## Major Requirements - B.S. in Computer Science

(for students who entered Roanoke College Fall 2010 or later)

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### Suggested Freshman Courses:

**EITHER**

- MATH 118* DIFFERENTIAL CALCULUS and MATH 119* INTEGRAL CALCULUS
- OR
- MATH 121* CALCULUS I

- MATH 122 CALCULUS II *
- CPSC 120 FUNDAMENTALS OF COMPUTER SCIENCE I (*)
- CPSC 170 FUNDAMENTALS OF COMPUTER SCIENCE II
- MATH 131 DISCRETE MATHEMATICS

### Suggested Sophomore Year Courses:

- CPSC 250 DATA STRUCTURES & ALGORITHMS
- CPSC 290 COMPUTER ARCHITECTURE & OPERATING SYSTEMS
- MATH 201 LINEAR ALGEBRA
- STAT 202 PROBABILITY

### Suggested Junior/Senior Year Courses:

- CPSC 390 ** THEORY OF COMPUTATION
- CPSC 395 *** ANALYSIS OF ALGORITHMS
- CPSC 425 ** PRINCIPLES OF PROGRAMMING LANGUAGES
- ELECTIVE ****
- ELECTIVE ****

### Senior Year Course:

- CPSC 436 or 435 & 437 SENIOR RESEARCH

### Elective Choices:

- CPSC 301/302 SYSTEMS ADMINISTRATION 1 AND 2 (Offered every year)
- CPSC 310 TOPICS IN APPLIED COMPUTING
- CPSC 340 ** DATABASE SYSTEMS
- CPSC 342 NUMERICAL ANALYSIS
- CPSC 350 HUMAN COMPUTER INTERACTION
- CPSC 360 NETWORKS
- CPSC 365 *** SOFTWARE ENGINEERING & PROJECT DESIGN
- CPSC 405 INDEPENDENT STUDY AND RESEARCH (1/2 unit)
- CPSC 406 INDEPENDENT STUDY AND RESEARCH (1 unit)
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>CPSC 407</td>
<td>INDEPENDENT STUDY AND RESEARCH (1/2 unit)</td>
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<tr>
<td>CPSC 415</td>
<td>*** WEB PROGRAMMING</td>
<td>Taught in 2011/2012 and alternate years: take either junior or senior year depending upon when offered.</td>
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<td>CPSC 416</td>
<td>INTERNSHIP</td>
<td>Taught in 2012/2013 and alternate years: take either junior or senior year depending upon when offered.</td>
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* CPSC 120, MATH 118 and 119, or 121, and MATH 122 are not explicitly required for the major but are prerequisites for all required courses in the major. Students should consult a computer science faculty member about the need to take these courses.

** Taught in 2011/2012 and alternate years: take either junior or senior year depending upon when offered.

*** Taught in 2012/2013 and alternate years: take either junior or senior year depending upon when offered.

**** Two elective units are required. One of these units may be Math 361 or Math 371. Elective courses are taught on a rotation basis, not every year.