# CMSC389O: The Coding Interview

## Course Description

This course provides a comprehensive, practical introduction to technical interviews. The course will start with basic topics such as Big O and String Manipulation. We will then move into more complex topics such as Graphs and Dynamic Programming. Most of the classes will be in-class interviews to give real interview practice.

## Course Details

- **Course**: CMSC389O
- **Prerequisites**: CMSC250, CMSC216
- **Credits**: 1
- **Seats**: 30
- **Lecture Time**: 11 AM, 12 PM, 1 PM, 2 PM, 3 PM
- **Location**: Online
- **Semester**: Fall 2021
- **Textbook**: (*recommended*) Cracking the Coding Interview by Gayle Laakmann McDowell
- **Supplementary Material**: Elements of Programming Interviews
- **Course Facilitator(s)**: Naveen Raman, William Liu, Arjun Rajkumar, Ethan Schaffer, Franklin Yang, Sahir Mody, Varun Singhai, Patrick Tu, Thomas Varano, Amanda Liu
- **Faculty Advisor**: Tom Goldstein

## Sections

1. **0101** (11:00 AM) - William Liu + Patrick Tu
2. **0201** (12:00 PM) - Naveen Raman + Varun Singhai
3. **0301** (1:00 PM) - Arjun Rajkumar + Amanda Liu
4. **0401** (2:00 PM) - Ethan Schaffer + Thomas Varano
5. **0501** (3:00 PM) - Franklin Yang + Sahir Mody

# Schedule - Fall 2021

| Week | Date | Topic | Assignments |
|---|---|---|---|
| 1 | 9/3 | Introduction/<br>Ideal Resume/<br>Mock Interview | Resume Review Part I (Due 9/3)<br>Resume Review Part II (Due 9/17) |
| 2 | 9/10 | Behavioral Interview | Behavioral Video (9/3)<br>Behavioral Quiz (Due 9/9) |
| 3 | 9/17 | Arrays, Strings, & 2D Arrays | Arrays Video (9/10)<br>Arrays Quiz (Due 9/16)<br>Arrays Homework (Due 9/17) |
| 4 | 9/24 | Sorting and Searching | Sorting and Searching Video (9/17)<br>Sorting and Searching Quiz (Due 9/23)<br>Sorting and Searching Homework (Due 9/24) |
| 5 | 10/1 | LinkedLists | LinkedLists Video (9/24)<br>LinkedList Quiz (Due 9/30)<br>LinkedList Homework (Due 10/1) |
| 6 | 10/8 | Inheritance | Inheritance Video (10/1)<br>Inheritance Quiz (Due 10/7)<br>Inheritance Homework (Due 10/8) |
| 7 | 10/10 | **Midterm Week** | |
| 8 | 10/22 | Stacks, Queues, & Heaps | Stacks Video (10/15)<br>Stacks, Queues, & Heaps Quiz (Due 10/21)<br>Stacks, Queues, & Heaps Homework (Due 10/22) |
| 9 | 10/29 | Graphs | Graphs Video (10/22)<br>Graphs Quiz (Due 10/28)<br>Graphs Homework (Due 10/29) |
| 10 | 11/5 | Trees and Tries | Trees and Tries Video (10/29)<br>Trees and Tries Quiz (Due 11/4)<br>Trees and Tries Homework (Due 11/5) |
| 11 | 11/12 | Dynamic Programming | Dynamic Programming Video (11/5)<br>Dynamic Programming Quiz (Due 11/11)<br>Dynamic Programming Homework (Due 11/12) |
| 12 | 11/19 | Flex<br>(Multithreading or | Video (11/12)<br>Homework (Due 11/19) |

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| | | Requests) | |
| 13 | 11/26 | **Thanksgiving Break** | |
| 14 | 11/28 | **Finals Weeks** | |
| 15 | 12/5 | | |

Please note if you have any questions about a particular week's quiz, lecture, homework or extra credit, then email the head TA (Naveen).

# Grading

Grades will be maintained on ELMS. You will be responsible for all material discussed in lecture as well as other standard means of communication (ELMS announcements, email, etc). This includes deadlines, policies, and assignment changes.

Any request for reconsideration of any grading on coursework must be submitted within one week of when it is returned. No requests will be considered afterward.

Your final course grade will be determined according to the following percentages. **Ten extra credit opportunities will be provided throughout the semester. In aggregate, these assignments can boost your grade a maximum of 5%.**

We will additionally drop the lowest quiz and homework.

| Percentage | Title | Description |
|---|---|---|
| 30% | Class Participation | Each week students will be grouped up into groups of 2-3, and expected to meet on their own time to practice questions. A list of practice questions will be given, and each group member must submit a document containing the problems they worked on and their work on the problems. The lowest class participation grade will be dropped. |
| 10% | Pre-Lecture Videos/Quizzes | Students will be responsible for watching pre-lecture videos and completing pre-lecture quizzes or activities to demonstrate their understanding of the content in the videos. These quizzes will be open-note. |

| | | |
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| 20% | Homework | Weekly homework assignments will consist of solving coding interview questions and submitting solutions to the UMD CS submit server. Students will be graded on passing test cases, on the time and space complexities of their solution, and on completion of a short write-up regarding their solution. See below for a full homework grading rubric.<br><br>**Homeworks will be accepted up to 24 hours after the deadline, with a 20% deduction in credit. NO homework will be accepted more than 24 hours late.** |
| 20% | Midterm - Interview | The midterm will be a 30-minute Google Hangout/Zoom technical interview with one of the student facilitators. Students will be expected to solve 1-2 coding questions and have a brief conversation about their experiences and skills. |
| 20% | Final - Interview | The final will be a 45-minute Google Hangout/Zoom technical interview with one of the student facilitators. Students will be expected to solve 1-2 coding questions and have a brief conversation about their experiences and skills. |

**Homework Rubric**

| | | | | |
|---|---|---|---|---|
| **Test Cases (40)** | Determined by grade given through submit server. | | | |
| **Time and Space Complexity (20)** | Analysis (10) | Student clearly states the correct time and space complexity of their solution. (10) | Student states time and space complexities that do not match their solution or does not state complexity at all. (0) | |
| | Code (10) | Student's solution has optimal time and space complexity (sliding scale for sub-optimal solution) | | |
| **Write Up (40)** | 4-5 Sentence Summary (30) | The student provides a full | The student provides a | The student did not provide |

| | | | | |
|---|---|---|---|---|
| | | summary that adequately explains how the function works. (40) | lacking summary that fails to adequately explain how the function works. (20) | a summary. (0) |
| | Comments (10) | The student provides many comments that adequately describe the program. (10) | The student provides some comments. (5) | The student did not comment. (0) |

See Homework_Example on ELMS for more detailed explanations.

# Communication

We will interact with students outside of class in primarily three ways: ELMS announcements, through piazza, and through Slack. Office hours are by appointment.

Instructor(s) Name(s) and Email(s):

- Thomas Goldstein: tomg@umd.edu

Facilitator(s) Name(s) and Email(s):

- Naveen Raman: nav.j.raman@gmail.com
- William Liu: williamliu628@gmail.com
- Arjun Rajkumar: arjun.rajkumar3k@gmail.com
- Ethan Schaffer: ethan@schaffer.com
- Franklin Yang: franklinjcyang@gmail.com
- Varun Singhai: vsinghai@terpmail.umd.edu
- Amanda Liu: amandastephanieliu@gmail.com
- Sahir Mody: sahir.mody@gmail.com
- Thomas Varano: tvarano@terpmail.umd.edu
- Patrick Tu: tu.patrick.n@gmail.com

# Excused Absence and Academic Accommodations

See the section titled "Attendance, Absences, or Missed Assignments" available at Course Related Policies**.** Please also note that absences due to internship/job interviews will be excused as long as you notify one of the TAs BEFORE the missed class through email. Please also note that for University Excused absences you will be

excused from the participation assignment for that day NOT given credit i.e. that day's participation grade will not count towards your final grade. This will appear as a --- (Dash) on ELMS. If it is an excused absence for an interview you will receive full credit.

# Disability Support Accommodations

See the section titled "Accessibility" available at Course Related Policies.

# Academic Integrity

Note that academic dishonesty includes not only cheating, fabrication, and plagiarism but also includes helping other students commit acts of academic dishonesty by allowing them to obtain copies of your work. In short, all submitted work must be your own. Cases of academic dishonesty will be pursued to the fullest extent possible as stipulated by the Office of Student Conduct. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit http://www.shc.umd.edu.

# Course Evaluations

If you have a suggestion for improving this class, don't hesitate to tell the instructor or TAs during the semester. At the end of the semester, please don't forget to provide your feedback using the campus-wide CourseEvalUM system. Your comments will help make this class better.