

# Computer Science with Business Applications

<b>Fall Quarter</b>	<b>Units</b>	<b>Winter Quarter</b>	<b>Units</b>	<b>Spring Quarter</b>	<b>Units</b>
<b>FIRST YEAR</b>					
CS 010 <i>C++ Programming I</i>	4	CS 012 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 001M <i>Professional Dev. &amp; Mentoring</i>	1	MATH 009B <i>First Year Calculus</i>	4	Breadth _____ <i>Humanities/Natural Sciences</i>	4
MATH 009A <i>First Year Calculus</i>	4	CS/MATH 011 <i>Intro to Discrete Structures</i>	4	Breadth _____ <i>Humanities/Natural Sciences</i>	4
<b>SECOND YEAR</b>					
BUS 020 <i>Financial Accounting &amp; Reporting</i>	4	MATH 010A <i>Multivariable Calculus</i>	4	ECON 003 <i>Intro to Microeconomics</i>	5
CS 061 <i>Machine Org. &amp; Assembly Lang. Prog.</i>	4	CS 111 <i>Discrete Structures</i>	4	MATH 031 <i>Applied Linear Algebra</i>	5
CS 100 <i>Software Construction</i>	4	STAT 155 <i>Probability &amp; Statistics for Engr</i>	4	Breadth _____ <i>Humanities/Natural Sciences</i>	4
ECON 002 <i>Intro to Macroeconomics</i>	5	Breadth _____ <i>Biological Sci (Biol 002 or</i>	4	Breadth _____ <i>Humanities/Natural Sciences</i>	4
<b>THIRD YEAR</b>					
BUS 103 <i>Marketing &amp; Distribution Mgmt</i>	4	BUS/STAT 104 <i>Decision Analysis &amp; Mgmt Science</i>	4	CS 153 <i>Design of Operating Systems</i>	4
CS 141 <i>Interm. Data Structures &amp; Algorithms</i>	4	BUS 106/ECON 134 <i>Intro to Financial Mgmt</i>	4	ENGR 180W** <i>Technical Communications</i>	4
SOC 150 <i>Soc. of Economic Organizations</i>	4	CS Technical Elective** _____	4	CS Technical Elective*** _____	4
ENGR 101M <i>Professional Dev. &amp; Mentoring</i>	1	Breadth _____ <i>Humanities/Natural Sciences</i>	5	Breadth _____ <i>Humanities/Natural Sciences</i>	4
<b>FOURTH YEAR</b>					
CS 165 <i>Computer Security</i>	4	BUS Technical Elective <sup>1</sup> _____	4	CS Technical Elective*** _____	4
CS Elective <i>CS 164, CS 166, CS 172 or CS 180</i>	4	BUS Technical Elective <sup>1</sup> _____	4	BUS Technical Elective** _____	4
CS Elective <i>CS 164, CS 166, CS 172 or CS 180</i>	4	CS Technical Elective** _____	4	BUS Technical Elective** _____	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 third quarter 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./Rlst: \_\_\_\_\_
- C. Human Persp. on Sci: \_\_\_\_\_

**Natural Sciences: (4 courses)**

- A. Biological Science: \_\_\_\_\_
- B. Physical Science: \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**Ethnicity: (1 course)**

- 1. \_\_\_\_\_

**Upper Division: (1 course)**

- 1. \_\_\_\_\_

**TECHNICAL ELECTIVES \*\*\***

Please note that Technical Electives may be offered throughout the Academic Year. Consult with your Academic Advisor about potential offerings. See approved technical electives on back.

**Computer Science Technical Electives:**

- 1. \_\_\_\_\_ 3. \_\_\_\_\_
- 2. \_\_\_\_\_ 4. \_\_\_\_\_

**Business Administration Technical Electives:**

- 1. \_\_\_\_\_ (IS) 3. \_\_\_\_\_
- 2. \_\_\_\_\_ (IS) 4. \_\_\_\_\_

Total Units: 178  
Maximum Units: 222

Course Plan is subject to change.

## Computer Science w/Business Applications Technical Electives

### Computer Science Technical Electives:

You must complete at least 16 units of upper division Computer Science Technical Electives which must be distinct from major requirements. These 16 units may be chosen from upper division requirements or technical electives for the Computer Science Major. At least three courses must be in the Department of Computer Science and Engineering.

CS 120A	Logic Design (5)	CS 170	Introduction to Artificial Intelligence (4)
CS 120B	Introduction to Embedded Systems (4)	CS 171	Intro to Machine Learning & Data Mining (4)
CS 122A	Inter. Embedded&Real-Time Syst. (5)	CS 172	Introduction to Information Retrieval (4)
CS 122B	Adv. Embedded & Real-Time Syst. (5)	CS 175	Entrepreneurship in Computing (4)
CS 130	Computer Graphics (4)	CS 177	Modeling & Simulation (4)
CS 133	Computational Geometry (4)	CS 179 (E-Z)	Project in Computer Science (4 units maximum)
CS 134	Video Game Creation & Design (4)	CS 181	Principles of Programming Languages (4)
CS 135	Virtual Reality (4)	CS 182	Software Testing and Verification (4)
CS 145	Combinatorial Optimization Algor. (4)	CS 183	UNIX System Administration (4)
CS 150	Theory of Automata & Formal Lang. (4)	CS 193	Design Project (4 units maximum)
CS 152	Compiler Design (4)	MATH 120	Optimization (4)
CS 160	Concurrent Prog. & Parallel Syst. (4)	MATH 126	Combinatorics (4)
CS 161	Design&Architecture of Comp. Syst. (4)	MATH 135A	Numerical Analysis (4)
CS 162	Computer Architecture (4)	MATH 135B	Numerical Analysis (4)
CS 168	Introduction to VLSI Design (4)	PHIL 124	Formal Logic (4)
CS 169	Mobile Wireless Networks (4)		

### Business Administration Technical Electives:

You must complete at least 16 units of upper division Business Administration Technical Electives, including at least 8 units of courses listed in the Information Systems concentration within the Business Administration major. These units must be distinct from major requirements and may be chosen from any of the available Business Administration courses.

\* Choose at least TWO from Information Systems courses:

BUS 125	Simulation for Business (4)
BUS 128	Project Planning and Control (4)
BUS 171	System Analysis & Design (4)
BUS 172	Information Economics (4)
BUS 173	Introduction to Databases for Mgmt (4)
BUS 174	Electronic Commerce (4)
BUS 175	Business Data Communications (4)
BUS 177	Strategies in Information Systems (4)

\* Choose remaining TWO from:

*ANY AVAILABLE UPPER DIVISION BUSINESS ADMINISTRATION (BUS) COURSES, EXCEPT BUS 101*

Please note the following credit exceptions:

- No credit is given for BUS 101
- Only one of BUS 171 or CS 180 can be taken for credit
- Only one of BUS 173 or CS 166 can be taken for credit
- Only one of BUS 175 or CS 164 can be taken for credit
- Only one of BUS 125 or CS 177 can be taken for credit

1 Technical Electives may require that you complete additional courses as prerequisites that are not accounted for in the undergraduate program. Please go to [www.catalog.ucr.edu](http://www.catalog.ucr.edu) for course descriptions and prerequisite information.