SYLLABUS

DATE OF LAST REVIEW: 02/2013
CIP CODE: 15.1204
SEMESTER: Spring 2011
COURSE TITLE: C++ Programming Language II
COURSE NUMBER: CIST0262
CREDIT HOURS: 3
INSTRUCTOR: Departmental Syllabus
OFFICE LOCATION: Departmental Syllabus
OFFICE HOURS: Departmental Syllabus
TELEPHONE: Departmental Syllabus
EMAIL: Departmental Syllabus

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PREREQUISITES: CIST0240 C++ Programming

REQUIRED TEXT AND MATERIALS:
Please check with the KCKCC bookstore, http://www.kckccbookstore.com for the required text for your particular class.

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, fried 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.

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, and 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
EXPECTED LEARNER OUTCOMES:
A. Use the basic components of C++, simple data types, arithmetic operators and expressions.
B. Demonstrate C++’s input/output instructions.
C. Define the six control structures and related operators.
D. Program using standard functions and user-defined functions.
E. Create and manipulate advanced data types such as enumeration and string data types.
F. Demonstrate the use of arrays and strings.
G. Devise problem-solving recursion technique.
H. Create and demonstrate the use of records (constructs).
I. Implement classes for data abstraction.
J. Demonstrate Inheritance and Composition by creating new classes from existing classes.
K. Manipulate data in classes using pointers, lists and virtual functions.
L. Construct overloaded operators and function/class templates.
M. Use pointers to process data in linked lists.
N. Implement stacks and queues.
O. Perform searches using search algorithms and organize data using sort algorithms.
P. Use the tools provided by the Standard Template Library in programs.

COURSE COMPETENCIES:
Use the basic components of C++, simple data types, arithmetic operators and expressions.
1. The student will be able to program using the basic components of the C++ language.
2. The student will be able to define and use simple data types.
3. The student will be able to define and use arithmetic operators.
4. The student will be able to define and use arithmetic expressions.

Demonstrate C++’s input/output instructions.
5. The student will be able to demonstrate the use of cin and cout for input-output.
6. The student will be able to format output using options such as set precision.

Define the six control structures and related operators.
7. The student will be able to define the 3 control structures, if, if…else and switch.
8. The student will be able to demonstrate the use of relational and logical operators.
9. The student will be able to demonstrate the use of the 3 repetition or loop structures.

Program using standard functions and user-defined functions.
10. The student will be able to define a “while”, the “do…while” and the “for” loop.
11. The student will be able to define and use standard predefined functions.
12. The student will be able to define and use user-defined value-returning functions.
13. The student will be able to define and use void functions.

14. Create and manipulate advanced data types such as enumeration and string data types.
15. The student will be able to define and use value and reference parameters.
16. The student will be able to demonstrate the use of enumeration types.
17. The student will be able to demonstrate the use of string data types.
18. The student will be able to define names spaces in programs.

20. The student will be able to devise the recursion technique.
21. The student will be able to predict the output of recursion and iteration.
22. Create and demonstrate the use of records.
23. The student will be able to create records (constructs).
24. The student will be able to create an array of structures.

25. Implement classes for data abstraction.
26. The student will be able to implement classes.
27. The student will be able to specify access specifiers: public, protected and private.

28. Demonstrate Inheritance and Composition by creating new classes from existing classes.
29. The student will be able to create new classes using inheritance.
30. The student will be able to create new classes using composition.
31. The student will be able to define constructors for base and derived classes.

32. Manipulate data in classes using pointers, lists and virtual functions.
33. The student will be able to define pointer variables.
34. The student will be able to use the address of operator and dereference operator.
35. The student will be able to use pointers when processing lists.
36. The student will be able to use pointers for dynamically linking objects.
37. The student will be able to demonstrate the use of virtual functions.

38. Construct overloaded operators and function/class templates.
39. The student will be able to use overloaded operators.
40. The student will be able to use friend functions.

41. Use pointers to process data in linked lists.
42. The student will be able to use the “this” pointer.
43. The student will be able to use function and class templates.
44. The student will be able to use the ordered linked list.
45. The student will be able to use the doubly linked list.

46. Implement stacks and queues.
47. The student will be able to implement the stack as an array.
48. The student will be able to perform various queue operations.

49. Perform searches using search algorithms and organize data using sort algorithms.
50. The student will be able to organize data using sort algorithms.
51. The student will be able to perform a search using the linear search.
52. The student will be able to perform a search using the binary search.
Use the tools provided by the Standard Template Library in programs.

43. The student will be able to use the sequence vector container.
44. The student will be able to use function objects.
45. The student will be able to demonstrate STL algorithms: copy, remove and find.

ASSESSMENT OF LEARNER OUTCOMES:
Student progress is evaluated by means that include, but are not limited to, exams, written assignments, and class participation.

SPECIAL NOTES:
This syllabus is subject to change at the discretion of the instructor. Material included is intended to provide an outline of the course and rules that the instructor will adhere to in evaluating the student’s progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome any time.

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