Welcome to

Data Structures and Algorithms

311116030, Fall 2025

Hao Wang

General Information

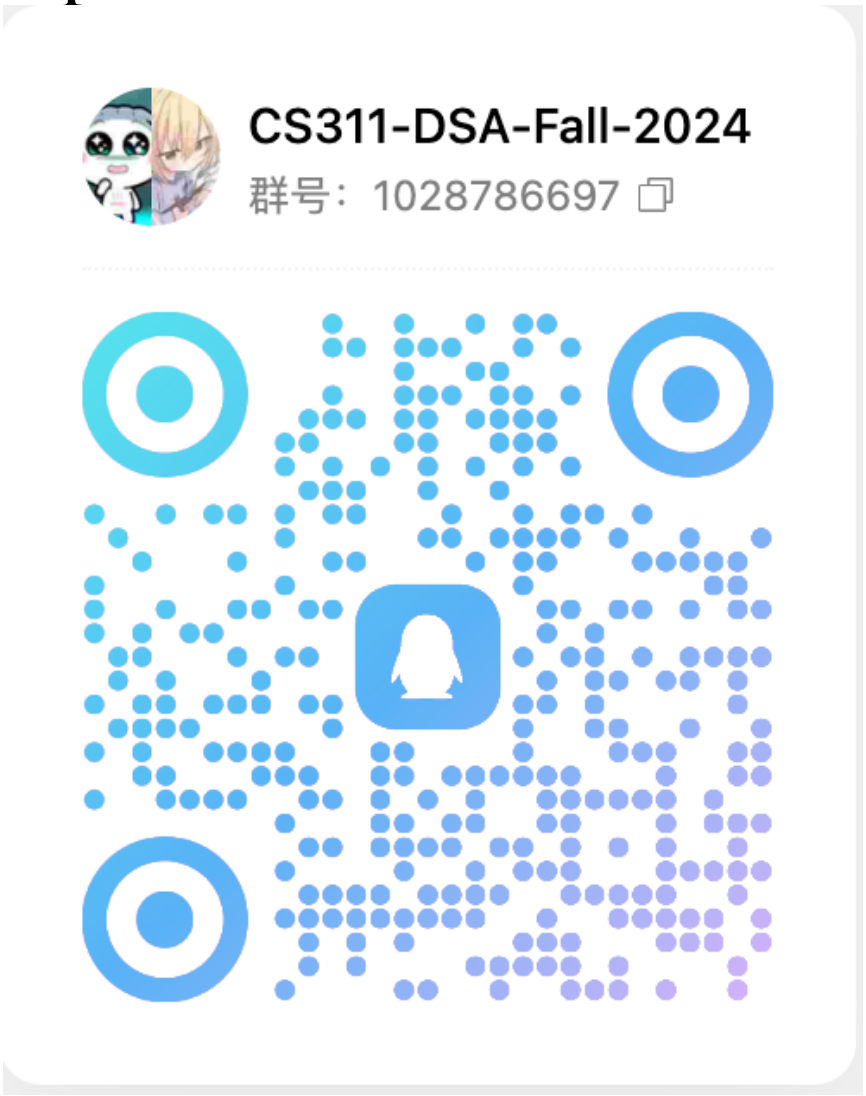
Course Webpage: https://cshaowang.github.io/cs311-fall-25/
Time: 09:10am - 11:55am, Wednesday
Location: A105, 1st Teaching Building, Jiang'an Campus

Instructor: Hao Wang
Homepage: https://cshaowang.github.io/
Email: cs_scu@foxmail.com
Office: 305, Shaw S&T Building, Wangjiang Campus
Teaching Assistant (TA): Xiaomei Gong
Email: 2024326040001@stu.scu.edu.cn

Office hours (online): 10:00am - 11:00am Fri (by appointment)
Tencent Meeting: https://meeting.tencent.com/dm/SjcumIHUlaYi
Password: binary code of the course number 311

Prerequisites
Discrete Mathematics. C, or C++ (this course used)

QQ Group



Course Description

This course will provide an introduction to

1) fundamental mathematics for modeling computational problems,

2) data structures for storing and accessing information together with relationships between the items being stored, and

3) classic algorithms for efficiently finding solutions to various problems.

The course emphasizes the relationship between theory and programming to ensure that **YOU** are able to use basic data structures and common algorithms in practice, and to evaluate the cost of a data structure or algorithm. For programming, we will use the C++ language.

Grading

Final Exam: 50%

- You MUST pass the final to pass the course **(IMPORTANT!!!)**.

Assignments (Hw): 20%

- distributed on selected Wed during the regular class time.
- Usually, no late submissions will be allowed for homework assignments.

Projects: 30%

- conducted on selected Wed during the **Lab class** time (live demo + code submission in due time)
- As for machine, you need to bring your laptop.

Weekly Exercises (**not graded**)

- No need to hand in, but 2 or 3 questions will appear in exams.

Assignment Submissions

Email each of your submission to

cs_scu@foxmail.com

Deadline in general: before the class of next week
e.g., 11:59pm Sept. 16, 2025 (Beijing time, GMT+8)

File name format:
CS311_assignmentID_yourID_yourName.doc
e.g.,
CS311_Hw1_202352146xxxx_yourName.doc

Main body in each submission **MUST** include assignment ID, your ID, and your name.

Teaching materials

Required Texbook

- Data Structures and Algorithm Analysis in C++, 3rd Edition, online eBook by Clifford A. Shaffer (**FREE download**)

https://people.cs.vt.edu/~shaffer/Book/

References

- Data Structures and Algorithm Analysis in C++, 4th Edition, by Mark A. Weiss, Addison-Wesley, 2013, ISBN 978-0132847377
- Discrete Mathematics with Applications, 5th Edition, by Susanna S. Epp, CENGAGE Learning, 2019, ISBN 978-1337694193
- Any C++ book or online resources (e.g., **An online tutorial on C++ Language**, see http://www.cplusplus.com/doc/tutorial/)

Topics (subject to change)

- Set, relations, and functions theory
- Algorithm analysis
- Lists, stacks, and queues
- C++ programming
- Hash Tables
- Trees and Graphs
- Sorting
- Searching
- Indexing
- Advanced Trees

Schedule (subject to change)

Week	Date	Topics	Readings	Notes
1	10/09/25	Syllabus, Intro	I.1	
2	17/09/25	Set, relations, and functions theory	I.2	
3	24/09/25	Algorithm Analysis	I.3	Hw 1
4	01/10/25	*No Classes* - Holiday		
5	08/10/25	Lists, Stacks, and Queues (I)	II.4	
6	15/10/25	Lists, Stacks, and Queues (II)	II.4	Hw 2
7	22/10/25	Proj 1		**Lab class**
8	29/10/25	Trees	II.5, 6	
9	05/11/25	Sorting	III.7, 8	Hw 3
10	12/11/25	Searching, Hashing	III.9	
11	19/11/25	Proj 2		**Lab class**
12	26/11/25	Indexing & Advanced Trees	III.10, IV.13	
13	03/12/25	Graphs	IV.11	Hw 4
14	10/12/25	Algorithm Design	Weiss: Ch. 10	
15	17/12/25	Proj 3		**Lab class**
16	24/12/25	Course Wrap Up		
Exam	TBD	Final Exam		

This schedule is tentative and subject to change.

Feedback and Suggestions

Your feedback and suggestions are most welcome!

- We need it to adapt the course to suit your needs.
- Let me know if you find any errors in the slides.

Share your questions and concerns with the class

- very likely others may have the same questions.

No pain no gain

- Curiosity, determination, hard-work.
- The more you put in, the more you get.

Rules and Policies

Statute of limitations: No grading questions or complaints, no matter how justified, will be listened to one week after the item in question has been returned.

Cheating: Cheating will not be tolerated. All work you submitted must be entirely your own. Any suspicious similarities between students' work (this includes homework, exams and program) will be recorded and brought to the attention of the Dean. The MINIMUM penalty for any student found cheating will be to receive a 0 for the item in question, and dropping your final course grade one letter. The MAXIMUM penalty will be expulsion from the University.

MOSS: Sharing code with your classmates is not acceptable!!! All programs will be screened using the Moss (Measure of Software Similarity.) system.

Late submission: Late submission of assignment or code will not, in general, be accepted. They will never be accepted if the student has not made special arrangements with me at least one day before the assignment is due. If a late assignment is accepted it is subject to a reduction in score as a late penalty (10% per day).

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