



Certificate Description

This certificate provides professionals the opportunity to enhance technical and commercial understanding in Software Analysis and Development.

Object Oriented Application Development—ITSD 322—This course introduces the application development methodology using contemporary, industry-grade development environments. Students will learn to use programming techniques such as Try Catch blocks, If blocks, looping and arrays, etc. Furthermore students will learn about debugging, printing, message Boxes etc.

Outcomes:

- Explain the various components of an integrated development environment
- Create a simple application that will respond to user input
- Understand objects in the real world and in software
- Discuss the roles of encapsulation, inheritance, and polymorphism
- Set up a project in an integrated development environment

Software Requirement—ITSD 323—In this course, students will learn principles tools and techniques for requirements elicitation, analysis, and specification. Students will explore and become familiar with the role of requirements in the development process, goals of the requirements phase, and the essential difficulties inherent in specifying requirements for real-world systems.

Outcomes:

- Understand the principles of requirements specification and the use of mathematical models in assessing the quality of a requirements specification
- Be able to evaluate and choose appropriate requirements specifications methods and tools for a specific software development
- Demonstrate the ability to write formal software requirements specification
- Understand the context of requirements in the overall development process



EXPERIENCED PROFESSIONAL CERTIFICATE IN **Software Analysis & Development**

Software Quality Control and Testing—ITSD 324—In this course, students will examine a variety of programming techniques and technologies to ensure software quality, such as Quality Tools in Software Development, Software Testing Metrics and Models, and Software Test Document.

Outcomes:

- Examine quality issues such as product operation, revision, and transition factors
- Demonstrate graphic user interface testing, verification, and validation
- Apply white-box and black-box testing
- Demonstrate the use of test integration and debugging

Application of Scripting Language—ITSD 327—The course covers current scripting languages and their use in writing web applications with emphasis on software installation, deployment, and system administration and maintenance.

Outcomes:

- Demonstrate understanding for characteristics of interpreted languages
- Use and utilize scripts to administer and maintain system files and environment
- Create utilities aimed to install and deploy applications
- Apply various scripting techniques

System Analysis and Design—ITSD 422—This course focuses on software development life cycle, and covers methodologies and tools used in software planning, analysis, and design.

Outcomes:

- Create system requirements
- Describe the phases of system development life cycle
- Demonstrate understanding for use of tools in each phase of software development life cycle
- Explain major cross-functional Systems Analyst's tools, including: CASE tools, Financial Analysis tools, Project-Management tools, and Internet Resource tools
- Demonstrate an in-depth understanding of how information technology supports operational and business requirements in today's extremely competitive market



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Object Oriented Application Development II—ITSD 424—In this course, students will discuss the implementation of graphical user interface in application development, event-handling methods, event propagation, and exception handling.

Outcomes:

- Demonstrate the use of test integration and debugging
- Explain the difference between GUI programming and console programming
- Design, code, test, and debug event-driven programs that respond to user events
- Develop code that responds to exception conditions raised during execution
- Design and document an object oriented application using standard modeling tools

Data-connected Application Development—ITSD 425—This course covers architectures for integrating systems, XML Web services and middleware, message and queuing services, and low-level data communications. Furthermore, the course covers issues pertinent to a multi-user environment, such as concurrency control and security.

Outcomes:

- Create and access a XML Web service
- Describe data-centric applications and architecture
- Develop data-connected objects to query and update a data source
- Describe and contrast the different types of architectures for integrating systems
- Program software to respond to concurrency issues when they manifest in a multi-user environment
- Implement programming techniques to secure a data-connected application

Software Development for Mobile Devices—ITSD 427—This course teaches methodologies and skills used to develop software for mobile devices. Topics covered include user interface design for small screens, data synchronization, memory management, and principles of good design for mobile computing.

Outcomes:

- Identify characteristics of mobile applications
- "Apply the concepts of data synchronization and memory management in designing mobile applications
- Design and develop a web application targeted for a mobile device
- Apply design guidelines for using threads in mobile applications
- Identify performance needs in designing mobile applications