computer engineers often find themselves focusing on problems or challenges that result in new state-of-the-art products that integrate computer capabilities. They work on the manufacturing of computer hardware, from chips to device controllers, including computer networks for the transmission of data and multimedia, design, development, planning, supervision of manufacturing of computer hardware and testing.

Computer engineers frequently find jobs that involve designing new applications of computers and other devices, such as those used in airplanes, digital television and photography, intelligent highways and control systems for cars, new apparatuses for the sight-impaired or others with physical disabilities, new cell phone technologies, security systems and space vehicles.

Chandler Gilbert Community College Contact

Bassam Matar

480-732-7139

B.Matar@cgcmail.maricopa.edu

Arizona State University Contact

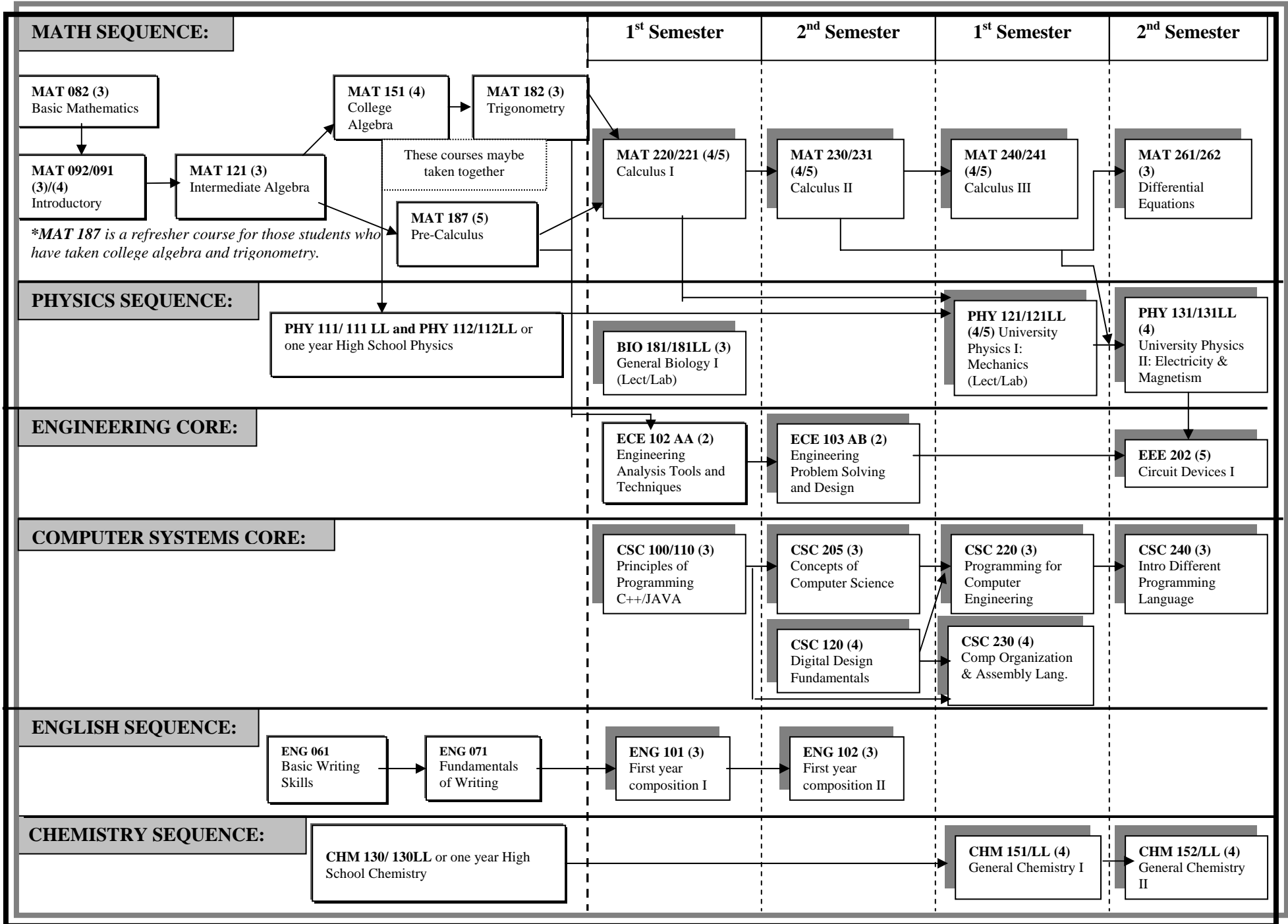
[Computer Science and Engineering Program](#) |

sci.advising@asu.edu | 480/965-3190

ENGINEERING ASSESSMENTS AND COURSE SEQUENCE COMPUTER SYSTEMS ENGINEERING

Prerequisite Courses

Required Courses



Computer Systems Engineering Recommended Study Plan

Year 1		Year 2	
First Semester	Second Semester	Third Semester	Fourth Semester
ECE102 AA (2) Engineering Analysis	ECE103 AB (2) Problem Solving	CHM 151/LL (4) General Chemistry 1 <u>HS algebra and HS chemistry</u>	CHM 152/LL (4) General Chemistry 2 <u>CHM 151/LL</u>
ECE102 AA + ECE 103 AB = CSE 101 (3)			
MAT 220 (4) Calc 1 <u>Mat 187 or MAT182</u> MAT 265 (3)	MAT 230 (4) Calc 2 <u>MAT 220</u> MAT 266 (3)	MAT 240 (4) Calc 3 <u>MAT 220</u> MAT267 (4)	MAT 261 (3) Differential Equation <u>MAT220</u> MAT275 (3)
BIO 181LL (4) General Biology BIO 181+lab (4)	CSC 120 (4) Digital Design Fundamentals CSC 120 (3)	PHY 121 (4) University Physics 1 <u>MAT 220</u> PHY 121 (4)	PHY 131 (4) University Physics 2 <u>PHY 121, MAT 230</u> PHY131 (4)
ENG 101 (3) First Year Composition 1 ENG 101 (3)	ENG102 (3) First Year Composition 2 ENG102 (3)	CSC 220 (3) Programming <u>CSC 120, CSC 205</u> CSC 220 (3)	EEE 202 (5) Circuits 1 <u>pre-co: PHY131, MAT261</u> EEE 202 (4)
CSC 100/110 (3) C++/Java	CSC 205 (3) Concepts of Computer Science <u>CSC100</u> CSC 205 (4)	CSC 230 (4) Comp Organization & Assembly Lang <u>CSC 100, CSC120</u>	
16	16	19	16

Underlined = Pre-req *Italic* = ASU Equivalence

CHM151 (4)+CHM152(4)=CHM 114 or CHM 116 (4)

According to ASU Computer System 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 <i>(courses in bold/shading are critical)</i>	Hrs.	Upper Division	Completed ATP: <input type="checkbox"/> Yes <input type="checkbox"/> No		Completed AGECS: <input type="checkbox"/> Yes <input type="checkbox"/> No
			Transfer Course/Grade	Minimum Grade if Required	Additional Critical Requirement Notes
TERM ONE: 0-15 CREDIT HOURS					
ASU 101-FSE: The ASU Experience	1	<input type="checkbox"/>			<ul style="list-style-type: none"> • Complete CSE 100 or 110, 101; MAT 265 each with a minimum grade of “C” • ASU 101-FSE should be completed first semester. • An SAT, ACT, Accuplacer, or TOEFL score determines placement into first-year composition courses • ASU Math Placement Exam score determines placement in Mathematics course **If ENG 105 a 3 hr applicable elective must also be taken prior to graduation. See Advisor. # Designates Major Course: A minimum cumulative GPA of 2.0 required.
# CSE 100: Principles of Programming with C++ (CS) OR # CSE 110: Principles of Programming with Java (CS)	3	<input type="checkbox"/>		Grade of C	
# CSE 101: Introduction to Computer Science & Engineering	2	<input type="checkbox"/>		Grade of C	
MAT 265: Calculus for Engineers I (MA)	3	<input type="checkbox"/>		Grade of C	
ENG 101 or 102: First-Year Composition OR ENG 105: Advanced First-Year Composition** OR ENG 107 or 108: English for Foreign Students	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"/>			
TERM TWO: 16-30 CREDIT HOURS					
# CSE 120: Digital Design Fundamentals	3	<input type="checkbox"/>		Grade of C	<ul style="list-style-type: none"> • Complete CSE 120, 205; MAT 266 each with a minimum grade of “C” # Designates Major Course: A minimum cumulative GPA of 2.0 required.
# CSE 205: Object-Oriented Programming & Data Structures (CS)	3	<input type="checkbox"/>		Grade of C	
MAT 266: Calculus for Engineers II	3	<input type="checkbox"/>		Grade of C	
BIO 187: General Biology I (SQ) OR BIO 188: General Biology Laboratory II (SQ)	4	<input type="checkbox"/>			
ENG 101 or 102: First-Year Composition OR ENG 105: Advanced First-Year Composition** OR ENG 107 or 108: English for Foreign Students	3	<input type="checkbox"/>		Grade of C	
TERM THREE: 31-45 CREDIT HOURS					
# CSE 230: Computer Organization and Assembly Language Programming	3	<input type="checkbox"/>		Grade of C	<ul style="list-style-type: none"> • Complete CSE 230; MAT 243, 267 each with a minimum grade of “C” • Complete First-Year Composition requirement: ENG 101 & 102 or ENG 107 & 108 or ENG 105 # Designates Major Course: A minimum cumulative GPA of 2.0 required.
MAT 243: Discrete Mathematical Structures	3	<input type="checkbox"/>		Grade of C	
MAT 267: Calculus for Engineers III	3	<input type="checkbox"/>		Grade of C	
PHY 121/122: University Physics I/Laboratory I (SQ)	3/1	<input type="checkbox"/>			
TERM FOUR: 46-60 CREDIT HOURS					
# CSE 220: Programming for Computer Engineering	3	<input type="checkbox"/>		Grade of C	<ul style="list-style-type: none"> • Complete CSE 220 with a minimum grade of “C” # Designates Major Course: A minimum cumulative GPA of 2.0 required.
MAT 275: Modern Differential Equations	3	<input type="checkbox"/>			
PHY 131/132: University Physics II Electricity and Magnetism/Laboratory II (SQ)	3/1	<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"/>			
Social & Behavioral Science (SB) AND Cultural Diversity in the US (C), Global Awareness (G) or Historical Awareness (H)	3	<input type="checkbox"/>			
TERM FIVE: 61-75 CREDIT HOURS					
# EEE 202: Circuits I	4	<input type="checkbox"/>			<ul style="list-style-type: none"> # Designates Major Course: A minimum cumulative GPA of 2.0 required.
# IEE 380: Probability and Statistics for Engineering Problem Solving	3	<input checked="" type="checkbox"/>			
# CSE 301: Computing Ethics	1	<input checked="" type="checkbox"/>		Grade of C	
# CSE 310: Data Structures and Algorithms	3	<input checked="" type="checkbox"/>		Grade of C	
# CSE 360: Introduction to Software Engineering	3	<input checked="" type="checkbox"/>		Grade of C	
TERM SIX: 76-90 CREDIT HOURS					
# EEE 334: Circuits II	4	<input checked="" type="checkbox"/>			<ul style="list-style-type: none"> # Designates Major Course: A minimum cumulative GPA of 2.0 required.
# CSE 320: Design and Synthesis of Digital Hardware	3	<input checked="" type="checkbox"/>		Grade of C	
# CSE 325: Embedded Micro Systems	3	<input checked="" type="checkbox"/>		Grade of C	
# MAT 343: Applied Linear Algebra	3	<input checked="" 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"/>			
TERM SEVEN: 91-105 CREDIT HOURS					
# CSE 423: Systems Capstone Project I (L)	3	<input checked="" type="checkbox"/>		Grade of C	<ul style="list-style-type: none"> • See Advisor for approved list of CSE Technical Electives # Designates Major Course: A minimum cumulative GPA of 2.0 required.
# CSE 430: Operating Systems	3	<input checked="" type="checkbox"/>		Grade of C	
# CSE Technical Elective	3	<input checked="" type="checkbox"/>		Grade of C	
# CSE Technical Elective	3	<input checked="" type="checkbox"/>		Grade of C	
UD Humanities, Fine Arts & Design (HU) OR Social & Behavioral Science (SB)	3	<input checked="" type="checkbox"/>			
TERM EIGHT: 106-120 CREDIT HOURS					
# CSE 420: Computer Architecture I	3	<input checked="" type="checkbox"/>		Grade of C	<ul style="list-style-type: none"> • See Advisor for approved list of CSE Technical Electives # Designates Major Course: A minimum cumulative GPA of 2.0 required.
# CSE 424: Systems Capstone Project II (L)	3	<input checked="" type="checkbox"/>		Grade of C	
# CSE 434: Computer Networks	3	<input checked="" type="checkbox"/>		Grade of C	
# CSE Technical Elective	3	<input checked="" type="checkbox"/>		Grade of C	
# CSE Technical Elective	3	<input checked="" type="checkbox"/>		Grade of C	

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: