

Idaho PTE Business Education Course with Essential Learning Outcomes and Learning Indicators

Course Title	COMPUTER PROGRAMMING AND SOFTWARE DEVELOPMENT I		
SDPTE Course ID	BE 0250	IBED	IBED 10156

A course designed to introduce students to computer science, programming concepts, and programming. Students will learn how to design, enter, compile, run and debug programs and gain an understanding of how to break up large programming tasks into small, solvable parts to create effective working programs across a variety of platforms.

Term Preq

Notes:

Business Law BLaw_7: Demonstrate Knowledge of Computer Law

BLaw_7.1 Explain how the advances in computer technology impact upon such areas as property law, contract law, criminal law, and international law.

- Learning Indicator: BLaw_7.1.1 Define the key terms and new issues involved in computer law including security, privacy, computer crime and viruses
- Learning Indicator: BLaw_7.1.2 Determine when a computer program can be protected by a patent or a copyright and explain the steps in applying for each
- Learning Indicator: BLaw_7.1.3 Identify the circumstances under which the copyright of a computer program has been violated
- Learning Indicator: BLaw_7.1.4 Determine when computer-related contracts are service contracts and when they are sale of goods contracts
- Learning Indicator: BLaw_7.1.5 Outline the various claims and defenses that are available in civil suits involving computer contracts
- Learning Indicator: BLaw_7.1.6 Explain how common law, constitutional law, statutory law, and administrative regulations can be used to prevent the use of computers to invade privacy
- Learning Indicator: BLaw_7.1.7 Outline the various types of federal and state statutes designed to combat computer crime
- Learning Indicator: BLaw_7.1.8 Discuss the impact of the law of different countries and the impact of international law on computer law

Information Systems IS_12: Demonstrate Knowledge of Programming

IS_12.1 Demonstrate knowledge of computer history.

- Learning Indicator: IS_12.1.1 Give a brief history of computers
- Learning Indicator: IS_12.1.2 Describe how hardware and software make up computer architecture
- Learning Indicator: IS_12.1.3 Describe the binary representation of data and programs in computers
- Learning Indicator: IS_12.1.4 Discuss the evolution of programming languages
- Learning Indicator: IS_12.1.5 Describe the software development process
- Learning Indicator: IS_12.1.6 Discuss the fundamental concepts of object-oriented programming

IS_12.2 Demonstrate ability to create a simple computer program.

- Learning Indicator: IS_12.2.1 Describe the structure of a simple program
- Learning Indicator: IS_12.2.2 Write a simple program - hello world
- Learning Indicator: IS_12.2.3 Edit, compile, and run a program
- Learning Indicator: IS_12.2.4 Format a program to give a pleasing, consistent appearance
- Learning Indicator: IS_12.2.5 Locate compile-time errors
- Learning Indicator: IS_12.2.6 Write a simple graphics program

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IS_12.3 Identify syntax and errors, and demonstrate the ability to debug.

Learning Indicator: IS_12.3.1	Construct and use numeric and string literals
Learning Indicator: IS_12.3.2	Name and use variables constraints
Learning Indicator: IS_12.3.3	Create arithmetic expressions
Learning Indicator: IS_12.3.4	Know the precedence of different arithmetic operators
Learning Indicator: IS_12.3.5	Concatenate two strings or a number and a string
Learning Indicator: IS_12.3.6	Know how and when to use comments in a program
Learning Indicator: IS_12.3.7	Tell the difference between syntax errors, run-time errors, and logic errors
Learning Indicator: IS_12.3.8	Insert output statements to debug a program
Learning Indicator: IS_12.3.9	Differentiate between Cartesian coordinates and screen coordinates
Learning Indicator: IS_12.3.10	Work with color and text properties

IS_12.4 Demonstrate ability to use basic control statements.

Learning Indicator: IS_12.4.1	Use the increment and decrement operators
Learning Indicator: IS_12.4.2	Use standard math methods
Learning Indicator: IS_12.4.3	Use if and if-else statements to make choices
Learning Indicator: IS_12.4.4	Use while and for loops to repeat a process
Learning Indicator: IS_12.4.5	Construct appropriate conditions for control statements using relational operators
Learning Indicator: IS_12.4.6	Detect and correct common errors involving loops

IS_12.5 Demonstrate ability to use classes in Object Oriented Programming.

Learning Indicator: IS_12.5.1	Design and implement a simple class from user requirements
Learning Indicator: IS_12.5.2	Organize a program in terms of a view class and a model class
Learning Indicator: IS_12.5.3	Use visibility modifiers to make methods visible to clients and restrict access to data within a class
Learning Indicator: IS_12.5.4	Write appropriate mutator methods, accessor methods, and constructors for a class
Learning Indicator: IS_12.5.5	Describe how parameters transmit data to methods
Learning Indicator: IS_12.5.6	Use instance variable, local variables, and parameters appropriately
Learning Indicator: IS_12.5.7	Organize a complex task in terms of helper methods

IS_12.6 Demonstrate ability to use Advanced Control Statements.

Learning Indicator: IS_12.6.1	Construct complex Boolean expressions using logical operators && and !
Learning Indicator: IS_12.6.2	Construct truth tables for Boolean expressions
Learning Indicator: IS_12.6.3	Defend the logic of nested if statements and extended if statements
Learning Indicator: IS_12.6.4	Test if statements in a comprehensive manner
Learning Indicator: IS_12.6.5	Construct nested loops
Learning Indicator: IS_12.6.6	Create appropriate test cases for if statements and loops
Learning Indicator: IS_12.6.7	Explain the purpose of assertions, invariants, and loop verification

IS_12.7 Demonstrate ability to use User Interfaces.

Learning Indicator: IS_12.7.1	Construct a query-driven terminal interface
Learning Indicator: IS_12.7.2	Construct a menu driven terminal interface
Learning Indicator: IS_12.7.3	Construct a graphical user interface

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Learning Indicator: IS_12.7.4 Format text, including numbers, for output

Learning Indicator: IS_12.7.5 Handle number format exceptions during input

IS_12.8 Demonstrate ability to use Applets.

Learning Indicator: IS_12.8.1 Convert a Java Application to an applet and embed in a Web page

Learning Indicator: IS_12.8.2 Identify the constraints on applets that distinguish them from Java applications

IS_12.9 Demonstrate ability to use Basic Array Concepts.

Learning Indicator: IS_12.9.1 Write programs that handle collections of similar items

Learning Indicator: IS_12.9.2 Declare array variables and instantiate array objects

Learning Indicator: IS_12.9.3 Manipulate arrays with loops, including the enhanced for loop

Learning Indicator: IS_12.9.4 Write methods to manipulate arrays

Learning Indicator: IS_12.9.5 Create parallel arrays and two-dimensional arrays

Information Systems IS_14: Demonstrate Knowledge of Information Systems Careers

IS_14.1 Describe positions and career paths in information systems.

Learning Indicator: IS_14.1.1 Identify positions and career paths in the field of information systems

Learning Indicator: IS_14.1.2 Identify common tasks performed by information systems workers

Learning Indicator: IS_14.1.3 Describe education, experience, skills, and personal requirements for careers in information systems

Learning Indicator: IS_14.1.4 Recognize the impact of technological change on information systems positions and the resulting need for lifelong learning and retraining
