Computer Science Major Requirements
Catalog Year: 2013-14
Degree: Bachelor of Science
Credit Hours: 76+

“PR” indicates a pre-requisite. “CO” indicates a co-requisite.

Courses within this major may also satisfy general education requirements. Please consult http://registrar.cofc.edu/general-edu for more information.

Required Courses

- CSCI 220  Computer Programming I (3) PR: CSCI 120 or CSCI 180 or CSCI 210 or MATH 111; CO: CSCI 220L
- CSCI 220L  Computer Programming I Lab (1)CO: CSCI 220
- CSCI 221  Computer Programming II (3) PR: CSCI 220, CSCI 220L; CO or PR: MATH 207
- CSCI 230  Data Structure and Algorithms (3) PR: CSCI 221, MATH 207
- CSCI 250  Introduction to Computer Organization and Assembly Language Programming (3) PR: CSCI 220 and CSCI 220L; CO or PR: MATH 207
- CSCI 320  Programming Language Concepts (3) PR: CSCI 221, MATH 207
- CSCI 340  Operating Systems (3) PR: CSCI, 230, CSCI 250, MATH 207
- CSCI 350  Digital Logic and Computer Organization (3) PR: CSCI 250; PR or CO: MATH 307
- CSCI 360  Software Architecture and Design (3) PR: CSCI 230, MATH 207; CO: COMM 104
- CSCI 362  Software Engineering (3) PR: CSCI 221, MATH 207; CO: COMM 104
- CSCI 392  Seminar on Computing and Society (3) PR: CSCI 221
- CSCI 462  Software Engineering Practicum (3) PR: CSCI 230, CSCI 360 or CSCI 362; COMM 104

Elective Requirements: 9 credit hours from the following:

- CSCI 310  Advanced Algorithms (3) PR: CSCI 230, MATH 207
- CSCI 315  Service-Side Web Programming (3) PR: CSCI 215, CSCI 221
- CSCI 325  Functional and Logic Programming (3) PR: CSCI 221, MATH 207
- CSCI 332  Database Concepts (3) PR: CSCI 221, MATH 207
- CSCI 334  Data Mining (3) PR: CSCI 221, MATH 207, MATH 250
- CSCI 380  User Interface Development (3) PR: CSCI 221, MATH 207, or instructor permission
- CSCI 397  Research Experience in Computer Science (0) PR: Declared CSCI Majors only, instructor permission, department chair permission
- CSCI 399  Tutorial (3, Repeatable up to 12) PR: Junior standing, tutor permission, department chair permission
- CSCI 410  Automata and Formal Language (3) PR: MATH 207
- CSCI 420  Principles of Compiler Design (3) PR: CSCI 230, CSCI 320, MATH 307
- CSCI 432  Concepts of Database Implementation (3) PR: CSCI 332, MATH 307
- CSCI 440  Computer Networks (3) PR: CSCI 340, MATH 250, MATH 307
- CSCI 450  Architecture of Advanced Computer Systems (3) PR: CSCI 340 or CSCI 350
CSCI 459  Service-Oriented Programming (3) PR: CSCI 221; CSCI 230 or CSCI 315
CSCI 470  Principles of Artificial Intelligence (3) PR: CSCI 230, MATH 307
CSCI 480  Principles of Computer Graphics (3) PR: CSCI 230, MATH 220, MATH 307
CSCI 490  Special Topics (3) PR: Instructor permission
CSCI 499  Bachelor’s Essay (6) PR: A project proposal must be submitted in writing and approved by the department prior to registration for the course.

Math Requirement

☐ MATH 120  Introductory Calculus (4) PR: Placement or C or better in MATH 111
☐ MATH 207  Discrete Structures I (3) PR: MATH 105, MATH 111, or MATH 120
☐ MATH 250  Statistical Methods I (3) PR: MATH 111 or MATH 120 or instructor permission
☐ MATH 307  Discrete Structures II (3) PR: MATH 207 or MATH 295 or instructor permission

Select one additional math course from the following:

☐ _________________________

MATH 220  Calculus II (4) PR: MATH 120 or HONS 115
MATH 203  Linear Algebra (3) PR: MATH 220 or instructor permission
MATH 245  Numerical Methods and Mathematical Computation (3) PR: MATH 203, MATH 220, instructor permission; CO: MATH 246
MATH 350  Statistical Methods II (3) PR: MATH 120, MATH 250
MATH 440  Statistical Learning I (3) PR: MATH 203, MATH 220, and MATH 350

Communication Requirement

☐ COMM 104  Public Speaking (3) PR: None

☐ Science Requirement Select 14 credit hours from the following:

BIOL 111  Introduction to Cell and Molecular Biology (3) PR: None; CO: BIOL 111L
BIOL 111L  Introduction to Cell and Molecular Biology Lab (1) CO: BIOL 111
BIOL 112  Evolution, Form, and Function of Organisms (3) PR: BIOL 111 and 111L; CO: BIOL 112L
BIOL 112L  Evolution, Form, and Function of Organisms Lab (1) CO: BIOL 112L

CHEM 111  Principles of Chemistry (3) PR or CO: unless students exempt MATH 111 (via diagnostic testing) or have completed this course as a pre-requisite, they are required to take MATH 111 as a co-requisite; CO: CHEM 111L
CHEM 111L  Principles of Chemistry Lab (1) CO: CHEM 111
CHEM 112  Principles of Chemistry (3) PR: CHEM 111 and 111L or HONS 153 and 153L; CO: CHEM 112L (MATH 120 strongly recommended)
CHEM 112L  Principles of Chemistry Lab (1) CO: CHEM 112

GEOL 101  Dynamic Earth (3) PR: None; CO: GEOL 101L
GEOL 101L  Dynamic Earth Lab (1) CO: GEOL 101
GEOL 103  Environmental Geology (3) PR: None; CO: GEOL 103L
GEOL 103L  Environmental Geology Lab (1) CO: GEOL 103
GEOL 105  Earth History (3) PR: GEOL 101 and 101L or GEOL 103 and 103L; CO: GEOL 105L
GEOL 105L  Earth History Lab (1) CO: GEOL 105
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<th>COURSE</th>
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<tr>
<td>PHYS 111</td>
<td>General Physics I (3) PR or CO: MATH 120 or equivalent or instructor permission; CO: PHYS 111L</td>
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<td>PHYS 111L</td>
<td>General Physics I Lab (1) CO: PHYS 111</td>
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<td>PHYS 112</td>
<td>General Physics II (3) PR: PHYS 111 or HONS 157; CO or PR: MATH 220 or equivalent or instructor permission; CO: PHYS 112L</td>
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<td>PHYS 112L</td>
<td>General Physics II Lab (1) CO: PHYS 112</td>
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