

## CSE 757: Software Engineering

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## Course Info

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- CSE 757, MWF 9:30 - 10:18 am, CL 120
- Instructor: Atanas (Nasko) Rountev,
  - Office: DL 685, Tel: 292-7203, Office hours: M 1:00 pm - 2:30 pm, W 11:00 am - 12:30 pm, or by appointment
  - rountev@cse.ohio-state.edu
- Grader: Xiaogang Li
  - Office: DL 778, Tel: 292-4634, Office hours: W 1:30 pm - 3:30 pm, or by appointment
  - xgli@cse.ohio-state.edu

## Web Site

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- [www.cse.ohio-state.edu/~rountev/757](http://www.cse.ohio-state.edu/~rountev/757)
- Primary source of information
  - Detailed schedule
  - Lecture notes (PDF files)
  - Assignments
  - Course policies
  - Reading materials
  - ...
- Will be updated regularly, check it often

## Reading Materials

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- No mandatory textbook (see web site)
- Craig Larman, "Applying UML and Patterns", 2<sup>nd</sup> edition
  - on reserve at SEL
  - amazon.com: new \$47, used ~\$40
- Gamma, Helm, Johnson, Vlissides, "Design Patterns", on reserve
- Pressman, "Software Engineering", on reserve

## Assignments

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- 6 assignments; will be posted on the web site and distributed in class
- First 2 assignments: summarize an article
  - Assignment 1: handed out 9/24, due 10/1
  - Assignment 2: handed out 10/1, due 10/8
  - Easy, 5 pts each
- Next 4 assignments: small problems related to analysis, design, testing, etc ...
  - Typically due in 10 days
  - First two are 10 pts each
  - Next two are 20 pts each (harder)

## Work

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- Assignments: easy in the beginning, takes more work at the end
- Midterm exam and final exam
  - Closed book; you can have one "cheat sheet"
  - The final is comprehensive
  - Doing the assignments should help
- Relatively low load: no labs or projects
- Attendance is not mandatory, but helps

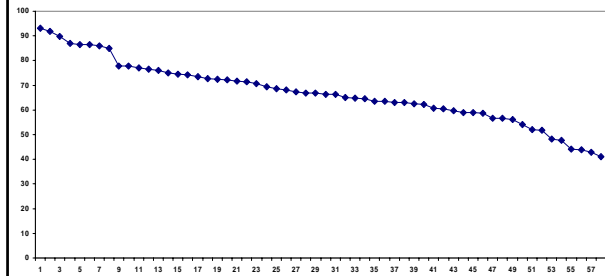
## Grading

- Weights: assignments 35%, midterm 25%, final 40%
- Graded on a curve
- The grader will grade the assignments, I will grade the exams
  - Grading disputes will be resolved by the person that graded the work
  - Grades become final within a week

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## Scores from Another Quarter



- Weighted scores, normalized in [0,100]
- Median score = 67, corresponds to a B

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## Important Dates

- First class: September 22, 9:30 am, CL 120
- Midterm exam: November 1, 9:30 am - 10:20 am, CL 120
- No class on November 3
- Thanksgiving: November 26
- Last class: December 3
- Final exam: December 8, 7:30 am - 9:20 am, CL 120

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## Course Policies (see handout)

- Don't cheat (obviously)
- Makeup exams: arrange a week in advance
- Assignments: at the beginning of class
  - Do not email the assignments
  - Legibly written or typed: [stapled](#)
  - If the grader cannot read or understand, points may be taken off
- Late assignments: 30% penalty
  - Write date/time and slide under my door; or bring it to the next class
  - Not accepted after the beginning of the next class
- No resubmission of assignments

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## Course Topics

- This course is about designing, building, and maintaining high-quality software
  - Detailed topic list in the handout
- Introduction and motivation
  - Why should anyone care?
- Software process
  - How do we organize the work?
  - Old approaches: 70-80s
  - Modern techniques: flexible and adaptive

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## Course Topics

- Requirements analysis
  - What are we supposed to build?
    - Often no one really understands
- Software design
  - How are we going to build it?
  - Modern world: [object-oriented design](#)
    - Closely related to object-oriented languages: Java, C++, C#, Smalltalk, ...
  - Unified Modeling Language (UML)
  - Design patterns

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## Course Topics

- Very little about programming
  - Relationship with design and testing
- Software testing
  - Does this thing really work?
  - The cost of failure is high
  - Procedural software
  - Object-oriented software

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## High-level Course Objectives

- Goal 1: introduce some of the **problems** of software engineering
- Goal 2: present approaches and tools for **solving** these problems
  - Basic **computer science literacy**: knowing some of these is as important as knowing how to use programming languages
  - E.g., object-oriented design, UML, design patterns are used widely in the real world

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## Course Objectives

- Goal 3: limited **experience** in applying these approaches and tools
  - Through homeworks and discussions in class
  - Preparation for 758: you will need to deal with these issues in the 758 project
  - Preparation for real-world programming
- Goal 4: achieve balance between breadth and depth in the subject area
  - Exposure to some of the basic concepts

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## Some Observations

- Learn things that are essential if you have to build software
  - Inside and (especially) outside of OSU
- Learn about modern development approaches used by industry
  - e.g. object-oriented design with UML
  - Should help with employment
- Ensure some basic literacy for CS majors

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## Some Observations

- Problem: no project/labs, so the material is somewhat dry and abstract
  - Reason: 757 is a "prelude" to 758
  - I will try to use real-world examples (e.g. code from the standard Java libraries)
- Consider 758
  - 758 is hands-on, focused on a project
  - 757 is more general and broad
- Not enough time to go in real depth
  - Cannot play with lower-level technical details; makes is hard to internalize
  - Supplement with 758 and additional reading

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## Request

- If you are going to drop the course, please do it ASAP to help people on the waitlist

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# CSE 757: Software Engineering, Autumn 2004

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## [Announcements](#)

## [Schedule, Lecture Notes, Reading](#)

## [Assignments](#)

## Meeting Times

9:30 - 10:18 am, CL 120

## Instructor: Atanas (Nasko) Rountev

Office: DL 685, tel. 292-7203

Office Hours: M 1:00 pm - 2:30pm, W 11:00 am - 12:30 pm, or by appointment

Email: rountev cse ohio-state edu

## Grader: Xiaogang Li

Office: DL 778, tel. 292-4634

Office Hours: W 1:30 pm - 3:30 pm, or by appointment

Email: xgli cse ohio-state edu

## Prerequisites

CIS 560 or equivalent, and senior or graduate standing

## Course Description

This course introduces concepts and methods related to the design, implementation, validation, and maintenance of software systems. Students will explore various software engineering topics (e.g., design and testing) through several assignments. Three credit hours.

## Course Objectives

This course familiarizes students with some problems of software engineering, and certain approaches used to solve these problems. Upon successful completion of the course, students will be able to:

- Understand the role of key elements of software engineering such as requirements analysis, software design, and software testing
- Understand principles of modern software processes
- Understand and apply principles of object-oriented analysis and design, and the corresponding UML notation
- Understand and apply principles and patterns for software design
- Understand and use standard techniques for software testing

## Topics (partial list)

- Goals of software engineering
- Software process: waterfall model, iterative and incremental processes, Unified Process
- Requirements analysis: use cases, system sequence diagrams, operation contracts, non-functional requirements
- Domain modeling: conceptual classes, attributes, associations
- UML: class diagrams, sequence diagrams, collaboration diagrams
- Object-oriented design: basic principles, object responsibilities, attributes, operations, associations
- Design principles and patterns (e.g., GoF patterns)
- Software testing for procedural and object-oriented software

## Textbook

There is no "official" textbook for this course. I will use materials from a variety of books.

- Craig Larman, *Applying UML and Patterns*, 2nd edition, Prentice Hall, 2002. Two copies are on reserve at [SEL](#). I will use materials from this book in the first half of the course. This is a useful book for anyone interested in building modern object-oriented software. New and used copies are available at various online bookstores; just make sure that you are purchasing the second edition.
- Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides, *Design Patterns: Elements of Reusable Object-Oriented Software*, on reserve at SEL. The course material on design patterns is based on parts of this popular book. The book is often referred to as the "gang of four" (GoF) book.
- Roger Pressman, *Software Engineering: A Practitioner's Approach*, 5th Edition, on reserve at SEL. A comprehensive textbook on software engineering.
- Martin Fowler, *UML Distilled*, 2nd edition, on reserve at SEL. Concise overview of the Unified Modeling Language (UML). Excellent starting point for UML.

## Grading

Assignments	35%
Midterm	25%
Final	40%

The course will be graded on a curve, with an average grade around B. Grading disputes will be handled by the person that assigned the grade. The instructor will grade the midterm and the final. The grader will grade the assignments. Grades become final one week after the assignment or the exam is handed back; this should leave plenty of time to resolve grading disputes.

## Important Dates

- First class: September 22, 9:30 am, CL 120
- Midterm: November 1, 9:30 am - 10:20 am, CL 120
- November 3: no class
- November 26: no class, Thanksgiving
- Last class: December 3

- Final: December 8, 7:30 am - 9:20 am, CL 120

## Course Policies

- You are responsible for all material presented in class including lectures, handouts, assignments, etc.
- Assignments are to be done independently. General high-level discussion of the assignments with others in the class is allowed, but when it comes to doing the work, anything you submit should be your own. *Cheating is a very serious offence and will be dealt with to the full extent allowed by university rules.* If you allow someone else to present your work as his or her own, you will also be considered a cheater.
- No makeup exams will be given without prior arrangements. If you need to take a makeup exam, you should talk with me at least a week before the regularly-scheduled exam. Typically, I will not give such approval unless the reasons are justifiable.
- Both the midterm and the final will be comprehensive, closed book, closed notes. However, if you want, you can bring one "cheat sheet" — a standard-sized piece of paper, with your notes on both sides.
- Assignments are due at the beginning of class on the due date.
- Late assignments will be graded with 30% penalty, and will be accepted only until the beginning of the next class (i.e., 9:30 am of the day of the first class after the due date).
- Assignments cannot be resubmitted.
- Do not submit by email any assignments unless you have the grader's approval in advance. If you have a late submission, write the date/time on it and slide it under the door of my office.
- Anything you submit should be clearly labeled with your name. Assignments should be checked for spelling and grammar, and the grader should be able to read and understand them. If you have more than one sheet, *staple them together*. If the grader has problems reading or understanding what you have done, additional points may be taken off.

## Students with Disabilities

Any student who feels he or she may need an accommodation based on the impact of a disability should contact me privately to discuss his or her specific needs. Please contact the Office of Disability Services at (614) 292-3307, or visit 150 Pomerene Hall, to coordinate reasonable accommodations for students with documented disabilities.

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### Notes

- You do *not* need to read everything listed under "Reading". The starting point should always be the lecture notes. For more details on a specific issue, you can look it up in the appropriate book.
- The dates for each topic may change somewhat, depending on how quickly we cover the material

Date	Topic	Reading	Lecture Notes
9/22	Course Info	—	<a href="#">CourseInfo.pdf</a>
9/24	Introduction to Software Engineering	Pressman Ch. 1	Intro.pdf
9/27, 9/29	Software Process	Pressman Ch. 2, Larman Ch. 2	Process.pdf
10/1, 10/4	Requirements Analysis	Larman Ch. 5, 6, 7, 9	Requirements.pdf
10/6 - 10/11	Domain Modeling	Larman Ch. 10, 11, 12, 26	DomainModeling.pdf
10/13 - 10/29	Object-Oriented Design	Larman Ch. 15, 16, 17, 18, 19	OO_Design.pdf
<b>11/1</b>	<b>Midterm Exam, 9:30 am - 10:20 am, CL 120</b>	—	—
11/5 - 11/22	Design Principles and Patterns	Gamma et al. Ch 3, 4, 5; Larman Ch. 22	Principles.pdf
11/24 - 12/3	Software Testing	Pressman Ch. 17, 18	Testing.pdf
<b>12/8</b>	<b>Final Exam, 7:30 am - 9:20 am, CL 120</b>	—	—