COSC 4340-110, CRN 10425, Analysis of Algorithms
Spring 2018 rev. 12.08.2017
Texas A&M University-Central Texas

INSTRUCTOR AND CONTACT INFORMATION
Instructor: Dr. Timothy Woodcock
Office: 323-G Founders Hall
Phone: 254-519-5783
Email: WoodcockTG@tamuct.edu – Please use A&M-Central Texas email

Office Hours:
Monday thru Thursday from 12:30 pm to 2:30 pm and by appointment

Mode of instruction and course access:
This course meets face-to-face, (with supplemental materials made available online).
This course uses the A&M-Central Texas Canvas Learning Management System [https://tamuct.instructure.com].

Student-instructor interaction:
Student emails will be read and responded to before the next day's office hours for email sent on the A&M-Central email system. Canvas emails will be ignored.

911 Cellular:
Emergency Warning System for Texas A&M University – Central Texas
911Cellular is an emergency notification service that gives Texas A&M University-Central Texas the ability to communicate health and safety emergency information quickly via email, text message, and social media. All students are automatically enrolled in 911 Cellular through their myCT email account.

Connect at 911Cellular [https://portal.publicsafetycloud.net/Texas-AM-Central/alert-management] to change where you receive your alerts or to opt out. By staying enrolled in 911Cellular, university officials can quickly pass on safety-related information, regardless of your location.

COURSE INFORMATION
Course Overview and description: COSC 4340 Analysis of Algorithms
Study modern computer algorithms with emphasis on how to select the best algorithm for a task considering the specific computing environment. Examine searching and sorting algorithms for their importance in computing. Special emphasis is on efficiency, readability, maintainability, advanced design and analysis techniques, advanced data structures, and graph algorithms.

Course Objective:
- Calculate the theoretical relative efficiency of sorting algorithms with emphasis on "divide and conquer" sorts such as the quick sort.

- Calculate the actual relative efficiency of advanced sorting algorithms.
- Contrast the "divide and conquer" approach with other solutions to programming problems.
- Employ recursion as it applies to binary search and quick sort.
- Diagram graphs as mathematical representations of networks. Review graph manipulation algorithms including spanning tree and shortest path traversal algorithms. Implement a program to find the shortest path in a graph.
- Contrast the use of heuristic methods as "good enough" methods to attack otherwise unsolvable problems.
- Apply the "NP-Completeness" theorem to the identification of intractable problems.
- Evaluate Finite State Automata, Push Down Automata, and Turing Machines as models of computers executing algorithms.

Required Reading and Textbook(s):

COURSE REQUIREMENTS

Course Requirements: (include point values for each- not just a percentage)

- There will be two exams, a midterm, and a final, each worth 100 points.
- There will be four projects that the students will build. Two of the projects will be algorithm performance and two will be formal language automata. The students will turn in a written report as well as the program.

Grading Criteria Rubric and Conversion

Assignment	Total Points
Mid-term Exam	200
Final Exam	200
Projects	600

Grade	Points
A	900-1000
B	800-899
C	700-799
D	600-699
F	Below 600

Posting of Grades

- Student grades will be posted on the Canvas Grade book.
- Grades will be posted in Canvas as soon as possible after assignments are due.

COURSE OUTLINE AND CALENDAR

Complete Course Calendar

Algorithms			
Week	Date	Book Chapter	Assignments
1	1/16/2018	1, and 2	
2	1/23/2018	3-4	
3	1/30/2018	5-6-7	Project 1 - Search compare
4	2/6/2018	DFA vs.PDA	
5	2/13/2018	8-9	
6	2/20/2018	10-11-12	Project 2 - Sort compare
7	2/27/2018	Midterm	
8	3/6/2018	13-14	
9	3/13/2018	Spring Break	
10	3/20/2018	15-16	
11	3/27/2018	16-17	Project 3 - PDA machine
12	4/3/2018	Turing Machine	
13	4/10/2018	18-19-20	
14	4/17/2018	20-21	
15	4/24/2018	20-22	Project 4 Turing Machine
16	5/1/2018	Final Exam	

Important University Dates:

January 2018

January 2, (Tuesday) Winter Break Ends
January 2, (Tuesday) Priority Deadline for Admissions applications
January 5, (Friday) VA Certification Request Priority Deadline
January 11, (Thursday) Convocation
January 12, (Friday) Tuition and Fee payment deadline (16 week & 1st 8 week)
January 15, (Monday) Martin L. King Jr. Day
January 16, (Tuesday) ADD/DROP/LATE REGISTRATION BEGINS ($25 fee assessed for late registrants) (16 week & 1st 8 week)
January 16, (Tuesday) Classes Begins
January 18, (Thursday) ADD/DROP/LATE REGISTRATION ENDS (16 week & 1st 8 week)
January 23, (Tuesday) Last day to drop 1st 8-week classes with no record
January 31, (Wednesday) Last day to drop 16 week classes with no record

February 2018

February 2, (Friday) Priority Deadline to Submit Graduation Application
February 9, (Friday) Last day to drop a 1st 8-week class with a Q or withdraw with a W
February 15, (Thursday) Last day to apply for Clinical Teaching
February 23, (Friday) Student End of Course Survey Opens (1st 8-Week Classes)

March 2018

March 1, (Thursday) Deadline to submit application to Teacher Education Program
March 2, (Thursday) Deadline to Submit Graduation Application for Ceremony Participation
March 9, (Friday) 1st 8 week classes end
March 9, (Friday) Deadline for Admissions applications

March 11, (Sunday) Student End of Course Survey Closes (1st 8-Week Classes)
March 12, (Monday) Spring Break Begins
March 12, (Monday) 1st 8-week grades from faculty due by 3pm
March 15, (Thursday) Tuition and Fee Payment Deadline (2nd 8-week classes)
March 16, (Friday) Spring Break Ends
March 19, (Monday) 2nd 8 week begins
March 19, (Monday) Summer Advising Starts
March 19, (Monday) Class Schedule Published
March 19, (Monday) ADD/DROP/LATE REGISTRATION BEGINS ($25 fee assessed for late registrants) (2nd 8-week classes)
March 21, (Wednesday) ADD/DROP/LATE REGISTRATION ENDS (2nd 8-week classes)
March 27, (Tuesday) Last day to drop 2nd 8-week classes with no record
March 30, (Friday) Last day to drop a 16-week course with a Q or withdraw with a W

April 2018

April 1, (Sunday) GRE/GMAT scores due to Office of Graduate Studies
April 2, (Monday) Scholarship Deadline
April 2, (Monday) Registration begins
April 5, (Thursday) Priority Deadline for International Student Admission Applications
April 13, (Friday) Last day to drop a 2nd 8-week class with a Q or withdraw with a W*
April 13, (Friday) Deadline for submission of final committee-edited theses with committee approval signatures to Office of Graduate Studies
April 27, (Friday) Student End of Course Survey Opens (16 Week and 2nd 8-Week Classes)

May 2018

May 7-11, Finals Week
May 11, (Friday) Last day to file for Degree Conferral (Registrar's Office)($20 Late Application Fee applies)
May 11, (Friday) Spring Term Ends
May 11, (Friday) Last day to withdraw from the university (16 week and 2nd 8 week classes)
May 11, (Friday) Last day to apply for $1000 Tuition Rebate for Spring graduation (5pm)
May 12, (Saturday) Commencement Ceremony Bell County Expo Center 7:00 p.m.
May 13, (Sunday) Student End of Course Survey Closes (16 Week and 2nd 8-Week Classes)
May 14, (Monday) Minimester begins
May 15, (Tuesday) Last Day to clear Thesis Office
May 5, (Tuesday) Final grades due from faculty by 3pm (16 week & 2nd 8 week)
May 21, (Monday) Priority Deadline for Admissions applications
May 25, (Friday) VA Certification Request Priority Deadline
May 28, (Monday) Memorial Day

TECHNOLOGY REQUIREMENTS AND SUPPORT

Technology Requirements

This course will use the A&M-Central Texas Instructure Canvas learning management system. Logon to A&M-Central Texas Canvas [https://tamuct.instructure.com].

Username: Your MyCT username (xx123 or everything before the "@" in your MyCT e-mail address)
Password: Your MyCT password

Canvas Support

Use the Canvas Help link, located at the bottom of the left-hand menu, for issues with Canvas. You can select "Chat with Canvas Support," submit a support request through "Report a Problem," or call the Canvas support line: 1-844-757-0953.
For issues related to course content and requirements, contact your instructor.

Other Technology Support

For log-in problems, students should contact Help Desk Central.
24 hours a day, 7 days a week:

Email: helpdesk@tamu.edu
Phone: (254) 519-5466
Web Chat: [http://hdc.tamu.edu]

Please let the support technician know you are an A&M-Central Texas student.

UNIVERSITY RESOURCES, PROCEDURES, AND GUIDELINES

Drop Policy.

If you discover that you need to drop this class, you must complete a Drop Request Form [https://www.tamuct.edu/registrar/docs/Drop_Request_Form.pdf].

Professors cannot drop students; this is always the responsibility of the student. The Registrar's Office will provide a deadline on the Academic Calendar for which the form must be completed, signed and returned. Once you return the signed form to the Registrar's Office, you must go into Warrior Web and confirm that you are no longer enrolled. If you still show as enrolled, FOLLOW-UP with the Registrar's Office immediately. You are to attend class until the procedure is complete to avoid penalty for absence. Should you miss the drop deadline or fail to follow the procedure, you will receive an F in the course, which may affect your financial aid and/or VA educational benefits.

Academic Integrity.

Texas A&M University -Central Texas values the integrity of the academic enterprise and strives for the highest standards of academic conduct. A&M-Central Texas expects its students, faculty, and staff to support the adherence to high standards of personal and scholarly conduct to preserve the honor and integrity of the creative community. Academic integrity is defined as a commitment to honesty, trust, fairness, respect, and responsibility. Any deviation by students from this expectation may result in a failing grade for the assignment and potentially a failing grade for the course. Academic misconduct is any act that improperly affects a true and honest evaluation of a student's academic performance and includes, but is not limited to, cheating on an examination or other academic work, plagiarism and improper citation of sources, using another student's work, collusion, and the abuse of resource materials. All academic misconduct concerns will be reported to the university's Office of Student Conduct. Ignorance of the university's standards and expectations is never an excuse to act with a lack of integrity. When in doubt on collaboration, citation, or any issue, please contact your instructor before

taking a course of action.

Academic Accommodations.
At Texas A&M University-Central Texas, we value an inclusive learning environment where every student has an equal chance to succeed and has the right to a barrier free education. The Department of Access and Inclusion is responsible for ensuring that students with a disability receive equal access to the University's programs, services and activities. If you believe you have a disability requiring reasonable accommodations please contact the Department of Access and Inclusion at (254) 501-5831. Any information you provide is private and confidential and will be treated as such.

For more information please visit our Access & Inclusion webpage [https://www.tamuct.edu/student-affairs/access-inclusion.html].

Texas A&M University-Central Texas supports students who are pregnant and/or parenting. In accordance with requirements of Title IX and guidance from US Department of Education's Office of Civil Rights, the Dean of Student Affairs' Office can assist students who are pregnant and/or parenting in seeking accommodations related to pregnancy and/or parenting. For more information, please visit https://www.tamuct.departments/index.php. Students may also contact the institution's Title IX Coordinator. If you would like to read more about these requirements and guidelines online, please visit the website [http://www2.ed.gov/about/offices/list/ocr/docs/pregnancy.pdf].

Title IX of the Education Amendments Act of 1972 prohibits discrimination on the basis of sex and gender – including pregnancy, parenting, and all related conditions. A&M-Central Texas is able to provide flexible and individualized reasonable accommodation to pregnant and parenting students. All pregnant and parenting students should contact the Division of Student Affairs at 254-501-5909 to seek out assistance. Students may also contact the University's Title IX Coordinator.

Tutoring.
Tutoring is available to all A&M-Central Texas students, both on-campus and online. On-campus subjects tutored include Accounting, Advanced Math, Biology, Finance, Statistics, Mathematics, and Study Skills. Tutors are available at the Tutoring Center in Warrior Hall, Suite 111.
If you have a question regarding tutor schedules, need to schedule a tutoring session, are interested in becoming a tutor, or any other question, contact Academic Support Programs at 254-519-5796, or by emailing Dr. DeEadra Albert-Green at deeadra.albertgreen@tamuct.edu.

Chat live with a tutor 24/7 for almost any subject on your computer! Tutor.com is an online tutoring platform that enables A&M-Central Texas students to log-in and receive FREE online tutoring and writing support. This tool provides tutoring in over forty subject areas. Access Tutor.com through Canvas.

University Writing Center: Located in 416 Warrior Hall, the University Writing Center (UWC) at Texas A&M University-Central Texas is a free workspace open to all TAMUCT students from 10am-5pm Monday-Thursday with satellite hours in the University Library Monday-Thursday from 6:00-9:00pm. Students may arrange a one-on-one session with a trained and experienced writing tutor by visiting the UWC during normal operating hours (both half-hour and hour sessions are available) or by making an appointment via WCOnline at [https://tamuct.mywconline.com/]. In addition, you can email Dr. Bruce Bowles Jr. at bruce.bowles@tamuct.edu to schedule an online tutoring session. Tutors are prepared to help writers of all levels and abilities at any stage of the writing process.

While tutors will not write, edit, or grade papers, they will assist students in developing more effective composing practices. By providing a practice audience for students' ideas and writing, our tutors highlight the ways in which they read and interpret students' texts, offering guidance and support throughout the various stages of the writing process. In addition, students may work independently in the UWC by checking out a laptop that runs the Microsoft Office suite and connects to WIFI, or by consulting our resources on writing, including all of the relevant style guides. Whether you need help brainstorming ideas, organizing an essay, proofreading, understanding proper citation practices, or just want a quiet place to work, the University Writing Center is here to help!

If you have any questions about the University Writing Center, please do not hesitate to contact Dr. Bruce Bowles Jr. at bruce.bowles@tamuct.edu.

University Library.
The University Library provides many services in support of research across campus and at a distance. We offer over 200 electronic databases containing approximately 250,000 eBooks and 82,000 journals, in addition to the 72,000 items in our print collection, which can be mailed to students who live more than 50 miles from campus. Research guides for each subject taught at A&M-Central Texas are available through our website to help students navigate these resources. On-campus, the library offers technology including cameras, laptops, microphones, webcams, and digital sound recorders.

Research assistance from a librarian is also available twenty-four hours a day through our online chat service, and at the reference desk when the library is open. Research sessions can be scheduled for more comprehensive assistance, and may take place on Skype or in-person at the library. Assistance may cover many topics, including how to find articles in peer-reviewed journals, how to cite resources, and how to piece together research for written assignments.

Our 27,000-square-foot facility on the A&M-Central Texas main campus includes student lounges, private study rooms, group work spaces, computer labs, family areas suitable for all ages, and many other features. Services such as interlibrary loan, TexShare, binding, and laminating are available. The library frequently offers workshops, tours, readings, and other events. For more information, please visit our Library website [https://tamuct.libguides.com/].

OPTIONAL POLICY STATEMENTS:

A Note about Sexual Violence at A&M-Central Texas

Sexual violence is a serious safety, social justice, and public health issue. The university offers support for anyone struggling with these issues. University faculty are mandated reporters, so if someone discloses that they were sexually assaulted (or a victim of Domestic/Dating Violence or Stalking) while a student at TAMUCT, faculty members are required to inform the Title IX Office. If you want to discuss any of these issues confidentially, you can do so through Student Counseling (254-501-5955) located on the second floor of Warrior Hall (207L).

Sexual violence can occur on our campus because predators often feel emboldened, and victims often feel silenced or shamed. It is incumbent on ALL of us to find ways to actively create environments that tell predators we don't agree with their behaviors and tell survivors we will support them. Your actions matter. Don't be a bystander; be an agent of change. For additional information on campus policy and resources visit the Title IX webpage [https://www.tamuct.edu/departments/compliance/titleix.php].

INSTRUCTOR POLICIES

Students should come to class prepared, ready to ask questions and participate in discussions.

While in other classes, the direct quoting of other authors is considered acceptable; in this class, it is not acceptable. You may not directly quote any other published paper, web site, or textbook in any writing assignment, including papers, homework, discussion boards, PowerPoint presentations, or any other written assignments. The simple reason for this is that copying (quoting) is a lower level skill. However, reading, understanding, and then communicating the ideas in your own words is a high level skill that I want you to develop.

Please note that plagiarism, is a serious problem, and that any plagiarized assignment will result in a failing grade for this class.

Do not submit any code that is not yours. Do not copy code from websites, other students, tutors, friends, family, or from any other source that is not your brain. If you get help with any code, you must make it clear which portions of the code you had help with and which you wrote. You must supply the contact information for the person, web site, youtube video, or other person who helped you. This is very important because you will only learn to write code by writing code. Yes, some concepts are difficult, but if you do not write the code and solve the problems, you will not learn how to write code and solve problems. Having someone explain a solution or algorithm to you or help you debug a problem is acceptable and allowed. Having someone else write the code for you is not OK. Submitting someone else's code as your own will result in a failing grade for this class.

Unless you make prior arrangements, all late assignments will lose 20% of their point value every day they are late. Late assignments will be graded at the professor's discretion

All projects must have the author's name in every class and method submitted. (See Code Documentation Standards and Report Format Specification.) Every project submitted must be

named starting with the student's last name followed by the project number. All projects must be zipped using WinZip. The zipped file submitted must be named, starting with the student's last name. Projects that do not follow this naming and documentation standard will be returned ungraded.

Instructor Information

Dr. Woodcock has a PhD in Computer Science from Florida Atlantic University. He has over 25 years of real world experience working for IBM and Sony-Ericsson. Dr. Woodcock believes that you will learn best by being engaged in class, asking questions, participating in discussion, and doing the hands on exercises.

This class will be a lot of work, but it will also be fun.

Dr. Woodcock reserves the right to modify this syllabus during the semester.