Programming Principles II

CS 1412
Spring 2012

1 Contact Information

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Class Hours: Tue, Thur 1230-1350.
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Teaching Assistant: Randy Ransom.
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2 Course Description

The purpose of this course is to help the student increase their programming and problem solving skills utilizing the software engineering concepts of analysis, design, implementation, debugging and software testing. The course will also consider the design and development of software from the viewpoint of the user, to help the student learn how to meet the needs of the user. Another important component explored in this class is learning how to solve problems using programming. This course also introduces the student to classes, an important programming construct that provides another layer of program organization beyond the typical procedural programming constructs, e.g., if-then-else, loops and statements. Classes require some extra thought in program design, but can help to reorganize the complex elements of a program into smaller, more manageable units. Classes come with some unique features designed to reduce the amount of coding required to use them, such as inheritance and polymorphism, and offer protection of the class's internal elements through encapsulation. Furthermore, this course delves into some complex data structures and algorithms as a natural next step from a first course in programming. These data structures include linked lists, stacks and queues, while algorithms include sorting and recursive algorithms.

3 Textbook

The course will primarily draw its content from the following book:

Any other materials will be posted online and/or distributed in class. Some very useful (additional) resources such as slides and code examples are available online: http://www.cs.armstrong.edu/liang/cpp2e/
4 Pre-requisites
The students are expected to have been through a first course in programming, e.g., in Python or C. Specifically, the following conditions have to be met:
- A “C” or better in CS 1411: Programming Principles I.
- Departmental approval.
- Knowledge of: arrays, variables, assignment statements, operator precedence, control statements (e.g., if-else) and loops (e.g., while and for).
If it has been some time since you last took a course on basic programming (e.g., CS 1411), please take a look at the corresponding materials. Contact the instructor if you need help finding relevant materials.

5 Course Syllabus
An initial draft of the syllabus is given below. It provides a distribution of the textbook chapters over the weeks in the Fall semester. This schedule is tentative and subject to change.

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Table 1: Course Syllabus/Schedule

Dates for specific projects and exams will be announced (later) in class. Students will be responsible for making sure they are informed about announcements made in class.

6 Course Philosophy and Grading Policy
The final grade for this course will be based on the labs, projects, quizzes and exams:
- Labs and Quizzes: 35%
- Projects: 25%
- Exams: 40%
Please note the following:
- The usual grading scale will be used in the absence of a curve: A (90-100), B (80-89), C (70-79), D (60-69), F (0-59).
- All assignments will be due by 5pm on the corresponding due date, unless stated otherwise in class.
• Valid reasons for delay (issues related to health or family) will be considered if the instructor is informed in advance. Late assignments may be accepted within 24 hours of the due date with a 20% penalty provided the instructor’s approval is obtained in advance.
• Deadlines will not be extended due to system failures. Please backup all information!
• Exams and labs cannot be made up except for unusual and unforeseen events. Decisions will be made by the instructor on a case by case basis.
• Pop quizzes may be assigned in class at regular intervals. It is your responsibility to be present!
• There will be at least two projects and two in-class exams (excluding the final exam).
• Questions about graded material:
  • All questions about graded material must be submitted in writing along with the graded material within one class period of the day the material is returned.
  • Questions may result in the entire material being re-graded, resulting in higher or lower grades.

Beyond the conditions listed above, all grading decisions made by the instructor and all announcements made in class will be final.

7 Academic Dishonesty
Though students are encouraged to discuss ideas and problems with the TA, instructor and other students, academic dishonesty will not be tolerated. This course aims to provide a broad introduction to programming in C++, which can only be achieved by working through the labs and projects. It is your responsibility to educate yourself about actions that constitute academic dishonesty. If you are not sure whether a specific action is allowed, contact the instructor and/or the TA before you indulge in it!

All submitted code will be randomly checked for plagiarism. Academic dishonesty of any kind, if discovered, will result in a grade of “0” for the corresponding lab/project. Any student who is caught indulging in academic dishonesty more than once will lead to a grade of “F” in the course, and further action according to the TTU operating procedures: http://www.depts.ttu.edu/opmanual/OP34.12.pdf. Dealing with academic dishonesty is painful and unpleasant—please do not indulge in it!

8 Classroom Civility
All violations of classroom civility will be reported to the Student Judicial Programs. The Texas Tech University Catalog states: “Students are expected to assist in maintaining a classroom environment that is conducive to learning.” In order to assure that all students have the opportunity to gain from time spent in class, students are prohibited from engaging in any form of distraction, e.g., reading newspapers (or other articles), working on other courses, and using cellphones or laptops for calls or messages. If you indulge in any such inappropriate behavior (without explicit consent of the instructor), you will (at the very least) be asked to leave the classroom.

9 Special Requirements
Any student who, because of a disability, may require special arrangements in order to meet course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services:1 during the instructor’s office hours. Please note that instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services Office in 335 West Hall or 806-742-2405.

10 Learning Outcomes
The following are the expected learning outcomes of the course:
• Bachelor of Science Degree:

1http://www.depts.ttu.edu/studentaffairs/sds/
• Familiarity with the mathematical foundations of computation and have the ability to apply this knowledge in the identification, formulation, and the solution of computer science-related problems (LO 1).
• Ability to apply successful design techniques and programming practices in the solution of challenging real-world problems (LO 2).
• Understanding on how computer science theory relates to the fundamental workings of contemporary computing (LO 3).

Note: The syllabus is subject to change during the course. Any changes will be announced in class and/or posted online.