# UCR | Bourns College of Engineering

# Computer Science with Business Applications

| Fall Quarter | Units | Winter Quarter | Units | Spring Quarter | Units |
|---|---|---|---|---|---|
| **FIRST YEAR** | | | | | |
| CS 010 | 4 | CS 012 or CS 013 | 4 | CS 014 | 4 |
| *C++ Programming I* | | *C++ Programming II* | | *Intro to Data Structures & Algorithms* | |
| ENGL 001A | 4 | ENGL 001B | 4 | MATH 009C | 4 |
| *Beginning Composition* | | *Intermediate Composition* | | *First Year Calculus* | |
| ENGR 001M | 1 | MATH 009B | 4 | Breadth _____ | 4 |
| *Professional Dev. & Mentoring* | | *First Year Calculus* | | *Humanities/Natural Sciences* | |
| MATH 009A | 4 | CS/MATH 011 | 4 | Breadth _____ | 4 |
| *First Year Calculus* | | *Intro to Discrete Structures* | | *Humanities/Natural Sciences* | |
| **SECOND YEAR** | | | | | |
| BUS 020 | 4 | MATH 010A | 4 | ECON 003 | 5 |
| *Financial Accounting & Reporting* | | *Multivariable Calculus* | | *Intro to Microeconomics* | |
| CS 061 | 4 | CS 111 | 4 | MATH 031 or EE 020 | 5 |
| *Machine Org. & Assembly Lang. Prog.* | | *Discrete Structures* | | *Applied Linear Algebra* | |
| CS 100 | 4 | STAT 155 | 4 | Breadth _____ | 4 |
| *Software Construction* | | *Probability & Statiscis for Engr* | | *Humanities/Natural Sciences* | |
| ECON 002 | 5 | Breadth _____ | 4 | Breadth _____ | 4 |
| *Intro to Macroeconomics* | | *Biological Sci (Biol 002 or* | | *Humanities/Natural Sciences* | |
| **THIRD YEAR** | | | | | |
| BUS 103 | 4 | BUS/STAT 104 | 4 | CS 153 | 4 |
| *Marketing & Distribution Mgmt* | | *Decision Analysis & Mgmt Science* | | *Design of Operating Systems* | |
| CS 141 | 4 | BUS 106/ECON 134 | 4 | ENGR 180W** | 4 |
| *Interm. Data Structures & Algorithms* | | *Intro to Financial Mgmt* | | *Technical Communications* | |
| Breadth _____ | 4 | CS Technical Elective** | 4 | SOC 150 | 4 |
| *Humanities/Natural Sciences* | | _____ | | *Soc. of Economic Organizations* | |
| Breadth _____ | 4 | ENGR 101M | 1 | CS Technical Elective*** | 4 |
| *Humanities/Natural Sciences* | | *Professional Dev. & Mentoring* | | _____ | |
| **FOURTH YEAR** | | | | | |
| BUS Technical Elective⁺ | 4 | BUS Technical Elective⁺ | 4 | CS Technical Elective*** | 4 |
| _____ | | _____ | | _____ | |
| CS Elective | 4 | CS Technical Elective** | 4 | BUS Technical Elective*⁺ | 4 |
| *CS 164, CS 166, CS 172 or CS 180* | | _____ | | _____ | |
| CS Elective | 4 | CS 165 | 4 | BUS Technical Elective*⁺ | 4 |
| *CS 164, CS 166, CS 172 or CS 180* | | *Computer Security* | | _____ | |

Total Units: 177
Maximum Units: 222

To earn a B.S., you must complete all College and University requirements. For a complete list: 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:        1_____
                              2_____
                              3_____
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. _____

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 eletives for the Computer Science Major. At least four courses must be in the Department of Computer Science and Engineering.

| | | | |
|---|---|---|---|
| CS 105 | Data Analysis Methods (4) | CS 169 | Mobile Wireless Networks (4) |
| 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) | | |
| CS 160 | Concurrent Prog. & Parallel Syst. (4) | | |
| CS 161 | Design&Architecture of Comp. Syst. (4) | | |
| CS 162 | Computer Architecture (4) | | |
| CS 167 | Intro to BIG-DATA Management (4) | | |
| CS 168 | Introduction to VLSI Design (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:*

* Choose remaining TWO from:

| | |
|---|---|
| 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) |

*ANY AVAILABLE UPPER DIVISION BUISNESS 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 for course descriptions and prerequisite information.