BTC Course Syllabus

Instructor Name: David Davidson **Email:** dadavidson@btc.edu
Office: No office on campus **Phone:** No campus phone
Dept/Course #: CS 132 **Quarter:** Spring 2018
Meeting times/dates: T/Th 8:00 – 10:30 a.m., April 3 – June 19, 2018
Credits: 5 **Theory Hours:** 44 **Guided Practice Hours:** 22 **Total Hours:** 66

Course Title: Computer Science II C++

Course Description: Advanced software development using the C++ programming language, emphasizing object-oriented concepts and fundamental data structures techniques. Introduces concepts of recursion, modularity, encapsulation, inheritance, templates, polymorphic class design, and self-referential data structures; focuses on fundamental abstract data types (stacks, queues, linked lists, binary trees) and their use.

Course Prerequisite: CS& 131 with grade of C or better

Learning Outcomes	Assessment Methods
Demonstrate knowledge of the following object-oriented programming concepts: modularity, encapsulation, inheritance, polymorphism, abstract data types, namespaces, and exception handling.	In-class exams and quizzes containing coding problems and other types of questions (short answer, multi-choice). Face-to-face demonstration and explanation of software programs and pseudo-code built by students, as well as graded programs submitted via Canvas.
Construct programs utilizing fundamental data structures (stack, queue, linked list, tree) and self-referential data structures.	Same as above.
Construct programs that use templates and the Standard Template Library.	Same as above.
Create, test and analyze programs of moderate complexity using top-down modular design, and using separate compilation.	Same as above.

BTC Course Syllabus

Course schedule, subject to revision:

	Topic	Text sections for the given topic
3-Apr	Review array, string, pointer	p. 378-414, 7.3, 8.2, 9.1
5-Apr	Review struct, file I/O	6.1 - 6.2, 10.1
10-Apr	Classes I	pp. 554 - 576
12-Apr	Classes II	pp. 576 - 597
17-Apr	Classes III	10.4
19-Apr	Friends	11.1
24-Apr	Overloading	11.2
26-Apr	Arrays, dynamic arrays	11.3 - 11.4
1-May	Arrays, cont.	
3-May	Separate compilation, etc.	12.1 - 12.2
8-May	MIDTERM	
10-May	Inheritance	15.1
15-May	Polymorphism	15.2 - 15.3
17-May	NO CLASS	
22-May	Linked list	13.1
24-May	Stack & queue	13.2
29-May	Recursion - binary search	14.3
31-May	Exception handling	16
5-Jun	Templates	17.1 - 17.2
7-Jun	STL iterators	18.1 - 18.2
12-Jun	STL containers, algorithms	18.2 - 18.3
14-Jun	Catch-up & review	
19-Jun	FINAL EXAM	

Method of Instruction: Lecture, lab exercises, discussion, small group work.

Required Texts and Materials:

Textbook: "Problem Solving with C++," 9th Edition (2015), by Walter Savitch, published by Pearson. ISBN-10: 0-13-383442-5. ISBN13: 978-0-13-383442-0. Either hardcopy or e-book is acceptable. The MyProgrammingLab software that supplements the text is NOT required.

External USB memory storage with capacity of 2GB or greater. Either a thumb drive or an external SSD or disk drive.

BTC Course Syllabus

Student Expectations/Requirements:

Students are expected to arrive each day on time (awake and eager to learn), focus and participate, and work diligently on the labs. Students are expected to complete daily reading assignments (~25 pages), and spend out-of-class time as necessary to complete lab exercises that are begun in class.

Assignments, Evaluation and Grading

A final letter grade will be assigned using the standard 10 point scale with 90-100 A, 80-89 B, etc. Plus or minus grade designations may be used at the discretion of the instructor. The grade will be based upon:

- Two exams (midterm, final). These will be timed, in-class exams (administered via Canvas) that allow use of the textbook, your notes, and the Visual Studio 2017 software program that is used to write code. No other resources (internet, phone, classmates, etc.) are allowed. An absence on an exam day will result in a score of zero, unless a prior arrangement has been made with the instructor. **Each exam** will be weighted as **20%** of the final grade.
- Approximately 8 quizzes. On any given class day (other than exam days), a short closed book quiz (10 questions or less, T/F or multi-choice) might be administered, focusing on recent lecture material and on the assigned reading. The dates of quizzes will not be announced in advance, and there is no opportunity to "make-up" a quiz at any other time. A quiz may only be taken by those people in class. The cumulative score on all quizzes combined (with the lowest two scores omitted) will be weighted as **20%** of the final grade.
- Lab exercises. The cumulative scores on assigned labs will be weighted as **35%** of the final grade. Some labs will be "pair-programming" style, in which two people together tackle a problem. In that instance, a single solution is submitted for grading, and the same grade is given to both people in the pair. Other labs will be individual efforts. Significant time is scheduled within class for completion of the labs, but out-of-class effort will be necessary if a lab is not finished in class. A lab submitted after its due date will be marked down by 50%.
- Attendance. **5%** of the final grade is based entirely on attendance. Not counting the two exam days, there are 20 class days in the quarter. A student is expected to be present throughout each class period (i.e., from 8:00 until 10:30), unless the student has completed and submitted the day's lab, in which case the student may leave. The first three absences will result in no deduction to this component of the grade. Thereafter, each absence results in the component being reduced by 1%. I.e., a student that had perfect scores on all exams, quizzes, and labs, but who had been absent seven times, would receive a 96% as the course grade.

The structure of the grading is obviously designed to encourage attendance at the entirety of each class. Exchanging ideas with fellow students (e.g., during a pair-programming lab) and receiving guidance from the instructor *while you're actually working on a coding problem* is the most effective and efficient way to master this complex material.

BTC Course Syllabus

Additional Student Resources

Accessibility: BTC and your instructor are committed to the principle of universal learning. This means that our classroom, our virtual spaces, our practices, and our interactions be as inclusive as possible. Mutual respect, civility, and the ability to listen and observe others carefully are crucial to universal learning.

If you have difficulty reading, hearing or seeing content, or any other difficulties that might negatively impact your potential to succeed in this course, you may be eligible to receive help from our Accessibility Resources Office. If you feel you may benefit from an accommodation, contact Accessibility Resources ideally at the start of the quarter. (You may contact them at any time during the quarter.) This office is located in the **Admissions and Student Resource Center, Room 106. Call 360-752-8450 or email ar@btc.edu**. If you qualify for academic accommodations, the Accessibility Resources Office will forward a letter of accommodation to your instructor, who will, with you, work out the details of any accommodations needed for this course.

Campus Emergencies: If an emergency arises, your instructor may inform you of actions to follow. You are responsible for knowing emergency evacuation routes from your classroom. If police or university officials order you to evacuate, do so calmly and assist those needing help. You may receive emergency information alerts via the building enunciation system, text message, email, or BTC's webpage, Facebook and Twitter. Refer to the emergency flipchart in your room for more information on specific types of emergencies.

Tutoring: Drop-in tutoring is available at no cost to students when classes are in session. Tutors are recruited in all subjects where tutoring assistance is requested. The Tutoring Center is located in Building H, Rooms 9 and 15. To request tutoring or to apply to be a tutor, please contact the Tutoring Center at 360.752.8499 or visit www.btc.edu/tutoringfor additional information and to access the Tutoring Request Form and the current drop-in tutoring schedule.

Advising & Career Services: Academic & Career Advisors are available to assist with: Exploring and choosing the career that fits you best; Developing an educational plan and selecting the courses to get you started and progress toward your goals; Assistance with academic success strategies; Job and internship searching resources including resume and cover letter development, mock interviews and more; Connecting with employers to explore job opportunities. This office is located in the Admissions and Student Resource Center, Room 106. Call 360-752-8345 or email advising@btc.edu.

Financial Aid: Students seeking Financial Aid should begin by completing a FAFSA at FAFSA.ed.gov. Students who have completed a FAFSA can check their status by logging in to their student Financial Aid Portal on the BTC website. Visit the Financial Aid office in CSB 101, call at 360-752-8351, or email at finaid@btc.edu for assistance or additional resources. You may also qualify for additional funding support through Workforce Funding & Student Support. Apply at http://www.btc.edu/workforcefundingor stop by Campus Services, Room 102 for more information.

BTC Course Syllabus

Library: The BTC Library is located on the third floor of the Campus Center Building with an inviting atmosphere that includes a view of Bellingham Bay. The Library offers a variety of services and technology to meet the educational needs of students by providing professional, high-quality service and assistance.

The Library houses a physical collection of 12,000 books and media as well as online resources that include access to 120,000 eBooks and 20+ databases (8,000 full-text online journals) to use for research in prerequisite classes and specific programs; one-on-one assistance is offered for reference and research needs. The Library also is the open computer lab on campus and consists of 80 computers with 40+ software programs. A variety of equipment is available for check out that includes laptops and iPads. Assistance is offered with hardware and software questions, online learning and any technology-related question during all open hours; there is also a HelpDesk with specific hours to help with technology needs. Media-enhanced rooms are available for group study.

Contact the Library by phone at 360.752.8383 or via email at Library@btc.edu, or visit the website: www.btc.edu/library.