

ITT Technical Institute
IT217P
Programming in C++ II
Onsite Course

SYLLABUS

Credit hours: 4

Contact/Instructional hours: 66 (46 Theory Hours, 20 Lab Hours)

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

Prerequisites: IT106P Programming in C++ I

Course Description:

This course is a continuation of the preceding C++ course. Students will examine concepts of classes, dynamic memory allocation, exception handling, file input/output, and the STL. Basic object-oriented programming will be presented.

SYLLABUS

Instructor: _____

Office hours: _____

Class hours: _____

Major Instructional Areas

1. Detailed Study of Classes
2. Operator Overloading
3. Polymorphism in Object-Oriented Programming
4. Templates and Other Advanced Features
5. File Processing
6. Class string and String Stream Processing
7. Searching, Sorting, and Data Structures
8. Bits, Characters, C-Strings, and structs
9. Standard Template Library (STL)
10. Web Programming

Course Objectives

1. Use pointers for dynamic memory management in C++ programs.
2. Create and use templates in C++ programs.
3. Apply inheritance and polymorphism in C++ programs.
4. Identify object-oriented design principles.
5. Implement operator overloading.
6. Identify relationships among classes.
7. Write the code that processes strings.
8. Read and write data using files.
9. Write the code that implements searching and sorting.
10. Write programs using the Standard Template Library (STL).
11. Write the code that uses data structures.
12. Write Common Gateway Interface (CGI) scripts using C++.
13. Write the programs that use bitwise operators.
14. Use the struct and typedef keywords.

Teaching Strategies

In this course, you will continue your study of how to build a console application using C++. The course will build on the knowledge you acquired in IT106, Programming in C++ I, with detailed discussions of object-oriented programming techniques, templates—including the Standard Template Library (STL), string manipulation, file processing, and data structures.

You will spend some time reviewing and referencing the material covered in the earlier course, on which this course builds. It will be helpful to refer to chapters in the Programming in C++ I course when working on labs and projects.

The strategies used in this course are:

- Group activities in which you analyze a specific issue or C++ technique and present their findings to the class
- Design activities in which you create your own designs and critically assess the designs of other students
- Code demonstrations
- Open-ended questions to initiate discussions in class
- Labs and projects that will give you hands-on practice
 - Each unit includes at least one lab exercise that reinforces the content specific to that unit. The later units will require you to apply concepts that have been presented earlier in the course because of the nature of programming requirements.
- Assignments in which you will answer questions on what you have learned and apply your knowledge to programming in C++

Course Resources

Student Textbook Package

Deitel, H. M., and P. J. Deitel. *C++ How to Program*. 6th ed. Upper Saddle River, NJ: Pearson Prentice Hall, 2008.

Other Required Resources

Deitel, H. M., and P. J. Deitel. *C++ How to Program*. 5th ed. Upper Saddle River, NJ: Pearson Prentice Hall, 2005.

- Chapter 19, "Web Programming," available on the ITT Tech Virtual Library. (School of Study> School of Information Technology> Course materials> IT217 How to Program, 5th ed., Ch 19)

References and Resources

ITT Tech Virtual Library

Log on to the ITT Tech Virtual Library (<http://www.library.itt-tech.edu/>) to access online books, journals, and other reference resources selected to support ITT Tech curricula.

General References

- School of Study> School of Information Technology> > Professional Organizations> Association of C & C++ Users
- School of Study > School of Information Technology > Recommended Links> Reference> C Programming: C++ Resources

Books

The following books are related to this course and are available through the ITT Tech Virtual Library.

Books> Ebrary>

- Easttom, William. *C++ Programming Fundamentals: CyberRookies*. Boston, MA: Charles River Media, 2003.
- Misfeldt, Trevor, Jim Shur, and Gregory Bumgardner. *Elements of C++ Style*. New York: Cambridge University Press, 2004.
- Pfaffenberger, Bryan, Steven M. Schafer, and Chuck White. *HTML, XHTML, and CSS Bible*. 3rd ed. Indianapolis, IN: John Wiley and Sons, Incorporated, 2004.
- Solter, Nicholas A., and Scott J. Kleper. *Professional C++*. Indianapolis, IN: John Wiley and Sons, Incorporated, 2005.
- Wright, Charles, and Kris Jamsa. *1001 Microsoft Visual C++ Programming Tips*. Boston, MA: Thomson Course Technology, 2002.

Evaluation & Grading

COURSE REQUIREMENTS

1. **Attendance and Participation**
Regular attendance and participation are essential for satisfactory progress in this course.
2. **Completed Assignments**
Each student is responsible for completing all assignments on time.
3. **Team Participation (if applicable)**
Each student is responsible for participating in team assignments and for completing the delegated task. Each team member must honestly evaluate the contributions by all members of their respective teams.

Evaluation Criteria Table

The final grade will be based on the following weighted categories:

CATEGORY	WEIGHT
Assignment	15%
Labs	25%
Midterm Exam	15%
Project	25%
Final Exam	20%
Total	100%

Grade Conversion Table

Final grades will be calculated from the percentages earned in class as follows:

Grade	Percentage	Credit
A	90–100%	4.0
B+	85–89%	3.5
B	80–84%	3.0
C+	75–79%	2.5
C	70–74%	2.0
D+	65–69%	1.5
D	60–64%	1.0
F	<60%	0.0

Course Outline

Notes—

- **Unit 1:** All the concepts will be covered in the class; therefore, the specified readings are merely for your reference.
- **For all units, except Unit 1:** It is recommended that you complete the readings before attending the class.

Unit #	Activities for the Unit
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1—Detailed Study of Classes	<ul style="list-style-type: none"> • Content Covered: C++ <i>How to Program</i>, 6th ed.: <ul style="list-style-type: none"> ○ Review Chapter 9, “Classes: A Deeper Look, Part 1” ○ Chapter 10, “Classes: A Deeper Look, Part 2” • Assignment: 1 • Lab: 1 • Project Part 1: Start
2—Operator Overloading	<ul style="list-style-type: none"> • Read from C++ <i>How to Program</i>, 6th ed.: <ul style="list-style-type: none"> ○ Chapter 11, “Operator Overloading; String and Array Objects” • Assignment: 1 • Lab: 1 • Project Part 1: Submit • Project Part 2: Start
3—Polymorphism in Object-Oriented Programming	<ul style="list-style-type: none"> • Read from C++ <i>How to Program</i>, 6th ed.: <ul style="list-style-type: none"> ○ Review Chapter 12, “Object-Oriented Programming: Inheritance” ○ Chapter 13, “Object-Oriented Programming: Polymorphism” • Assignment: 1 • Lab: 1 • Project Part 2: Submit • Project Part 3: Start
4—Templates and Other Advanced Features	<ul style="list-style-type: none"> • Read from C++ <i>How to Program</i>, 6th ed.: <ul style="list-style-type: none"> ○ Chapter 14, “Templates” ○ Chapter 25, “Other Topics” • Assignment: 1 • Lab: 1 • Project Part 3: Submit • Project Part 4: Start
5—File Processing	<ul style="list-style-type: none"> • Read from C++ <i>How to Program</i>, 6th ed.: <ul style="list-style-type: none"> ○ Review Chapter 16, “Exception Handling” ○ Chapter 17, “File Processing” • Assignment: 1 • Lab: 1 • Project Part 4: Submit • Project Part 5: Start
6—Class String and String Stream Processing	<ul style="list-style-type: none"> • Read from C++ <i>How to Program</i>, 6th ed.: <ul style="list-style-type: none"> ○ Chapter 18, “Class string and String Stream Processing” • Midterm Exam • Assignment: 1 • Lab: 1 • Project Part 5: Submit • Project Part 6: Start
7—Searching, Sorting, and Data Structures	<ul style="list-style-type: none"> • Read from C++ <i>How to Program</i>, 6th ed.: <ul style="list-style-type: none"> ○ Chapter 19, “Searching and Sorting” ○ Chapter 20, “Data Structures” • Assignment: 1 • Lab: 1 • Project Part 6: Submit • Project Part 7: Start

Unit #	Activities for the Unit
8—Bits, Characters, C-Strings, and structs	<ul style="list-style-type: none"> • Read from <i>C++ How to Program</i>, 6th ed.: <ul style="list-style-type: none"> ◦ Chapter 21, “Bits, Characters, C-Strings, and structs” • Assignment: 1 • Lab: 1 • Project Part 7: Submit • Project Part 8: Start
9—Standard Template Library (STL)	<ul style="list-style-type: none"> • Read from <i>C++ How to Program</i>, 6th ed.: <ul style="list-style-type: none"> ◦ Chapter 22, “Standard Template Library (STL)” • Assignment: 1 • Lab: 1 • Project Part 8: Submit • Project Part 9: Start
10—Web Programming	<ul style="list-style-type: none"> • Read from <i>C++ How to Program</i>, 5th ed.: <ul style="list-style-type: none"> ◦ Chapter 19, “Web Programming,” pp. 911–974 • Assignment: 1 • Lab: 1 • Project Part 9: Submit
11—Review and Final Exam	<ul style="list-style-type: none"> • Review • Final Exam

(End of Syllabus)