About this course

Software as a stand alone product or embedded within a system plays an integral role in our world today. As a consequence, it is essential that software works as expected. This requires software testing which entails answering both the verification question: “Are we building the product right?” and the validation question: “Are we building the right product?”. Understanding these questions is crucial for developing good test cases. This course is for anyone involved in testing software at any level starting from code modules to system testing. Strategies and techniques are presented for both testing software as well as planning and tracking testing efforts.

Specific topics covered include:

- Testing background
- Testing process activities
- Requirements based testing techniques Structure based testing techniques System testing
- Testing tools
- Reliability models Statistical testing
- Test planning
- Tracking testing progress Test documentation
- Test process improvement

Required prior knowledge and skills

- High-level programming language
- Software development life cycle models

Learning Outcomes

Learners completing this course will be able to:

- Explain how testing activities fit within leading software development process models Understand and apply best practices for software testing
- Create test cases based on commonly used requirements based testing techniques Create test cases to achieve control and data flow structure based coverage
- Apply static analysis techniques to identify code anomalies
- Create test cases that demonstrate system-level quality requirements are being met Identify appropriate testing tools for applications
- Predict software reliability based on operational profile testing and reliability models Describe activities to perform for improving testing processes
- Analyze testing needs to create a plan to achieve test objectives
- Track testing progress against a plan

Estimated Workload/Time Commitment Per Week

15 - 20 hours per week
Dr. James Collofello

James Collofello serves as Vice Dean of Academic and Student Affairs and has held this position since 2006. In this capacity he leads the school’s student recruitment and retention, career development and placement, K-12 programming, new curriculum development, accreditation and oversight of Fulton Difference programming. The Fulton Difference consists of innovative programs operated at scale to provide students with opportunities to develop and enhance their research, leadership, project development and entrepreneurship skills. Major Fulton Difference programs include engineering student organizations, Fulton Undergraduate Research Initiative, Grand Challenge Scholars Program, Undergraduate Teaching Assistant Program and Engineering Projects in Community Service. He is also a professor of computer science and software engineering. His teaching and research interests lie in the software engineering area with an emphasis on software quality assurance, software process improvement and software project management. He has also been active in developing and improving computer science curriculum and working to improve undergraduate retention. In addition to his academic activities, he has also been involved in applied research projects, training and consulting with many large corporations over the last 25 years.