

Syllabus – CS 2420 – Introduction to Data Structures and Algorithms									
Instructor:	Brad Peterson								
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E-Mail: Google Hangouts:	bradleypeterson@weber.edu bradpeterson@gmail.com								
Office Hours:	<p>My office is at room 308 J at the Davis Campus, Building 2. My hours are Mondays and Wednesdays 1-5PM, and Tuesdays 1-6PM. I'm available by appointment at Ogden around 11:30 AM on Mondays and Wednesdays.</p> <p>Students find that email and instant messaging are the most effective way of contacting me. I am available online most hours of the day.</p>								
Text:	<p>The textbook is optional. It is a study companion if you choose to use it that way. Most students who did not purchase the book in prior semesters did fine.</p> <p>Data Structures Using C++, 2nd Edition by D. S. Malik. ISBN 978-0-324-78201-1 I will work with students who have the 1st edition. (Though it doesn't seem to save much money.) If you choose to rent a e-book version, I will reference items by section. (This approach will save you the most money. This isn't a textbook I believe you need to keep after the course is over.)</p>								
Course Description:	General principles of common data structures and design of efficient algorithms. Topics include: arrays, linked-lists, stacks, queues, trees, graphs, tables, storage and retrieval structures, searching, sorting, hashing, and algorithmic analysis. Emphasis will be on abstraction, efficiency, re-usable code, and object-oriented implementation. Prerequisites: CS SI1410 and co/pre-req of MATH QL1050 or 1080.								
Course Objectives:	<p>By the end of the course, students will understand the following concepts:</p> <ul style="list-style-type: none"> * To reinforce good scheduling and working habits * To learn adaptable skills in a software development workplace environment * Object-oriented program design * Algorithm development techniques * The conceptual idea behind as well as the implementation of the data structures including static and dynamic arrays, vectors, linked lists, stacks, queues, and binary trees * Comparing and contrasting efficiency both in time and space for these data structures * Common search and sort algorithms 								
Students with Disabilities:	Any student requiring accommodations or services due to a disability must contact Services for Students with Disabilities. SSD can also arrange to provide course materials (including this syllabus) in alternative formats if necessary). You can also call 801-626-6413 for more details.								
Allocated Time:	You should anticipate spending four to twelve hours of time per week for this course. This class is particularly difficult. Not because I make it difficult. The subject matter is just a difficult adjustment for many students. If the level of detail seems overwhelming, or C++ knowledge is lacking, then spend twelve hours of study per week on this course. If much of the course feels like a simple extension of CS 1410, then four hours of time per week should suffice.								
Tips for success:	<ul style="list-style-type: none"> * Determination, determination, determination. Students who complete all homework assignments have a very high rate of passing. Students who miss one or more homework assignments have a very low rate of passing. * Like all good computer scientists, you cannot give up. This class is all about solving puzzles and problems. Even the best computer science students get discouraged on hard problems. Good CS students take it as a challenge. Poor CS students give up without trying. * My courses are geared towards concepts, and not memorization. If you don't understand why something works, take the time to understand it. * Learn to ask for help properly. Some students are too afraid or unwilling to say they need help. On the other hand, some students give up after thinking for only a few minutes and contact me at least once a day wanting me to do the thinking for them. There's a healthy zone between those two you should seek. A good rule of thumb is that if you have spent a couple of hours trying to solve something, and you simply can't proceed, please ask for help. <i>I don't want students stuck in a state of confusion, I'm here to help.</i> 								
Grading:	<table> <tr> <td>Weekly Assignments</td> <td>40%</td> </tr> <tr> <td>Review Quizzes</td> <td>10%</td> </tr> <tr> <td>Midterm</td> <td>25%</td> </tr> <tr> <td>Final Exam</td> <td>25%</td> </tr> </table> <p>Only one late assignment will be accepted for half credit. The due date for a late assignment is the last day of finals. Or you could redo an assignment for the one "late assignment" and obtain half credit.</p>	Weekly Assignments	40%	Review Quizzes	10%	Midterm	25%	Final Exam	25%
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Letter Grades:	<p> A : 93.3% <= Total A- : 90 <= Total < 93.3% B+ : 86.7 <= Total < 90% B : 83.3 <= Total < 86.7% B- : 80 <= Total < 83.3% C+ : 76.7 <= Total < 80% </p> <p> C : 73.3 <= Total < 76.7% C- : 70 <= Total < 73.3% D+ : 66.7 <= Total < 70% D : 63.3 <= Total < 66.7% D- : 60 <= Total < 63.3% E : Total < 60% </p>	
Assignments:	<p>Homework assignments will generally be assigned on Wednesday, and will be due the following Wednesday (unless otherwise specified). Homework assignments are unlocked by entering codes found in lectures from the previous class periods. Please note that my courses are flexible, and some homework assignments will likely be extended., and others will be assigned on Mondays. Assignments must be turned in on time at midnight. Turning in an assignments after midnight runs a strong risk that it will be treated as your one late assignment for the semester. All assignments should be submitted through canvas.weber.edu.</p> <p>If for any reason you must submit an assignment via email rather than through canvas.weber.edu, submit it to bradpeterson+homework@gmail.com.</p>	
Quizzes and exams:	<p>Quizzes and exams will generally be assigned on Mondays. Weekly quizzes will be review material from CS 1410 and CS 2420. The quizzes will consist of multiple choice, True/False, and response questions. The quizzes will be administered online through chitester.weber.edu, and each quiz will last for a period of one week. Students will be able to take the quiz as many times as necessary. Only students receiving 100% for the quiz will receive credit for that quiz. Some weeks will go by without a quiz. It is your responsibility to check Chitester weekly to see if there is a quiz.</p>	
Cheating:	<p>CS Department policy dictates that any verifiable evidence of student academic cheating, as defined and determined by the instructor, will result in: 1) an automatic failing grade for the class and 2) a report to the Dean of Students that will include the student's name and a description of the student's dishonest conduct. The University affords you certain rights, including the right to challenge the accusation of cheating. The Dean of Students will explain these rights to you if you are accused of cheating.</p> <p>The WSU Student Code defines cheating as the following:</p> <ul style="list-style-type: none"> a. Cheating, which includes but is not limited to: i) Copying from another student's test; ii) Using materials during a test not authorized by the person giving the test; iii) Collaborating with any other person during a test without authorization; iv) Knowingly obtaining, using, buying, selling, transporting, or soliciting in whole or in part the contents of any test without authorization of the appropriate University official; v) Bribing any other person to obtain any test; vi) Soliciting or receiving unauthorized information about any test; vii) Substituting for another student or permitting any other person to substitute for oneself to take a test. b. Plagiarism, which is the unacknowledged (uncited) use of any other person's or group's ideas or work. This includes purchased or borrowed papers; c. Collusion, which is the unauthorized collaboration with another person in preparing work offered for credit; d. Falsification, which is the intentional and unauthorized altering or inventing of any information or citation in an academic exercise, activity, or record-keeping process; e. Giving, selling, or receiving unauthorized course or test information; f. Using any unauthorized resource or aid in the preparation or completion of any course work, exercise, or activity; g. Infringing on the copyright law of the United States which prohibits the making of reproductions of copyrighted material except under certain specified conditions. 	
Course Fee Statement:	<p>Course fees for the Computer Science major are designed to cover the costs of lab equipment maintenance and replacement including desktop and server computer systems and software; consumable materials and supplies; and support for lab aides, student tutors, and online instructional resources.</p>	
Schedule: (Note that this course will be very fluid. Topics will change depending on the needs of students.)	<p> Week 1 Chapter 1,2,3,7,8 C++ basics review, stacks, Week 2 Chapter 1,2,3,7,8 C++ basics review, stacks, queues Week 3 Chapter 4 Linked lists Week 4 Chapter 5 Doubly linked lists Week 5 Chapter 5 Linked list iterators Week 6 Chapter 9 Hash tables Week 7 Chapter 9 Hash tables, algorithmic analysis Week 8 Chapter 9, 10 Midterm, sort algorithms Week 9 Chapter 10 Sort algorithms Week 10 Chapter 10 Multi threaded sort algorithms Week 11 Chapter 11 Binary trees, AVL trees, B trees Week 12 Chapter 11 Trees, continued Week 13 Chapter 12 Graphs Week 14 TBA, Review Week 15 Final Exam Week </p>	