CS 0445: Data Structures (Fall 2023)

Department of Computer Science, SCUPI

Course Reference Number: 312189030 (CS0445)

When: Fall 2023

What & Where:

Lectures: Wednesday, 8:15 – 11:00 AM @ 105, Zone 3, WenKeLou, Jiangan Campus

Instructor: Qiuhui Yang

Email: yangqiuhui@scu.edu.cn

Office hours: Wednesday, 11:00 – 11:45 AM @ 105, Zone 3, WenKeLou, Jiangan Campus

Course Description: Here are six principle objectives for this course: 1) to learn the principles of object-oriented programming and to see Java from an object-oriented point of view; 2) to learn, understand and be able to utilize many of the data structures that are fundamental to computer science; 3) to understand implementation issues related to these data structures, and to see how they can be implemented in the Java programming language; 4) to understand and analyze some fundamental algorithms in computer science; 5) to understand and utilize programming ideas and techniques utilized in data structure and algorithm implementation; 6) to learn more of the Java programming language and its features, and to become more proficient at programming with it.

Prerequisites: A grade of C or better in CMPINF 0401 is required. Working knowledge of programming languages (Java preferred) and familiarity with Windows/Linux are assumed.

Blackboard: https://pibb.scu.edu.cn QQ group:154684766

All handouts, class notes and assignments will be published on Blackboard and QQ group. You are expected to check this website and QQ group frequently.

Textbook: Data Structures and Abstractions with Java (5th Edition).Frank M. Carrano and Timothy M. Henry, Pearson (c) 2016, 5th Edition (ISBN 9780134831695)

Note on Email & Communication: The instructor and TA will periodically post announcements to the Blackboard website and QQ group. It is every student's responsibility to regularly monitor these announcements. The instructor and TA will periodically email enrolled students with announcements. Students must check their SCUPI email at least once per day to ensure these announcements are received. When contacting the course staff via email, messages must be addressed to (or CC) both the instructor and the TA. Email subject should be prefaced with the appropriate prefix (e.g., "[CS0445]").

Course Grading:

Ordinary Grade (attendance, questions, homework, project)	40%
Midterm Exam	10%
Final Exam	50%

Grading Policy:

Attendance and participation in lecture may be used to decide borderline grades.

Unless explicitly noted otherwise, the work in this course is to be done independently. Discussions with other students on the assignments should be limited to understanding the statement of the problems. Cheating in any way, including giving your work to someone else will result in a low grade for the course and a report to the appropriate University authority.

Submission & Late Policy: All written assignments must be submitted electronically and there is no late submission. An assignment which is late will be accepted only under special circumstances with the instructor's permission prior to its deadline. In such a case, the instructor will determine any penalty in a fair manner.

Make-up Policy: Students are expected to take both midterm and final exams. Make-up exams will only be given in the event of a medical situation or an emergency, and only if this is documented and the instructor is notified immediately if in advance is not possible. Missing an exam will result in a failure for the exam.

Students with Disabilities: If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and TA as early as possible in the term.

Religious Observance: In order to accommodate the observance of religious holidays, students should inform the instructor of any such days as early as possible in the term by email.

Audio/Video Recording To ensure the free & open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use.

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Outline: Tentative Syllabus

1. Introduction
2. JAVA fundamentals
3. Interface & Generic & ADT
4. The Efficiency of Algorithms
5. Bags
6. Lists
7. Queues
8. Stacks
9. Recursion
10. Sorting
11. Trees

References:

《数据结构与抽象——Java 语言描述（原书第 5 版）》 作者：[美] 弗兰克·M.卡拉诺，蒂莫西·M.亨利 译者：辛运帏 机械工业出版社 2019