Introduction to Problem Solving with Computers II, COSC 1436.002
Department of Computing Science
Spring 2019

A. COURSE INFORMATION

Course number/section: COSC 1436.002; COSC 1436.021; COSC 1436.022
Class meeting time: MW 02:00 - 03:15PM (Lecture)
                   COSC 1436.301 W 3:30 - 5:20AM (Lab)
                   COSC 1436.221 W 3:30 - 5:20AM (Lab)
                   COSC 1436.222 W 3:30 - 5:20AM (Lab)
Class location: CI-122 (Lecture); CI-226 (Lab)
Course Website: http://bb9.tamucc.edu

B. INSTRUCTOR INFORMATION

Instructor: Dr. Mamta Yadav
Office location: EN 316N
Office hours: TR 11:00 AM – 1:30 PM
Telephone: 361-825-2688
e-mail: Mamta.Yadav@tamucc.edu
Appointments: Please email for appointments

C. COURSE DESCRIPTION

Catalog Course Description
This course is a continuation of COSC 1435, completing the syntax of the language used as
the programming tool in COSC 1435 and providing an introduction to basic data structures. It
includes the intermediate study of the basic concepts of problem solving. Topics covered
include basic one- and two-dimensional array handling, recursion, basic searching and sorting
algorithms, abstract data types, and dynamic data structures.

Extended Course Description
The course will begin as a review of the last topics of 1435. After reviewing functions and
arrays, we will proceed with more advanced topics. By the end of the semester you should be
capable of programming using classes, inheritance and polymorphism.

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)

Optional Textbook(s) or Other References
None

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. Develop, implement, and effectively use linear and binary search algorithms.
2. Develop, implement, and effectively use basic bubble, insertion, and selection sorting algorithms.
3. Have a basic understanding of algorithm efficiency and be able to determine the Big-O efficiency of an algorithm.
4. Develop, implement, and effectively use pointers.
5. Develop, implement, and effectively use characters and c-strings.
6. Develop, implement, and effectively use structured data.
7. Develop, implement, and effectively use classes.
8. Develop, implement, and effectively use recursive algorithms.
9. Understand and effectively use inheritance, polymorphisms and virtual functions.
10. Understand and effectively use basic recursive algorithms.

Assessment of objectives will be conducted through exams, laboratory exercises, and programming assignments

G. INSTRUCTIONAL METHODS AND ACTIVITIES

The methods and activities for instruction will include but not limited to:
- Presentation of new material and concepts in the classroom using lecture, tutorials, and sample programs.
- Classroom and lab discussions.
- Lab assignments to review and reinforce topics covered in the classroom.
H. MAJOR COURSE REQUIREMENTS AND GRADING

Your course grade will be decided on your performance in the lab activities, assignments, quizzes, two midterm exams, and the final exam. The distribution of points is as follows:

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
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<tbody>
<tr>
<td>Exam 1</td>
<td>15</td>
</tr>
<tr>
<td>Exam 2</td>
<td>15</td>
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<tr>
<td>Final Exam</td>
<td>20</td>
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<tr>
<td>Assignments</td>
<td>20</td>
</tr>
<tr>
<td>Programming Quizzes</td>
<td>10</td>
</tr>
<tr>
<td>Lab Activities</td>
<td>10</td>
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<tr>
<td>Class Participation and Quizzes</td>
<td>10</td>
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</tbody>
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Grading scale: A: 100-90, B: 89-80, C: 79-70, D: 69-60, and F: 59-0.

**Homework:** Approximately 8 - 10 homework assignments will be given.

**Exams:** The first exam will be given on February 20, 2019, the second exam will be given on March 27, 2019 during the scheduled class time, and the final exam will be given on May 08, 2019 from 1:45 – 4:15 pm.

I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>WEEK</th>
<th>TOPIC</th>
<th>CHAPTER(S)</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>Functions</td>
<td>Chapter 6</td>
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<tr>
<td>Week 2</td>
<td>Arrays &amp; Vectors (Review)</td>
<td>Chapter 7</td>
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<tr>
<td>Week 3</td>
<td>Searching and Sorting Algorithms</td>
<td>Chapter 8</td>
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<td>Week 4</td>
<td>Pointers</td>
<td>Chapter 9</td>
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<tr>
<td>Week 5</td>
<td>Strings</td>
<td>Chapter 10</td>
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<tr>
<td>Week 6</td>
<td>Review and Exam 1</td>
<td>-</td>
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<td>Week 7</td>
<td>Structured Data</td>
<td>Chapter 11</td>
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<tr>
<td>Week 8</td>
<td>Introduction to Classes</td>
<td>Chapter 13</td>
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<td>Week 9</td>
<td>Spring Break</td>
<td>Chapter 13-14</td>
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<tr>
<td>Week 10</td>
<td>More about classes</td>
<td>Chapter 14</td>
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<tr>
<td>Week 11</td>
<td>Review and Exam 2</td>
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<td>Week 12</td>
<td>Linked Lists</td>
<td>Chapter 17</td>
</tr>
<tr>
<td>Week 13</td>
<td>Inheritance and Polymorphism</td>
<td>Chapter 15</td>
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<tr>
<td>Week 14</td>
<td>Inheritance and Polymorphism</td>
<td>Chapter 15</td>
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<td>Week 15</td>
<td>Recursion</td>
<td>Chapter 19</td>
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<td>Week 16</td>
<td>Recursion &amp; Final Exam Review</td>
<td>Chapter 19</td>
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**Final Exam** on Wednesday, May 08, 2019 from 1:45 PM - 4:15 PM.
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

Course Syllabus: We will meet for lecture on Mondays and Wednesdays, when new material will be presented. We will follow the text generally, but non-text material may also be included in the lectures. The assignments and exams will be given during the class hours. You are responsible for all the material presented during the lecture. We will meet for the lab on Wednesdays.

Exams: Exams will cover all lecture and reading material discussed in the class. Exams must be taken on the hour they are scheduled.

Missed Exam: 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). Once your cause is validated a make-up exam will be given.

Assignments: Assignments will significantly build on the material from the lectures. They will be posted on the course web page. Due dates are listed in each assignment. Assignments are accepted until the specified due date. There is a penalty for late submissions. 25% penalty for 1 day late (up to 24 hours late), 50% penalty for 2 days late (from 24 to 48 hours late), 75% penalty for 3 days late, and 100% penalty (i.e. no credit) if submitted after 3 days. Be sure to backup copies of all your programs. Note that any kind of hardware or software failure or machine unavailability in the lab does not merit an extension on the assignment.

Collaboration: The assignments are to be completed individually unless instructed otherwise. You may ask each other for general advice, but do NOT share final answers and/or source code. Be sure to protect your work. Working with others without the specific permission of the instructor on assignments that will be submitted for a grade is considered unauthorized collaboration and will be treated as copying. Action will be taken as discussed under the academic honesty policy.

Grading Error: All questions concerning a test score or grading of a returned test or assignment must be resolved within one week. It is always a good idea to keep all of your work until the end of the semester. In case of any recording errors or doubts, you may produce them for correction or verification.

Extra Credit: There is no EXTRA CREDIT
Electronics
- Turn off all electronic devices including cell phones when you enter the classroom or lab.
- Use of computers is only allowed for taking notes and class-related activities. Surfing the Internet, playing games, or otherwise participating in distracting behavior are not allowed and will result in automatic grade reduction and/or being asked to leave class.

Academic Honesty Policy: You are expected to avoid all forms of academic dishonesty as defined in Catalog. In addition, students are expected to behave in an ethical manner in all class activities. If you feel uncertain about a particular activity, please speak to me BEFORE problems arise. Ethical behavior is a requirement for passing this course. All work submitted for grading must be the student's own work. Plagiarism 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 and/or copying, in the exams or assignments, in the instructor's opinion, will receive an automatic F for the course.

Attendance: You must attend all classes and labs. While in class or lab attendance will not directly affect the grade, you are responsible for any materials covered or handed out or announcements made for the tests and 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.

Absence from class: 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 responsibility to obtain such assignments. No excuse will be accepted for assignments not turned in because the student was absent when it was due.

Cell Phone Use: Cell phones and pagers must be turned off during class. First violation receives a warning. All succeeding violations result in a ten points deduction on the last exam. Any violation during a quiz or exam results in a ten percent deduction off the corresponding paper. No warnings for quizzes or exams.

Laptop Use: Laptops, Tablets cannot be used in the class.

Food in Class: No food in the class or labs.

K. COLLEGE AND UNIVERSITY POLICIES

- Academic Integrity (University)
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. 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 failing grade.

- **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.

- **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.

- **Deadline for Dropping a Course with a Grade of W (University)**
  I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. **Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course.** Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic Calendar ([http://www.tamucc.edu/academics/calendar/](http://www.tamucc.edu/academics/calendar/)) for the last day 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
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**
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

- **Statement of Academic Continuity**
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.

L. **OTHER INFORMATION**

- **Academic Advising**
The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

**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.