

Computer Science Specializations

Effective spring semester 2012 and later

In order to give Computer Science majors the opportunity to concentrate, optional specializations have been added to the computer science major at Rowan University. A specialization is composed of four or more specified courses (12 s.h. or more) in computer science and other related disciplines that provide a solid foundation in some fundamental area of computer science. The areas of specialization are software engineering, networking and operating systems, information technology, programming languages and compilers, artificial intelligence, and graphics and visualization.

NOTE: There may be other alternative ways to achieve these specializations. Please see your Computer Science advisor for details.

The following lists specify the courses making up each specialization.

- **Software Engineering**
 - CS 07.320 Software Engineering Lab (1 s.h.)
 - CS 07.321 Software Engineering I
 - CS 07.322 Software Engineering II
 - At least two of
 - CS 04.305 Web Programming
 - CS 07.370 Introduction to Information Visualization
 - CS 04.380 Object Oriented Design
 - CS 04.401 Compiler Design

- **Networking and Operating Systems**
 - CS 04.390 Operating Systems
 - CS 06.410 Data Communications and Networking
 - At least one of
 - CS 04.391 Concurrent Programming
 - CS 04.392 System Programming and Operating System Internals
 - CS 04.394 Distributed Systems
 - And at least one of
 - CS 06.415 Wireless Networks, Protocols and Application
 - CS 06.416 TCP/IP and Internet Protocols and Technologies

- **Information Technology**
 - INTR 01.265 or INTR 01.266 Computers and Society
 - CS 04.430 Database Systems: Theory and Programming
 - At least two of
 - CS 04.305 Web Programming
 - CS 06.410 Data Communications and Networking
 - CS 06.415 Wireless Networks, Protocols and Application
 - CS 06.416 TCP/IP and Internet Protocols and Technologies
 - CS 06.420 Embedded Systems Programming

- **Programming Languages and Compilers**
 - CS 04.315 Programming Languages
 - CS 04.401 Compiler Design
 - At least two of
 - CS 04.325 Programming in Ada
 - CS 04.327 Power Java
 - CS 04.380 Object Oriented Design
 - CS 06.420 Embedded Systems Programming
 - CS 07.422 Theory of Computing
- **Artificial Intelligence**
 - CS 07.450 Artificial Intelligence
 - At least three of
 - PHIL 09.130 Introduction to Symbolic Logic
 - CS 07.310 Robotics: Software and Mobility
 - CS 07.340 Design and Analysis of Algorithms
 - CS 07.460 Computer Vision
 - CS 07.470 Theory and Applications of Pattern Recognition
- **Graphics and Visualization**
 - At least four of
 - MATH 01.210 Linear Algebra
 - CS 07.360 Introduction to Computer Graphics
 - CS 07.370 Introduction to Information Visualization
 - CS 07.380 Introduction to Computer Animation
 - CS 07.390 Introduction to Computer Game Design and Development
- **Cyber Security**
 - CS 04.390 Operating Systems
 - At least three of (*other courses may be added at the later time*)
 - CS 07.350 Computer Cryptography
 - CS 07.351 Cyber Security: Fundamentals, Principles and Applications
 - CS 06.417 Principles of Network Security
 - CS 06.410 Data Communications and Networking

The following limitations apply.

- A course can be used to satisfy the requirements of at most one specialization.
- If a student takes the graduate version of a course (senior privilege or accelerated BSMS degree) instead of the undergraduate version, the graduate version will count in a specialization in place of the undergraduate version.
- A CS 01.400 Independent Study or CS 01.395 Topics in Computer Science course in the area of a specialization will count as a course in that specialization if approved by the student's advisor, subject to the following constraints.
 - An Independent Study/Topics in Computer Science course used by a student to satisfy the requirements of a particular specialization must be 3.0 semester hours or less.
 - At most one Independent Study/Topics in Computer Science course may be used by a student to satisfy the requirements of any particular specialization.
 - A particular Independent Study/Topics in Computer Science course may be used at most once by a student to satisfy the requirements of a specialization.
 - A student may satisfy the requirements of at most one specialization with Independent Study/Topics in Computer Science courses.