

COP 3503H – Honors Computer Science II - Fall 2026 Syllabus

Course Prerequisites: COP 3502, COT 3100, COP 3330

Course Credit Hours: 3

Course Web Page: <http://www.cs.ucf.edu/courses/cop3503/fall2026>

Course Time: Tuesday, Thursday 9:00 - 10:15 am **Course Location:** BHC-129

Instructor: Arup Guha

Office: HEC-240

Email: dmarino@ucf.edu

Office Hrs: <http://www.cs.ucf.edu/~dmarino/ucf/OH.html>

I do NOT check my WebCourses email. Please email me at dmarino@ucf.edu to contact me.

Teaching Assistant Information: <http://www.cs.ucf.edu/courses/cop3503/fall2026/TAinfo.html>

Course Objective: This course explores specific algorithmic techniques in more detail than CS1 and applies these to some new problems not explored in CS1. Also, more technical algorithmic analysis will be done in order to verify the efficiency of the algorithms discussed. Finally, a couple of new data structures will be introduced.

Textbook: **No required textbook.** Any of the following books will be reasonable references: Johnsonbaugh, Schafer (ISBN: 0-02-360692-4), Cormen, Leiserson, Rivest, Stein (ISBN-13: 978-0072970548), Weiss (ISBN-13: 978-0-13-257627-7), Levitin (ISBN: 0-321-35828-7), Dasgupta, Papadimitriou, Vazirani (ISBN-13: 978-0-07-352340-8)

Grading: The final letter grade will be based upon the six items listed below:

Item	Percentage
Programming Assignments	15
Kattis Problems	5
Whiteboarding Session	10
Final Project	10
Exam #1	15
Exam #2	20
Final Exam	25

At the end of the course, I will choose grade lines for each letter grade. +/- **grades will be assigned when deemed appropriate.** For more on how I choose my grade lines, please read my grading philosophy posted off my teaching archive page.

Note: This grading breakdown is subject to change. Any changes will be discussed in class and on Webcourses announcements. As previously mentioned, in the past I made changes to the class syllabus based on class behavior. In some classes I changed the syllabus to include class attendance in the middle of the semester and as previously mentioned, I threw out an entire exam grade due to academic misconduct. In classes where I've had a vast majority of responsible students, I have not needed to make any changes to the class grading system.

Tentative Schedule

Week	Tuesday Class	Thursday Class	Sunday
Aug 24 – 28	Data Structs in Java	Data Structs in Java	P1 Due
Aug 31 – Sept 4	Backtracking	Backtracking	Kattis Problem
Sept 7 – 11	Disjoint Sets	2-4 Trees	P2 Due
Sept 14 – 18	R-B Trees	Binary Index Tree/ Segment Trees	
Sept 21 – 25	Algorithm Analysis & Amortized Analysis	Lower Bound Sort/Bucket, Radix Sort	Kattis Problem
Sept 28 – Oct 2	Greedy Algorithms	Huffman Coding	P3 Due
Oct 5 – 9	Exam #1 Review	Exam #1	
Oct 12 – 16	Graphs, DFS, BFS	BFS applications, Topological Sort	Kattis Problem
Oct 19 – 23	Dijkstras, Bellman Ford, Floyd-Warshall's	MST	Kattis Problems
Oct 26 – 30	Network Flow	Div&Conq - Int Mult, Tromino	P4 Due
Nov 2 – 6	Div&Conq – LCS, Closest Points	Exam #2	
Nov 9 – 13	DP - Fib, LCS, Change	DP- Subset Sum, 0/1 Knapsack	P5 Due
Nov 16 – 20	MCM	Traveling Salesman DP	Kattis Problems
Nov 23 – 27	THANKSGIVING	BREAK	
Nov 30 – Dec 3	Final Exam Review	Final Presentations	P6 Due
Dec 7 – 11		Final Exam 7 am – 10 am	

I may change this schedule, thus class attendance is important. This is a general time frame only and is subject to the needs of the class. It will be altered without notice but will generally follow the same progression. At the end of each class I will tell you what we will be discussing during the next class period. I will attempt to place notes on the course web site (prior to each day's class) which will be the basis for that day's lecture.

Programming Assignments

All programming assignments will be turned in over WebCourses. Due date/time will be specified for each program within WebCourses ONLY. In particular, the instructor will NOT answer any questions relating to due dates since this information is available for students in WebCourses. **No late assignments are accepted!!!** You must submit your program (in whatever condition) at that point. You'll get partial credit if the program is not completely done. You'll get no credit if you don't submit the program. **All programs must be done in Java (no exceptions), and be compatible with Java 21.** The instructor is not responsible for making sure that students use WebCourses properly. **If a student completes an assignment but doesn't properly submit the assignment for any reason (using the wrong browser, not hitting the submit button, internet error, etc.) the grade for the assignment is a zero.**

THE ONLY VALID DUE DATES ARE THOSE POSTED ON WEBCOURSES.

My personal advice is to submit all assignments **AT LEAST THREE HOURS BEFORE THE POSTED DEADLINE.** Too often, students wait till the last minute only to miss the deadline due to network issues. **IN CASES WHERE A SUBMISSION IS LATE (EVEN BY A SECOND), A GRADE OF ZERO WILL BE GIVEN TO THE SUBMISSION.**

If anyone is caught getting unwarranted assistance with any of these programs and the proof that they did so is clear, a report will be turned into the Office of Student Conduct. The grade consequences will depend on the severity of the infraction and range from lowering the course grade by a full letter to receiving an automatic F in the course. (In short, no AI and no getting "significant" help from someone other than the course instructor or teaching assistant.)

Kattis Problems

The best way to understand the algorithms in the course is to code them up. A website I regularly use for programming contests, COP 3502 and COP 3503 is the Kattis website. To this end, over the course of the semester, students will be given five Kattis problems to complete. These are low stakes practice problems as each is only worth 1% of the course grade. When students take other courses, I often encourage them to write "practice programs." The five Kattis programs I choose will be programs that I deem are good "practice" to learn some of the algorithms taught in the course. You will have to submit both your code AND a screenshot of our accepted status on Kattis. If you couldn't get your program accepted by Kattis, please include the screenshot showing the maximum number of test cases you passed.

The links and directions for these programs will appear in Webcourses only. Sample solutions for the problems will be posted on the course website after the due date for the assignment.

Whiteboarding Session

Each student will have to book a 30 minute session with me where I simulate a whiteboard interview session based on the course material. This is intended to simulate a technical interview. Details about how to schedule the session will be given in class. The earlier you schedule the

session, the less course material I have to pull from with my questions, so it's likely that it's advantageous to schedule these earlier in the semester.

This is a new item I am adding to the course syllabus due to AI. When I ask questions live, I can quickly tell the "level" of a student's understanding. (With the advent of AI, code that students submit unfortunately isn't always an accurate signal of their actual understanding.) I am giving myself complete leeway/flexibility in grading this assignment.

Final Project

I like to add at least one extra item to an Honors course compared to the corresponding large lecture section. For this course, I would like the students to break up into five groups of size 4 and for each group to choose a project of their liking that is involves some sort of classical algorithm. Your group is **allowed to and encouraged to use AI** for this project if you deem that it would be helpful.

The goal here is to give students time and a reason to pursue something they enjoy within the "rough scope" of the course as well as get some practice with teamwork and tools that they'll have to use in future courses. (The use of github is encouraged as well.)

Individual project deadlines will be discussed in class.

Each group will present their work in a 15 minute presentation during the last class meeting on December 3, 2026.

Exams

There will be three exams in the course worth 15%, 20% and 25%, respectively. These will be old-school paper exams where you solve relevant mathematics type problems by hand and write code by hand based on the course material. Aids for the exams will be discussed in class before the exam.

I have many of my past exams online. I encourage students to look at past exams as a rough guideline for the types of questions I like to ask. In general, I try to design my exams so that it's difficult to do well on them without conceptually understanding the material and having the details down straight. Memorizing answers to past exam questions is likely not to be useful preparation for the course exams.

Community Service Opportunity

If students want to get an automatic perfect 100% for a portion of the final exam, which is worth 5% of the course grade, students may perform 5 hours (or more) of community service **with a registered 501 (c)(3) organization.** If you take this option, then you will automatically earn 100% for Final Exam Part A. In order to get this credit, you must complete the community service and turn in the requisite form signed directly to me (in my hand) by **December 1, 2026.** All grades for the community service will be posted in the FEA column by December 3, 2026. If you don't see your grade there by December 3rd, 2026, then you must take Part A of the Final Exam.

Other Important Course Policies

Exam and Program Regrades

Any regrades must be requested to the instructor within ONE WEEK of when the grade was posted on WebCourses. All students may request three regrades during the course of the semester. The reason for this limitation is that too often students ask for a regrade without fully understanding the feedback they've received and the corresponding grading criteria. As a consequence, a majority of regrade requests I've received either don't have any merit or don't adhere to the grading criteria for the assignment. By limiting the total number of regrade requests per student, I hope to remove trivial requests (for a couple points) and requests that deal with not understanding the grading criteria. If points were added incorrectly on an exam, this change does NOT constitute a regrade. **NO REGRADE REQUESTS CAN BE MADE ON THE LAST ASSIGNMENT OR FINAL EXAM.**

Make Up Exams, Assignments

If a student is unable to complete an assignment on time or take an exam or quiz on time due to a serious family, medical or work situation, he or she must contact the instructor **BEFORE** the due date and ask for an extension. Extensions will be granted in situations the instructor deems reasonable. If an emergency occurs that prevents contacting the instructor before the due date, then the student should contact the instructor as soon as possible and reasonable accommodations will be made. **Note: for assignments, a different replacement assignment will be given so that the regular assignment solution can be posted on time.**