COP 3502 Syllabus
Computer Science I – Spring 2012

Course Prerequisites: COP 3223 and MAC 1105
Class Time: WMF 9:30 – 10:20 AM
Class Location: HEC-125
Course Web Page: http://www.cs.ucf.edu/courses/cop3502/spr2012/

Lecturer: Jonathan Cazalas
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Office Hours: MW 10:30 AM – 12:30 PM

TA Office Hours: TBD, and will be posted on the course website

Course Description: from the UCF catalog description, "Problem solving techniques, order analysis and notation, abstract data types, and recursion." Now, in English, this class is a follow up to the COP 3223 material, in which you learned (ideally) the syntax and use of major constructs of the C language (conditional statements, loops, functions, arrays, pointers, strings, structures, and file I/O). This course now focuses on algorithmic design, analysis of running time, a variety of abstract data types (new data structures), and lastly, but definitely not least important, recursion.

Course Textbook: Data Structures, Algorithms & Software Principles in C by Thomas A. Standish. ISBN-13: 978-0201591187. (*While beneficial, this book is not necessary. The PPT slides, provided on the course website, are more than sufficient.*)

Recitations/Lab Sessions: In addition to the main lecture, this course also includes recitation (lab) sections. One of the primary purposes of the recitation is to reinforce the information presented in the main lecture. Additionally, due to the amount of material that must be presented in this course, there will be times where new material is presented in the Labs and not discussed during the main lecture. For this reason, **recitation/lab attendance is mandatory**, with the labs counting as 10% of your final grade. What makes up this 10%? Four of the labs will have very short (and easy) quizzes. Those four quizzes count 1% each (so 4%). ***There will be no makeup lab quizzes.*** *If you miss the lab, you miss the quiz.* The dates for those quizzes are shown at the end of this syllabus. For the remaining eight labs, attendance will be taken, with each day counting as 1%. In order to **earn** your attendance point, you must be present throughout the lab (physically and mentally) and actively paying attention and/or working on the given problems. If you come more than 10 minutes late, leave early, or are playing on a Laptop, phone, game system, etc., you will not get credit for the lab. You should attend ALL labs. However, once you have attended six of the eight "non-quiz" labs, you will have received the amount from the remaining 6% of the lab grade (attending more will not earn you extra credit).

Programming Assignments: There will be **six** programming assignments. Each assignment will be introduced in class and posted on WebCourses. All programming assignments are to be turned in through WebCourses **by** (which means before) 11:55 PM on the day they are due. The official time a program is submitted will be determined by WebCourses. (Your wristwatch or cell phone time when you hit the submit button is not valid.) Due to possible server issues, it is

strongly suggested that you attempt to submit programs **at least three hours before the actual time it's due**. All programming for assignments is to be done in C and <u>must compile and run using the most current version of **CodeBlocks**</u>. Details on the installation and usage of CodeBlocks will be provided on the course website.

Late Assignment Policy: Late homework assignments will be accepted for the first five homework assignments, but will be assessed a late penalty. In particular, assignments will be accepted up to 48 hours after the due date of the assignment. If an assignment is less than 24 hours late, a 10% penalty will be assessed. If an assignment is in between 24 and 48 hours late, a 25% penalty will be assessed. Assignments will not be accepted beyond 48 hours after the due date. ***No late assignments will be accepted on the last programming assignment.***

Community Service Opportunity: In lieu of the last assignment (program 6), you may perform 5 hours (or more) of community service. **If you take this option, then you will automatically get a 100 for program 6.** In order to get this credit, you must complete the community service and turn in the signed requisite form by **12:30 PM on Wednesday, March 28th**. I strongly suggest you do this early to guarantee you do not miss the deadline; remember, **this is a FREE 100 for Program 6.** There will be NO exceptions to this deadline. All grades for the community service will be posted under the column P6 two weeks before the last program is due.

Exams: There will be two midterm exams and one final exam. Students will be allowed one page (8-1/2" x 11" or smaller) of notes for the two midterms and two pages of notes for the final. However, calculators will NOT be allowed for any of the exams. As the material in this course builds on itself, each exam can be considered "cumulative", and material from the beginning of the semester is certainly not off-limits for the 2nd Midterm. And of course, the Final exam is cumulative as well.

Quizzes: Quizzes will consist of a small number of basic questions on material that has been covered recently, with the goal of forcing students to keep up with the material. Quizzes will be announced either in class or on Webcourses, and they will be **administered via WebCourses**. They will normally be due the following day by 11:55 PM with no late exceptions. If you miss class and, therefore, miss the announcement, and happen to have not checked your WebCourses, then you will miss the quiz. **There will be no makeup quizzes**. It is your responsibility to go to class and to check WebCourses for announcements.

Tentative Grading Procedures: The final letter grade will be based upon the six items listed below. <u>Plus/minus grades may be issued, when deemed appropriate.</u> The grading scale will be based on the class average, standard deviation, and overall difficulty of the assignments and exams.

Item	Percentage	*Also, in order to pass the class you must earn at least a 40% on the final exam. (Thus, if you have a 75% in the course but earn a 30% on the final, you still get a C- in the course even though your percentage may qualify for a B.)*
Lab Quizzes	10	
Quizzes (online @ Webcourses)	10	
Homework Assignments	30	
Exam #1	15	
Exam #2	15	
Final Exam	20	

Important Dates:

First Midterm: Friday, February 17th
Withdrawal Deadline: Tuesday, March 20th by 11:59 PM
Second Midterm: Friday, March 30th
Community Service Due: Wednesday, March 28th by 12:30 PM
Last day of class: Monday, April 23rd
Final Exam: Friday, April 27th, bright 'n early at 8:00 AM *

* The official, UCF start time is 7:00 AM. However, the final exam is not three times longer than your regular midterms, for which you have 50 minutes. As such, the Final exam will start at 8:00 AM, and you will have one hour and fifty minutes.

The UCF Creed

Integrity, scholarship, community, creativity, and excellence are the core values that guide our conduct, performance, and decisions.

Integrity
I will practice and defend academic and personal honesty.

Scholarship
I will cherish and honor learning as a fundamental purpose of my membership in the UCF community.

Community
I will promote an open and supportive campus environment by respecting the rights and contributions of every individual.

Creativity
I will use my talents to enrich the human experience.

Excellence
I will strive toward the highest standards of performance in any endeavor I undertake.

UCF Ethics Statement:

As reflected in the UCF creed, integrity and scholarship are core values that should guide our conduct and decisions as members of the UCF community. Plagiarism and cheating contradict these values, and so are very serious academic offenses. Penalties can include a failing grade in an assignment or in the course, or suspension or expulsion from the university. Students are expected to familiarize themselves with and follow the University's Rules of Conduct.

(see http://www.osc.sdes.ucf.edu/).

Other Important Course Policies:

1) **The TAs are your first, second, and even third points of** contact regarding the programming assignments. If you have any questions at all regarding the assignment, solving the program, how to code it, syntax errors, you name it, **contact the TAs**. There are plenty of TA office hours throughout the week, and I strongly suggest you take advantage of them. You can also email them with your questions, but understand that they may not respond immediately. If you want help via email, start your assignment early. Finally, the TAs will be grading the assignments. Therefore, any and all questions you have regarding your grade should be directed to them. If you feel your grade was unfair and you were not satisfied after contacting the TA, please come to my office hours to discuss.

2) Cheating will not be tolerated. **If a student is caught cheating, then the grade on that assignment for all students knowingly involved (the person providing answers as well as the one taking the answers) will be a -25%.** (**Note, this is less than 0%.**) Since discussion of concepts with other students is often helpful, cheating must be more clearly defined. In particular, the following items are cheating: copying a segment of code of three lines or more from another student from a printout or by looking at their computer screen, taking a copy of another student's work and then editing that copy, and sitting side by side while writing code for assignments and working together on segments of code.

   In all of these situations, **BOTH people responsible**, the one from whom the three lines of code are taken as well as the person who takes those lines of code are engaging in academic misconduct. For example, if someone makes an electronic copy of their code accessible to ANYONE in the class (except for themselves) before 48 hours after an assignment is due, they are automatically culpable of academic misconduct. It does not matter if the recipient of the code doesn't use it, uses it a little, or copies it directly. Furthermore, based on the severity of the case, the entire course grade for the student may be lowered an entire letter grade.

   If you get stuck on an assignment, please ask either a TA for help instead of getting help from another student. Part of the learning process in programming involves debugging on your own. In our experience, when a student helps another student with an assignment, they rarely allow the student getting help to "figure out" problems on their own. Ultimately, this results in a lack of debugging experience for the student receiving help. The goal of the TAs and instructors is to provide the facilitation necessary for students to debug and fix their own programs rather than simply solving their problems. **But, you are encouraged to work together on any non-graded programs to enhance and expedite the learning process.**

3) In order to take a make-up exam, you must request one from the instructor. The instructor will grant requests using his own judgment by applying the following general rule: "Make-up exams will only be given if the reason for missing the exam was out of the student's control." For example, being hospitalized unexpectedly is out of a student's control, but oversleeping or going to happy hour is not out of a student's control. *If possible, it is recommended that the instructor be contacted before the exam.*

4) The penalty for assignments late by less than 48 hours will be waived only for circumstances described in #2 above at the instructor's discretion. Similarly, assignments will be accepted after 48 hours past the due date under these same types of circumstances. The student *must* contact the instructor within two days of the due date of the assignment in order to get credit for the assignment. ***TAs are NOT allowed to give extensions for assignments under any circumstances; only the instructor can.***

5) Both the course web page and WebCourses will be crucial elements of the course. ***It is your responsibility to check both of these before every class meeting for any updates that may be posted.*** Additionally, some clarifications may only be given in class and won't be posted online at all, so make sure you keep up with announcements in class.

6) **Class Attendance**. We may randomly take class attendance throughout the semester, which will count as **bonus points** on your Final Exam (up to five points). Most students have commented that this is one of their more enjoyable classes and that they enjoy and take benefit from the lectures. However, I still like to encourage attendance. We will take class attendance upwards of seven or eight times, with each recorded attendance counting as one bonus point, for a maximum of five bonus points. Thus, you can miss two or three "attendances" without being penalized.

7) **Grading Scale and Curving.** All UCF classes are ultimately graded on some type of grading scale, with the most popular being the famous "90 to 100 is an A, 80 to 89 a B, 70 to 79 a C", etc. In this course, we do **NOT** curve individual assignments, quizzes, or tests. **However**, at the end of the semester, we may choose to ultimately assign final letter grades based on a more "liberal" version of the aforementioned grading scale.

"What does this mean?"

For example, if the class average for tests was very low, resulting in a lower than normal final average, a final grade of 65 could most certainly be a C (instead of a typical D). Similarly, a 75 could be a B, or an 87 could be an A. Now, **do not quote me here!**

So for all intents and purposes, you can view this as a "curve" if you like. Additionally, the final grading scale is based on the class averages and specific grade distributions during the semester, which means that it can and does indeed fluctuate from semester to semester. Just like a professor cannot tell you, ahead of time, how much of a "curve" will be given on a test, similarly, I cannot tell you what the final grading scale will ultimately be. There are many variables that come into play when determining that scale.

So how should you treat this? To be safe, **assume** the normal grading scale. Meaning, assume that anything less than a 90 is not an A, or that anything less than 70 is not a C.

Regardless, it is the hope that your intention is to **care more about learning the material** than about your final grade. Those that do this will be fine!

Finally, it is our intention to grade as fairly as possible. You can be sure that you will get the grade you deserve.

Tentative Schedule for Lectures/Assignments

Week	Monday Class	Wednesday Class	Friday Class	Assignments
Jan 9 - 13	Go over Syllabus + Intro PPT Slides + C-Review: Read on your own.	Linear vs Binary Search + Explanation of Program 1	Sorted List Matching Problem + Review of Pointers	Assignment 1: BigInt I (aka "wake up call") (Due 1/25)
Jan 16 - 20	**Martin Luther King Jr. Day (no class)**	Dynamic memory allocation for arrays	Linked Lists Intro: Traversing a list, counting elements in a list, printing a list, and more	
Jan 23 - 27	Linked List operations: Insertion into a list	Linked List operations: Deleting nodes from a list	Linked Lists Gone Wild: Circle and Doubly-Linked Lists	Assignment 2: Linked Lists (Due 2/8)
Jan 30 - Feb 3	Recursion 1: Intro to Recursion, examples include count down, factorial, and Fibonacci	Recursion 2: General structure, sum numbers, power, reversing a string, multiply, & Towers of Hanoi	Recursion 3: Permutations + Info on Assignment 3	
Feb 6 - 10	Recursion 4: Recursive Binary Search & Fast Exponentiation	Big-O notation, algorithm analysis, time complexity problems; use of summations	More Algorithm Analysis	Assignment 3: Recursion (Due 2/22)
Feb 13-17	Summations	Even more Algorithm Analysis + Exam #1 Review	**Exam #1**	
Feb 20-24	Time complexity using recurrence relations	Stacks – applications, evaluation of postfix expressions	Use of stacks for infix to postfix; array and linked list implementation of a stack	
Feb 27 - Mar 2	Go Over Exam #1	Queues: array and linked list implementation of a queue	Binary Trees, relation of height to number of nodes, tree traversals	Assignment 4: Stacks/Queues (Due 3/21)

Mar 5-10	Spring Break (no class)			
Mar 12-16	Binary search tree, searching in a BST, insertion	Deletion in BST	Various other binary tree functions	
Mar 19-23	Sorting- selection sort, insertion sort, bubble sort	Merge sort	Quick Sort	Assignment 5: BST with LL (Due 4/4)
Mar 26-30	Solving Recurrence Relations	Exam #2 Review	**Exam #2**	**Community Service DUE:** 3/28 by 12:30 PM
Apr 2-6	Heaps & Priority Queues	More Heaps & Heapsort	Hash tables	Assignment 6: Heaps & HT (Due 4/18)
Apr 9-13	Go over Exam #2	AVL Trees, insert	AVL Tree delete	
Apr 16-20	Base Conversion Methods	Backtracking	Introduction to Graphs	
Apr 23-27	FINAL EXAM REVIEW		**FINAL EXAM (8:00 AM)**	

*Weeks that will have Lab Quizzes:

January 23rd – 27th
January 30th – February 3rd
March 12th – March 16th
March 19th – March 23rd

As explained on Page 1 of this syllabus (under the section "Recitations/Lab Sessions"), there will be four lab quizzes held during the four weeks stated above. Each is worth 1% of your final grade. If you want that 1%, make sure you attend lab, pay attention, and take the quiz. There will be no makeup quizzes.