CSCI 3333: Algorithms and Data Structures

SYLLABUS
Spring 2025

Course Information

Meeting Days and Time:

Section 05: MW 9:30am – 10:45, EIEAB 1.206.

Section 06: MW 12:30 – 1:45pm, EIEAB 2.203.

Campus Maps

Course Modality: Traditional Face-to-Face Courses (TR)

Instructor Information

Instructor Name: Robert Schweller

UTRGV E-mail: robert.schweller@utrgv.edu
Office Phone: 956-665-2667
Office Location: EIEAB 3.220
Office Hours: MW 11:15am-12:15pm, 1:45pm-3:15pm, and by appointment.

Welcome and Teaching Philosophy

Welcome to the class. I am excited to have you all as my students this semester. My teaching philosophy is centered around creating an inclusive and collaborative learning environment where students feel comfortable asking questions, participating in discussions, and actively engaging with the material. I believe that every student has unique strengths and talents, and it is my goal to help each of you reach your full potential.

In order to achieve this, I encourage regular attendance and participation in class, as well as completing all assigned readings and homework. Additionally, I am available during office hours to provide extra support and answer any questions you may have. I highly encourage you to take advantage of office hours, as it is a great opportunity to get one-on-one help and clarification on any material you may be struggling with.

Course Description, Prerequisites & Course Modality

Description and Prerequisites. A continuation of the topics covered in CSCI 2380 and CSCI 3310. Focuses on the analysis and design of algorithms (sorting, searching, dynamic programming) and

data structures (priority queues, trees, hash tables, graphs). Also covers C++ implementation of algorithms and data structures discussed.
Mode of Learning. Lectures, quizzes, and exams will occur in-person during lecture hours. Homework will be submitted online.

Program **Student Learning Outcomes**	**Student Learning Outcomes** (After completing this course, a student should be able to)	**Major Course Requirement/Major Assignment/Examination**
(1) Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.	• Understand basic data structures and abstract data types. • Gain an appreciation of the variety, theoretical nature, and practical uses of data structures.	Homework, quizzes, and exams
(2) An ability to design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.	• Select appropriate data structures for uses in computer programs. • Design and implement efficient algorithms based on the selected data structures.	Homework, quizzes, and exams
(6)) An ability to apply computer science theory and software development fundamentals to produce computing-based solutions.	• Understand the basic techniques of algorithm design and analysis. • Understand the basic concepts of computational complexity	Homework, quizzes, and exams

Course Assignments & Learning Objectives

Assessment of Learning

The course will include lectures by the instructor, quizzes, and homework.

Quizzes: (10%) Most of the sessions have a quiz that is relevant to the topic being covered in the class. They will usually be submitted electronically through Blackboard or on paper.

Homeworks: (20%) The assignments are usually programming. These assignments are comprised of problems that aim to allow the students to practice with the methods covered in class and develop ideas to manipulate these methods. No late homework is accepted. However, one missing assignment may be submitted for full credit at the end of the semester.

Exams: (70%) The material in this course is naturally cumulative, with each week's topics building on all the prior material. Therefore, we have 3 exams including the final exam. Each exam will focus on the material covered since the previous exam, however, the student is expected to understand and apply all previous course material.

The course 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.

You must take all tests, participate in all class activities, and turn in all assignments on time. If you are going to miss any class session or deadline **for any reason** you must contact me **ahead of time** or, in the case of emergency, as soon as possible. Depending on the reason, I will determine what options you have to make up the work, possibly with a penalty. In general, if you contact me ahead of time and/or have a good reason or emergency, we can work something out. If you come to me after the fact, options, if any, will be limited. The title of your email should be **CSCI3333-Absense**.

Late Work and Make Up Policies

Class work and labs will not be accepted late. No make-up exams will be given except for university sanctioned excused absences. If you need to miss an exam, it is your responsibility to contact me before the exam, or as soon after the exam as possible. Missing an exam without an approved (by the university or me) excuse will result in a zero.

Required Readings, Technology Needs, and Resource Materials

- **Data Structures and Algorithm Analysis in C++**, 4th edition by Mark A. Weiss. Earlier editions are fine as well.
- **Daily access to course webpage, class discord channel, and Blackboard.** We will use the class webpage to post information and homework. We will host discussions and post announcements on the class Discord channel. will also use Blackboard to submit homework assignments. Please check the course regularly. It is your responsibility to keep updated with class.

Tentative Calendar of Activities

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

_ Week 1 : Review of Basics.

_ Week 2 : Asymptotic Notation, C++ tools.
_ Weeks 3-4 : Sorting algorithms.
_ Weeks 3-4 : Divide and Conquer Algorithms
_ Weeks 5-7 : Trees-based data structures.
_ Weeks 8-10 : Hash tables and heaps.
_ Weeks 11-13 : Graph algorithms.
_ Weeks 14-15 : Dynamic programming.
_ Week 15: NP-Completeness

The UTRGV academic calendar can be found on My.UTRGV at the bottom of the screen prior to login.

Course Policies and Procedures

We value a positive and supportive learning environment, and for us to thrive together, we must recognize that our responsibilities, actions, and contributions can impact and transform our learning. The course policies listed below are created to ensure your success by fulfilling course expectations while remaining flexible to account for unexpected events.

LEARNING AND TEACHING ENVIRONMENT

Consider including a brief description of what you envision as the learning and teaching environment in your course and the role the instructor and student play in contributing to this vision and to a safe, learning-enriching educational environment for all.

ATTENDANCE

Students are expected to attend all scheduled classes. UTRGV's attendance policy excuses students from attending class if they are participating in officially sponsored university activities, such as athletics, accommodation by Student Accessibility Services (SAS), observance of religious holy days, or military service.

ABSENCES/SICK POLICY

If you are going to miss any class session or deadline for any reason you must contact me ahead of time or, in the case of emergency, as soon as possible. Depending on the reason, I will determine what options you have to make up the work, possibly with a penalty. In general, if you contact me ahead of time and/or have a good reason or emergency, we can work something out. If you come to me after the fact, options, if any, will be limited.

COURSE DROPS

Please consider the following information when referencing course drops. Instructor-initiated drops can have significant financial consequences for students. According to UTRGV policy, students may drop any class without penalty earning a grade of DR (drop) 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 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.

ACADEMIC INTEGRITY

Zero-tolerance policy on plagiarism is enforced. If the homeworks or assignment found similar to the available resources online or to other students, you will get 0 for that assignment. If you copy (more than once) from the online resources or other students, you will get 0 for the rest of homeworks and labs until the end of semester. Although you are encouraged to work in team and help each other, the final coding should not be copied. Members of the UTRGV community uphold the Vaquero Honor Code's shared values of honesty, integrity and mutual respect in our interactions and relationships. In this regard, academic integrity is fundamental in our actions, as any act of dishonesty conflicts as much with academic achievement as with the values of honesty and integrity. The Writing Center is an excellent resource to assist in learning about and avoiding plagiarism in writing. Violations of academic integrity include, but are 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 (Board of Regents Rules and Regulations, STU 02-100, and UTRGV Academic Integrity Guidelines). **All violations of Academic Integrity will be reported to Student Rights and Responsibilities through Vaqueros Report It.**

Student Support Resources

We are committed to your personal, academic, and professional success; please know you can reach out to me for questions and/or I can help you identify the resources you need. UTRGV offers student support resources designed to contribute to your well-being and academic excellence.

Students seeking academic help in their studies can use university resources in addition to an instructor's office hours. University Resources include the Advising Center, Career Center, Counseling Center, Learning Center, and Writing Center. These centers provide services such as tutoring, writing help, counseling services, critical thinking, study skills, degree planning, and connections student employment (through JobX and HR Student Employment). In addition, services, such as the Food Pantry are also provided. Locations are listed below.

Center Name	E-mail	Brownsville Campus	Edinburg Campus
Advising Center	AcademicAdvising@utrgv.edu	BMAIN 1.400 (956) 665-7120	EITTB 1.000 (956) 665-7120
Career Center	CareerCenter@utrgv.edu	BINAB 1.105 (956) 882-5627	ESTAC 2.101 (956) 665-2243
Counseling Center	Counseling@utrgv.edu	BSTUN 2.10 (956) 882-3897	EUCTR 109 (956) 665-2574

Center Name	E-mail	Brownsville Campus	Edinburg Campus
	Mental Health Counseling and Related Services List		
Food Pantry	FoodPantry@utrgv.edu	BCASA Club House (956) 882-7126	EUCTR 114 (956) 665-3663
Learning Center	LearningCenter@utrgv.edu	BMSLC 2.118 (956) 882-8208	ELCTR 100 (956) 665-2585
University Library	circulation@utrgv.edu www.utrgv.edu/library	BLIBR (956) 882-8221	ELIBR (956) 665-2005
Writing Center	WC@utrgv.edu	BLIBR 3.206 (956) 882-7065	ESTAC 3.119 (956) 665-2538

Financial Need

Students who demonstrate financial need have a variety of options when it comes to paying for college costs, such as scholarships, grants, loans and work-study. Students should visit the Student Services Center (U Central) for additional information. U Central is located in BMAIN 1.100 (Brownsville) or ESSBL 1.145 (Edinburg) or can be reached by email (ucentral@utrgv.edu) or telephone: (956) 882-4026. In addition to financial aid, U Central can assist students with registration and admissions.

Blackboard Support

If you need assistance with course technology at any time, please contact the Center for Online Learning and Teaching Technology (COLTT).

Campus:	**Brownsville**	**Edinburg**
Location	Casa Bella (BCASA) 613	Marialice Shary Shivers (EMASS) 3.142
Phone	(956)-882-6792	(956)-665-5327
Toll Free	1-(866)-654-4555	
Support Tickets	Submit a Support Case via our Ask COLTT Portal	

Campus:	Brownsville	Edinburg
Online Support	Chat with a Support Specialist online.	
24/7 Support	Need Blackboard assistance after hours? You can call our main office numbers, (956)-882-6792 or (956)-665-5327, to speak with a support representative.	

University Policy Statements

We care about creating a safe and supportive learning environment for all students. The University policy statements below are intended to create transparency for your rights and responsibilities as students. We each contribute to ensuring a safe and positive environment through our actions and conduct, and students are encouraged to advocate for their needs.

STUDENT ACCESSIBILITY SERVICES

Student Accessibility Services staff can be contacted at either campus to learn about and explore accessibility services.

Campus:	Brownsville	Edinburg
Location:	Student Union (BSTUN) 1.20	University Center (EUCTR, 108)
Phone:	phone (956) 882-7374	phone (956) 665-7005
e-mail	ability@utrgv.edu	

STUDENTS WITH DISABILITIES

Students with a documented disability (physical, psychological, learning, or other disability which affects academic performance) who would like to receive reasonable academic accommodations should contact **Student Accessibility Services (SAS)** for additional information. In order for accommodation requests to be considered for approval, the student must apply using the *mySAS* portal and is responsible for providing sufficient documentation of the disability to SAS. Students are required to participate in an interactive discussion, or an intake appointment, with SAS staff. Accommodations may be requested at any time but are not retroactive, meaning they are valid once approved by SAS. Please contact SAS early in the semester/module for guidance. Students who experience a broken bone, severe injury, or undergo surgery may also be eligible for temporary accommodations.

PREGNANCY, PREGNANCY-RELATED, AND PARENTING ACCOMODATIONS

Title IX of the Education Amendments of 1972 prohibits sex discrimination, which includes discrimination based on pregnancy, marital status, or parental status. Students seeking accommodations related to pregnancy, pregnancy-related condition, or parenting should submit the request using the form found at Pregnancy and Parenting | UTRGV.

For questions about campus support services or public benefit programs for students who are pregnant, or parenting contact the Parenting Liaison officer in the Dean of Students Office.

Edinburg: UCTR rm. 325 Phone: 956.665.2260

Brownsville: BSTUN 1.20 Email: dos@utrgv.edu

SEXUAL MISCONDUCT AND MANDATORY REPORTING

In accordance with UT System regulations, your instructor is a "Responsible Employee" for reporting purposes under Title IX regulations and so must report to the Office of Title IX and Equal Opportunity (otixeo@utrgv.edu) any instance, occurring during a student's time in college, of sexual misconduct, which includes sexual assault, stalking, dating violence, domestic violence, and 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 that is free from sexual misconduct, discrimination, and all forms of violence. If students, faculty, or staff would like confidential assistance, or have questions, they can contact OAVP (Office for Advocacy & Violence Prevention) at (956) 665-8287, (956) 882-8282, or OAVP@utrgv.edu.

DEAN OF STUDENTS

The Dean of Students office assists students when they experience a challenge with an administrative process, unexpected situation, such as an illness, accident, or family situation, and aids in resolving complaints. Additionally, the office facilitates student academic related requests for religious accommodations, support students formerly in foster care, helps to advocate on behalf of students and inform them about their rights and responsibilities, and serves as a resource and support for faculty and campus departments.

Vaqueros Report It allows students, staff, and faculty a way to report concern about the well-being of a student, seek assistance in resolving a complaint, or report allegations of behaviors contrary to community standards or campus policies. The Dean of Students can be reached by email (dos@utrgv.edu), phone (956-665-2260), (956-882-5141), or by visiting one of the following office locations: Student Union (BSTUN) 1.20 or University Center (EUCTR 323).

MANDATORY COURSE EVALUATION PERIOD

Students have the opportunity to complete an ONLINE evaluation of this course, accessed through your UTRGV account (http://my.utrgv.edu). Course evaluations are used by the instructor to better understand the student experience in the course, which can inform revisions of the course to ensure student success. Additionally, course evaluations are also used by the instructor for annual performance review and promotion applications, teaching award applications, among others. For these reasons, your feedback, reflections, and insights on your experience in the course are invaluable to ensure student success and a quality education for all. 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 on or about:

Spring 2025 Regular Term April 16 – May 7, 202