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|  |  |  | **CptS 122: Spring**, **2021 [4 Credits]** **Data Structures in C/C++ - Schedule**    **VCEA Events:**<https://vcea.wsu.edu/upcoming-events/>  **WSU Crimson Service Desk Info:** <https://its.wsu.edu/csd/>  **Language References:**  [ANSI C Quick Reference](http://eecs.wsu.edu/~aofallon/cpts122/CQuickRefANSI.pdf)     ||     [C++ Quick Reference](http://eecs.wsu.edu/~aofallon/cpts122/CppQuickRef.pdf)  **Library Guides:**  [C Library Guide](http://eecs.wsu.edu/~aofallon/cpts122/CLibraryReferenceGuide.pdf)     ||     [C++ Library Guide](http://eecs.wsu.edu/~aofallon/cpts122/CppLibraryReferenceGuide.pdf)  **Coding Standards:**  [C Standard](http://eecs.wsu.edu/~aofallon/cpts122/lectures/Coding_Standard_Guide_CptS121.pdf)    ||     [C++ Standard](https://google.github.io/styleguide/cppguide.html)  **Free VCEA Tutoring:**  <https://vcea.wsu.edu/tutors/tutoring-schedule/>  – CptS and EE tutors can help!    **VCEA Learning Outside the Classroom (Career Fair, Internships, Resume Help, Interview Tips) -**<https://vcea.wsu.edu/undergraduateexperience/>  -       WSU Virtual Career Expo Info (February 9, 10) -  <https://ascc.wsu.edu/employers/career-expo/>  -       ASCC Resume Info - <https://ascc.wsu.edu/career-services/resumes-and-cover-letters/>  -       ASCC Interview Info - <https://s3.wp.wsu.edu/uploads/sites/167/2020/04/ASCC-RESUME-2020.pdf>    **Installing Windows on Linux and OSX:**[.PDF](https://eecs.wsu.edu/Fall2020/cpts121/installing_windows_on_osx_linux.pdf)    **How to Ignore scanf\_s () and printf \_s () Warnings in Microsoft Visual Studio:**[.PDF](http://eecs.wsu.edu/~aofallon/cpts121/lectures/How%20to%20Ingore%20scanf.pdf) |  |  |
|  |  |  |  |  |  |
|  | **Date** | **Reading** | **Topic** | **Assignments** | **Due Dates & Solutions** |
| 1 | Jan 18 |  | **No class --- Martin Luther King Jr Day --- all university holiday!** | **No lab this week!** |  |
|  | Jan 20 | DD CPP   1.1 – 1.5 | [Syllabus](http://eecs.wsu.edu/~aofallon/cpts122/syllabus.htm), intro to course, exploring MS VS 2019 and debugging, 3-file format/organization;    Bootcamp for Mac help;    check out this article on the future of computing jobs!          <http://cacm.acm.org/blogs/blog-cacm/180053-computing-is-the-safe-stem-career-choice-today/fulltext>;    check out these websites!          <https://www.hackerrank.com/>          <https://leetcode.com/>          <http://www.tutorialspoint.com/> | Download [MS VS Community 2019](https://visualstudio.microsoft.com/downloads/) from Microsoft; install “Desktop development with C++” workload |  |
|  | Jan 22 |  | [1-1: C review of pointers, arrays, strings, and structs,](https://eecs.wsu.edu/~aofallon/cpts122/lectures/L1-1.pdf) C review [examples](https://eecs.wsu.edu/~aofallon/cpts122/lectures/CExamples.zip) courtesy of John Schneider | [PA 1](https://eecs.wsu.edu/~aofallon/cpts122/progassignments/PA1.htm) |  |
| 2 | Jan 25 | Optional:  HK 13.1 – 13.3,  DD C 12.1 –   12.3 | **Note: Last day you may add a course on-line!**    [2-1: Intro to data structures, abstract data types (ADTs) & lists in C](https://eecs.wsu.edu/~aofallon/cpts122/lectures/L2-1.pdf), example [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/CommentingExample.zip)] shows how to comment C programs and corresponding functions, in-class review [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/FirstCExampleReview.zip)] w/ structs, pointers, arrays, strings, strtok ();    please visit the virtual Crimson Service Desk if you’re struggling w/ installing Visual Studio (however, you must show them that you made an earnest attempt to install it yourself!):          <https://its.wsu.edu/csd/> | [Quiz 1](https://eecs.wsu.edu/~aofallon/cpts122/quizzes/Quiz1.pdf), [Lab 1](https://eecs.wsu.edu/~aofallon/cpts122/labs/Lab1.htm) | Install of MS VS, [Lab 1](https://eecs.wsu.edu/~aofallon/cpts122/labs/Lab1.zip) (by end of lab) – partial solution courtesy of Matt F. |
|  | Jan 27 | Optional: HK 13.4,  DD C 12.4 | [2-2: Linked lists I in C](https://eecs.wsu.edu/~aofallon/cpts122/lectures/L2-2.pdf) - insertFront ( ), deleteFront ( ), printListIterative ( ), isEmpty ( ), initList (), associated diagrams, & applications, in-class linked list start pt [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/LinkedList1.zip)], in-class linked list end pt [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/LinkedList2.zip)];    check out these sites for more practice!:          <http://www.topcoder.com/>          <https://leetcode.com/>          <http://projecteuler.net/>          <https://www.hackerrank.com/>          <http://codingforinterviews.com/practice> |  |  |
|  | Jan 29 |  | 2-3: Linked lists II in C (no ppt) - insertOrder ( ), printListRecursive ( ), & deleteNode ( ) - linked list application & problem solving w/ lists, discuss testing, in-class linked list [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/LinkedList3.zip)] |  |  |
| 3 | Feb 1 |  | **Note: Last day you may receive a refund for special course fees!**    3-1: Linked lists III in C - in-class linked list [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/LinkedList4.zip)] | [Quiz 2](https://eecs.wsu.edu/~aofallon/cpts122/quizzes/Quiz2.pdf), [Lab 2](https://eecs.wsu.edu/~aofallon/cpts122/labs/Lab2.htm) | [Quiz 1](https://eecs.wsu.edu/~aofallon/cpts122/quizzes/Quiz1Solution.pdf) & [Quiz 2](https://eecs.wsu.edu/~aofallon/cpts122/quizzes/Quiz2Solution.pdf) (by start of lab), Lab 2 (by end of lab) |
|  | Feb 3 |  | 3-2: Doubly linked & circular lists in C, in-class linked list [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/LinkedList5.zip)] | [PA 2](https://eecs.wsu.edu/~aofallon/cpts122/progassignments/PA2.htm) | PA 1 |
|  | Feb 5 | DD CPP 6.11    Optional: HK 13.5, DD C 12.5 | Continue w/ L3-2 ( Doubly linked & circular lists in C), in-class list [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/LinkedList6.zip)] w/ some doubly linked list operations (insertFront () and deleteNodeID ()),    [3-3: Stacks I in C](https://eecs.wsu.edu/~aofallon/cpts122/lectures/L3-3.pdf) – push ( ), printStack ( ), pop ( ), isEmpty ( ), peek (), associated diagrams, & applications, extra example using stacks (infix to postfix application) [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/infixToPostfixStackExample.zip)] |  |  |
| 4 | Feb 8 |  | Compare and contrast linked lists and stacks implemented with linked lists,  4-1: Stacks II in C, in-class stack start pt [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Stack.zip)], in-class reverse string using stack [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Stack2.zip)] | No Quiz!,  [Lab 3](https://eecs.wsu.edu/~aofallon/cpts122/labs/Lab3.htm) | No Quiz!, Lab 3 (by end of lab) |
|  | Feb 10 |  | [**Exam 1 Review Guide**](https://eecs.wsu.edu/~aofallon/cpts122/examreviews/exam1review.htm), in-class stack code w/ 1 test case [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Stack3.zip)] will help with PA 3, [more info about testing](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Testing.pdf) | [PA 3](https://eecs.wsu.edu/~aofallon/cpts122/progassignments/PA3.htm) |  |
|  | Feb 12 |  | **Exam 1** (covers units 1-1 –- 4-1) [[.docx](https://eecs.wsu.edu/~aofallon/cpts122/examreviews/CptS122Exam1.docx)] [[.pdf](https://eecs.wsu.edu/~aofallon/cpts122/examreviews/CptS122Exam1.pdf)] -**No Class (work on exam)** |  | PA 2 |
| 5 | Feb 15 |  | **No class --- President’s Day --- class holiday!** | No quiz!,  [Lab 4](https://eecs.wsu.edu/~aofallon/cpts122/labs/Lab4.htm) | **Exam 1 due by Tuesday, midnight PST,** No quiz!, Lab 4 (by end of lab) |
|  | Feb 17 | DD CPP 1.6 – 1.16, 2 | **Note: Last day you may drop a course without record!**    [5-1: Intro to C++ & object technology](https://eecs.wsu.edu/~aofallon/cpts122/lectures/L5-1.pdf), in-class C++ first example [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/FirstCPPExample.zip)] w/ function overloading, cout, cin |  |  |
|  | Feb 19 | DD CPP  3.1 – 3.4, 6.15, 6.16, 6.18, 6.20 | [5-2: Intro to language elements](https://eecs.wsu.edu/~aofallon/cpts122/lectures/L5-2.pdf), I/O, classes, objects, data members, member functions, setters/getters, function overloading, and pass-by-reference, in-class incomplete class Rectangle [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Rectangle.zip)] |  |  |
| 6 | Feb 22 | DD CPP 3.5 – 3.9 | 6-1: More w/ class members, The Rule of Three, constructors, destructors, & function templates [no PPT], in-class class Rectangle example [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Rectangle2.zip)] w/ constructor, destructor, setters, getters, and reference operator, in-class  [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/FirstCPPExample2.zip)] w/ function template | [PA 4](https://eecs.wsu.edu/~aofallon/cpts122/progassignments/PA4.htm), [Quiz 3](https://eecs.wsu.edu/~aofallon/cpts122/quizzes/Quiz3.docx), [Lab 5](https://eecs.wsu.edu/~aofallon/cpts122/labs/Lab5.htm) | PA 3 (extended date), [Quiz 3](https://eecs.wsu.edu/~aofallon/cpts122/quizzes/Quiz3Solution.pdf), Lab 5 (by end of lab) |
|  | Feb 24 | DD CPP 6.12, 6.17, 6.19 | 6-2: More w/ classes and OOP, more in-class Rectangle [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Rectangle3.zip)] w/ copy constructor, copy assignment, start to overloaded stream insertion (<<) |  |  |
|  | Feb 26 | Optional: HK 13.6, DD C 12.6 | [6-3: Queues I in C++ & some Big-O](https://eecs.wsu.edu/~aofallon/cpts122/lectures/L6-3.pdf), in-class Rectangle [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Rectangle4.zip)] w/ overloaded stream insertion (<<), std::string, & file objects, Bank Application example [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/BankApplicationExamplewithTests.zip)] w/ tests will help with PA 4! |  |  |
| 7 | Mar 1 | Required: DD CPP 13.1 - 13.9, 7.1 – 7.5, 7.10, 14.1 - 14.5 | [7-1: Queues II –in C++ along w/ formatted streams](https://eecs.wsu.edu/~aofallon/cpts122/lectures/L7-1.pdf), stream I/O, stream manipulators, stream format states files, & array keyword in C++, in-class queue start [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/QueuesCPP.zip)], in-class queue end pt [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/QueuesCPP2.zip)], in-class Rectangle [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Rectangle5.zip)] | [Quiz 4](https://eecs.wsu.edu/~aofallon/cpts122/quizzes/Quiz4.docx), [Lab 6](https://eecs.wsu.edu/~aofallon/cpts122/labs/Lab6.htm) | [Quiz 4](https://eecs.wsu.edu/~aofallon/cpts122/quizzes/Quiz4Solution.pdf) (by start of lab), Lab 6 (by end of lab) |
|  | Mar 3 | DD CPP 10.1 - 10.3 | [7-2: Friend, const, operator overloading](https://eecs.wsu.edu/~aofallon/cpts122/lectures/L7-2.pdf), more in-class queue [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/QueuesCPP3.zip)], Rational example start pt [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Rational.zip)] |  |  |
|  | Mar 5 | DD CPP  8.6 – 8.8,  9.1 – 9.15,  10.4 - 10.7 | [7-3: Classes: a deeper look](https://eecs.wsu.edu/~aofallon/cpts122/lectures/L7-3.pdf), composition, const objects, const member functions, const w/ pointers, & “this” pointer, more in-class queue [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/QueuesCPP4.zip)] |  |  |
| 8 | Mar 8 | DD CPP 10.8 - 10.15, 21.1 - 21.7 | 8-1: More work with classes, objects, operators as member vs. non-member functions, & class string (no ppt), more in-class Rational [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Rational2.zip)] | [Quiz 5](https://eecs.wsu.edu/~aofallon/cpts122/quizzes/Quiz5.docx), [Lab 7](https://eecs.wsu.edu/~aofallon/cpts122/labs/Lab7.htm) | [Quiz 5](https://eecs.wsu.edu/~aofallon/cpts122/quizzes/Quiz5Solution.pdf) (by start of lab), [Lab 7 (solution courtesy of Nick A.)](https://eecs.wsu.edu/~aofallon/cpts122/labs/ClassLinkedListSolution.zip) |
|  | Mar 10 | DD CPP 18.1 - 18.3 | **Note: Midterm grades will be posted!**    [8-2: Container classes and iterators](https://eecs.wsu.edu/~aofallon/cpts122/lectures/L8-2.pdf), [[notes](https://eecs.wsu.edu/~aofallon/cpts122/lectures/cpts122_06.pdf)] on binary trees courtesy of Jack H., in-class binary search tree start pt [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/BST.zip)], more in-class Rational [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Rational3.zip)] w/ overloaded < and >>;    Tree terminology:          <http://btechsmartclass.com/data_structures/tree-terminology.html> |  |  |
|  | Mar 12 | DD CPP  19.1 - 19.3 | 8-3: Custom templatized data structures, generic classes, & templating w/ linked lists (no PPT), in-class binary tree [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/BST2.zip)] | [PA 5](https://eecs.wsu.edu/~aofallon/cpts122/progassignments/PA5.htm) | [PA 4](https://eecs.wsu.edu/~aofallon/cpts122/progassignments/PA4.zip) (partial solution provided) |
| 9 | Mar 15 | DD CPP 19.4 – 19.6 | 9-1: Custom class template BST, in-class BST [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/BST3.zip)] w/ insert () & inorderTraversal (), [lab 7 solution (linked lists) courtesy of Nick A.](https://eecs.wsu.edu/~aofallon/cpts122/labs/ClassLinkedListSolution.zip) | [Quiz 6](https://eecs.wsu.edu/~aofallon/cpts122/quizzes/Quiz6.docx),  [Lab 8](https://eecs.wsu.edu/~aofallon/cpts122/labs/Lab8.htm) | [Quiz 6](https://eecs.wsu.edu/~aofallon/cpts122/quizzes/Quiz6Solution.pdf) (by start of lab), Lab 8 (by end of lab) |
|  | Mar 17 |  | **No class --- university planned holiday!** |  |  |
|  | Mar 19 | DD CPP 19.7 | 9-2: Custom class template using preexisting class template, in-class template BST [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/BST4.zip)] w/ postorderTraversal () and start to incomplete class BST template,  Complete PA 4 solution from provided [partial solution](https://eecs.wsu.edu/~aofallon/cpts122/progassignments/PA4.zip) by Friday, April 9 by midnight for bonus; send to aofallon@wsu.edu | [PA 6](https://eecs.wsu.edu/~aofallon/cpts122/progassignments/PA6.htm) |  |
| 10 | Mar 22 | DD CPP 20.1, 20.2 | [10-1: Sequential and binary search & Big-O analysis](https://eecs.wsu.edu/~aofallon/cpts122/lectures/L10-1.pdf), in-class class BST [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/BST5.zip)] w/ class template, class template extra [example](https://eecs.wsu.edu/~aofallon/cpts122/lectures/ClassTemplates.zip) with Bubble Sort;     Check out these animations for searches:          <https://www.cs.usfca.edu/~galles/visualization/Search.html>     check out these websites:          <https://www.toptal.com/developers/sorting-algorithms>          <https://www.cs.usfca.edu/~galles/visualization/ComparisonSort.html> | No quiz!,  [Lab 9](https://eecs.wsu.edu/~aofallon/cpts122/labs/Lab9.htm) | PA 5 (extended date), No quiz!, Lab 9 (by end of lab) |
|  | Mar 24 |  | [**Exam 2 Review Guide**](https://eecs.wsu.edu/~aofallon/cpts122/examreviews/exam2review.htm)**;**    BST simulator:          <https://visualgo.net/bn/bst>    Tree terminology:          <http://btechsmartclass.com/data_structures/tree-terminology.html> |  |  |
|  | Mar 26 |  | **Exam 2** (covers units 5-1 –- 10-1) [[.docx](https://eecs.wsu.edu/~aofallon/cpts122/examreviews/CptS122Exam2.docx)] [[.pdf](https://eecs.wsu.edu/~aofallon/cpts122/examreviews/CptS122Exam2.pdf)] -**No Class (work on exam)** |  | PA 6 |
| 11 | Mar 29 | DD CPP 20.3, 20.4 | 11-1: Sorting w/ bubble, selection, insertion, merge sorts & Big-O analysis, in-class start class templates [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/BigOTemplates.zip)] for analysis (be sure to uncomment the function templates to run the code!!!), in-class end pt [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/BigOTemplates2.zip)] | [PA 7](https://eecs.wsu.edu/~aofallon/cpts122/progassignments/PA7.htm), No quiz!, [Lab 10](https://eecs.wsu.edu/~aofallon/cpts122/labs/Lab10.htm) | **Exam 2 due by midnight PST**, No quiz!, Lab 10 (by end of lab) |
|  | Mar 31 | DD CPP 11.1 – 11.4 | [11-2: Inheritance I](https://eecs.wsu.edu/~aofallon/cpts122/lectures/L11-2.pdf), base and derived classes, & class diagrams w/ MS Visio, in-class Employee App start pt [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Employee.zip)], MS Visio UML Employee Class [[diagram](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Visio-EmployeeClassDiagram.pdf)] |  |  |
|  | Apr 2 | DD CPP 11.5 – 11.7 | 11-3: Inheritance II, public, protected, private inheritance, & software engineering w/ inheritance, in-class Employee/Manager example [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Employee2.zip)] |  |  |
| 12 | Apr 5 |  | 12-1:  Inheritance III, in-class Employee/Manager example [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Employee3.zip)] w/ virtual Employee::calculatePay () | [Quiz 7](https://eecs.wsu.edu/~aofallon/cpts122/quizzes/Quiz7.docx), [Lab 11](https://eecs.wsu.edu/~aofallon/cpts122/labs/Lab11.htm) | [Quiz 7](https://eecs.wsu.edu/~aofallon/cpts122/quizzes/Quiz7Solution.pdf) (by start of lab), Lab 11 (by end of lab) |
|  | Apr 7 |  | 12-2:  Inheritance IV, in-class Employee/Manager example [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Employee4.zip)] w/ abstract Employee class and Employee::caculatePay () as pure virtual function, in-class cipher start pt [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Ciphers.zip)] |  |  |
|  | Apr 9 | DD CPP 12.1 – 12.3 | [12-3: Intro to polymorphism & overriding base class members](https://eecs.wsu.edu/~aofallon/cpts122/lectures/L12-3.pdf), more in-class Employee/Manager [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Employee5.zip)];    check out:          <https://techdevguide.withgoogle.com/> | [PA 8](https://eecs.wsu.edu/~aofallon/cpts122/progassignments/PA8.htm) | PA 7, PA 4 bonus due via email to aofallon@wsu.edu |
| 13 | Apr 12 | DD CPP 12.4 – 12.7 | [13-1: Polymorphism and virtual functions, casting, vtables, & abstract classes](https://eecs.wsu.edu/~aofallon/cpts122/lectures/L13-1.pdf), in-class Cipher [code] w// abstract Cipher class and start to overridden versions of encode () and decode () in Caesar class | [Quiz 8](https://eecs.wsu.edu/~aofallon/cpts122/quizzes/Quiz8.docx), [Lab 12](https://eecs.wsu.edu/~aofallon/cpts122/labs/Lab12.htm) | [Quiz 8](https://eecs.wsu.edu/~aofallon/cpts122/quizzes/Quiz8Solution.pdf) (by start of lab), Lab 12 (by end of lab) |
|  | Apr 14 | DD CPP 12.8, 12.9 | 13-2: Designing with polymorphism & graphics;    check out these sites:          <http://www.sfml-dev.org/> for more information about using SFML for PA 9          <http://www.gamefromscratch.com/page/Game-From-Scratch-CPP-Edition.aspx> | [PA 9](https://eecs.wsu.edu/~aofallon/cpts122/progassignments/PA9.htm) |  |
|  | Apr 16 |  | **Note: Last day you may withdraw from a course! Withdrawals do not reduce tuition charges!**    Continue w/ L13-2 (Designing with polymorphism & graphics), in-class Cipher [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Ciphers2.zip)], SFML start [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Pong.zip)] – note you may need to change the paths of the files to find the SFML libraries on your computer! |  | PA 8 |
| 14 | Apr 19 |  | Continue w/ L13-2 (Designing with polymorphism & graphics), more in-class SFML Pong [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Pong3.zip)] w/ class Paddle and class Ball | No quiz!, [Lab 13](https://eecs.wsu.edu/~aofallon/cpts122/labs/Lab13.htm) | No quiz!, Lab 13 (by end of lab) |
|  | Apr 21 | DD CPP 17.1 – 17.4 | [14-1: C++ exception handling I](https://eecs.wsu.edu/~aofallon/cpts122/lectures/L14-1.pdf), in-class divide-by-zero exception [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/DivideByZeroException.zip)], more Pong [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/Pong4.zip)] w/ movements |  |  |
|  | Apr 23 | DD CPP  17.5 – 17.11 | 14-2: C++ exception handling II, exceptions & inheritance, & standard library exception hierarchy, in-class [[code](https://eecs.wsu.edu/~aofallon/cpts122/lectures/DivideByZeroException2.zip)] w/ out\_of\_range exception | [Compiler bonus assignment](https://eecs.wsu.edu/~aofallon/cpts122/progassignments/CompilerBonus.htm) |  |
| 15 | Apr 26 |  | 15-1: Revisit algorithm analysis and polymorphism, [more UML info](https://eecs.wsu.edu/~aofallon/cpts122/lectures/L14-3.pdf);    check out these sites:          <https://dofactory.com/net/design-patterns> for design patterns          <http://www.uml.org/> for more review of UML          <http://www.geeksforgeeks.org/data-structures/> for practice with data structures          <http://codingforinterviews.com/practice> for interview questions    **Please remember to fill out course evaluations! We appreciate your feedback!** | No lab! | No lab! |
|  | Apr 28 | DD CPP 15.1 – 15.5 | 15-2: Standard Template Library (STL), more about testing;    check out these sites:          <http://www.sgi.com/tech/stl/>          [http://www.cplusplus.com/reference/stl/](http://www.cplusplus.com/reference/stl/%20)for more info about the STL | **Final Exam [**[**.docx**](https://eecs.wsu.edu/~aofallon/cpts122/examreviews/CptS122FinalExam.docx)**] [**[**.pdf**](https://eecs.wsu.edu/~aofallon/cpts122/examreviews/CptS122FinalExam.pdf)**]** |  |
|  | Apr 30 |  | [**Final Exam Review Guide**](https://eecs.wsu.edu/~aofallon/cpts122/examreviews/finalExamreview.htm);    Recall this site!          <http://www.geeksforgeeks.org/data-structures/> |  | PA 9 (extended date) |
| **16** | **Finals Week** |  | **--Take-home final due by Wednesday, M**ay 5**, midnight PST**  **--All bonus assignments due by Friday, May 7, midnight PST – send via email to**[**aofallon@wsu.edu**](mailto:aofallon@wsu.edu) |  |  |