

# COMPUTER SCIENCE

<i>Fall Quarter</i>	<i>Units</i>	<i>Winter Quarter</i>	<i>Units</i>	<i>Spring Quarter</i>	<i>Units</i>
<b>FIRST YEAR</b>					
CS 010 <sup>1</sup> <i>C++ Programming I</i>	4	CS 012 <sup>2</sup> or CS 013 <i>C++ Programming II</i>	4	CS 014 <i>Intro to Data Structures &amp; Algorithms</i>	4
ENGL 001A <i>Beginning Composition</i>	4	ENGL 001B <i>Intermediate Composition</i>	4	MATH 009C <i>First Year Calculus</i>	4
ENGR 001I <i>Professional Dev. &amp; Mentoring</i>	1	MATH 009B <i>First Year Calculus</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4
MATH 009A <i>First Year Calculus</i>	4	MATH/CS 011 <i>Intro to Discrete Structures</i>	4		
<b>SECOND YEAR</b>					
CS 061 <i>Machine Org. &amp; Assembly Lang. Prog.</i>	4	EE/CS 120A <i>Logic Design</i>	5	CS/EE 120B <i>Embedded Systems</i>	4
CS 100 <i>Software Construction</i>	4	CS 111 <i>Discrete Structures</i>	4	PHYS 040C <i>Physics (Electricity/Magnetism)</i>	5
PHYS 040A <i>Physics (Mechanics)</i>	5	PHYS 040B <i>Physics (Heat/Waves/Sound)</i>	5	Breadth _____ <i>Humanities/Social Sciences</i>	4
Breadth _____ <i>Humanities/Social Sciences</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4		
<b>THIRD YEAR</b>					
CS 141 <i>Interm. Data Structures &amp; Algorithms</i>	4	CS 150 <i>Theory of Automata &amp; Formal Language</i>	4	Engineering Elective <sup>3</sup> _____	4
CS 161 <i>Design &amp; Architec. of Comp. Sys. &amp; Lab</i>	4	CS 153 <i>Design of Operating Systems</i>	4	ENGR 180W* <i>Technical Communications</i>	4
MATH 010A <i>Multivariable Calculus</i>	4	Technical Elective** _____	4	MATH 031 <i>Applied Linear Algebra</i>	5
ENGR 101I <i>Professional Dev. &amp; Mentoring</i>	1	Math Elective** _____	4	Technical Elective** _____	4
<b>FOURTH YEAR</b>					
STAT 155 <i>Probability &amp; Statistics for Engr</i>	4	CS 152 <i>Compiler Design</i>	4	CS 179 (E-Z) <i>Project in Computer Science</i>	4
Technical Elective** _____	4	Technical Elective** _____	4	Technical Elective** _____	4
Math Elective** _____	4	Technical Elective** _____	4	Technical Elective** _____	4
Breadth _____ <i>Biological Sciences</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4	Breadth _____ <i>Humanities/Social Sciences</i>	4

To earn a B.S., you must complete all College and University requirements. For a complete list: [www.catalog.ucr.edu](http://www.catalog.ucr.edu).

**ENGLISH COMPOSITION\***

A C or better is required in three quarters of English Composition courses to satisfy the graduation requirement. ENGR 180W fulfills the third quarter of English Composition.

**BREADTH REQUIREMENTS**

For an approved list of Breadth courses: <http://student.engr.ucr.edu/policies/requirements/breadth.html>.

- Humanities: (3 courses)
- A. World History: \_\_\_\_\_
  - B. Fine Arts, Lit., Phil. or Rlst: \_\_\_\_\_
  - C. Human Persp. on Science: \_\_\_\_\_
- Social Sciences: (3 courses)
- A. Econ. or Posc.: \_\_\_\_\_
  - B. Anth., Psyc, or Soc.: \_\_\_\_\_
  - C. General Social Science: \_\_\_\_\_
- Biological Science \_\_\_\_\_

- Ethnicity: (1 course)
- 1. \_\_\_\_\_
- Upper Division: (2 courses)
- 1. \_\_\_\_\_
  - 2. \_\_\_\_\_

**MATH & TECHNICAL ELECTIVES \*\***

Math electives may be chosen from: MATH 046, MATH 120, MATH 126 or PHIL 124.

Please note that Technical Electives may be offered throughout the Academic Year. Consult with your Academic Advisor about potential offerings. Proposed offerings may be found at:

<http://www.cs.ucr.edu/education/undergraduate/courses/>. See approved technical electives on back.

Course Plan is subject to change.

<sup>1</sup> CS 010V may be used to satisfy this requirement

<sup>2</sup> CS 012V may be used to satisfy this requirement

<sup>3</sup> See your Academic Advisor

Total Units: 183

Maximum Units: 220

## Computer Science Technical Electives

You must complete 7 courses (at least 28 units) of Technical Electives chosen from the list below. The technical electives selected must be distinct from those used to satisfy major requirements.

Course	Course Title (Units)
CS 122A	Intermediate Embedded & Real-Time Systems (5)
CS 122B	Advanced Embedded & Real-Time Systems (5)
CS 130	Computer Graphics (4)
CS 133	Computational Geometry (4)
CS 134	Video Game Creation & Design (4)
CS 145	Combinatorial Optimization Algorithms (4)
CS 151	Introduction to Theory of Computation (4)
CS 160	Concurrent Programming & Parallel Systems (4)
CS 162	Computer Architecture (4)
CS 164	Computer Networks (4)
CS 165	Computer Security (4)
CS 166	Database Management Systems (4)
CS/EE 168	Introduction to Very Large Scale Integration (VLSI) Design (4)
CS 169	Mobile Wireless Networks (4)
CS 170	Introduction to Artificial Intelligence (4)
CS 171	Introduction to Machine Learning and Data Mining (4)
CS 172	Introduction to Information Retrieval (4)
CS 177	Modeling & Simulation (4)
CS 179 E-Z	Project in Computer Science (4 units maximum)
CS 180	Introduction to Software Engineering (4)
CS 181	Principles of Programming Languages (4)
CS 182	Software Testing and Verification (4)
CS 183	UNIX System Administration (4)
CS 193	Design Project (4 units maximum)
EE 140	Computer Visualization (4)
MATH 120*	Optimization (4)
MATH 135A	Numerical Analysis (4)
MATH 135B	Numerical Analysis (4)

\* Cannot be used as a Technical Elective if being used to satisfy a Math Elective.