

NFC ACADEMY



SOFTWARE DEVELOPMENT TOOLS ACADEMIC INSTRUCTIONAL LIBRARY

COURSE OVERVIEW

This course introduces students to the variety of careers related to programming and software development. Students will gather and analyze customer software needs and requirements, learn core principles of programming, develop software specifications, and use appropriate reference tools to evaluate new and emerging software. Students will produce IT-based strategies and a project plan to solve specific problems, and define and analyze system and software requirements.

Objectives

- Understand the development of the computer.
- Be able to describe the organization of the Central Processing Unit.
- Demonstrate knowledge of widely used software applications (e.g., word processing, database management, spreadsheet development).
- Identity three levels of programming languages.
- Identity execution differences between interpreted, translated, and compiled languages.
- Describe how computers address data in memory.
- Design structures, classes, and objects that include variables and methods.
- Summarize how data is organized in software development.
- Understand the standard primitive types and operations of the java programming language.
- Define and initialize Java arrays.

- Demonstrate knowledge of the basics of structured, object-oriented language.
- Write software applications using while, do while, for, for-each loops.
- Define logic statements using if, else if, else and switch statements.
- Develop an application using conditional statements.
- Demonstrate knowledge of key constructs and commands specific to a language.
- Develop an application that responds to user input.
- Develop a web application that responds to user input.

This course requires independent research and work from the student. Students should have a high interest in this course for the most success.

- **UNIT 1 - INTRODUCTION TO SOFTWARE DEVELOPMENT TOOLS**

- **Course Overview**
- **Coding Standards and Conventions**
- **Software Processes and Methodology**
- **Project: Grades Projection IPO – Complete this project assignment Grades Projection IPO**
- **Software Types and Elements**
- **Project: Software Types and Elements – Complete this project assignment Software Types and Elements.**
- **Quiz 1: Computer History, Computer Hardware, Software, and Organization**
- **Multimedia and Graphics Software Applications**
- **Web-Based Software Applications**
- **Project: Multimedia and Web Design Careers – Complete this project assignment Multimedia and Web Design Careers.**
- **Software Design Principles and Tools**
- **Project: Software Design Principles Table**
- **Quiz 2: Central Processing Unit Operations**
- **Unit 1 Test**
- **Glossary and Credits**

- **UNIT 2 - SOFTWARE DEVELOPMENT**

- **Personal Information Management (PIM) Tools**
- **Computer Security Application Tools**
- **Individual Programming Development Tools**
- **Project: Assessment of Competitive Office Suites – Complete this project assignment Assessment of Competitive Office Suites.**
- **Quiz 1: Different Language Abstraction Layers**

- Database Software Development Tools
 - Web Design Software Development Tools
 - Project: My Personal Website – Complete this project assignment My Personal Website.
 - Integrated Development Environments (IDEs)
 - Project: My Text Editor IDE Evaluation – Complete this project assignment My Text Editor IDE Evaluation.
 - Quiz 2: Building Blocks of Programs
 - Unit 2 Test
 - Glossary and Credits
- UNIT 3 - DEBUGGING
 - Download, Install, Explore IntelliJ IDEA
 - Download, Install, Explore NetBeans
 - Project: My IntelliJ NetBeans IDE Evaluation – Complete this project assignment My IntelliJ NetBeans IDE Evaluation.
 - Download, Install, Explore Eclipse
 - Project: MY IntelliJ NetBeans Eclipse IDE Evaluation – Complete this project assignment My IntelliJ NetBeans Eclipse IDE Evaluation.
 - Quiz 1: Basic Java Applications
 - Exceptions
 - Project: Best Practices in Exception Handling in Java Programming – Complete this project assignment Best Practices in Exception Handling in Java Programming.
 - STDIN and STDOUT
 - File Input, Output, and Network Input, Output
 - Quiz 2: Text Input, Output, and Exceptions
 - Unit 3 Test
 - Glossary and Credits
- UNIT 4 - SOFTWARE CONFIGURATION MANAGEMENT
 - Code Blocks
 - Project: Concepts of Programming Code Structure in Java
 - Iterative Loops
 - For-Each Loops
 - Project: Computing Class Grades – Complete this project assignment Computing Class Grades.
 - Quiz 1: While, Do, While, For, Statements
 - Java Logic

- **If, Else If, Else**
 - **Project: Write an IF...ELSE Program that Computes the New Salary for the CIO – Complete this project assignment Write an IF...ELSE Program that Computes the New Salary for the CIO.**
 - **Switch Statements**
 - **Project: Write a Program Using a SWITCH Statement - Complete this project assignment Write a Program Using a SWITCH Statement.**
 - **Quiz 2: If, Then, and Switch Statements**
 - **Unit 4 Test**
 - **Glossary and Credits**
- **UNIT 5 - OBJECT MODELING UML AND SOFTWARE TESTING**
 - **Swing and AWT**
 - **Creating Frames and Dialog Boxes, Components, Form Fields, Panels, Buttons**
 - **Project: Building Better Java using GUI Applications, Frames, Containers, and Dialogs Complete this project assignment Building Better Java using GUI Applications, Frames, Containers, and Dialogs.**
 - **HTML and Web Pages**
 - **Project: Creating a Web Page - Complete this project assignment Creating a Web Page.**
 - **Quiz 1: GUI Programming**
 - **Business Information System Trends, Applications, and eCommerce**
 - **Project: Social Media on Campus - Complete this project assignment Social Media on Campus.**
 - **Application Servers and JavaServer Pages (JSP)**
 - **JavaServer Faces and Future Trends in Programming**
 - **Quiz 2: The Future of Programming**
 - **Unit 5 Test**
 - **Glossary and Credits**
- **UNIT 6 - COURSE PROJECT, REVIEW AND EXAM**
 - **Course Project: The Design Team: Creating a Tablet GUI - Complete this capstone project assignment The Design Team: Creating a Tablet GUI.**
 - **Review**
 - **Exam**

