CSC215 (SPRING 2015)

Course Title & Number: Computer Science I: For Science and Engineering (Section 1)
Professor: David Cooper, PhD
Office Location: Forcina 448
Email Address: cooperd@tcnj.edu
Office Hours: TuFr 12:30pm – 1:30pm, or by appointment
Class Time: Tuesdays & Fridays 2:00pm – 3:20pm – Forcina 407 (Lecture/Test)
or Forcina 406 (Unix Lab)

COURSE DESCRIPTION (prerequisites: none)

An introduction to computing and object-oriented programming, with an emphasis on using computational methods to develop algorithms to solve scientific problems. Topics include control structures, data typing including structures and arrays, parameterized procedures, and recursion as well as simple I/O control. This course may not be taken by computer science majors without permission of the department, and then only for free elective credit.

COURSE MATERIALS

Required Books:

Programming and Problem Solving with C++: Comprehensive
Nell Dale, University of Texas, Austin; Chip Weems, University of Massachusetts
http://www.jblearning.com/catalog/9781284028768/

Introduction to MATLAB for Engineers, 3rd Edition
Palm III, William

Web sites:

CodeLab (required for reading exercises): http://jblearning.turingscraft.com/
Registration Access Code: `JBLE-18458-PKMR-23`

Harvard CS50 – Intro to CS I lectures:
https://www.youtube.com/playlist?list=PLvJoKWRPIu8G6Si7LlvmBPA5rOJ9BA29R

COURSE REQUIREMENTS

The course will require taking reading exercises for each class, weekly or bi-weekly laboratory assignments (sometimes to be completed by pairs of students), take-home programming projects (generally to be completed on your own), on-line exercises (turingscraft), a single mid-term examination, and a comprehensive final examination.

COURSE OBJECTIVE & LEARNING GOALS

This course introduces students to concepts and techniques for solving problems using well-designed computer programs in C++ and Matlab.

Students will gain the ability to analyse a scientific or engineering problem, identify and define the computing requirements, and apply knowledge of programming to solve the problem and meet desired needs.

Students will gain a deeper understanding of computational problem solving through classroom instruction. A series of assignments and class exercises serve to reinforce principles and concepts learned in class while providing hands-on experience with related software tools. Students will be able to apply the understanding and skills developed to courses that follow this one in the curriculum sequence. Many of these are vital skills for today's demanding workplace.

COURSE SCHEDULE (SUBJECT TO CHANGE, SEE CANVAS SIGHT FOR CURRENT SCHEDULE)

Week	Class Day	Topic	Reading Assignment	Assignments due
1	01/27	Class cancelled		
	01/30	Introduction, software setup, Basic Concepts	Chapter 1	
2	02/03	C++ Syntax & Semantics	Chapter 2	
	02/06	Prog. Dev. Process		
3	02/10	Numeric Types, Expressions,	Chapter 3	
	02/13	and Output		
4	02/17	Program Input and the	Chapter 4	
	02/20	Software Design Process		
5	02/24	Conditions, Logical Expressions, and	Chapter 5	
	02/27	Selection Control Structures		
6	03/03	Loops and Additional Control Structures	Sections 6.1-6.3 and Sections 7.1-7.3	
	03/06	Functions	Chapter 8, pgs 345 - 365	
7	03/10	Scope, Lifetime, and More on Functions	Chapter 9	
	03/13	Mid-term Exam		
	03/17	Spring Break		
	03/20	Spring Break		
8	03/24	User Defined Simpler Types	Chapter 10	
	03/27	User Defined Complex Types	Chapter 10	
9	03/30	1-D Arrays	Chapter 11	
	04/03	Arrays, 2-D and beyond	Chapter 11	
10	04/07	Classes	Chapter 12	
	04/10	and Abstraction		
11	04/14	Matlab		
	04/17			
12	04/21			
	04/24			
13	04/28			
	05/01			
14	05/05			
	05/08			

GRADING.

Class Participation/In class exercises:	10%
Reading Exercises/Quizzes:	10%
Labs and Projects:	30%
Midterm Exam:	20%
Final Exam:	30%

4th Hour

In this class, the deep learning outcomes associated with TCNJ's 4th hour are accomplished by a series of rigorous educational assignments that extend beyond the typical scheduled class time. These include complex programming projects that require significant additional out-of-class time as well as laboratory programming work that generally extends beyond the provided in-class time.

Course Policies

Late Work

- Lab assignments are due as posted in Canvas for their respective assignment locations. Late labs are not permitted. Since you will sometimes be working with a partner and labs are often not completed in the time allotted, you are expected to deal with the time management and communication issues so that your lab is submitted on time.
- Programming projects (take-home projects): projects submitted late are subject to a 10-point per day penalty or as dictated by the project guidelines (up to a maximum "drop dead date"). After the drop-dead date, work will no longer be accepted for said project.
- Disclaimer: Some of the programming projects may have no "drop-dead date"; refer to the project specification for the date, if one is permitted. For example, at the end of the semester I tend to eliminate all possible drop dead dates due to the grading, exam preparation, exam grading and final course grade finalization demands.
- On-line exercises are due as posted in Canvas for their respective assignment locations. Late on-line exercises are not permitted. On-line exercises are to be completed on an individual basis.

Reading Notes/Quizzes

- For each class, I suggest you create notes based on the reading for that day. The purpose for this is to keep you up to date on the reading, and for you to have test preparation materials. If I notice a number of students coming to class unprepared, I may give a quiz where you will be allowed to use only your notes, to motivate you to continue reading.

On-line exercises:

- On-line exercises will be assigned to supplement the content from this course. I will be able to view your progress, but you should still submit which problems you did for the reading day.
- Assignments are due as posted and the report will be submitted to Canvas as assigned. Grades are based upon the number correct out of the ten problems you chose.

Group/Paired Assignments:

- We will use the Canvas group feature to manage the groups and for a central upload location for the assignment(s). Each partner will earn the same grade for the assignment. Delegation of the work for the assignment will be left to the students to manage. Partner assignments will vary with each assignment and are at the discretion of the instruction.
- For some assignments you will pair with one other student (varies each time) to complete the program.

Programming projects:

- Programming projects are scored on a 100-point basis. All work is to be submitted no later than the "drop-dead date" to the appropriate Canvas submission area. For each 24- hour period past the "due date" for the project, a 10-point penalty is assessed. A project is late at 1 minute past the assigned due date. Submissions will not be accepted past the "drop dead date".
- If you project fails to compile, the project is automatically graded at 50% of the maximum points possible for the assignment and I stop examining the project submission. You are expected to be able to submit a program that compiles (though may not functionally be correct or complete) in this course.
- Projects scoring below 60 are eligible for resubmission and re-grading. To be eligible for this, project partners must come to meet with me together about the resubmission. You will have no more than 5 days (weekend days included) to resubmit the project (by Canvas). During our meeting I will explicitly define exactly when the project is due on Canvas.
- You will incur a penalty for resubmitting a project (it's not fair to everyone else for you to resubmit and get a 100). Only two such opportunities exist for resubmission, the first and second projects. Of course, during re-grading a resubmitted project, all aspects of the project will still be enforced. Late penalties for the original project are always applied to any resubmission (late penalties don't disappear just because you are resubmitting it). The maximum possible grade for a project that is resubmitted is as follows:

  1st project – 80

  2nd project – 70

  subsequent projects – no resubmission is permitted

Exams:

- Exams may not be taken at a different day without permission requested at least 24 hours prior to the exam unless there is an emergency that prevents you from taking the Exam at the designated time.

Other / Misc:

- I expect my students to be on time to class, and prepared for the lecture / lab. You should be reading ahead in the textbook, prior to coming to class, prepare to review the materials you have read and ask insightful questions about the material and contribute to the discussion of the design and implementation of the concepts we cover.
- I do not to scale grades. There are opportunities for project resubmission, and some extra credit from time to time. However, if you cannot pass this class as a proficient programmer, then you cannot advance as a computer science major or minor.
- Please shut off all cell phones, pagers and other devices before class starts. Nothing distracts me more than you interrupting my lecture with a call or arriving late.
- Appointments outside of regular office hours must be prearranged at least 24 hours in advance, via email.
- Unless otherwise specified explicitly in the specifications, I expect that all work (homework assignments, on-line exercises, and tests) be completed on an individual basis. Labs and take-home projects may have more collaborative opportunities. All work will be examined for similarities by my inspection and by using an automated system. Violations of this policy will be handled in accordance with the College's Academic Integrity Policies (see http://www.tcnj.edu/~studlife/judaff).
- Discussing problems and talking about solutions in a general sense with your peers is welcomed and encouraged. The outright sharing of program source code is explicitly forbidden and will be prosecuted to the fullest extent possible. Sharing source code includes one person describing what to do while another types code. While generally discussing solutions, any notes taken during discussion should be destroyed to guarantee that you will have distinct solutions. If you are uncertain about a particular activity, ask in class, or email me privately and I will clarify this policy for you.
- Students have one week following the return of graded work to dispute grades. After the one-week time frame, re-grading or adjusting grades will not be performed. This one-week window starts from the time the material is return to you (or made available to you) regardless of whether you checked Canvas that day.
- Extra credit for just you is discrimination. Don't ask for it; you won't get it. Take advantage of the extra credit opportunities as they arise (assuming they do).

SELECTED TCNJ POLICIES

TCNJ's final examination policy is available on the web:
http://policies.tcnj.edu/policies/digest.php?docId=9136

Attendance

Every student is expected to participate in each of his/her courses through regular attendance at lecture and laboratory sessions. It is further expected that every student will be present, on time, and prepared to participate when scheduled class sessions begin. At the first class meeting of a semester, instructors are expected to distribute in writing the attendance policies which apply to their courses. While attendance itself is not used as a criterion for academic evaluations, grading is frequently based on participation in class discussion, laboratory work, performance, studio practice, field experience, or other activities which may take place during class sessions. If these areas for evaluation make class attendance essential, the student may be penalized for failure to perform satisfactorily in the required activities. Students who must miss classes due to participation in a field trip, athletic event, or other official college function should arrange with their instructors for such class absences well in advance. The Office of Academic Affairs will verify, upon request, the dates of and participation in such college functions. In every instance, however, the student has the responsibility to initiate arrangements for make-up work.

Students are expected to attend class and complete assignments as scheduled, to avoid outside conflicts (if possible), and to enroll only in those classes that they can expect to attend on a regular basis. Absences from class are handled between students and instructors. The instructor may require documentation to substantiate the reason for the absence. The instructor should provide make-up opportunities for student absences caused by illness, injury, death in the family, observance of religious holidays, and similarly compelling personal reasons including physical disabilities. For lengthy absences, make-up opportunities might not be feasible and are at the discretion of the instructor. The Office of Academic Affairs will notify the faculty of the dates of religious holidays on which large numbers of students are likely to be absent and are, therefore, unsuitable for the scheduling of examinations. Students have the responsibility of notifying the instructors in advance of expected absences. In cases of absence for a week or more, students are to notify their instructors immediately. If they are unable to do so they may contact the Office of Records and Registration. The Office of Records and Registration will notify the instructor of the student's absence. The notification is not an excuse but simply a service provided by the Office of Records and Registration. Notifications cannot be acted upon if received after an absence. In every instance the student has the responsibility to initiate arrangements for make-up work.

TCNJ's attendance policy is available on the web:
http://policies.tcnj.edu/policies/digest.php?docId=9134

Academic Integrity Policy

Academic dishonesty is any attempt by the student to gain academic advantage through dishonest means, to submit, as his or her own, work which has not been done by him/her or to give improper aid to another student in the completion of an assignment. Such dishonesty would include, but is not limited to: submitting as his/her own a project, paper, report, test, or speech copied from, partially copied, or paraphrased from the work of another (whether the source is printed, under copyright, or in manuscript form). Credit must be given for words quoted or paraphrased. The rules apply to any academic dishonesty, whether the work is graded or ungraded, group or individual, written or oral.

TCNJ's academic integrity policy is available on the web:
http://policies.tcnj.edu/policies/digest.php?docId=7642

Americans with Disabilities Act (ADA) Policy

Any student who has a documented disability and is in need of academic accommodations should notify the professor of this course and contact the Office of Differing Abilities Services (609-771-2571) . http://differingabilities.pages.tcnj.edu. Accommodations are individualized and in accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1992

TCNJ's Americans with Disabilities Act (ADA) policy is available on the web:
http://policies.tcnj.edu/policies/digest.php?docId=8082