

CS485 Advanced Object Oriented Design

Course Syllabus

Spring 2017

Catalog Description

Extends the object oriented design knowledge gained in CS 250. This course will cover the decomposition of a software system into objects emphasizing: building an object hierarchy, information hiding, abstraction of behavior, and reusability of objects. Object Oriented Design Patterns will be introduced. Students will apply various Design Patterns to classroom assignments as well as refactor an existing software project to use the proper Design Patterns. Students will be required to work in teams to produce a large software system as a final project. Prerequisites: CS 300. Offered alternate years. 4 credits.

Student Learning Objectives

- PL/Object-Oriented Programming
 - Design and implement a class hierarchy
 - Use subclassing to design simple class hierarchies that allow code to be reused for distinct subclasses.
 - Use object-oriented encapsulation mechanisms such as interfaces and private members.
 - Correctly reason about control flow in a program using dynamic dispatch.
- SDF/Development Methods
 - Construct, execute and debug programs using a modern IDE and associated tools such as unit testing tools and visual debuggers
 - Apply consistent documentation and program style standards that contribute to the readability and maintainability of software
- SE/Software Design
 - Articulate design principles including separation of concerns, information hiding, coupling and cohesion, and encapsulation.
 - Describe one or more design patterns that could be applicable to the design of a simple software system.

Instructor Details

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|---------------|-----------------------------|
| Professor: | Chadd Williams |
| Email: | chadd@pacificu.edu |
| Office: | Strain 202 |
| Phone: | (503) 352-3041 |
| Office Hours: | 1-3pm MWF or by appointment |

Course Details

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|----------------|---|
| Course Title: | CS485 Advanced Object Oriented Design |
| Prerequisite: | CS300 Data Structures with a grade of C or better |
| Meeting Times: | MWF 3:30pm-4:45pm |
| Location: | Scott 204 |
| Textbooks: | Design Patterns Explained: A New Perspective on Object Oriented Design, 2nd Edition (Software Patterns) 2nd Edition, Alan Shalloway ISBN-13:978-0321247148 ISBN-10: 0321247140 Effective Modern C++, Scott Meyers ISBN: 978-1-4919-0399-5 ISBN 10: 1-4919-0399-6 |
| Software: | Microsoft Visual Studio 2015 Community Edition. Copies can be |

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| | downloaded from visualstudio.com for free. |
| Course Website: | http://zeus.cs.pacificu.edu/chadd/cs485s17 |

Course Assessment

Grade Distribution:

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|--|-----|
| Outside class Programming Assignments | 40% |
| Unscheduled Quizzes (open-note) / Labs | 10% |
| 2 Exams | 30% |
| Final Exam | 20% |

Programming Projects Grading:

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|--|-----|
| Successful Execution | 40% |
| Coding Standards You must follow the C++ Coding Standards provided on the class webpage | 20% |
| Software Design | 40% |

Percent Breakdown:

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|---------|----|--|----------|---|--|---------|----|
| | | | [92,100] | A | | [90,92] | A- |
| [88,90) | B+ | | [82,88) | B | | [80,82) | B- |
| [78,80) | C+ | | [72,78) | C | | [70,72) | C- |
| [68,70) | D+ | | [60,68) | D | | | |
| | | | [0,60) | F | | | |

All exams and quizzes must be taken in PENCIL with an eraser

Important Dates

Tentative dates for Exams:

Exam 1: Wednesday, March 1, 2017

Exam 2: Wednesday, April 12, 2017

Spring Break:

Saturday, March 27, 2017 – Sunday, March 31, 2017 (No Class)

Senior Project Day:

Wednesday, April 26, 2017 (No Class)

Reading Day:

Wednesday, May 10, 2017

Date of Final:

Friday May 12, 2017 noon-2:30pm

Academic Calendar:

<http://www.pacificu.edu/current-undergraduate/academics/academic-calendar>

Course Policies

Attendance: Attendance at every class is critical to your success in this course. I expect you to be on time and ready to go once it is 3:30pm and that you stay until the end of class. You will not be allowed into the classroom once I close the door and start teaching. Any missed lecture is your responsibility to make up; just remember that if you fall behind, it may be very difficult for you to catch up.

- I reserve the right to raise or lower your grade based on class participation and attendance. Specifically, I may lower your grade or may officially withdraw you from the course through the tenth week of the semester for poor attendance or participation. Further, your final grade may be lowered by 1/3 of your final course grade for each day (or portion thereof) of class missed. Please notify me PRIOR to class if you must miss class for any reason.
- No early or late exams/final will be given. No incompletes will be given.
- I do not want to hear any electronic devices go off during lecture; therefore, make sure you silence these devices before lecture starts.

Programming Assignments: All assignments are to be programmed in C++ using Visual Studio 2015 Enterprise or Community Edition. Both the electronic copy and hardcopy of your assignments are due at 3:30pm on the day that they are due *unless otherwise stated*.

- The hardcopy must be placed on the instructor's desk before 3:30pm on the day the assignment is due. If the hardcopy uses more than one sheet, then all sheets must be stapled in the upper-left corner. The code must be printed in color. Failure to submit a hardcopy of the assignment will result in a loss of 60% of the assignment points.
- The electronic copy must be placed in the 'CS485 Drop' folder on Grace, *or available to the instructor via version control*, by 3:30pm on the day the assignment is due. Failure to submit an electronic copy will result in a loss of 40% of the assignment points.
- A program that does not successfully compile or produces no output loses 40% of the assignment grade.
- No late assignments will be accepted.
- Make sure that you test your programs before submitting them. You may only submit your assignment once.
- Neither computer failure, software failure, nor lack of computer access are accepted as excuses for late programs; therefore, start work on the programs as soon as they are assigned, and don't put them off until the last minute. Further, corruption of programs due to bad disk media is also not accepted as an excuse for late programs; therefore, always keep a current backup of all programs on a separate disk. Please note that the Computer Science departmental servers are not backed up.

Academic Dishonesty: Pacific University has no tolerance for academic misconduct/dishonesty. It is university policy that all acts of misconduct and dishonesty be reported to the Associate Dean for Student Academic Affairs. Sanctions that may be imposed for such misconduct range from an "F" for the assignment, an "F" for the course, and suspension or dismissal from the university. Forms of academic misconduct include but are not limited to plagiarism, fabrication, cheating, tampering with grades, forging signatures, and using electronic information resources in violation of acceptable use policies.

- For programming assignments, plagiarism takes the form of, *but is not limited to* copying code from someone else, whether copying files, glancing at someone else's code, typing from someone else's notes, typing from someone's description of a solution (written or verbal) or typing while they dictate. The source can be a classmate, former student, website, program listing found in the trash, or anything else. Furthermore, plagiarism even on a small part of the program is cheating.
- You should also note that aiding someone else's cheating also constitutes cheating. You should never leave your code where someone else could have access to it, such as staying logged onto a machine or

placing solutions in the recycling bin where another student may take it. Posting your code on a public forum such as GitHub also constitutes cheating.

- Sanctions that may be imposed for academic dishonesty are:
 - First offense for cheating: 12 percentage points subtracted from your final course grade
 - Second offense for cheating of any kind: `F' in the course

Other:

- You may be asked to leave the class if you are causing a distraction e.g. cell phone ringing, talking, etc.
- If you have a complaint regarding a grade on an assignment or exam, write a one paragraph description of why you feel the grade is incorrect and deliver it to the instructor within five working days (M-F are considered working days) of when the graded material was returned to you. I will not consider any grade changes later than five working days after the graded material was returned.

Learning Support Services for Students with Disabilities: If you have documented challenges that will impede your learning in any way, please contact our LSS office in Scott Hall (ext.2107). The Director will meet with students, review the documentation of their disabilities, and discuss the services that Pacific offers and any appropriate ADA accommodations for specific courses.

The Tutoring and Learning Center is located in Scott Hall 127: The center focuses on delivering one-on-one and group tutoring services for math and science courses and writing skills in all subjects. Students should consult with the center's director for information on tutoring available for other subjects. Day and evening hours; walk-ins welcome!