Introduction to Problem Solving with Computer II
Summer 2015

A. COURSE INFORMATION
   Course number/section: COSC 1436
   Class meeting time (Lecture): MW 12:00 – 2:30 p.m.
   Class meeting time (Lab): MW 2:45 p.m. – 4:45 p.m.
   Location (Lecture): CS-103
   Location (Lab): CI-226
   Course Website: http://sci.tamucc.edu/~dkar/sum2015/1436/documents.htm

B. INSTRUCTOR INFORMATION
   Instructor: Dr. Dulal Kar
   Office location: CI 321
   Office hours: 11:00 a.m. – 12:00 noon
   Telephone: 361-825-5878
   e-mail: dulal.kar@tamucc.edu
   Appointments: Required for meetings beyond office hours

C. COURSE DESCRIPTION
   Catalog Description
   A continuation of COSC 1435 completing the syntax of the language used as the
   programming tool in COSC 1435. An introduction to elementary data structures. The student
   will be introduced to multiple computing platforms in this two course sequence. This course
   is the intermediate study of the basic concepts of problem solving using C++ on both a PC
   and a UNIX platform. Concepts include basic one- and two dimensional array handling,
   classes, recursion, basic searching and sorting algorithms applied to static data structures, and
   an introduction to dynamic data structures. Emphasis will be on developing high quality
   programs of intermediate length (several hundred lines).

D. PREREQUISITES AND COREQUISITES
   Prerequisites
   COSC 1435 Introduction to Problem Solving with Computers I.

   Corequisites
   None.

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES
   Required Textbook(s)
   1. Starting Out with C++ (7th edition) by Tony Gaddis
2. Problem Solving and Programming Concepts by Maureen Sprankle

Optional Textbook(s) or Other References
Interactive UNIX Tutorial and Reference by Edutrends, Inc. (Recommended).

Supplies
None.

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT
Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:

1. Use the UNIX operating system to manage and manipulate files and folders and to create, compile, and execute computer programs of intermediate length.

2. Explain and effectively use single- and multi-dimensional arrays.

3. Explain and effectively use basic searching and sorting algorithms.

4. Determine the Big-O efficiency of some basic sorting and searching algorithms.

5. Apply the concepts of object-oriented programming through the use of abstract data types, including structs and classes.

6. Develop, implement, and effectively use classes to create dynamic (pointer-based) list, stack, and queue data structures.

7. Effectively use dynamic memory allocation to create and manipulate variables within computer programs.

8. Determine if a simple recursive function is semantically correct.

G. INSTRUCTIONAL METHODS AND ACTIVITIES
Instructions will be delivered through in-class lectures and presentations using slides. Demos on some programming examples will be given in the lab.
H. MAJOR COURSE REQUIREMENTS AND GRADING

This is a programming course. This skill-building course demands all students attend all classes! Regular completion of all reading and lab assignments is absolutely essential for success in this course.

Assignments. Approximately ten programming assignments will be given. Depending on the situation, partial credit will be given for some incomplete programming assignments. All programming assignments will be based on the topics covered in the lectures. All assignments will be handed out in the class.

Exams. There will be three exams. The dates of midterm exams will be announced in the class. The final exam will be comprehensive and will be given on the last day of the summer session for the course.

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
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<tbody>
<tr>
<td>Two Midterm Exams (each 20%)</td>
<td>40</td>
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<tr>
<td>Assignments</td>
<td>35</td>
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<tr>
<td>Final Exam</td>
<td>25</td>
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I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
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<tbody>
<tr>
<td>1</td>
<td>Review file I/O, Review strings, Pointers</td>
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<tr>
<td>2</td>
<td>Review of arrays (2-D), Structures, Classes, Exam I</td>
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<tr>
<td>3</td>
<td>Classes (cont’d), Algorithm Efficiency</td>
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<tr>
<td>4</td>
<td>Searching and Sorting Arrays, Exceptions, Templates</td>
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<tr>
<td>5</td>
<td>Linked lists, Exam II</td>
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<tr>
<td>6</td>
<td>Stack and Queues, Recursion</td>
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<tr>
<td>7</td>
<td>Catch-up and Final Exam</td>
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Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning
Outcomes described in Section F.

**J. COURSE POLICIES**

**Attendance/Tardiness**

You must attend all classes. You are responsible for any materials covered or handed out or announcements made for the tests, quizzes, and homework assignments in your absence. Records of your attendance will be maintained and reported to the university. Students found missing classes without the instructor's permission will be automatically withdrawn from the course. Students are responsible for all materials covered in class and assigned. Should a student be absent from class, it is his/her responsibility to get the notes, etc. for that missed class. More important, should there be assignments, it is the student’s responsibility to obtain such assignments. No excuse will be accepted for assignments not turned in because the student was absent when it was due.

**Late Work and Make-up Exams**

All the assignments are due at the beginning of the class on the due date. If the student is absent on the assignment due date, it is the student's responsibility to make sure that the assignment is submitted on the designated date. An assignment that is turned in after the class on the due date is considered one day late. There is a penalty for late submissions. Late assignments will be counted 20% off for each day after the due time. No credit will be given if an assignment is submitted after 5 days. If you have not completed your assignment by the due date, you should submit the work you have done for partial credit. No work will be accepted once the graded work has been returned or the solution has been disclosed to the class, except for unusual circumstances. Exams must be taken on the hour they are scheduled. In the event, if you cannot attend the class to take the exam due to some emergency or some unavoidable situation (such as serious illness, death in the family, participation in university sports, religious observations, and so on) you must notify me as soon as possible before the exam and also you must validate your absence by providing me a document (e.g., with a letter from your doctor).

**Extra Credit**

None.

**Cell Phone Use**

Set your cell phone/electronic device in silent mode when you are in class.

**Laptop Use**

You can use your laptop to view course documents or slides.

**Food in Class**
Missed Exam
No makeup exam will be given without prior agreement.

Participation
You are encouraged to ask questions related to course topics that can help you and others attending the class.

Plagiarism
Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. Plagiarism is the presentation of the work of another as one’s own work. In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a score of 0 (zero) for the work or dismissal from the course and the Dean of Students office will be notified. No copying from another student's work, of any class, is allowed. It is the student's duty to allow no one to copy his or her work. Anyone found cheating in the exams will receive an automatic F for the course.

K. COLLEGE AND UNIVERSITY POLICIES

- **Academic Integrity (University)**
  It is expected that university students will demonstrate a high level of maturity, self-direction, and ability to manage their own affairs. Students are viewed as individuals who possess the qualities of worth, dignity, and the capacity for self-direction in personal behavior.
  See Full University Policy at [http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity](http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity)

- **Classroom/Professional Behavior**
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.
• Deadline for Dropping a Course with a Grade of W (University)
  The grade of W will be assigned to any student officially dropping a course by
  Friday, June 19, 2015. No student is eligible to receive a W without completing the
  official drop process by this deadline. Visit the Office of the University Registrar
  for the Course Drop Form that must be submitted. After June 19, 2015 a student will
  not be allowed to drop a course.

• Grade Appeals (College of Science and Engineering)
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a
  student who believes that he or she has not been held to appropriate academic standards
  as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading,
  may appeal the final grade given in the course. The burden of proof is upon the student to
  demonstrate the appropriateness of the appeal. A student with a complaint about a grade
  is encouraged to first discuss the matter with the instructor. For complete details,
  including the responsibilities of the parties involved in the process and the number of
  days allowed for completing the steps in the process, see University Procedure
  13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible
  through the University Rules website at
  http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science
  and Engineering Grade Appeals webpage at
  http://sci.tamucc.edu/students/GradeAppeal.html. For assistance and/or guidance in the
  grade appeal process, students may contact the chair or director of the appropriate
  department or school, the Office of the College of Science and Engineering Dean, or the
  Office of the Provost.

• Disability Services
  Disability Services (DS) is the hub for coordinating services and accommodations to
  ensure accessibility and utilization of all programs for all Texas A&M University-
  Corpus Christi students with disabilities. Our services are designed to meet the
  unique educational needs of enrolled students with documented permanent or
  temporary disabilities. DS provides intake and consultation services to students
  seeking to register with our office. DS reviews an individual’s documentation of
  disability and assesses eligibility for services and the determination of reasonable
  accommodations. For more information visit the Disability Services Office at 116
  Corpus Christi Hall or go to http://disabilityservices.tamucc.edu/

• Statement of Civility
  Texas A&M University-Corpus Christi has a diverse student population that
  represents the population of the state. Our goal is to provide you with a high quality
  educational experience that is free from repression. You are responsible for
  following the rules of the University, city, state and federal government. We expect
  that you will behave in a manner that is dignified, respectful and courteous to all
  people, regardless of sex, ethnic/racial origin, religious background, sexual
  orientation or disability. Behaviors that infringe on the rights of another individual
  will not be tolerated.
L. **OTHER INFORMATION**

In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

**GENERAL DISCLAIMER**

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.