

ITT Technical Institute

SD1230T

**Introduction to Application Design and
Development**

Onsite and Online Course

SYLLABUS

Credit hours: 4.5


Contact/Instructional hours: 67 (41 Theory Hours, 26 Lab Hours)

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

Prerequisite: NT1110T Computer Structure and Logic or equivalent

Course Description:

This course provides an overview of the desktop and mobile application industry, technologies and development environment. Topics include platforms and tools, market trends, and the impact on the economy and society.



COURSE SUMMARY

COURSE DESCRIPTION

This course provides an overview of the desktop and mobile application industry, technologies and development environment. Topics include platforms and tools, market trends, and the impact on the economy and society.

MAJOR INSTRUCTIONAL AREAS

1. Fundamentals of Software Engineering
2. Software Development Life Cycles
3. Software Design
4. Desktop, Web Site, and Mobile Applications
5. Requirements Specification and Analysis
6. Product Design
7. User Interface Design
8. Coding Practices and Documentation
9. Software Testing
10. Software Project Management

COURSE LEARNING OBJECTIVES

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

1. Explain the goals of application design and development/software engineering.
2. Describe how a computer program is designed, developed, compiled, tested, and maintained.
3. Describe various ways in which programs and data are structured, and the interactions between processes within a system.
4. Compare the characteristics of desktop, Web, and mobile applications.
5. Compare the characteristics of competing mobile operating systems.
6. Analyze business requirements to create a requirements specification.
7. Determine the appropriate type of application—desktop, Web, or mobile—in a given situation.
8. Describe the characteristics of a usable interface for desktop and mobile applications.

9. Identify the different processes and roles of the software development cycle.
10. Describe how popular and evolving software process models organize the necessary steps of software application design.
11. Describe the process used to build, test, and distribute desktop, Web, and mobile applications.

COURSE OUTLINE

MODULE 1: SOFTWARE ENGINEERING

COURSE LEARNING OBJECTIVES COVERED

- Explain the goals of application design and development/software engineering.

TOPICS COVERED

- Introduction to Software
- Software Engineering
- Software Project Management

| MODULE LEARNING ACTIVITIES | GRADE D | OUT-OF- CLASS TIME |
|--|------------|--------------------------|
| Reading: ITT Tech Virtual Library > Basic Search > <i>Software Engineering: Architecture-Driven Software Development, Chapter 1</i> | No | 1.5 hr |
| Reading: ITT Tech Virtual Library > Basic Search > <i>Agile Software Development: Best Practices for Large Software Development Projects, Chapter 1</i> | No | 2 hr |
| Reading: ITT Tech Virtual Library > Basic Search > <i>Software Project Management For Dummies, Chapter 1</i> | No | 1.5 hr |
| Lesson: Study the lesson for this module. | No | 1 hr |
| Discussion: Participate in the discussion titled “Software Engineering.” | Yes | 1 hr |
| Lab: Complete the lab titled “Software Project Success.” | Yes | 1.5 hr |

Total Out-Of-Class Activities: 8.5 Hours

MODULE 2: SOFTWARE APPLICATIONS

COURSE LEARNING OBJECTIVES COVERED

- Describe how a computer program is designed, developed, compiled, tested, and maintained.
- Describe various ways in which programs and data are structured, and the interactions between processes within a system.

TOPICS COVERED

- Software Applications
- Computer Software Development
- Software Errors and Testing
- Data Input, Output, and Processing

| MODULE LEARNING ACTIVITIES | GRADE D | OUT-OF- CLASS TIME |
|---|------------|--------------------------|
| Reading: Fling, Chapter 7 | No | 2 hr |
| Reading: ITT Tech Virtual Library > Basic Search > <i>Essentials of Software Engineering, Chapters 1, 2, and 3</i> | No | 6.5 hr |
| Reading: ITT Tech Virtual Library > Basic Search > <i>Software Engineering: Architecture-Driven Software Development, Chapters 2 and 3</i> | No | 2.5 hr |
| Lesson: Study the lesson for this module. | No | 2.5 hr |
| Discussion: Participate in the discussion titled “Testing Methodologies.” | Yes | 1 hr |
| Exercise: Submit the exercise titled “Inputs, Processing, and Outputs.” | Yes | 2 hr |
| Lab: Complete the lab titled “Software Applications.” | Yes | N/A |

Total Out-Of-Class Activities: 16.5 Hours

MODULE 3: MOBILE APPLICATIONS

COURSE LEARNING OBJECTIVES COVERED

- Compare the characteristics of desktop, Web, and mobile applications.
- Compare the characteristics of competing mobile operating systems.
- Determine the appropriate type of application—desktop, Web, or mobile—in a given situation.

TOPICS COVERED

- Desktop, Web, and Mobile Applications
- Competing Mobile Operating Systems

| MODULE LEARNING ACTIVITIES | GRADE D | OUT-OF- CLASS TIME |
|---|------------|--------------------------|
| Reading: Fling, Chapters 1, 2, 3, 6, and 12 | No | 10.5 hr |
| Lesson: Study the lesson for this module. | No | 2.5 hr |
| Discussion: Participate in the discussion titled “Competing Mobile Operating Systems.” | Yes | 1 hr |
| Exercise: Submit the exercise titled “Desktop, Web, and Mobile Applications.” | Yes | 2 hr |
| Lab: Complete the lab titled “Transforming Desktop Applications.” | Yes | N/A |

Total Out-Of-Class Activities: 16 Hours

MODULE 4: USER REQUIREMENTS**COURSE LEARNING OBJECTIVES COVERED**

- Analyze business requirements to create a requirements specification.
- Describe the characteristics of a usable interface for desktop and mobile applications.

TOPICS COVERED

- Gathering User Requirements
- Creating Requirements Specifications
- Useable Interfaces for desktop and mobile applications

| MODULE LEARNING ACTIVITIES | GRADE D | OUT-OF- CLASS TIME |
|---|------------|--------------------------|
| Reading: Fling, Chapters 4 and 5 | No | 3 hr |
| Reading: ITT Tech Virtual Library > Basic Search > <i>Essentials of Software Engineering, Chapter 6</i> | No | 2.5 hr |
| Reading: ITT Tech Virtual Library > Basic Search > <i>Software Engineering: Architecture-Driven Software Development, Chapters 7, 8, and 9</i> | No | 5.5 hr |
| Lesson: Study the lesson for this module. | No | 2.5 hr |
| Discussion: Participate in the discussion titled "User Interface." | Yes | 1 hr |
| Exercise: Submit the exercise titled "Requirements Gathering." | Yes | 2 hr |
| Lab: Complete the lab titled "User Interface Development." | Yes | N/A |

Total Out-Of-Class Activities: 16.5 Hours

MODULE 5: SOFTWARE DEVELOPMENT

COURSE LEARNING OBJECTIVES COVERED

- Identify the different processes and roles of a software development cycle.
- Describe how popular and evolving software process models organize the necessary steps of software application design.

TOPICS COVERED

- Software Development Cycles
- Competing Software Development Cycles

| MODULE LEARNING ACTIVITIES | GRADE D | OUT-OF- CLASS TIME |
|---|------------|--------------------------|
| Reading: Fling, Chapters 7 and 11 | No | 3.0 hr |
| Reading: ITT Tech Virtual Library > Basic Search > <i>Essentials of Software Engineering, Chapters 4 and 5</i> | No | 4.0 hr |
| Reading: ITT Tech Virtual Library > Basic Search > <i>Agile Software Development Best Practices for Large Software Development Projects, Chapter 6</i> | No | 2.5 hr |
| Lesson: Study the lesson for this module. | No | 2.5 hr |
| Discussion: Participate in the discussion titled “Software Development Processes.” | Yes | 1.0 hr |
| Exercise: Submit the exercise titled “Software Process Models.” | Yes | 2.0 hr |
| Lab: Complete the lab titled “Application Development.” | Yes | N/A |
| Final Exam: Prepare for the final exam. | No | 5.0 hr |

Total Out-Of-Class Activities: 20 Hours

MODULE 6: MOBILE WEB

COURSE LEARNING OBJECTIVES COVERED

- Explain the goals of application design and development/software engineering.
- Describe how a computer program is designed, developed, compiled, tested, and maintained.
- Describe various ways in which programs and data are structured, and explain the interactions between processes within a system.
- Compare the characteristics of desktop, Web, and mobile applications.
- Compare the characteristics of competing mobile operating systems.
- Analyze business requirements to create a requirements specification.
- Determine the appropriate type of application—desktop, Web, or mobile—in a given situation.
- Describe the characteristics of a usable interface for desktop and mobile applications.
- Identify the different processes and roles of a software development cycle.
- Describe how popular and evolving software process models organize the necessary steps of software application design.
- Describe the process used to build, test, and distribute desktop, Web, and mobile applications.

TOPICS COVERED

- Build, Test, and Distribute Applications
- Software Errors
- Testing Procedures

| MODULE LEARNING ACTIVITIES | GRADE D | OUT-OF- CLASS TIME |
|---|------------|--------------------------|
| Reading: Fling, Chapters 14 and 15 | No | 3.0 hr |
| Reading: ITT Tech Virtual Library > Basic Search > <i>Essentials of Software Engineering, Chapter 10</i> | No | 2.5 hr |
| Reading: ITT Tech Virtual Library > Basic Search > <i>Software Engineering: Architecture-Driven Software Development, Chapters 15,</i> | No | 3.0 hr |

| MODULE LEARNING ACTIVITIES | GRADE D | OUT-OF- CLASS TIME |
|---|------------|--------------------------|
| 19, and 20 | | |
| Lesson: Study the lesson for this module. | No | 2.0 hr |
| Exercise: Submit the exercise titled “Application Distribution.” | Yes | 2.0 hr |
| Final Exam: Take the final exam. | Yes | N/A |

Total Out-Of-Class Activities: 12.5 Hours

EVALUATION AND GRADING

EVALUATION CRITERIA

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

| Category | Weight |
|------------|--------|
| Lab | 30% |
| Exercise | 25% |
| Discussion | 20% |
| Final Exam | 25% |
| 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

- Fling, B. (2009). *Mobile design and development (Custom 1st ed.)*. Sebastopol, CA: O'Reilly and Associates.

OTHER ITEMS

- VMware Player 5.2 (or later)
(https://my.vmware.com/web/vmware/free#desktop_end_user_computing/vmware_player/6_0)
- Microsoft Visio 2007 (or later)
- ITT-LAB Android VM

Note: You can download Microsoft Visio from the DreamSpark Web site. Refer to the [DreamSpark Installation Guide](#) for download instructions.

RECOMMENDED RESOURCES

- Books and Professional Journals
 - [Application Development Trends \(http://adtmag.com/Home.aspx\)](http://adtmag.com/Home.aspx)
 - Computer World (<http://www.computerworld.com/>)
 - InformationWeek (<http://www.informationweek.com/>)
 - eWEEK (<http://www.eweek.com/>)
- Professional Associations
 - IEEE Computer Society (<http://www.computer.org/portal/web/guest/home>)
 - Information Technology Industry Council (<http://www.itic.org/>)
 - Internet Society (<https://www.internetsociety.org/>)
 - Society of Internet Professionals (<http://www.sipgroup.org/>)
 - Software & Information Industry Association (<http://www.siaa.net/>)
 - TechAmerica (<http://www.techamerica.org/>)
 - World Wide Web Consortium (<http://www.w3.org/>)
- ITT Tech Virtual Library (accessed via Student Portal | <https://studentportal.itt-tech.edu>)
 - Basic Search >

- Schmidt, R. F. (2013). *Software engineering architecture-driven software development*. Waltham: Morgan Kaufmann.
- Stober T., & Hansmann U. (2010). *Agile software development best practices for large software development projects*. Heidelberg: New York Springer.
- Tsui, F. F., Karam, O., & Bernal, B. (2014). *Essentials of software engineering (3rd ed.)*. Burlington: Jones & Bartlett Publishers.
- Teresa, L., & Phillips, J. (2006). *Software project management for dummies (1st ed.)*. Hoboken, N.J.: Wiley Publishing.

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 lessons and hands-on labs. Your progress will be regularly assessed through a variety of assessment tools including discussions, labs, exercises, 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)