SOFTWARE ENGINEERING

CAREER OVERVIEW FOR STUDENTS
Software Engineering is a diverse field offering a wide range of opportunities for students. Software Engineers define requirements, design system architecture, and write and test code as part of the software development life cycle. Professionals in this field are in demand in a wide range of industries, including software companies, financial services, defense contractors, interactive entertainment, health services and more. Software Engineering has consistently been ranked one of the top jobs in the US, with high growth potential.

Curriculum Overview for Software Engineering
www.rit.edu/programs/software-engineering

Degree(s) Awarded
Bachelor of Science

Enrollment
Approximately 450 students

Cooperative Education Component
Students are required to complete at least 2 semesters and 1 summer of co-op work assignments, and are available to work 3 or 7 months at a time. Co-op positions must incorporate various phases of the Software Development Life Cycle (for example, requirements gathering and analysis, design, development, documentation, and/or testing), and include duties beyond just programming.

Salary Information (Avg/Range)
Co-op: $20.86 – $48.00
BS: $70,000 – $100,000

Equipment & Facilities
The department provides a variety of facilities where students collaborate on projects, polish their skills, and consult with faculty. Outfitted with the latest hardware and software technology, our facilities reflect our commitment to teamwork, interactive learning, and professional education. From the team rooms to the Collaboration Lab, our facilities are designed to support students and mimic a real-world environment.

Accreditation
The Bachelor of Science degree program in Software Engineering is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

Student Skills & Capabilities
Students learn principles, methods and techniques for the construction of complex and evolving software systems. The software engineering program encompasses both technical issues affecting software architecture, designs and implementation, as well as process issues that address project management, planning, quality assurance and product maintenance. The software engineering coursework maintains a balance between engineering design and software process in both required and elective courses. As with other engineering fields, mathematics and natural science fundamentals are taken in the early years. A three-course sequence in a domain outside the program’s core requirements allows students to apply their software engineering skills to a variety of fields including science, computing, engineering, and business. Finally, students complete a full year senior project as the final demonstration of their abilities and preparation for immediate employment and long-term professional growth in software development organizations.
Nature of Work
Software engineers apply the principles and techniques of computer science, engineering, and mathematical analysis to the design, development, testing, and evaluation of the software and systems that enable computers to perform their many applications. The tasks performed by these workers evolve quickly, reflecting new areas of specialization or changes in technology, as well as the preferences and practices of employers. Software engineers working in applications or systems development analyze users’ needs and design, construct, test, and maintain computer applications software or systems. Software engineers can be involved in the design and development of many types of software, including software for computer games, business applications, operating systems and network distribution, and compilers, which convert programs for execution on a computer. In programming, or coding, software engineers instruct a computer, line by line, how to perform a function. Software engineers must possess strong programming skills, but are more concerned with developing algorithms and analyzing and solving programming problems than with actually writing code. Applications software engineers analyze users’ needs and design, construct, and maintain general computer applications software or specialized utility programs. These workers use different programming languages, depending on the purpose of the program. The programming languages most often used are C, C++, and Java, with Fortran and COBOL used less commonly. Some software engineers develop both packaged systems and systems software or create customized applications. (Source: U.S. Bureau of Labor and Statistics Occupational Outlook Handbook)

Training/Qualifications
For software engineering positions, most employers prefer applicants who have at least a bachelor’s degree and broad knowledge of, and experience with, a variety of computer systems and technologies. The usual college majors for applications software engineers are computer science, software engineering, or mathematics. Systems software engineers often study computer science or computer information systems. Graduate degrees are preferred for some of the more complex jobs. (Source: U.S. Bureau of Labor Statistics O.O.H.)

Job Outlook
Employment of computer software engineers is projected to increase by 22 percent over the 2012 to 2022 period, which is much faster than the average for all occupations. This occupation will generate more than 223,000 new jobs, over the projections decade, one of the largest employment increases of any occupation. Employment growth will result as businesses and other organizations adopt and integrate new technologies and seek to maximize the efficiency of their computer systems. (Source: U.S. Bureau of Labor Statistics O.O.H.)

Job Titles
Software Engineer, Technical Specialist, Software Developer, Software Quality Assurance Specialist, Software Tester, Software Designer, Software Requirements Engineer, Programmer.

Significant Points
- Computer software engineers are among the occupations projected to grow the fastest and add the most new jobs over the 2010-20 decade.
- Excellent job prospects are expected for applicants with at least a bachelor’s degree in a computer-related field and with practical work experience.
- Computer software engineers must continually strive to acquire new skills in conjunction with the rapid changes that occur in computer technology. (Source: U.S. Bureau of Labor Statistics O.O.H.)

Employment
Computer software developers held about 1.1 million jobs in 2012. Although they are employed in most industries, the largest concentration of computer software engineers—about 32 percent—is in computer systems design and related services. Many also work for software publishers, manufacturers of computers and related electronic equipment, financial institutions, and insurance providers. (Source: U.S. Bureau of Labor Statistics O.O.H.)

Selected Employers of RIT Software Engineering Co-op and Graduating Students

Contact Us
We appreciate your interest in your career and we will make every effort to help you succeed. Feel free to contact Jill Jablonski, the career services coordinator who works with the Software Engineering program. For your convenience, you can access information and services through our web site at www.rit.edu/co-op/careers.

Jill Jablonski, Career Services Coordinator. jsjoce@rit.edu
RIT Office of Career Services and Cooperative Education, Bausch & Lomb Center
57 Lomb Memorial Drive, Rochester NY 14623-5603, 585.475.2301