

Syllabus

COP 3504: Advanced Programming Fundamentals

Fall 2011

Course Description

COP 3504: Advanced Programming Fundamentals

Credits: 3; Prerequisites: MAC 2311 or MAC 3472, programming experience

A fast paced introduction to computer science for students with **prior programming experience**. Major concepts of computer science and the process of computer programming including object-oriented programming, procedural and data abstraction and program modularity.

This course *uses* the Java programming language. The course *discusses and concentrates* on the following major topics: (1) object-oriented programming, (2) procedural abstraction, (3) data abstraction, and (4) program modularity and state information. Java is our *tool* for discussing these topics.

Students often refer to this course as “the Java course” which it is *NOT* (note italics in previous paragraph). The intent of this course is to cover the major concepts of computer science and the process of computer programming. Java is merely being used as a vehicle for talking about programming and our coverage of Java technology will be incomplete. You will learn this language since part of the process of being a computer scientist or engineer is understanding a programming language so you can use it to solve problems. But, recognize that this course’s emphasis is much broader, encompassing an overview of the entire field of computer science.

Students are hereby advised that this is a **challenging** course intended for computer science majors — regardless of your actual major, you are expected to approach the course as if you were a CS major. Prior programming experience is **required** and prior object-orient programming experience is **highly recommended!** You should take this class *if and only if* you have taken a prior programming class and received at least a “B” grade or have taken the AP Programming test and received a 4 or higher. If you do **not have prior programming experience or your programming background is weak**, drop this course and take **COP 3502: Programming Fundamentals for CIS Majors 1 and COP 3503: Programming Fundamentals for CIS Majors 2 or CGS 2414: Programming with Java** (which is geared for non-majors wanting to learn a little about programming). If you have already taken CIS 3022 (or COP 3502), you **cannot** take this course as a replacement for CIS 2023 (or COP 3503) – you **MUST** take COP 3503.

Class Meeting Times

This course meets every MWF during the semester for lecture from 1:44 – 2:45 p.m. (7th hour) in 121 CSE. The lectures will present a high level discussion of the process of program design using object-oriented principles.

Each student also must attend a 2 hour lab session held once week in 116 CSE on Wednesday. NOTE: The labs will NOT meet the first week of class! These lab sessions will introduce lower-level programming concepts (concepts that are Java specific) and will provide an opportunity for students to practice generating solutions to smaller assignments than those given as the course’s programming assignments. Room 116 CSE is located inside the department’s public access laboratory, 114 CSE, which is located a short distance outside of the lecture hall.

ABET Outcomes

This course addresses the following ABET outcomes:

(c) an ability to design hardware and software systems, components, or processes to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

(e) an ability to identify, formulate, and solve hardware and software computer engineering problems, accounting for the interaction between hardware and software.

(k) an ability to use the techniques, skills, and modern engineering tools necessary for computer engineering practice.

Course Coordinator

Douglas D. Dankel II
Office: E330 CSE
Phone: (352) 505-1578
E-mail: ddd@cise.ufl.edu

Web: <http://www.cise.ufl.edu/~ddd/>
Office Hours: 10:40-11:30 a.m. (4th hour),
MWF
Other times BY APPOINTMENT ONLY.

Dr. Dankel is responsible for the lectures, examinations, and the coordination of the activities of the teaching assistants.

Teaching Assistants

TBA
E-mail: ??@cise.ufl.edu
Office Hours: TBA

TBA
E-mail: ??@cise.ufl.edu
Office Hours: TBA

The Teaching Assistants are in charge of the laboratory sessions and assisting with any questions that you have concerning Java and the assignments.

Required Text

Highly recommended: *Java in a Nutshell (5th Edition)*, David Flanagan, O'Reilly Press, 2005. Excellent coverage of Java – a book you will reference and use for many semesters. This should be available in the textbook stores in town or on-line.

Recommended: *The Object-Oriented Thought Process*, 3rd Edition, Matt Weisfeld, Addison-Wesley, 2009. Excellent discussion of the O-O process.

Recommended: *An Introduction to Programming and Object Oriented Design Using Java*, Jaime Nino and Frederick A. Hosch, John Wiley, New York. It is a good primer on the process of programming. This should be available in all of the textbook stores in town or on-line.

Copies of the overhead slides used in class will be available in PDF format on the course's Sakai site (<http://lss.at.ufl.edu>). It is *your* responsibility to log-on to Sakai **regularly** using your Gator Link account so you do not miss material. You should print out your own copy of these to use for taking notes in class so you can focus on what is said in lecture rather than hurriedly trying to write everything down during class. Note that material *has been left out of the notes* – *this is material for you to fill in* during lecture. I will *not* provide the completed set of notes without a medical excuse for missing class. If you miss class, see another student for the materials you missed.

Attendance

Since roll call will not be taken in lecture, your attendance is generally optional. However, since the students who do the best in this course are those who attend the course's lectures, your attendance is **strongly** encouraged and **expected!** To do your best in this class, you should consider your attendance **mandatory!!** Please be prompt in arriving for class and do not start packing up your materials *before* the class is over – the alarm on my phone will ring to let us know when we are done for the day. Turn off all cell phones *prior* to entering the classroom. ***If a cell phone goes off during lecture we will have a pop quiz!***

Periodic pop quizzes will be given during the lecture and discussion sessions at various times throughout the semester. There will be *no* makeup pop quizzes for any that you might miss. No excused absences will be given. Missing a quiz will result in a grade of zero. The lowest one or two pop quiz grades will be dropped when computing your final grade in the course. The number of pop quizzes that are dropped will be determined by the total number of quizzes given.

Similarly, an unexcused absence from an examination will result in a grade of zero for that examination. Makeup examinations will *not* be given. If you have a valid excuse for missing an examination (see below), the grade of “EX” (for “excused”) will be recorded in my grade book. Your other examination grades will be used to extrapolate your excused grade.

The *only* valid excuses for missing an examination are *prior* written approval from the instructor or a *documented* medical emergency.

Cooperative Learning

During the semester, we will sometimes use a technique known as *cooperative learning*. Using this technique you will, in a structured manner, learn from each other. The majority of the assigned programming assignments will be solved individually, but 1 or 2 will be solved using groups of 2 or 3 individuals, with a single solution submitted for the group. Everyone’s grade in the group will be based on the quality of the submitted solution and verbal answers given by a randomly selected member of the group. Studies have shown that using this technique benefits everyone in the group.

Grading

Your grade will be based on one of two scales:

	<u>OP1</u>	<u>OP2</u>	
1.	15%	10%	Examination 1
2.	20%	15%	Examination 2
3.	30%	15%	Examination 3 (Wednesday, December 7)
4.	-	25%	Final Examination (Thursday, December 15, 5:30-7:30 p.m.)
5.	20%	20%	Pop Quizzes, in-class exercises, and individual homework
6.	10%	10%	Lab exercises
7.	5%	5%	Group programming assignments

Dr. Dankel reserves the right to vary each of these percentages by no more than 5% (e.g., last semester’s group programming assignments was 2% and individual work as 23%).

Examinations 1-3 will occur during regular class periods throughout the semester. We will post final course grades using OP1 in the grade book on Sakai as soon as all of the course materials are graded. We will also identify what is the highest grade you can achieve should you take the final examination (OP2) and make a perfect score, a 90, an 80, a 70, and a 60. All students must let Dr. Dankel know no later than 10 p.m. on Tuesday December 13 if they plan to take the final. The final is scheduled for Thursday, December 15, 5:30-7:30 p.m.

Once the total percentage (TP) is computed, a student’s letter grades will be assigned as shown in the table below. Note that grades are *not* given – students *earn* their grades! The class *will not* be graded on a curve – it is possible for everyone to earn an “A”.

A “C-” will not be a qualifying grade for critical tracking courses. In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C-average is equivalent to a GPA of 1.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Total Point Percentage Range	Letter Grade
TP ≥ 92	A
92 > TP ≥ 90	A-
90 > TP ≥ 88	B+
88 > TP ≥ 82	B
82 > TP ≥ 80	B-

$80 > TP \geq 78$	C+
$78 > TP \geq 72$	C
$72 > TP \geq 70$	C-
$70 > TP \geq 68$	D+
$68 > TP \geq 62$	D
$62 > TP \geq 60$	D-
$60 > TP$	E

Cheating and Academic Dishonesty

Unfortunately, it is necessary to mention the subject of cheating. All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others.

The exercises given in this class require the development of short to medium length programs or program fragments, and there are always *many* correct solutions to any non-trivial programming problem. It is sometimes difficult for students and instructors to determine what constitutes cheating or academic dishonesty in this setting. Since the goal of this course is to learn the concepts required in the construction of programs, the student must actually engage in the creative process of constructing these programs – simply producing a working program is not enough. Each exercise, if carried out by the student, will give the student understanding, or will reinforce the student’s understanding, of an important computer science concept. Hence, the student working on individual or group assignments is permitted to *inspect* related problems and ask questions of the TA and others in the class about the problem and related problems, but the student is **not** permitted to **copy** the work of *any* others. This *includes but is not limited to* the TA, previous TAs, or others (students or non-students) who are taking the class, who previously have taken the class, or who have not taken this course. This includes all materials you can find on the web or in text books. *Turn in your work and only your work!* Likewise, students *allowing others to copy their work* are guilty of cheating.

One way to help adjudicate possible cases of forgery is to analyze the level of understanding each student has in their own work. Since this understanding is at the center of the course goals, each student must strive to have a complete understanding of every exercise and the solution the solution they submit.

Individual homework exercises assigned for this course are **not** team projects unless the instructor **explicitly** tells you so. You may consult with others when attempting to develop your solutions to these individual assignments. It is legitimate for two individuals to **plan** together the *general* approach that they will **individually** use in solving a problem. But once any **significant** details of the solution starts, collaboration should cease. This does not mean that students may not help each other – there are just limits to “helping”. You should not develop a single solution working together as a team with other students except when you are doing so on the required team exercises. Two identical or nearly identical solutions to the same problem will be regarded as evidence of over-collaboration and will be dealt with as cheating. The borderline, where simply consulting with others becomes working as a team or copying, is a gray area. If you have any doubts, you probably are working too closely and should stop – go off and work by yourself.

Because computer resources are shared, it is essential that all students use them in a way that respects the rights of others. Any attempt to copy other student’s assignments, destroy other’s

data or code, or deny the use of a computer to others is unethical and is considered a violation of academic honesty guidelines. The bottom line is, ***do not misuse a computer or the computer laboratory!***

All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Do not cheat! Do not copy others work! Immerse yourself in the class. Learn the material. The benefit and enjoyment you will receive will be much more valuable than any potential gain from cheating. **Do not even think about cheating!** You do not realize how easy it is for us to hand-check code for cheating and to prove to others that cheating occurred. Note that we have electronic means to detect collaboration, which are even better than our hand-checks! We will use these electronic systems to check for cheaters! Individuals who have misrepresented work as being their own **or** who have *assisted* another will receive as a **minimum**: a grade of *zero* on that assignment **and** a decrease of *one letter grade* on their final course grade. This is *in addition* to any other penalties given by Student Affairs. Every individual in this class should examine the Academic Honesty Guidelines and Student Conduct Code in the *University of Florida Undergraduate Catalog* for more details. Ignorance of these Guidelines is no excuse!

How to do Well in this Course

The students who get the most out of this course will be the ones put in the most effort. We will cover a large amount of material in a short time. If you cannot put in the required time to learn the material, you will do poorly. Based on past experience, you should plan on devoting a **MINIMUM** of ten hours outside of class **PER WEEK** to this course. **DO NOT FALL BEHIND** in the course material or significant difficulties will result.

If you want to do well in the course, attend all lectures, read any assigned readings *before* coming to class, actively participate within your assigned group, and start your assignments *early*. *Starting early* really helps because a solution to some of the problems may not grow in your mind right away when you first look at an assignment. Starting on the problems early and letting your mind work on them in background is often the most effective and efficient way to complete the assignments.

If you are having difficulty, you owe it to yourself to get help! Interact with the other members of your group when working on group assignments – bounce ideas off each other. Help each other learn! The TAs and class coordinator are also more than happy to assist you. Do not be afraid to come and see us, but please observe our posted hours. We hold numerous office and laboratory hours.

You (and your group when working on group projects), not the TAs or anyone else, are responsible for solving the assignments within the allotted time limits. The TAs can answer specific questions about the programming assignments, general approaches on how to attack a problem, and your program solutions. **BUT**, remember: the TAs are **NOT** there to write your programs or to debug them for you. Please have specific questions ready when you approach them.

All assignments in this course have a due date and due time. Failure to submit your solution before these will result in a 10% grade penalty. The assignments will have a late due date and time as well. Failure to meet the late deadline will result in a 0 (zero) for the assignment. Your watch and Sakai's are often *not* coordinated, so ***submit your solution well before the deadline!***

We would really love to have everyone in the class earn an "A". If you work hard and master the material presented, you will learn some powerful and fundamental programming techniques that can and will help you immeasurably when you tackle bigger programming problems later in school and in your career.

Course Schedule

The following are important dates for the class this semester:

1. Examination 1: tba – ~October 12 (to be decided by class vote)
2. Examination 2: tba – ~November 16 (to be decided by class vote)
3. Examination 3: Wednesday, December 7
4. Final Examination: Thursday, December 15, 5:30-7:30 p.m.

The dates for the first two examinations will be decided by a class vote. Assignments will be announced during the semester and posted electronically on the class web page.

Student with Disabilities

Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the course coordinator when requesting accommodation.

UF Counseling Services

Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

- UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services.
- Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.