



# CS 251 Data Structures

Prof. Luo Si

Department of Computer Science

Purdue University

# Administrative Issues

- Instructor: Prof. Luo Si  
(Another section with Prof. Sunil Prabhakar)
- Office Hours:
  - Walk in for short questions, otherwise make appointment via email (lsi@cs.purdue.edu)
- Teaching Assistants:
  - Ryan Phelps
  - Wei-Chiu Chuang
- Web Site:  
<http://www.cs.purdue.edu/homes/cs251/>

# Administrative issues

- Text book: “Data Structures and Algorithms in Java ”, (5th Edition)  
M. T. Goodrich and R. Tamassia  
(Other editions acceptable)
- Syllabus and slides on web page.
- Read the chapter before class.
- Print slides and bring to class.
- There may be some missing slides!
- Take notes in class.

# Course Organization

## □ Grading

- 45% Programming and Projects
  - ◆ About 6 projects + 2 planned homeworks
- 5% quizzes
- 50% Exams
  - ◆ Midterm Exam: 20% (October 20<sup>th</sup>, 6:30 – 7:30 pm WTHR 172)
  - ◆ Final Exam: 30% (Finals Week -- TBA)
    - Comprehensive, but with emphasis on latter topics.

# Missing Exams

- ❑ If you cannot make an exam, contact the instructor BEFORE the exam, otherwise you will receive a 0 on the exam.
- ❑ Exceptions: documented medical reasons and family emergencies only.
- ❑ NO late submissions for projects.
- ❑ NO deadline extensions.

# Campus Emergencies

- Course requirements, deadlines, and grading are subject to change.
- Course website will be used to notify you.
  - Emergencies include: pandemics, weather extremes, hazardous spills, safety issues, ...
- H1N1 (or other contagious flu)
  - Do not attend lectures or PSOs
  - Contact instructor via email to make arrangements.

# Logistics

- ❑ The course moves very fast.
- ❑ You must attend all lectures. PSO is highly recommended.
- ❑ Quizzes to give you another incentive.
- ❑ **Lectures**
  - No Mumbling
  - No talking among students
  - Before class, allow me to prepare
- ❑ Lectures will assume that you have read the material from the text. We will build on that.

# Logistics (contd.)

- ❑ Do not skip lectures
- ❑ No deadline extensions.
- ❑ No late submissions.
- ❑ Follow good programming style (see web page).



# CS Account

- ❑ You will need a CS account
- ❑ Go to the CS portal:
  - <https://portals.cs.purdue.edu/>
- ❑ Login with Purdue CAREER account and sign academic integrity policy.

# Email

- We will use the following alias for class announcements: [cs251@cs.purdue.edu](mailto:cs251@cs.purdue.edu)
- Add yourself to this alias ASAP:
  - Log on to [lore.cs.purdue.edu](http://lore.cs.purdue.edu) (CS account)
  - %mailer add me to cs251
- Use [cs251-ta@cs.purdue.edu](mailto:cs251-ta@cs.purdue.edu) for contacting TAs
- Use care when sending messages (no flaming, no profanity).

# Ethics

- ❑ Lose several students each semester.
- ❑ **NOT** a team programming course.
- ❑ Discussion is encouraged.
- ❑ All instances of cheating will be reported to the Dean of Students, and may result in a failing grade or expulsion.
- ❑ We use copy detection software!
  - Do not copy code and make changes!
  - Do not copy code from the Web.
- ❑ **Read course Academic Integrity Policy on web page and SIGN it -- no midterm exam if not signed.**

# Schedule

- See course web page
- No lectures on
  - September 6<sup>th</sup> (Labor Day)
  - October 11th (October Break)
  - November 22nd - 27th (Thanksgiving break)
- No lectures, PSOs during Thanksgiving break.
- Midterm: Oct 20th: 6:30-7:30 WTHR 172
- Final Exam: (TBA)

# Important Resources

- Class staff
- Course webpage  
<http://www.cs.purdue.edu/homes/cs251/>
- Java API:  
<http://download.oracle.com/javase/1.5.0/docs/api/index.html>

# IMPORTANT: Prerequisite

- ❑ The algorithms will be presented in Pseudo code or Java
- ❑ The class assumes that you have good Java background
  - Data types
  - Control flow statements
  - Arrays, Simple classes
  - Inheritance and Polymorphism
  - Exceptions
  - Interfaces and Abstract Classes
- ❑ C++ is also assumed and acceptable for projects.
- ❑ One project will be done in C++

# Course Goals

- ❑ In this course you will learn how the representation of data in the computer has an impact on the performance of a program.
- ❑ We will cover several kinds of data structures and the algorithms associated with these data structures.
- ❑ You will also improve your programming skills.

***Program = Algorithm + Data Structures***

# Course Content

- ❑ **Some Simple Proof Techniques**
- ❑ **Analysis Tools**
- ❑ **Indices, Nodes and Recursion**
- ❑ **Stacks and Queues**
- ❑ **Lists and Iterators**
- ❑ **Trees**
- ❑ **Priority Queues, Heaps and Adaptable Priority Queues**
- ❑ **Maps, Hash, Skip Lists and Dictionaries**
- ❑ **Search Trees**
- ❑ **Sorting, Sets, and Selection**
- ❑ **Text Processing**
- ❑ **Graphs**