

Course Syllabus
CIS 3296: Software Design
Fall Semester, 2019

This course provides direct experience in the design, development, documentation, testing and maintenance of medium size software projects, in the use of modern software problem solving abstractions and solution patterns, and in the use of software development environments. This course is the capstone of the programming course sequence.

Instructor

Amitangshu Pal

Official way to contact me: amitangshu.pal@temple.edu

Office hours in SERC 323:

- Thursday 3:00 – 5:00 pm

Prerequisites

C- or better in: CIS 2168 Data Structures and CIS 3207 Introduction to System Programming and Operating Systems

Course Description:

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software development environments. This course is the capstone of the programming course sequence.

By its very nature, the capstone course is a method of summative evaluation of students' previous learning in computer science disciplines. It provides a forum that allows an instructor to assess the student's overall collegiate learning experience. Students are assumed to have gained adequate computer language (C and Java in particular) and programming skills in their early-year curriculum.

As this is a writing-intensive course, students are required to submit written assignments that go through an iterative writing cycle: a student submits an assignment, the instructor gives feedback on the assignment, student revises and resubmits work, and the instructor assigns a grade for the revised version. Writing assignments in this course will be grounded in the expression of technical computer science concepts and are designed to help students to develop and practice skills in writing for the computer science discipline.

Course Goals:

To introduce students to the following topics and demonstrate their practical application:

- Software design modeling and methodologies
- Object-oriented design principles
- Refactoring
- Software Architecture
- Design Patterns
- User Interaction and Software Interface Design Patterns
- Test Driven Development
- Debugging
- Code Profiling and Optimization In addition, students will gain practice experience in using modern software development tools for:
- Project management

- Version control
- Build and configuration management
- Testing
- Issue tracking

Finally, students will gain knowledge and skills through experiential learning projects, working in small teams to contribute features or resolve issues for an open source project. Through these projects, student gain experience in working with a large, existing, open source code base, typically contributing to projects that are available on GitHub or through the Apache Software Foundation. Students may work in teams of 1-3 people.

Textbook:

- Flexible, Reliable Software Using Patterns and Agile Development. CRC Press. ISBN: 978-1-4200-9362-9
- Object-Oriented Design & Patterns. John Wiley & Sons. ISBN: 978-0-471-74487-0
- **Reference Material**
- Tahchiev, Leme, Massol, & Gregory. JUnit in Action, 2nd Ed Manning Publications Co. ISBN: 9781935182023
- Freeman & Freeman. Head First Design Patterns1. O'Reilly. ISBN: 978-0-596-00712-4
- Test-Driven Development by Example. Addison-Wesley. ISBN 978-321-14653-3
- Freeman & Pryce. Growing Object-Oriented Software, Guided by Tests Addison-Wesley ISBN: 978-0-321-50362-6
- Refactoring Improving the Design of Existing Code. Addison-Wesley ISBN: 978-0-201-48567-7
- Scott Chacon. Pro Git (<http://git-scm.com/book> (Links to an external site.)Links to an external site.)

Labs

When you register for this course, you are also registering for the lab session for this course. Students are REQUIRED to attend the lab section that they are registered for. Attendance will count as part of your grade. The labs are designed to reinforce the material presented in class and to facilitate progress on the required course project. They form an important part of the learning process and make a significant contribution to your final grade. Unless otherwise noted, lab assignments are due one week after they are assigned. Late submissions are NOT accepted. Failure to submit a lab assignment will result in the reduction of your maximum possible final grade by one letter grade step for each skipped lab. For example, if you fail to submit 3 labs, the best possible grade you can earn is a B (i.e., reduction for missed lab 1: A+ to A-; reduction for missed lab 2: A to A-; reduction for missed lab 3: A- to B+).

Quizzes

There will be at least four quizzes given during the semester, normally taking 15-20 minutes in the lecture time. Quizzes are usually open-book and open-notes unless specified otherwise, but no electronic devices are allowed.

Mid-term and Final Exams

There will be one mid-term exam and a final exam. The final will follow the university final exam schedule.

Grading

The final course grade will include quiz scores, homework and lab assignments, and exam scores. Students with an unexcused absence for an exam will be given an F. No grade of incomplete will be given except under extraordinary conditions. Final grades are comprised of the following types of assignments:

- Quizzes: 10%
- Midterm Exam: 15%
- Project Deliverables: 50%
- Final Exam: 25%

academic freedom

Freedom to teach and freedom to learn are inseparable facets of academic freedom. The university has adopted a [Policy on Student and Faculty Academic Rights and Responsibilities \(Policy 03.70.02\) \(Links to an external site.\)Links to an external site.](#)

academic honesty

Please review Temple's [page on academic honesty and other student responsibilities \(Links to an external site.\)Links to an external site.](#) in the undergraduate bulletin.

special needs

Any student who has a need for accommodation based on the impact of a documented disability, including special accommodations for access to technology resources and electronic instructional materials required for the course, should contact me privately to discuss the specific situation by the end of the second week of classes or as soon as practical. If you have not done so already, please contact

Disability Resources and Services (DRS) at 215-204-1280 in 100 Ritter Annex to learn more about the resources available to you. We will work with DRS to coordinate reasonable accommodations for all students with documented disabilities.