Course Name: Programming Principles II Number: CS1412 Semester: Fall 2012

Instructor: Dr. Mohan Sridharan Office: EC306C Email: mohan.sridharan@ttu.edu
Class room: ME 146 Class Hours: 9.30-10.50 (Tue, Thur)
Lab: PE 118 Lab Hours: 1400-1650 (Thur)
Instructor Office Hours: 1100-1200 (Tue, Thur)

TA: Michael Bullington TA-Office: EC201A TA-Email: michael.bullington@ttu.edu
TA-Office Hours: 1300-1400 (Tue, Thur), 1300-1500 (Fri)

Catalogue Listing: Advanced procedural programming. Topics include recursive functions, parameter passing, structures, records, memory allocation, exception handling, and abstract data types.


Course description: The objective of this course is to introduce advanced constructs in C programming language and key concepts of object-oriented programming in C++. Students will apply these constructs and problem solving methodology to complex problems.

Course objectives:

1. Capable of applying learned methodology to solve advanced problems (a, b, c).
2. Comprehend and apply advanced data types and structures (a, b, c).
3. Comprehend and apply parameter passing (a, b, c).
4. Comprehend and apply recursion (a, b, c).
5. Comprehend and apply object-oriented programming concepts (a, b, c).
6. Comprehend and apply basic sorting and searching methods (a, b, c).

Key Topics:

1. Review problem-solving methodology and basic constructs (e.g., control statements, loops).
2. Advanced data types and structures:
   a. Multidimensional arrays.
   b. Structs, pointers, linked lists.
   c. Dynamic memory allocation and de-allocation.
3. Functions (recursive, parameter passing) and file I/O.
4. Object-oriented concepts:
   a. Classes and objects.
   b. Inheritance and polymorphism.
5. Exception handling.
Course Prerequisites: CS1411 (Programming Principles I).

Expected prior knowledge and skills in: basic problem-solving methodology and ability to program in some high-level language (including control flow and functions). Students are expected to have prior knowledge of: arrays, variables, assignment statements, operator precedence, control statements (e.g., if-else) and loops (e.g., while and for).

Learning Outcomes & Assessment Methods: Students who have completed this course should have the ability to:

(a) Apply knowledge of computing and mathematics appropriate to the discipline. (quiz, exam, assignment, project).
(b) Analyze a problem, and identify and define the computing requirements appropriate to its solution. (quiz, exam, assignment, project).
(c) Design, implement and evaluate a computer-based system, process, component, or program to meet desired needs. (quiz, exam, assignment, project).

Course Schedule: The table (below) provides the initial distribution of textbook chapters discussed over the weeks in the semester. This schedule is tentative and subject to change. All changes will be announced in class or on the course website (Blackboard). Students are responsible for making sure they are informed about announcements.

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<thead>
<tr>
<th>Tentative Dates</th>
<th>Chapters</th>
<th>Projects/Exams</th>
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<tr>
<td>Aug 28</td>
<td>Syllabus + intro</td>
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<tr>
<td>Aug 30</td>
<td>Chapter 2</td>
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<td>Sep 4</td>
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<tr>
<td>Sep 13, 18</td>
<td>Chapter 6</td>
<td>Project I</td>
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<td>Sep 20, 25</td>
<td>Chapter 7</td>
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<td>Sep 27; Oct 2</td>
<td>Chapter 8</td>
<td>Midterm I</td>
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<td>Oct 4, 9</td>
<td>Chapter 17</td>
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<td>Oct 11, 16</td>
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<td>Project II</td>
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<td>Oct 18, 23</td>
<td>Chapter 10</td>
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<td>Oct 25, 30</td>
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<td>Nov 1, 6</td>
<td>Chapter 13</td>
<td>Midterm II</td>
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<td>Nov 27, 29</td>
<td>Chapter 19</td>
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Grading Policy: The final grade for this course will be based on labs, projects, quizzes and exams, as
described below:
- Labs and Quizzes: 35%.
- Projects: 25%.
- Exams: 40%.

Please note the following:
- The usual grading scale will be used: A (90-100), B (80-89), C (70-79), D (60-69), F (0-59). This
  scale is subject to change—all changes will be announced in class.
- All assignments will be due by 5pm on the corresponding due date, unless stated otherwise.
- Valid reasons for delay (e.g., 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. 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:
  a. 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.
  b. 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.

Ethical Conduct: Although students are encouraged to discuss ideas and problems with the TA,
instructor and other students, academic dishonesty will not be tolerated. 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

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 ensure that all students 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 cell-phones 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.
Student with Disabilities:
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 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.