

## UTRGV COURSE SYLLABUS

CSCI/CMPE 3333.02 Algorithms & Data Structures  
Fall 2017  
TR 9:25am~10:40am ENGR 1.274

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Office: Engr. 3.264A, Office hours: MW 1:40pm~4:00pm

### Textbook and/or Resource Material

Textbook: Mark Allen Weiss, "Data Structures and Algorithm Analysis in C++," the third edition or higher, Addison-Wesley, 2006.

I will use Blackboard for this class. Please make sure that you assess Blackboard often for course materials, assignments, and especially submitting your assignments. Assignment deadlines will be enforced by Blackboard. Additional materials may be available at my web page: <http://faculty.utrgv.edu/zhixiang.chen/>

### Course Description and Prerequisites

This course is a continuation of data structures topics covered in CSCI/CMPE 2380. Content includes theoretical topics in algorithmic efficiency and complexity, along with abstract data types, including graphs, networks, trees, and priority queues. Search topics, including hashing, trees, external search trees (B-trees), and sorting algorithms including external sorting are introduced and compared. Computational complexity topics include the Class P and NP, NP-completeness and Reducibility, NP-completeness Proofs, and NP-complete Problems. Prerequisites: CSCI/CMPE 2380 and Math 3373.

### Learning Objectives/Outcomes for the Course

After completing this course, a student should be able to:

- Understand basic data structures and abstract data types.
- Gain an appreciation of the variety, theoretical nature, and practical uses of data structures.
- Select appropriate data structures for uses in computer programs.
- Understand the basic techniques of algorithm design and analysis.
- Understand the basic concepts of computational complexity
- Design and implement efficient algorithms based on the selected data structures.

### ABET Student Outcomes for CSCI 3333

The list of ABET student outcomes related to this class is:

- (a) An ability to apply knowledge of computing and mathematics appropriate to the discipline
- (b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
- (c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
- (h) Recognition of the need for and an ability to engage in continuing professional development
- (i) An ability to use current techniques, skills, and tools necessary for computing practice.
- (j) 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.
- (k) An ability to apply design and development principles in the construction of software systems of varying complexity.

### ABET Student Outcomes for CMPE 3333

The list of ABET student outcomes related to this class is:

- (a) An ability to apply knowledge of mathematics, science, and engineering
- (b) An ability to design and conduct experiments, as well as to analyze and interpret data
- (c) 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
- (e) An ability to identify, formulate, and solve engineering problems
- (i) A recognition of the need for, and an ability to engage in life-long learning

- (j) A knowledge of contemporary issues
- (k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

### Learning Objectives for Core Curriculum Requirements

This course is not a part of the University Core Curriculum.

### Grading Policies

There will be three exams (two midterm exams and one final) for a total of 75% of the grade, 6 assignments for 20% of the grade, and 5% of attendance. The letter grade will be determined as follows:

A: 90-100%    B: 80-89%    C: 70-79%,    D: 60-69%    F: 0-59%

Note: Bonus projects will be announced during the semester.

### Assignment Policies

- All assignments must be in the instructor's hands before class on the due date which will be specified on each assignment. Late assignments will be accepted up to one week with a onetime 20% late penalty.
- Assignments will be graded on the basis of correctness, quality of design, documentation, and style.
- Any assignment submitted without documentation will automatically receive a 20% deduction. Documentation, design, and style guidelines will be discussed as the semester progresses. No programming assignment will be graded which contains syntax errors.

### Homework Grading Criteria

1. If submission is within one week past the deadline, your grade will have 20% penalty reduction. That is, your work is first graded on 100% scale to receive a mark, say X, then the final mark Y is adjusted to  $Y = 80\% * X$ .
2. No submission one week past the deadline is accepted.
3. If your submitted program cannot be compiled or built, you get 0.
4. If your program has 70% or above similarity as detected by SafeAssign or grader, you get 0.
5. Now assume that your submission passes above 4 criteria.
  - 5.1. If your program passes compiling and building, the grader can give you 40% to 50% of the credit, depending on his evaluation.
  - 5.2. If your program passes 5.1, but cannot produce any desired outcomes, the grader can give you 50% to 60% of the credit, depending on his evaluation.
  - 5.3. If your program passes 5.1 and can produce partial desired outcomes, the grader can give you 60% to 100% of the credit, depending on his evaluation. For example, if the assignment asks for three outcomes with respect to three testing scenarios, the grader can allocate some percentage for each of the three outcomes, or consider some outcomes are more substantial and use them to judge whether you shall receive full credit.
  - 5.4. If your program passes 5.1 and can produce the desired outcomes as required by the assignment, you get 100% of the credit.
6. About proper formatting and documentation: The grader can take 5% to 10% off your program, if he thinks that this is necessary.

### Calendar of Activities

Include in this section a table or list that provides information for students regarding important dates, assignments or activities. The UTRGV academic calendar can be found at <https://my.utrgv.edu/home> at the bottom of the screen, *prior to login*. Some important dates for Fall 2017 include:

August 28	First day of classes
August 31	Last day to add a course or register for fall 2017
September 4	Labor Day – NO classes
November 15	Last day to drop a course; will count toward the 6-drop rule
November 23 – 26	Thanksgiving Holiday – NO classes
December 6	Last day of classes
December 7	Study Day – NO class

December 8 -14  
December 15-16

Fall 2017 Final Exams  
Commencement Ceremonies

### **Other Course Information**

Please visit my web page and BlackBoard regularly for additional course information and materials.

### **UTRGV Policy Statements**

#### **STUDENTS WITH DISABILITIES:**

Students with a documented disability (physical, psychological, learning, or other disability which affects academic performance) who would like to receive academic accommodations should contact Student Accessibility Services (SAS) as soon as possible to schedule an appointment to initiate services. Accommodations can be arranged through SAS at any time, but are not retroactive. Students who suffer a broken bone, severe injury or undergo surgery during the semester are eligible for temporary services. **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](mailto: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](mailto:ability@utrgv.edu).

#### **MANDATORY COURSE EVALUATION PERIOD:**

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:

Fall 2017 Module 1	Oct. 5 – Oct. 11
Fall 2017 Module 2	Nov. 29 – Dec. 5
Fall 2017 (full semester)	Nov. 15 – Dec. 6

#### **ATTENDANCE:**

Students are expected to attend all scheduled classes and may be dropped from the course for excessive absences. UTRGV's 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.

#### **SCHOLASTIC INTEGRITY:**

As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism (including self-plagiarism), and collusion; submission for credit of any work or materials that are attributable in whole or in part to another person; taking an examination for another person; any act designed to give unfair advantage to a student; or the attempt to commit such acts. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to the Dean of Students.

#### **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 student's 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](http://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 that is free from sexual misconduct and discrimination.

#### **COURSE DROPS:**

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. The 6-drop rule refers to 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. The 3-peat rule refers to additional fees charged to students who take the same class for the third time.