Software Assurance Curriculum

Creating a Well-Rounded Education

Knowledge about software assurance topics is key to ensuring that the complex systems that provide the underlying operational support for every major industry continue to function properly. To help propagate that knowledge, the CERT® Program is leading efforts in software assurance education.

Overview

Because complex systems affect nearly every aspect of our lives—in areas such as communication, transportation, banking, government, defense, and energy— it is crucial that those systems are resistant to and resilient against threats. Securing those systems requires professionals with the knowledge and skills necessary to understand and meet the challenge. Unfortunately, there are not enough of these professionals to meet the growing demand.

Many colleges and universities have degree programs in areas such as software engineering and information security, but programs and tracks in software assurance are lacking. In collaboration with educators from Embry-Riddle Aeronautical University, Monmouth University, and Stevens Institute of Technology, the CERT Program has developed the first curriculum that focuses on assuring the functionality, dependability, and security of software and systems.*

Curriculum Highlights

The Master of Software Assurance (MSwA) Reference Curriculum addresses topics such as assurance across life cycles, risk management, assurance assessment, assurance management, system security assurance, assured software analytics, and system operational assurance.

Structured to be a complete, comprehensive curriculum that educators can implement with minimal effort, the MSwA Reference Curriculum includes

- prerequisites expected of students entering an MSwA program
- course architecture for both a standalone degree program and a track within a related degree program
- a core body of knowledge that includes the fundamental topics addressed in the curriculum
- educational outcomes that graduates from a program based on the curriculum should have achieved
- guidelines for educational institutions interested in implementing the curriculum

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For more information about the curriculum and to download resources, visit the CERT website:

www.cert.org/mswa

Implementation Options

To promote incorporation of software assurance information into formal degree programs, the MSwA project team offers flexible options. Educational institutions may choose from the following:

- implement the full reference curriculum to establish a standalone master's program in software assurance
- tailor the materials to offer a software assurance track within an existing graduate program in a related area, such as software engineering or information systems
- use the available undergraduate course outlines to prepare students for a career or additional graduate study in the field of software assurance

Additionally, managers or trainers within organizations may be able to use information from the curriculum to enhance the software assurance capabilities of their existing workforce.

Available Resources

A variety of resources to help educational institutions implement an MSwA degree program or track based on the curriculum are freely available from the CERT website at www.cert.org/mswa. These resources include

- MSwA Reference Curriculum
- MSwA curriculum overview presentation to faculty
- course syllabi to be used in an MSwA curriculum program
- undergraduate software assurance course outlines
- community college course outlines for software assurance
- lecture materials and artifacts
- Get Started in Software Assurance Education workshop
- master bibliography and related publications

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