

# COMPUTER ENGINEERING (BS)

## Degree Requirements

Code	Title	Hours
<b>General Education Requirements</b>		<b>54</b>
<b>Major Requirements</b>		
<i>Computer Engineering Major Core</i>		
EG 101	Intro to Engineering & Design (or EG 201 for LINK students)	2
EG 231	Intro to Ethics and Economics	3
CPE 260	Intro to C++ Programming	3
CSC 231	Intro Data Structures Algs	4
CSC 311	Networking and Communications	3
CSC 322	Operating Systems	3
EE 220	Circuit Analysis I	3
EE 223	Network Analysis	3
EE 227	Circuits and Devices Lab	1
EE 263	Digital Logic Design	3
EE 264	Microprocessor Sys-Interfacing	3
EE 268	Digital Logic Design Lab	1
EE 321	Signals, Systems & Transforms	3
EE 322	Prob, Rand Sigs & Stat Anlys	3
EE 328	Feedback Control Systems	3
EE 331	Physical Electronics	3
EE 334	Digital Electronics	3
EE 368	Microprocessor Sys Interf Lab	1
EE 401	Intro Elec and CpE Design - W	1
EE 404	Electrical and Computer Engineering Design	3
EE 431	Analog Electronics	3
EE 446	Embedded System Design Lab	1
EE 454	Digital Computer Architecture	3
EE 457	Embedded System Design	3
<i>Tracks</i>		
Select one of the following Tracks:		12
<i>Hardware Track: Technical Electives</i>		
A. Select two of the following:		
EE 438	Virtual Instrumentation	
EE 439	VSLI Technology-Fabrication	
EE 440	HDL Logic Synthesis <sup>1</sup>	
EE 441	Computer Networks	
EE 443	HDL Logic Simulation <sup>1</sup>	
EE 444	Wireless Networks	
EE 465	Digital Signal Processing	
EE 468	Programmable Logic Controllers	
EE 469	Signal Integrity	
EE 470	Synth Active-Passive Networks	
EE 471	Wireless Communication	
EE 473	Advanced Communication Systems	
CSC 410	Compiler Design-Construction	
CSC 411	Comm - Network Analysis	

CSC 412	Real-Time Software Systems
CSC 413	Computer Graphics
CSC 414	Modeling and Simulation
CSC 415	Numerical Analysis
CSC 416	AI Theory and Programming
CSC 417	Computer Game Development
CSC 418	Adv Game & Simulation Dev
CSC 434	Form Lang - Automata Theory
CSC 440	Secure Software Engineering
B. Select two of the following:	
EE 438	Virtual Instrumentation
EE 439	VSLI Technology-Fabrication
EE 440	HDL Logic Synthesis <sup>1</sup>
EE 441	Computer Networks
EE 443	HDL Logic Simulation <sup>1</sup>
EE 444	Wireless Networks
EE 465	Digital Signal Processing
EE 468	Programmable Logic Controllers
EE 469	Signal Integrity
EE 470	Synth Active-Passive Networks
EE 471	Wireless Communication
EE 473	Advanced Communication Systems
<i>Software Track: Technical Electives</i>	
A. Complete the following:	
CSC 331	Software Engineering Prin - W
CSC 332	Adv Data Structures and Algs
CSC 333	Prog Language Theory
B. Select one of the following:	
EE 438	Virtual Instrumentation
EE 439	VSLI Technology-Fabrication
EE 440	HDL Logic Synthesis <sup>1</sup>
EE 441	Computer Networks
EE 443	HDL Logic Simulation <sup>1</sup>
EE 444	Wireless Networks
EE 465	Digital Signal Processing
EE 468	Programmable Logic Controllers
EE 469	Signal Integrity
EE 470	Synth Active-Passive Networks
EE 471	Wireless Communication
EE 473	Advanced Communication Systems
CSC 410	Compiler Design-Construction
CSC 411	Comm - Network Analysis
CSC 412	Real-Time Software Systems
CSC 413	Computer Graphics
CSC 414	Modeling and Simulation
CSC 415	Numerical Analysis
CSC 416	AI Theory and Programming
CSC 417	Computer Game Development
CSC 418	Adv Game & Simulation Dev
CSC 434	Form Lang - Automata Theory
CSC 440	Secure Software Engineering

*Computer Senior Lab*

Select one of the following:	1
EE 437 Electronics Lab	
EE 447 Programmable Logic Devices Lab	
EE 449 Control and Communications Lab	
<b>Minor Requirements</b>	
A minor is not required for this degree program	0
<b>Total Hours</b>	<b>129</b>

**Note:** All undergraduates must complete two designated writing credit (W) courses, at least one of which must be in the student's major or minor. Courses carrying this required credit are identified in the University Bulletin by W after the course title. Appropriate software tools will be utilized in almost all CpE/EE courses.

<sup>1</sup> Credit for both EE 440 & EE 443 is not allowed.

## General Education requirements

Code	Title	Hours
<b>Area I – Written Composition</b>		
Complete the following:		
EH 101	English Composition I (Students who earn an English ACT score of 27, or a written SAT score of 610, can opt out of EH 101.)	3
EH 102 or EH 105	English Composition II Honors Composition - H	3
<b>Area II – Humanities &amp; Fine Arts</b>		
A. Select one of the following:		
EH 215	Brit Lit before 1785	
EH 216	Brit Lit after 1785	
EH 225	Am Lit before 1865	
EH 226	Am Lit after 1865	
EH 235	World Lit before 1650	
EH 236	World Lit after 1650	
B. Select one of the following:		
ARH 100	Survey of Art	
ARH 103	Art History I	
ARH 123	Art History II	
ARS 101	Art Appreciation	
DRA 110	Introduction to Theatre	
MUL 101	Introduction to Music	
C. Complete the following:		
CA 110	Public Speaking	3
<b>Area III – Natural Sciences &amp; Mathematics</b>		
Complete the following:		
MA 125	Calculus I	4
CH 131 & 131L	General Chemistry I and General Chemistry I Lab	4
PH 201 & 201L	Calculus-Based Physics I and Calculus-Based Physics I Lab	4
PH 202 & 202L	Calculus-Based Physics II and Calculus-Based Physics II Lab	4
<b>Area IV – History, Social &amp; Behavioral Sciences</b>		
A. Select one of the following:		

HY 101	HY of Western Civilization I	
HY 102	HY of Western Civilization II	
HY 135	US History to 1877	
HY 136	US History since 1877	
B. Select one of the following:		3
AN 100	Intro to Cultural Anthropology	
AN 101	Intro Archaeology-Bio Anthro	
CA 100	Intro to Communication	
CA 211	Interpersonal Comm	
ECO 215	Prin of Microeconomics	
ECO 216	Prin of Macroeconomics	
GEO 114	People, Places, Environment	
GEO 115	World Regional Geography	
GS 101	Intro to Gender Studies	
IS 100	Global Issues	
IST 201	Seasons of Life	
PSC 130	Intro to US Government	
PSY 120	Introduction to Psychology	
PSY 250	Life Span Development	
SY 109	Introductory Sociology	
SY 112	Social Problems	
C. Select one additional course from either List A or List B above in Area IV		3
<b>Area V Pre-Professional, Major, Elective Courses</b>		
Complete the following:		
MA 126	Calculus II	4
MA 227	Calculus III	4
MA 238	Differential Equations I	3
MA 267	Discrete Math Structures	3
<b>Total Hours</b>		<b>54</b>

## Professional Component Standing (PCS)

PCS is required to be eligible to take EE 300-level and EE 400-level courses. PCS is awarded when the student meets the following requirements:

- Courses: MA 125, MA 126, CH 131, CH 131L, PH 201, CPE 260, EE 220, EE 263, EH 101, EH 102 or EH 105
- Grade C or higher is required in all PCS courses
- Minimum Grade Point Average: 2.00 USA GPA

Students who fail to maintain at least a 2.00 GPA overall at the University of South Alabama will lose PCS status and may be required to take or repeat appropriate courses as specified by the Department Chair to correct their deficiencies and may not be permitted to continue in 300- and 400-level engineering courses.

## Graduation Plan

(129 Total Hours)

The Sample 4-year plan is designed as a guide for students preparing for their course selections. This information provides only a suggested schedule. Actual course selections should be made in consultation with an advisor. Courses listed as Milestones are required to obtain Professional Component Standing (PCS).

Course	Title	Hours
<b>First Year</b>		
<b>Fall</b>		
MA 125	Calculus I <sup>4</sup>	4
CH 131 & 131L	General Chemistry I and General Chemistry I Lab <sup>4</sup>	4
EH 101	English Composition I <sup>4</sup>	3
EG 101	Intro to Engineering & Design	2
CA 110	Public Speaking	3
<b>Milestone Notes</b>		
Must complete at least 12 hours with a 2.0 or higher GPA		
<b>Hours</b>		<b>16</b>
<b>Spring</b>		
MA 126	Calculus II <sup>4</sup>	4
PH 201 & 201L	Calculus-Based Physics I and Calculus-Based Physics I Lab <sup>4</sup>	4
EH 102	English Composition II (or EH 105) <sup>4</sup>	3
CPE 260	Intro to C++ Programming <sup>4</sup>	3
Gen Education	Area II or IV	3
<b>Milestone Notes</b>		
MA 125	Calculus I	
CH 131 & 131L	General Chemistry I and General Chemistry I Lab	
EH 101	English Composition I (if not exempt)	
<b>Hours</b>		<b>17</b>
<b>Second Year</b>		
<b>Fall</b>		
MA 227	Calculus III	4
PH 202 & 202L	Calculus-Based Physics II and Calculus-Based Physics II Lab	4
EE 220	Circuit Analysis I <sup>4</sup>	3
EE 263	Digital Logic Design <sup>4</sup>	3
MA 267	Discrete Math Structures	3
<b>Milestone Notes</b>		
PH 201 & 201L	Calculus-Based Physics I and Calculus-Based Physics I Lab	
MA 126	Calculus II	
CPE 260	Intro to C++ Programming	
EH 102 or EH 105	English Composition II or Honors Composition - H	
<b>Hours</b>		<b>17</b>
<b>Spring</b>		
MA 238	Differential Equations I	3
EE 223	Network Analysis	3
EE 264	Microprocessor Sys-Interfacing	3
EE 268	Digital Logic Design Lab	1
CSC 231	Intro Data Structures Algs	4
General Education: Area I, II, or IV		3
<b>Milestone Notes</b>		
EE 220	Circuit Analysis I	
EE 263 or CSC 228	Digital Logic Design or Digital Logic Computer Arch	
Obtain PCS		
<b>Hours</b>		<b>17</b>
<b>Third Year</b>		
<b>Fall</b>		
EE 331	Physical Electronics	3
EE 321	Signals, Systems & Transforms	3
EE 227	Circuits and Devices Lab	1
EG 231	Intro to Ethics and Economics	3
EE 368	Microprocessor Sys Interf Lab	1
CSC 311	Networking and Communications	3

General Education:Area I, II or IV		3
<b>Hours</b>		<b>17</b>
<b>Spring</b>		
EE 334	Digital Electronics	3
EE 328	Feedback Control Systems	3
EE 322	Prob, Rand Sigs & Stat Anlys	3
EE 457	Embedded System Design	3
EE 446	Embedded System Design Lab <sup>1</sup>	1
CSC 322	Operating Systems	3
<b>Milestone Notes</b>		
Apply for Graduation		
<b>Hours</b>		<b>16</b>
<b>Fourth Year</b>		
<b>Fall</b>		
EE 431	Analog Electronics	3
EE 401	Intro Elec and CpE Design - W <sup>2</sup>	1
EE 454	Digital Computer Architecture	3
EE/CSC 4xx***	Technical Elective <sup>3</sup>	3
EE/CSC 4xx***	Technical Elective <sup>3</sup>	3
General Education:Area I, II or IV		3
<b>Hours</b>		<b>16</b>
<b>Spring</b>		
EE 4xx	Technical Service Lab	1
EE 404	Electrical and Computer Engineering Design <sup>1</sup>	3
EE/CSC 4xx	Technical Elective <sup>3</sup>	3
EE/CSC 4xx	Technical Elective <sup>3</sup>	3
General Education: Area I, II or IV		3
<b>Hours</b>		<b>13</b>
<b>Total Hours</b>		<b>129</b>

<sup>1</sup> EE course only taught in the Spring semester.

<sup>2</sup> EE course only taught in the Fall semester.

<sup>3</sup> CpE technical electives must be selected from CSC and/or EE courses at 400-level according to the selected track with permission of the student's advisor.

<sup>4</sup> These courses are required for Professional Component Standing (PCS). Grade C or better in each course is required to obtain PCS in the Computer Engineering Program. No 300-level courses can be taken without PCS.

**Note:** Students not Term 1-Calculus I ready will exceed the 129 hours required for this degree. If math is not started prior to Fall of Year 1, it is likely that the four-year graduation timetable will be extended. Students with ACT Math scores of 21 and below should begin math courses in the summer before Fall of Year 1.