

COURSE SYLLABUS

LAST REVIEW	Spring 2021
COURSE TITLE	Microcomputer Business Software
COURSE NUMBER	CIST-0262
DIVISION	Career and Technical Education
DEPARTMENT	CIST
CIP CODE	15.1204
CREDIT HOURS	3
CONTACT HOURS/WEEK	Class: 3 Lab: 0
PREREQUISITES	CIST-0240: C++ Programming
COREQUISITES	None

COURSE DESCRIPTION

This second semester of programming using C++ covers a review of control structures, functions, arrays with special focus on structured programming. In addition, an object-oriented approach is used for problem solving and programming using classes and objects. Simple examples are used to demonstrate Abstract Data Types, operators, templates, pointers, linked lists, stacks, queues, virtual functions, friend functions, recursion, and the efficient use of STL for sorting and searching. The language is independent of the software. The techniques used are applicable to the Visual C++ 6.0, visual C++.NET, Borland C++ and other C++ programming environments. Learning advanced programming structures gives the "edge" and appreciation of the "behind the scene" work that is involved in programming that uses GUI.

PROGRAM ALIGNMENT

This course is part of a program aligned through the Kansas Board of Regents and Technical Education Authority. For more information, please visit:

https://kansasregents.org/workforce_development/program-alignment

PROGRAM LEARNING OUTCOMES

1. Develop Applications; Develop a list processing software application.

INSTITUTIONAL LEARNING OUTCOMES

- Communication
- Computation and Financial Literacy
- Critical Reasoning
- Technology and Information Literacy
- Community and Civic Responsibility
- Personal and Interpersonal Skills

TEXTBOOKS

<http://kckccbookstore.com/>

METHOD OF INSTRUCTION

A variety of instructional methods may be used depending on content area. These include but are not limited to lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE

- I. Basic Elements of C ++
- II. Input/output
- III. Control Structures – Selection
- IV. User-Defined Functions
- V. Advanced Data Types
- VI. Arrays and Strings
- VII. Recursion
- VIII. Records
- IX. Classes and Data Abstraction
- X. Inheritance and Composition
- XI. Pointers, Classes, Lists and Virtual Functions
- XII. Overloading and Templates
- XIII. Linked Lists
- XIV. Stacks and Queues
- XV. Searching and Sorting Algorithms
- XVI. Standard Template Library

COURSE LEARNING OUTCOMES AND COMPETENCIES

Upon completion of the course, the student will:

- A. Use the basic components of C++, simple data types, arithmetic operators and expressions.
 1. Program using the basic components of the C++ language.
 2. Define and use simple data types.
 3. Define and use arithmetic operators.
 4. Define and use arithmetic expressions.
- B. Demonstrate C++'s input/output instructions.
 5. Demonstrate the use of C-in and C-out for input-output.
 6. Format output using options such as set precision.

- C. Define the six control structures and related operators.
 - 7. Define the 3 control structures, if, if...else and switch.
 - 8. Demonstrate the use of relational and logical operators.
 - 9. Demonstrate the use of the 3 repetition or loop structures.

- D. Program using standard functions and user-defined functions.
 - 10. Define a “while”, the “do...while” and the “for” loop.
 - 11. Define and use standard predefined functions.
 - 12. Define and use user-defined value-returning functions.
 - 13. Define and use void functions.

- E. Create and manipulate advanced data types such as enumeration and string data types.
 - 14. Define and use value and reference parameters.
 - 15. Demonstrate the use of enumeration types.

- F. Demonstrate the use of arrays and strings.
 - 16. Demonstrate the use of string data types.
 - 17. Define names spaces in programs.

- G. Devise problem-solving recursion technique.
 - 18. Devise the recursion technique.
 - 19. Predict the output of recursion and iteration.

- H. Create and demonstrate the use of records.
 - 20. Create records (constructs).
 - 21. Create an array of structures.

- I. Implement classes for data abstraction.
 - 22. Implement classes.
 - 23. Specify access specifiers: public, protected, and private.

- J. Demonstrate Inheritance and Composition by creating new classes from existing classes.
 - 24. Create new classes using inheritance.
 - 25. Create new classes using composition.
 - 26. Define constructors for base and derived classes.

- K. Manipulate data in classes using pointers, lists and virtual functions.
 - 27. Define pointer variables.
 - 28. Use the address of operator and dereference operator.
 - 29. Use pointers when processing lists.
 - 30. Use pointers for dynamically linking objects.
 - 31. Demonstrate the use of virtual functions.

- L. Construct overloaded operators and function/class templates.
 - 32. Use overloaded operators.
 - 33. Use friend functions.

- M. Use pointers to process data in linked lists.
 - 34. Use the "this" pointer.
 - 35. Use function and class templates.
 - 36. Use the ordered linked list.
 - 37. Use the doubly linked list.

- N. Implement stacks and queues.
 - 38. Implement the stack as an array.
 - 39. Perform various queue operations.

- O. Perform searches using search algorithms and organize data using sort algorithms.
 - 40. Organize data using sort algorithms.
 - 41. Perform a search using the linear search.
 - 42. Perform a search using the binary search.

- P. Use the tools provided by the Standard Template Library in programs.
 - 43. Use the sequence vector container.
 - 44. Use function objects.
 - 45. Demonstrate STL algorithms: copy, remove and find.

ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES

Student progress is evaluated through both formative and summative assessment methods. Specific details may be found in the instructor's course information document.

COLLEGE POLICIES AND PROCEDURES

Student Handbook

<https://www.kckcc.edu/files/docs/student-resources/student-handbook-and-code-of-conduct.pdf>

College Catalog

<https://www.kckcc.edu/academics/catalog/index.html>

College Policies and Statements

<https://www.kckcc.edu/about/policies-statements/index.html>

Accessibility and Accommodations

<https://www.kckcc.edu/academics/resources/student-accessibility-support-services/index.html>.