Course Information

Course description. A second programming course. Includes problem solving by structured design; provides an introduction to elementary data structures, including linked lists, stacks, queues, trees and graphs, and advanced programming techniques, including recursion, sorting and searching.

- Instructor: Andrew Winslow (andrew.winslow@utrgv.edu).
- Teaching assistant: Cameron Chalk (cameron.chalk01@utrgv.edu).
- Course webpage: http://andrewwinslow.com/2380/.
- Lab: 9:25-10:40 W in ASB 2.120.
- Office hours: 3:00-5:00 MW, 9:30-10:30 R in ENGR 3.279.
- Final exam: 8:00-9:45 on Wednesday, May 10.
- Anonymous feedback: http://sayat.me/AndrewWinslow.

Prerequisites. Students must have completed CSCI 1370 or CSCI 1378 (Engineering Computer Science I) or CSCI 1380 or CSCI 1387 (Computer Science I).

Textbook. There are two recommended\(^1\) course textbooks:

- Open Data Structures (in C++): An Introduction by Pat Morin.
- C++ Primer (5th Edition) by Stanley B Lippman, Josée Lajoie, and Barbara E. Moo.

Course schedule and topics. Below is a rough schedule of the course and topics covered; the exact schedule will be maintained and updated on the course webpage.

- **Weeks 1-3:** Classes and pointers.
- **Weeks 4-6:** Array-based data structures, strings, file input & output.
- **Weeks 7-9:** Linked-list-based data structures.
- **Weeks 10-12:** Recursion and sorting algorithms.

\(^1\)The course does not use either textbook directly in any way.
• Week 13-15: Binary search trees.

**Grading.** The course grade is determined in three parts: weekly programming assignments (*homework*) and two in-class 70-minute paper-&-pencil tests (*midterm* and *final exam*). Each part determines a portion of the final grade as follows:

- *Homework*: 50% total (3.3% each).
- *Midterm*: 25%.
- *Final Exam*: 25%.

The final grade is determined by computing the weighted total (out of 100%) of all four parts and applying the following percentage-to-letter-grade function: 90%-100% → A, 80%-89% → B, 70%-79% → C, 60%-69% → D, 0%-59% → F. Grades may be curved to reflect the overall performance of the class.

**Bug bounty.** Please report errors in homeworks and exams to Andrew verbally or via email. For each such error, the first student to report it receives 0.5% bonus to their course grade. This bonus cannot exceed 3% total, i.e. six reports.

**Feedback.** Constructive feedback about the course is welcome at any time. Anonymous feedback can be given using *sayat.me*.

**Course Policies**

**Attendance.** Students are expected to attend all scheduled classes and may be dropped from the course for excessive absences. The UTRGV attendance policy excuses students from attending class if they are participating in officially sponsored university activities, such as athletics, for observance of religious holy days, or for military service. Students should contact the instructor in advance of the excused absence and arrange to make up missed work or examinations.

**Late work.** Late assignments receive 50% credit by completing the following process:

1. Complete the assignment, i.e. “Assignment complete.”
2. Submit the assignment via Blackboard.
3. Come to office hours, prepared to speak briefly about your submission.

Late assignments can be submitted even if a submission was made before the deadline. In this case, the late assignment grade of 50% replaces the previous grade.

**Dropping classes.** According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date. Following that date, students must be assigned a letter grade and can no longer drop the class. Students considering dropping
the class should be aware of the 3-peat rule and the 6-drop rule so they can recognize how dropped classes may affect their academic success.

- **6-drop rule:** Texas law that dictates that undergraduate students may not drop more than six courses during their undergraduate career. Courses dropped at other Texas public higher education institutions will count toward the six-course drop limit.

- **3-peat rule:** additional fees are charged to students who take the same class for the third time.

**Scholastic integrity.** As members of a community dedicated to honesty, integrity, and mutual respect in all interactions and relationships, students, faculty, and administration of our university pledge to abide by the principles in the Vaquero Honor Code. For more information, see the Student Conduct and Discipline Code.

**Course evaluation.** Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account (http://my.utrgv.edu); you will be contacted through email with further instructions. Students who complete their evaluations will have priority access to their grades. Online evaluations will be available:

- Feb 15 – Feb 21 for Module 1 courses
- Apr 12 – Apr 18 for Module 2 courses
- Apr 12 – May 3 for full spring semester courses

**Sexual harassment, discrimination, and violence.** In accordance with UT System regulations, your instructor is a “responsible employee” for reporting purposes under Title IX regulations and so must report any instance, occurring during a students time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at www.utrgv.edu/equity, including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect in an environment free from sexual misconduct and discrimination.

**Students with disabilities.** If you have a documented disability (physical, psychological, learning, or other disability which affects your academic performance) and would like to receive academic accommodations, please inform your instructor and contact Student Accessibility Services to schedule an appointment to initiate services. It is recommended that you schedule an appointment with Student Accessibility Services before classes start. However, accommodations can be provided at any time. **Brownsville Campus:** Student Accessibility Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at ability@utrgv.edu. **Edinburg Campus:** Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at ability@utrgv.edu.
Student Learning and ABET Outcomes

Student learning outcomes. Upon successful completion of this course, students will be able to:

1. Design, implement, test, and debug simple programs in an object-oriented programming language.
2. Write programs that use each of the following data structures: arrays, strings, linked lists, stacks, queues, and trees.
3. Choose the appropriate data structure for modeling a given problem.
4. Identify the base case and the general case of a recursively defined problem.
5. Implement, test, and debug simple recursive functions and procedures.
7. Demonstrate different traversal methods for trees.
8. Model problems in computer science using trees.

ABET Outcomes for CSCI 2380

1. An ability to apply knowledge of computing and mathematics appropriate to the discipline.
2. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
3. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
4. An ability to use current techniques, skills, and tools necessary for computing practice.
5. An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
6. An ability to apply design and development principles in the construction of software systems of varying complexity.

ABET Outcomes for CMPE 2380

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as to analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to identify, formulate, and solve engineering problems.

5. A recognition of the need for, and an ability to engage in life-long learning.

6. A knowledge of contemporary issues.

7. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.