

**ITT Technical Institute**

**SD4799**

**Software Development Capstone Project  
Onsite and Online Course**

**SYLLABUS**

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**Credit hours:** 4.5


**Contact/Instructional hours:** 60 (30 Theory Hours, 30 Lab Hours)

**Prerequisite(s) and/or Corequisite(s):**

Prerequisites: Completion of a minimum of 171 credits earned in the program of study

**Course Description:**

This course provides the opportunity for students to use the knowledge and skills taught in the program of study to research, design, develop and promote a functional software application that can help solve specific problems for end users



## COURSE SUMMARY

### COURSE DESCRIPTION

This course provides the opportunity for students to use the knowledge and skills taught in the program of study to research, design, develop and promote a functional software application that can help solve specific problems for end users.

### MAJOR INSTRUCTIONAL AREAS

1. Project Management
2. Software Development Lifecycle
3. Logical and Physical System Design
4. Business Object Design, Implementation, and Deployment
5. Database Design, Implementation, and Deployment
6. Client Application Design, Implementation, and Deployment
7. System Testing and Deployment
8. Team Dynamics
9. Documentation
10. Presentation Skills

### COURSE LEARNING OBJECTIVES

By the end of this course, you should be able to:

1. Apply project management concepts and techniques to a software development project.
2. Use Microsoft Office Project to help plan and manage a software development project.
3. Determine the requirements for an n-tier software development project.
4. Design an effective software solution for a given problem.
5. Implement an effective software solution for a given problem.
6. Test the software solution.
7. Create the necessary documentation for the software solution.
8. Create a professional presentation on the design and functionality of the software solution.

## COURSE OUTLINE

### MODULE 1: GATHERING THE PROJECT REQUIREMENTS

#### COURSE LEARNING OBJECTIVES COVERED

- Apply project management concepts and techniques to a software development project.
- Determine the requirements for an n-tier software development project.

#### TOPICS COVERED

- Software Development Lifecycle (SDLC)
- Requirements Gathering
- Project Definition
- Project Management

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
<b>Reading:</b> <i>System Analysis and Design</i> , Review Chapter 3.	No	2.5 hr
<b>Lesson:</b> Study the lesson for this module.	No	2 hr
<b>Discussion:</b> Participate in the discussion titled "Managing a Project."	Yes	N/A
<b>Project:</b> Read and begin the project.	No	1 hr
<b>Project:</b> Submit Project Documentation Part 1.	Yes	4 hr

Total Out-Of-Class Activities: 9.5 Hours

## MODULE 2: DEVELOPING A PROJECT PLAN

### COURSE LEARNING OBJECTIVES COVERED

- Use Microsoft Office Project to help plan and manage a software development project.
- Determine the requirements for an n-tier software development project.
- Design an effective software solution for a given problem.

### TOPICS COVERED

- Hardware and Software Requirements
- Designing the Architecture
- Project Scheduling

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
<b>Reading:</b> <i>Project Management: Achieving Competitive Advantage</i> , Review Chapters 9 and 10.	No	5 hr
<b>Reading:</b> <i>Systems Analysis and Design</i> , Review Chapters 7 and 8.	No	5.5 hr
<b>Lesson:</b> Study the lesson for this module.	No	2 hr
<b>Discussion:</b> Participate in the discussion titled "Requirements Assessment."	Yes	N/A
<b>Project:</b> Submit Project Documentation Part 2.	Yes	7 hr

Total Out-Of-Class Activities: 19.5 Hours

**MODULE 3: CREATING THE SOLUTION DESIGN****COURSE LEARNING OBJECTIVES COVERED**

- Design an effective software solution for a given problem.
- Implement an effective software solution for a given problem.

**TOPICS COVERED**

- Use Case Analysis
- Process Modeling
- Data Modeling
- Data Storage Selection
- User Interface Design
- Source Code Control

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
<b>Reading:</b> <i>Systems Analysis and Design</i> , Review Chapters 4, 5, 6, 9, 10, 11.	No	11.5 hr
<b>Lesson:</b> Study the lesson for this module.	No	2 hr
<b>Discussion:</b> Participate in the discussion titled "Use Case Modeling."	Yes	N/A
<b>Project:</b> Submit Project Documentation Part 3.	Yes	8 hr

Total Out-Of-Class Activities: 21.5 Hours

## MODULE 4: DEVELOPING THE SOFTWARE APPLICATION

### COURSE LEARNING OBJECTIVES COVERED

- Implement an effective software solution for a given problem.
- Test the software solution.
- Create the necessary documentation for the software solution.

### TOPICS COVERED

- Implementation Challenges
- Testing Strategies
- Unit Testing
- Change Management

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
<b>Reading:</b> <i>Systems Analysis and Design</i> , Review Chapter 12.	No	1.5 hr
<b>Reading:</b> <i>Quality Code: Software Testing Principles, Practices, and Patterns</i> , 1st Edition, Review Chapters 3, 5, 6, and 7.	No	10.5 hr
<b>Lesson:</b> Study the lesson for this module.	No	2 hr
<b>Discussion:</b> Participate in the discussion titled “Automated Testing Tools.”	Yes	N/A
<b>Project:</b> Submit Project Implementation Part 1.	Yes	9 hr

Total Out-Of-Class Activities: 23 Hours

## MODULE 5: REVISING AND DEBUGGING THE SOFTWARE

### COURSE LEARNING OBJECTIVES COVERED

- Implement an effective software solution for a given problem.
- Test the software solution.
- Create the necessary documentation for the software solution.

### TOPICS COVERED

- Integration Testing
- User Documentation
- Technical Documentation
- Project Documentation

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
<b>Reading:</b> <i>Quality Code: Software Testing Principles, Practices, and Patterns</i> , Review Chapters 9–12.	No	4 hr
<b>Reading:</b> ITT Tech Virtual Library> Basic Search> <i>Developing Quality Technical Information: A Handbook for Writers and Editors</i> , > Chapters 2–8.	No	7 hr
<b>Lesson:</b> Study the lesson for this module.	No	2 hr
<b>Discussion:</b> Participate in the discussion titled “Bug Tracking Method.”	Yes	N/A
<b>Project 1:</b> Submit Project Documentation Part 4.	Yes	5 hr
<b>Project 2:</b> Submit Project Implementation Part 2.	Yes	3 hr
<b>Final Exam:</b> Prepare for the final exam.	No	5 hr

Total Out-Of-Class Activities: 26 Hours

## MODULE 6: PRESENTING THE SOFTWARE APPLICATION

### COURSE LEARNING OBJECTIVES COVERED

- Apply project management concepts and techniques to a software development project.
- Use Microsoft Office Project to help plan and manage a software development project.
- Determine the requirements for an n-tier software development project.
- Design an effective software solution for a given problem.
- Implement an effective software solution for a given problem.
- Test the software solution.
- Create the necessary documentation for the software solution.
- Create a professional presentation on the design and functionality of the software solution.

### TOPICS COVERED

- Presentation Strategies
- Documentation Finalization
- Lessons Learned

MODULE LEARNING ACTIVITIES	GRADED	OUT-OF-CLASS TIME
<b>Reading:</b> ITT Tech Virtual Library> Basic Search> <i>Resonate: Present Visual Stories that Transform Audiences</i> . Review the chapters that you find relevant for presenting the software application project.	No	4 hr
<b>Lesson:</b> Study the lesson for this module.	No	1 hr
<b>Project:</b> Submit Project Presentation.	Yes	3 hr
<b>Final Exam:</b> Take the final exam.	Yes	N/A

Total Out-Of-Class Activities: 8 Hours



## EVALUATION AND GRADING

### EVALUATION CRITERIA

The graded assignments will be evaluated using the following weighted categories:

CATEGORY	WEIGHT
Discussion	10%
Project Documentation	20%
Project Implementation	20%
Project Presentation	35%
Final Exam	15%
TOTAL	100%

### GRADE CONVERSION

The final grades will be calculated from the percentages earned in the course, as follows:

GRADE	PERCENTAGE
A (4.0)	90–100%
B+ (3.5)	85–89%
B (3.0)	80–84%
C+ (2.5)	75–79%
C (2.0)	70–74%
D+ (1.5)	65–69%
D (1.0)	60–64%
F (0.0)	<60%

## LEARNING MATERIALS AND REFERENCES

### REQUIRED RESOURCES

#### COMPLETE TEXTBOOK PACKAGE

None issued for this course.

#### OTHER ITEMS

- Virtual machine to support Android Studio, Microsoft Visual Studio, Windows SDK, and Windows Phone SDK
- Students will be required to have the external USB hard drive to host the virtual machines specifically required for this program.
- Microsoft Office
- Microsoft Project
- Microsoft Visio\*

\* This software title is available for download from ITT Technical Institute's DreamSpark software download site. For more information, please review the [DreamSpark Implementation Guide](#), available at the ITT Technical Institute Student Portal> Resources> Download Center.

### RECOMMENDED RESOURCES

- Books and Professional Journals
  - Dennis, A., Wixom, B. H., & Roth, R. M. (2009). *Systems analysis and design* (4th ed.). Hoboken, NJ: John Wiley & Sons.
  - Pinto, J. K. (2010). *Project management: Achieving competitive advantage* (2nd ed.). Upper Saddle River, NJ: Pearson.
  - Vance, S. (2014). *Quality code: Software testing principles, practices, and patterns* (1st ed.). Upper Saddle River, NJ: Pearson.

\* Note-These textbooks were issued in previous courses in the program.

- ITT Tech Virtual Library (accessed via Student Portal | <https://studentportal.itt-tech.edu>)
  - Basic Search>
    - Burd, B. (2014). *Java programming for android developers for dummies*. Hoboken, NJ: John Wiley & Sons.
    - Buyya, R., Vecchiola, C., & Selvi, S. T. (2013). *Mastering cloud computing: Foundations and applications programming*. Waltham, MA: Morgan Kaufmann Publishers.
    - Carey, M. (2014). *Developing quality technical information: A handbook for writers and Editors* (3rd ed.). Crawfordsville, IN: IBM Press.
    - Duarte, N. (2010). *Resonate: Present visual stories that transform audiences*. Hoboken, NJ: John Wiley & Sons.
    - Garofalo, E., Liccardi, A., & Aponte, M. (2014). *Building Windows 8.1 apps from the ground up*. New York, NY: Apress.
    - Gaylord, J. N. et al. (2013). *Professional ASP.NET 4.5 in C# and VB*. Indianapolis, IN: Wrox Press.
    - Kendrick, T. (2011). *101 project management problems and how to solve them: Practical advice for handling real-world project challenges*. New York, NY: AMACOM.
    - Moustafaev, J. (2011). *Delivering exceptional project results: A practical guide to project selection, scoping, estimation and management*. Fort Lauderdale, FL: Ross Publishing.
    - Richardson, G. L. (2010). *Project management theory and practice*. Boca Raton, FL: Auerbach Publications.
    - Rosebrock, E., & Filson, E. (2004). *Setting up LAMP: Getting Linux, Apache, MySQL, and PHP working together*. Alameda, CA: Sybex.
  - Other References
    - Amazon Web Services  
<https://aws.amazon.com/>
    - Android Developer site\_  
<http://developer.android.com/index.html>
    - Azure Cloud Services  
<https://azure.microsoft.com/en-us/services/>
    - Google Compute Engine  
<https://cloud.google.com>

- MSDN\_  
<https://msdn.microsoft.com/en-us/default.aspx>

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## INSTRUCTIONAL METHODS AND TEACHING STRATEGIES

The curriculum employs a variety of instructional methods that support the course objectives while fostering higher cognitive skills. These methods are designed to encourage and engage you in the learning process in order to maximize learning opportunities. The instructional methods include but are not limited to lectures, collaborative learning options, use of technology, and hands-on activities.

To implement the above-mentioned instructional methods, this course uses several teaching strategies, such as hands-on project and lessons. Your progress will be regularly assessed through a variety of assessment tools including discussions, a project, and a final exam.

## OUT-OF-CLASS WORK

For purposes of defining an academic credit hour for Title IV funding purposes, ITT Technical Institute considers a quarter credit hour to be the equivalent of: (a) at least 10 clock hours of classroom activities and at least 20 clock hours of outside preparation; (b) at least 20 clock hours of laboratory activities; or (c) at least 30 clock hours of externship, practicum or clinical activities. ITT Technical Institute utilizes a “time-based option” for establishing out-of-class activities which would equate to two hours of out-of-class activities for every one hour of classroom time. The procedure for determining credit hours for Title IV funding purposes is to divide the total number of classroom, laboratory, externship, practicum and clinical hours by the conversion ratios specified above. A clock hour is 50 minutes.

A credit hour is an artificial measurement of the amount of learning that can occur in a program course based on a specified amount of time spent on class activities and student preparation during the program course. In conformity with commonly accepted practice in higher education, ITT Technical Institute has institutionally established and determined that credit hours awarded for coursework in this program course (including out-of-class assignments and learning activities described in the “Course Outline” section of this syllabus) are in accordance with the time-based option for awarding academic credit described in the immediately preceding paragraph.

**ACADEMIC INTEGRITY**

All students must comply with the policies that regulate all forms of academic dishonesty or academic misconduct. For more information on the academic honesty policies, refer to the Student Handbook and the School Catalog.

**INSTRUCTOR DETAILS**

Instructor Name	
Office Hours	
Contact Details	

*(End of Syllabus)*