

**COMPUTER AND ELECTRICAL ENGINEERING  
AND COMPUTER SCIENCE 2011–13 ROADMAPS FOR THE  
FOLLOWING BACHELOR OF SCIENCE DEGREES:**

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**COMPUTER SCIENCE (CS TRACK)  
COMPUTER SCIENCE (CIS TRACK)  
COMPUTER ENGINEERING  
ELECTRICAL ENGINEERING**

**General Education and University Requirements.** Note that some of the general education and university requirements are satisfied automatically or by “double counting” a degree requirement. The CSUB general education goals are listed by the usual campus mnemonic (e.g. A2 is the composition goal in area A) and either a recommended course is given or the choice is left up to the student.

General Education and University Requirements (67–77)

- CSUB 101 - required for first-time freshman. note that engineering majors should take the CSUB 101 section *specific* to engineering.
- A1 - COMM 108 (must be completed within the first 60 units)
- A2 - ENGL 110 (must be completed within the first 45 units)
- A3 - (automatic for Computer and Electrical Engineering majors, but NOT for Computer Science majors)
- B1 and B3 - (satisfied by PHYS 221)
- B2 - BIOL 100
- B4 - (automatic from MATH 140, MATH 192 or MATH 201)
- C1
- C2
- C3
- US History Requirement
- D1
- D2 - ECON 201 (Microeconomics) or ECON 202 (Macroeconomics)
- D3 - PLSI 101 (also satisfies State Government requirement)  
Theme I (automatic for all CEE/CS Majors)
- Theme II - PHIL 316 (Ethics)
- Theme III
- Gender, Race, or Ethnicity Goal (GRE)  
GWAR - it is *strongly recommended* that the student satisfy this university requirement by exam.

The roadmaps (which depend upon whether the student enters in even or odd-numbered years) follow for each degree program. Note that a year is considered “even” if it begins in an even year (e.g. 2012/13) and “odd” otherwise (e.g. 2011/12). Roadmaps should be considered to be the “ideal” situation, as often students take longer than 4 years to graduate. On cross-listed courses we use the primary departmental designation.

### Computer Science 2011–13 Roadmap to Graduation — Entering Odd Years

Odd Year 1	Fall (17)	Winter (15)	Spring (20)
	A2 - ENGL 110 B4 - MATH 201 CMPS 221 Prog. Fund. CSUB 101 (2)	A1 - COMM 108 MATH 202 CMPS 222 OO Prog.	A3 MATH 203 CMPS 223 Data. Str. CMPS 295 Discrete Str.
Even Year 2	Fall (16)	Winter (16)	Spring (15)
	B1,B3 - PHYS 221 (6) CMPS 312 Algorithms MATH 340 Probability	PHYS 222 (6) CMPS 350 Prog. Lang. CMPS 224 Assembly	CMPS 335 Software Eng. MATH 330 Linear Alg. C1
Odd Year 3	Fall (15)	Winter (15)	Spring (15)
	CENG 320 Digital Circ. CMPS 342 Databases B2 - Biology 100/201	CMPS 321 Computer Arch. CENG 376 Networks C2	D1 D3 - PLSI 101 C3
Even Year 4	Fall (15)	Winter (15)	Spring (15)
	CMPS 360 Oper. Systems Theme II - PHIL 316 US History Req.	CMPS 356 AI Theme III D2 - ECON 201/202	CS Elective GRE CMPS 490

### Computer Science 2011–13 Roadmap to Graduation — Entering Even Years

Even Year 1	Fall (17)	Winter (20)	Spring (15)
	A2 - ENGL 110 B4 - MATH 201 CMPS 221 Prog. Fund. CSUB 101 (2)	A1 - COMM 108 MATH 202 CMPS 222 OO Prog. CMPS 295 Discrete Str.	A3 MATH 203 CMPS 223 Data. Str.
Odd Year 2	Fall (16)	Winter (16)	Spring (15)
	B1, B3 - PHYS 221 (6) CMPS 312 Algorithms MATH 340 Probability	PHYS 222 (6) CMPS 350 Prog. Lang. CMPS 224 Assembly	CMPS 335 Software. Eng. MATH 330 Linear Alg. CENG 320 Digital Circ.
Even Year 3	Fall (15)	Winter (15)	Spring (15)
	C1 CMPS 342 Databases B2 - BIOL 100/201	CMPS 321 Computer Arch. CENG 356 AI C2	CMPS 360 Oper. Systems D3 - PLSI 101 C3
Odd Year 4	Fall (15)	Winter (15)	Spring (15)
	D1 Theme II - Phil 316 US History Req.	CMPS 376 Networks Theme III D2 - ECON 201/202	CS Elective GRE CMPS 490

### CIS Track 2011–13 Roadmap to Graduation — Entering Odd Years

Odd Year 1	Fall (17)	Winter (16)	Spring (15)
	A2 - ENGL 110 A3 CMPS 211 Web Design CSUB 101 (2)	A1 - COMM 108 B4 - MATH 140 CMPS 221 Prog. Fund. CMPS 150 (1)	C1 MATH 190/191 CMPS 222 OO Prog.
Even Year 2	Fall (20)	Winter (15)	Spring (15)
	CMPS 223 Data. Str. B1,B3 C2 Elective	CMPS 295 Discrete Str. CMPS 350 Prog. Lang. C3	CMPS 335 Software Eng. CMPS 394 Java D1
Odd Year 3	Fall (15)	Winter (15)	Spring (15)
	CMPS 312 Algorithms CMPS 371 Graphics B2 - Biology 100/201	CMPS 360 Oper. Systems CENG 376 Networks D2 - ECON 201/202	Elective D3 - PLSI 101 Elective
Even Year 4	Fall (15)	Winter (15)	Spring (15)
	CMPS 342 Databases Theme II - PHIL 316 US History Req.	CMPS 356 AI Theme III Elective	Adv. Elective GRE CMPS 490

### CIS Track 2011–13 Roadmap to Graduation — Entering Even Years

Even Year 1	Fall (17)	Winter (16)	Spring (15)
	A2 - ENGL 110 A3 CMPS 211 Web Design CSUB 101 (2)	A1 - COMM 108 B4 - MATH 140 CMPS 221 Prog. Fund. CMPS 150 (1)	C1 MATH 190/191 CMPS 222 OO Prog.
Odd Year 2	Fall (20)	Winter (15)	Spring (15)
	CMPS 223 Data. Str. B1,B3 C2 CMPS 295 Discrete Str.	Elective CMPS 350 Prog. Lang. C3	CMPS 335 Software Eng. CMPS 394 Java D1
Even Year 3	Fall (15)	Winter (15)	Spring (15)
	CMPS 312 Algorithms CMPS 371 Graphics B2 - Biology 100/201	Elective CENG 356 AI D2 - ECON 201/202	CMPS 360 Oper. Systems D3 - PLSI 101 Elective
Odd Year 4	Fall (15)	Winter (15)	Spring (15)
	CMPS 342 Databases Theme II - PHIL 316 US History Req.	CMPS 376 Networks Theme III Elective	Adv. Elective GRE CMPS 490

### Computer Engineering 2011–13 Roadmap to Graduation — Entering Odd Years

Odd Year 1	Fall (17)	Winter (15)	Spring (15)
	A2 - ENGL 110 B4 - MATH 201 CMPS 221 Prog. Fund. CSUB 101 (2) Intro. Eng.	A1 - COMM 108 MATH 202 CMPS 224 Assembly	MATH 203 CMPS 223 Data. Str. CMPS 295 Discrete Str.
Even Year 2	Fall (16)	Winter (16)	Spring (16)
	B1,B3 - PHYS 221 (6) MATH 204 B2 - Biology 100/201	PHYS 222 (6) CENG 320 Digital Circ. CMPS 321 Comp. Arch.	PHYS 223 (6) PHYS/ENGR 207 C1
Odd Year 3	Fall (15)	Winter (15)	Spring (15)
	CENG 304 Linear Systems D3 - PLSI 101 US History Reqt.	CENG 307 Analog Circ. CENG 420 Embedded Sys. CMPS 360 Oper. Systems	C2 CENG 322 VHDL C3
Even Year 4	Fall (15)	Winter (15)	Spring (10)
	Theme II - PHIL 316 CE Elective D2 - ECON 201/202	Theme III CE Elective D1	GRE CENG 490

### Computer Engineering 2011–13 Roadmap to Graduation — Entering Even Years

Even Year 1	Fall (17)	Winter (15)	Spring (15)
	A2 - ENGL 110 B4 - MATH 201 CMPS 221 Prog. Fund. CSUB 101 (2) Intro. Eng.	MATH 202 CMPS 224 Assembly CMPS 295 Discrete Str.	A1 - COMM 108 MATH 203 CMPS 223 Data. Str.
Odd Year 2	Fall (16)	Winter (16)	Spring (16)
	B1,B3 - PHYS 221 (6) MATH 204 CENG 320 Digital Circ.	PHYS 222 (6) CMPS 321 Comp. Arch. C2	PHYS 223 (6) PHYS/ENGR 207 B2 - BIOL 100/201
Even Year 3	Fall (15)	Winter (15)	Spring (15)
	CENG 304 Linear Systems CENG 420 Embedded Sys. US History Reqt.	CENG 307 Analog Circ. D3 - PLSI 101 C1	CMPS 360 Oper. Systems CENG 322 VHDL C3
Odd Year 4	Fall (15)	Winter (15)	Spring (15)
	Theme II - PHIL 316 CE Elective D2 - ECON 201/202	Theme III CE Elective D1	GRE CENG 490

**Elect. Engineering 2011–13 Roadmap to Graduation — Entering Odd Years**

Odd Year 1	Fall (17)	Winter (15)	Spring (15)
	A2 - ENGL 110 B4 - MATH 201 CMPS 221 Prog. Fund. CSUB 101 (2) Intro. Eng.	A1 - COMM 108 MATH 202 CMPS 224 Assembly	B2 - BIOL 100/201 MATH 203 CENG 320 Digital Circ.
Even Year 2	Fall (16)	Winter (16)	Spring (16)
	PHYS 221 (6) MATH 204 CHEM 211	PHYS 222 (6) D2 - ECON 201/202 MATH 340 Probability	PHYS 223 (6) US History Reqt. PHYS/ENGR 207
Odd Year 3	Fall (15)	Winter (15)	Spring (15)
	CENG 304 Linear Systems C1 C2	C3 CENG 306 Complex Var. CENG 307 Analog Circ.	EENG 325 Prop. Mat. D1 D3 - PLSI 101
Even Year 4	Fall (15)	Winter (15)	Spring (10)
	Theme II - PHIL 316 EENG 332 Fields & Waves EENG Elective	Theme III CENG 330 Signals & Syst. EENG Elective	GRE EENG 490

**Elect. Engineering 2011–13 Roadmap to Graduation — Entering Even Years**

Even Year 1	Fall (17)	Winter (15)	Spring (15)
	A2 - ENGL 110 B4 - MATH 201 CMPS 221 Prog. Fund. CSUB 101 (2) Intro. Eng.	A1 - COMM 108 MATH 202 CMPS 224 Assembly	B2 - BIOL 100/201 MATH 203 C1
Odd Year 2	Fall (16)	Winter (16)	Spring (16)
	CHEM 211 PHYS 221 (6) MATH 204	CENG 320 Digital Circuits PHYS 222 (6) MATH 340 Probability	D3 - PLSI 101 PHYS 223 (6) PHYS/ENGR 207
Even Year 3	Fall (15)	Winter (15)	Spring (15)
	CENG 304 Linear Systems US History Reqt. C2	D2 - ECON 201/202 CENG 307 Analog Circuits CENG 306 Complex Var.	EENG 325 Prop. Mat. D1 C3
Odd Year 4	Fall (15)	Winter (15)	Spring (10)
	Theme II - Phil 316 EENG 332 Fields & Waves EENG Elective	Theme III CENG 330 Signals & Syst. EENG Elective	GRE EENG 490