

CIS-155 Home: <http://www.c-jump.com/bcc/c155c/CIS155syllabus.html>

CIS-155 Introduction to C++ Programming
Bristol Community College
Computer Information Systems Department
Spring 2020

Catalog Description

Based on the C programming language, C++ is an improved version of C that takes the C language to the next evolution of programming languages. Proper program design using structured programming techniques is emphasized, as well as the C++ syntax. The course covers data basics, C++ operators, loops, branching, function, arrays, pointers, structures, and file processing.

Three class hours a week.

Prerequisite: none.

Competency met: Critical Analysis (1.0), Technical Literacy (8.0)

Instructor: Igor Kholodov Igor.Kholodov@bristolcc.edu

Office: K211

Telephone: 774-357-3328

Meeting days and times

Lecture: room K-204 Mondays 11:00 am – 1:40 pm

Student Learning Outcomes

At the completion of this course the student will be able to:

- Demonstrate basic understanding of the C++ programming language

- Grasp the building blocks of a C/C++ program including the use of variable definitions, data types, functions, scopes and operators

- Understand the difference between procedural and object-oriented programming

- Work and become productive in Integrated Development Environment, using compiler, linker and debugger

- Explore various features of the command-line environment, including redirection and piped I/O

Specific goals to meet these outcomes also include:

- Explaining how C++ supports three different programming paradigms:

 - Modular

 - Object-based

 - Object-oriented

- Writing code and testing well-structured programs with

 - various forms of Input/Output, including files

 - C++ operators and expressions

 - if-then logic and other forms of flow control

 - while, do, and for loops

 - functions and their parameters

 - arrays, pointers, and references

 - strings and string functions

 - the Standard C++ Library, STL

Planning and designing prior to programming in C++ using the above features.

Required Text

"Programming: Principles and Practice using C++ (Second Edition)"

by Bjarne Stroustrup

Publisher: Addison-Wesley, 2014

2nd edition

ISBN 978-0-321-99278-9 #

Website: stroustrup.com/Programming

Disability Accommodations

I encourage any student in need of accommodations for a specific documented disability to meet with me and the Office of Disability Services (L109, 508-678-2811--Fall River, ext. 2955; Attleboro, ext. 2996; New Bedford, ext. 4011) at your earliest convenience to ensure timely and appropriate accommodations. You may also contact the Office of Disability Services online at <http://www.bristolcc.edu/about/publicrecordsrequest/disabilityservices/>

Office Hours and Extra Help

Instructor's office hours will be posted on the office door, K-211.

If you need some serious help with a homework assignment or if you need some one-on-one tutoring help to get caught up with the class, you can make an appointment with the instructor. Appointments can be arranged via e-mail or during class breaks. Half hour time slots are available for that purpose. Simple questions or assistance can be obtained through instructor's e-mail.

Minimum Requirements for a Passing Grade

Responsibility for reading the textbook and keeping current with the class material.

Ability to work with others in thinking and learning together.

Completion of 80 percent of textbook Chapter Review and Programming Project assignments.

Completion of the Final Project assignment with grade 60 or higher.

Average grade of 60 or greater for all quizzes.

Curiosity and love for learning. In this course students will become familiar with fundamental concepts of C++, one of today's most important programming languages. Modern C++ programs are fast, reliable, and portable across multiple hardware platforms and operating systems. For those who need the ultimate power in writing computer programs, learning C/C++ programming skills is a guaranteed way to success.

Final Grade Determination

Weights for the Final Grade Determination:

Chapter Reviews 50%
Quizzes 20%
Programming Assignments 20%
Final Project 10%

The Final Grades will be assigned as follows:

97-100	A+	87-89	B+	77-79	C+	67-69	D+
93-96	A	83-86	B	73-76	C	63-66	D
90-92	A-	80-82	B-	70-72	C-	60-62	D-
Below 60	F						

Extra Points

Want to earn some extra points? Here's how:

Submit one or more solutions to Chapter Exercises in the textbook and get extra points corresponding to the chapter number and the exercise number. For example, a correct solution to exercises #5 and #7 from Ch.3 yield

$3 + 5 + 7 = 15$ extra points.

Extra points accumulate over the entire semester and contribute to the Programming Assignments portion of your final grade. This is a sure way to give your grade a significant advance!

To be accepted for credit, your work must be submitted in a ZIP archive with each solution in a separate source file named very clearly as follows:

```
ch_3_exercise_5.cpp
ch_3_exercise_7.cpp
```

File names containing spaces will not be accepted for credit, because I am not able to compile them and verify that the program actually works. Do not submit any project or executable files. I only need the C++ source files to grade your work.

Every program must be reasonably commented with appropriate comments. The comment at the top must reiterate the actual problem description. The rest of your comments should be sufficient for me to understand what you are trying to do.

Please note that there are Selected exercise solutions posted on author's website. Please do not waste time copying and pasting them for obvious reasons. However, you are welcome to study the posted solutions for your own advantage.

Teaching Methodology

The lecture will be the principal teaching method used in this course. "Handouts" and sample programs will be available on the class web page. Class discussions will be conducted pertaining to the textbook chapters and in-class exercises.

Software demos and overhead slides will be used.

It will be imperative that the student complete all assigned readings and homework assignments prior to class. Failure to do so is a formula for failure. Coming to class prepared is essential for successful completion of the course.

Attendance Policy

Attendance is recorded weekly based on the student's ability to complete quality and timely home work assignments each week. Students are considered "present" for the week if they submit the required quiz or assignment (with a satisfying passing grade) prior to the due date for that week. Poor attendance may affect your final grade.

Students are responsible for withdrawing officially if they stop attending any or all classes. Faculty no longer have the ability to withdraw a student from a class. A grade of "F" will be assigned to any student who stops attending a course but does not officially withdraw. Students are encouraged to meet with an advisor before making any changes to their schedule. Withdrawals impact Satisfactory Academic Progress and can place the student at risk for academic probation or dismissal. Students who use financial aid and who subsequently withdraw may be required to return some or all funds received. Withdrawals are accepted until the tenth week of classes. Students may withdraw online in accessBCC, in person at any Enrollment Center, or via their college email to enrollmentservices@bristolcc.edu. Email requests must come from the student's BCC college email address and must include the student's name, BCC student ID number, and course information (CRN, course and section number).

Email from non-college accounts will not be accepted. If a student officially withdraws after the third week of classes, there will be no tuition or college fee refunds. For more information, see the College Catalog at

<http://bristolcc.edu/>

Students with questions should contact Enrollment Services via any of the methods mentioned above or at 774-357-2590

BCC Academic Policies

College-wide Academic Policies outlined in BCC Academic Catalog directly apply to this course. It is your responsibility to read carefully and understand Academic Information, especially Academic Integrity, Academic Dishonesty, Academic Negligence, Plagiarism, and Classroom conduct, which are published online. See BCC Catalog Academic Information for details.

CIS-155 TENTATIVE SCHEDULE

Week 1. Book Chapters 1 and 2

Week 2. Ch.3, Objects, Types, and Values

Weeks 3-4. Ch.4, Computation

Week 5. Ch.5, Errors
Week 6. Ch.8, Technicalities: Functions, etc.
Weeks 7-8. Ch.9, Technicalities: Classes, etc.
Week 9. Ch.10-11, Input and Output Streams
Weeks 10-11. Ch.12, A Display Model
Weeks 12-13. Ch.13, Graphics Classes
Week 14. Ch.14, Graphics Class Design
Week 15. Final Project Review

Week 1. Book Chapters 1 and 2

Lecture:

- BCC Student Handbook Tip: *"For each hour in class, you should expect to study at least 2-3 hours outside of class. Know your limits, avoid over scheduling yourself (whether it be work or class). Set up a schedule that you know will allow you to earn good grades. And, maintain a day planner to help you stay organized."*
- Textbook Chapter 1, Computers, People, and Programming
- Textbook Chapter 2, Hello, World!

Homework Assignment:

- Fill out and submit Ch.2 Review
- Reading: Textbook Chapter 2, Hello, World!
- Reading: Textbook Chapter 3, Objects, Types, and Values

Week 2. Ch.3, Objects, Types, and Values

Lecture:

- Textbook Chapter 3, Objects, Types, and Values
- Ch.3 Q&A

Topics:

- Input/Output with `std::cin` and `std::cout` (3.1)
- C++ primitive types (3.2)
- C++ statements, expressions, and operators (3.4)
- C++ identifiers (names) (3.7)
- Variable initialization and type safety (3.9)
- Floating Point Primitive Types
- C++ Floating-Point Numbers

Homework Assignment:

- Fill out and submit Ch.3 Review
- Assignment a3: Driving Time Calculator
- Reading: Textbook Chapter 4, Computation
- *Optional:* submit one or more solutions to **Ch.3.Exercises** and get extra points

Weeks 3-4. Ch.4, Computation

Lecture:

- Textbook Ch.4, Computation

- *Statements and flow control* (Control Structures)
- *Functions*
- Ch.4 Q&A

Topics:

- Expressions, Operators, Conversions (4.3)
- Statements *if*, *switch*, *while*, *for* (4.4)
- Functions (4.5)
- `std::vector` (4.6)

Homework Assignment:

- Fill out and submit Ch.4 Review
- Quiz@Home: C++ Intro
- Reading: Textbook Chapter 5, Errors
- *Optional*: submit one or more solutions to **Ch.4.Exercises** and get extra points

Week 5. Ch.5, Errors

Lecture:

- Textbook Ch.5, Errors
- *Exceptions*
- Ch.5 Q&A

Topics:

- Compile-time errors (5.3)
- Link-time errors (5.4)
- Run-time errors (5.5)
- Exceptions (5.6)
- Logic errors (5.7)
- Debugging, pre- and post-conditions (5.9, 5.10)

Homework Assignment:

- Fill out and submit Ch.5 Review
- Assignment a4: Serial Julian Date (Part 1)
- Quiz@Home: C++ Fundamental Concepts
- Reading: Textbook Chapter 8, Technicalities: Functions, etc.
- *Optional*: submit one or more solutions to **Ch.5.Exercises** and get extra points

Week 6. Ch.8, Technicalities: Functions, etc.

Lecture:

- Textbook Ch.8, Technicalities: Functions, etc.
- *Name visibility* (scope, `namespaces`, `using`, `std::`)
- Ch.8 Q&A

Topics:

- Declarations and definitions (8.2)
- Header files (8.3)
- Scope (8.4)
- Function call and return, C++ references (8.5)
- Order of evaluation (8.6)
- Namespaces (8.7)

Homework Assignment:

- Fill out and submit Ch.8 Review
- Reading: Textbook Chapter 9, Technicalities: Classes, etc.
- *Optional:* submit one or more solutions to **Ch.8.Exercises** and get extra points

Weeks 7-8. Ch.9, Technicalities: Classes, etc.

Lecture:

- Textbook Ch.9, Technicalities: Classes, etc.

Topics:

- User-defined types (9.1)
- Classes and members (9.2)
- Interface and implementation (9.4)

Homework Assignment:

- Assignment a5: Serial Julian Date (Part 2)
- Quiz@Home: C++ Built-in Types and Expressions
- Reading: Textbook Chapter 10, Input and Output Streams
- *Optional:* submit one or more solutions to **Ch.9.Exercises** and get extra points

Spring Break

Week 9. Ch.10-11, Input and Output Streams

Lecture:

- Textbook Ch.10, Input and Output Streams
- Textbook Ch.11 Customizing Input and Output
- Ch.11 Q&A

Topics:

- The I/O stream model (10.2)
- Files (10.3)
- Sequential access to files
- Random access to files
- Output formatting (11.2)
- File opening and positioning (11.3)

- String streams (11.4)
- Line-oriented input (11.5)
- Character classification (11.6)

Homework Assignment:

- Fill out and submit Ch.10 Review
- *Optional Reading:* Textbook Chapter 11, Customizing Input and Output
- Reading: Textbook Chapter 12, A Display Model
- *Optional:* submit one or more solutions to **Ch.10.Exercises** and get extra points

Weeks 10-11. Ch.12, A Display Model

Lecture:

- Textbook Ch.12, A Display Model
- In-class project: Lab 2, Ch.12, A Display Model Overview

Topics:

- Using graphics
- FLTK Library
- MS Visual Studio Project Configuration

Homework Assignment:

- Assignment a8: Convert binary to decimal and hex
- Quiz@Home: C++ Functions
- Quiz@Home: C++ Control Flow
- Reading: Textbook Chapter 13, Graphics Classes
- *Optional:* submit one or more solutions to **Ch.12.Exercises** and get extra points

Weeks 12-13. Ch.13, Graphics Classes

Lecture:

- Textbook Ch.13, Graphics Classes
- In-class project: Lab 3, Ch.13, Graphics Classes

Topics:

- Textbook Graphics Classes

Homework Assignment:

- Assignment a9: Serial date class
- Quiz@Home: C++ Stream Input/Output
- Reading: Textbook Chapter 14, Graphics Class Design
- *Optional:* submit one or more solutions to **Ch.13.Exercises** and get extra points

Week 14. Ch.14, Graphics Class Design

Lecture:

- Textbook Ch.14, Graphics Class Design

Topics:

- Class inheritance
- **Assignment a12:** CIS-155 Final Project

Homework Assignment:

- *Optional:* submit one or more solutions to **Ch.14.Exercises** and get extra points

Week 15. Final Project Review

Note: This syllabus is a suggested course outline and will be generally followed, subject to change according to the instructor's discretion and needs. Academic flexibility is important.