Texas Tech University  
Department of Computer Science

Course Name: **Programming Principles II**  
Number: CS1412-001  
Semester: Fall 2013

Instructor: Dr. Mohan Sridharan  
Office: EC306C  
Email: mohan.sridharan@ttu.edu

Class room: EC 205  
Lab: PE 118

Class Hours: 1100-1220 (Tue, Thur)  
Lab Hours: 0800-1050 (Tue)

Instructor Office Hours: 1230-1330 (Tue, Thur)

TA: Sarah Rainge  
TA-Office: EC201A  
TA-Email: sarah.rainge@ttu.edu

TA-Office Hours: 1100-1200 (Mon); 1400-1600 (Wed)

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


Course objectives:

The objective of this course is to introduce advanced constructs in C programming language. Students will apply these constructs and problem solving methodology to complex problems.

Key Topics:

1. Review problem-solving methodology and basic constructs.
2. Advanced data types and structures:
   a. Structs, records.
   b. Pointers, linked lists.
   c. Dynamic memory allocation and de-allocation.
   d. Abstract data types (ADT).
3. Functions (recursive, parameter passing).
4. Programming practices:
   a. Standard library usage.
   b. *UNIX shell usage* (optional).
   c. Exception handling.
5. Searching and sorting.
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. Students are expected to have prior knowledge of: arrays, variables, assignment statements, operator precedence, control statements (e.g., if-else), loops (e.g., while and for) and functions.

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

<table>
<thead>
<tr>
<th>Objective</th>
<th>ABET Outcomes</th>
<th>Assessment Methods</th>
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<tbody>
<tr>
<td>1. Capable of applying learned methodology to solve advanced problems.</td>
<td>a, b, c</td>
<td>Various lab assignments, all exams, and all projects.</td>
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<tr>
<td>2. Comprehend and apply advanced data types and structures.</td>
<td>a, b, c</td>
<td>Various lab assignments, all exams and all projects.</td>
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<tr>
<td>3. Comprehend and apply parameter passing.</td>
<td>a, b, c</td>
<td>Various lab assignments, Exam 1.</td>
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<tr>
<td>4. Comprehend and apply recursion.</td>
<td>a, b, c</td>
<td>Various lab assignments, Exam 1, Project 1.</td>
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<td>5. Comprehend and apply programming practices.</td>
<td>a, b, c</td>
<td>Various assignments, all exams.</td>
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<tr>
<td>6. Comprehend and apply basic sorting and searching methods.</td>
<td>a, b, c</td>
<td>Various assignments, Final exam.</td>
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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.

<table>
<thead>
<tr>
<th>Tentative Dates</th>
<th>Chapters</th>
<th>Projects/Exams</th>
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<tbody>
<tr>
<td>Aug 27, 29</td>
<td>Syllabus + review (Chapters 3-4)</td>
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<tr>
<td>Aug 29; Sep 3</td>
<td>Review (Chapters 5-6)</td>
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<tr>
<td>Sep 5, 10</td>
<td>Review (Chapter 7)</td>
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<tr>
<td>Sep 12, 17</td>
<td>Chapter 8 (arrays)</td>
<td>Project I</td>
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<td>Sep 19, 24</td>
<td>Chapter 9 (functions)</td>
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<tr>
<td>Sep 26; Oct 1</td>
<td>Recursion</td>
<td>Midterm I</td>
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<td>Oct 3, 8</td>
<td>Searching + Sorting</td>
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<tr>
<td>Oct 10, 15, 17</td>
<td>Chapter 11 (pointers)</td>
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</tr>
<tr>
<td>Oct 17, 22</td>
<td>Chapter 12 (pointers + arrays)</td>
<td>Project II</td>
</tr>
<tr>
<td>Oct 22, 24</td>
<td>Chapter 13 (strings), Chapter 22 (I/O)</td>
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<tr>
<td>Oct 29, 31</td>
<td>Chapter 14 (preprocessor)</td>
<td></td>
</tr>
<tr>
<td>Nov 5, 7</td>
<td>Chapter 16 (structs, unions)</td>
<td>Midterm II, Project III</td>
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</table>
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: 30%.
- Exams: 35%.

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 at the instructor’s discretion.
- 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. Unless stated otherwise by the instructor, you are not allowed to share code, use or even look at code obtained from online sources, friends or classmates. It is your responsibility to educate yourself about actions that constitute academic dishonesty. If you are not sure whether a specific action is allowed, talk to the instructor and 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, 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.