CS 1714 – Computer Programming II

Syllabus

Description	Extended programming concepts including multidimensional arrays, pointers, dynamic memory allocation/deallocation and recursion. Problem solving methods, algorithm development and implementation. *Concurrent enrollment in the corresponding lab (recitation) section is required. Prerequisite: CS 1083*.
Objectives	At the end of the course, students will be able to: 1. Understand the basics of the Linux operating system – vim and gcc. 2. Apply basic problem-solving skills in terms of problem analysis and decomposition. 3. Demonstrate basic programming skills using variables, primitive data types and declarations, and control flow constructs including if-else, while loops, and for loops. 4. Demonstrate an understanding of pointers with arrays, pass-by-pointer arguments, and dynamic memory allocation. 5. Understand simple data structures including how they are represented in memory; basics of I/O including the use of appropriate functions for input and formatted output; parameter passing; enumerations; structs and command line arguments. 6. Describe and use sorting and searching algorithms. 7. Trace simple recursive functions and recursive traversal of linked lists and binary search trees. 8. Differentiate among classifications of storage including automatic memory, static memory, dynamic memory, and local variables. 9. Implement basic data structure operations with singly linked lists and binary search trees.
Gateway Course	This is one of the "Gateway Courses" (CS1714 and CS 2124) for the students pursuing the B.S. degree in Computer Science. In order to promote student success and to help ensure that students are choosing majors that are appropriate for their aptitudes and skills, a UTSA student must successfully complete each of Gateway Courses for his or her major with a grade of "C-" or better in no more than two attempts. If the student does not successfully complete a Gateway course in two attempts, including dropping a course with a grade of "W" or taking an equivalent course at another institution, then the student is required to change to a different major. For more information about Gateways, see for http://www.utsa.edu/registrar/students/gateway.html.
Instructor	Kevin Desai, PhD (kevin.desai@utsa.edu) Open Office Hours, Discussion, Q/A – 1714 course channel on CS Main Lab Discord Server 1-on-1 meetings – by appointment, send email
Teaching Assistants	Yuntong Zhang (yuntong.zhang@utsa.edu) Christopher "Tony" Capps (tony4260@gmail.com)
Course Website	The course website is on Blackboard (http://utsa.blackboard.com). Check it frequently for updates. **We will be using the same Blackboard course as the lecture course for all recitations/labs. We will NOT use the lab course available on Blackboard.**

Course Format

As per the UTSA policies, this course will be offered as an "**online hybrid**" course. Online means that there will be no face-2-face classroom interactions, everything will be online. Hybrid means that the course will have a mix of asynchronous and synchronous components. Each course will have an allocated class times and the instructor can decide on how to conduct these live sessions. Following are the specifications of what this means for the CS 1714 course:

- **Lectures** will be presented as asynchronous instructional materials which will be available for viewing as Panopto and/or PlayPosit recordings.
  - Instructional materials will be divided into modules – mostly one module per week.
  - Each module will consist of textbooks readings, recorded videos, interactive presentations, and assignments.
  - Students can navigate through the materials at their own convenience while still adhering to the schedule and deadlines.
- **Live sessions** will be held as live synchronous sessions during the allocated class times but will not be required. These sessions will be conducted using Blackboard Collaborate Ultra and will also be recorded for future viewing.
  - Live lecture sessions are to be considered as additional instructional support.
  - These sessions will discuss next week's programming assignment. It will also discuss and solve extra programming exercises, which will be helpful in improving coding skills. Students are highly recommended to finish that week's zyBooks reading assignment as well as watch the recorded video lectures, before coming to the live sessions.
- **Recitations/Labs** will be live synchronous sessions led by the TA on Blackboard Collaborate Ultra, during the allocated meeting times.
  - TA will mainly go over the quizzes and assignments that were due in the previous weeks.
  - TA may also go over student requested topics as well as any commonly missed topics as evidenced by the results for quizzes, assignments, and exams.

Live Sessions (Lecture & Lab) Plan

Section	ASAP Times Assigned	**Actual Live Meeting Times**	Plan for the Session
--- SECTION 0A1 Lecture and Labs (Recitations) ---			
Lecture 0A1	TR 2:30 pm – 3:45 pm	Thursday 3 – 4 pm	Next Assignment Explanation, Extra Programming Examples
Lab 0AA	T 4:00 – 4:50	T 4:00 – 4:50	Previous week's Programming Assignment Solution & Quiz
Lab 0AB	R 4:00 – 4:50	R 4:00 – 4:50	
--- SECTION 0B1 Lecture and Labs (Recitations) ---			
Lecture 0B1	MWF 9:00 am – 9:50 am	Wednesday 9 – 10 am	Next Assignment Explanation, Extra Programming Examples
Lab 0BA	M 10:00 – 10:50	M 10 – 10:50	Previous week's Programming Assignment Solution & Quiz
Lab 0BB	W 10:00 – 10:50	W 10 – 10:50	
--- SECTION 0D1 Lecture and Labs (Recitations) ---			
Lecture 0D1	MWF 11:00 am – 11:50 am	Wednesday 11am – 12 pm	Next Assignment Explanation, Extra Programming Examples
Lab 0DA	M 12:00 – 12:50	M 12 – 12:50	Previous week's Programming Assignment Solution & Quiz
Lab 0DB	W 12:00 – 12:50	W 12 – 12:50	

You are free to attend any one of the recitation lab session for the week.

Textbooks and Readings

There is one required online textbook published by zyBooks entitled **CS 1714: Computer Programming II**. The instructions to purchase this book are:

1. Sign in or create an account at http://learn.zybooks.com
2. Enter zyBook code: **UTSACS1714Fall2020**
3. Subscribe

For Textbook Technical Issues contact support@zybooks.com. Course content and assignments are delivered through this interactive textbook. Be sure to acquire the book by the first day of class.

There is one recommended book, which is an additional excellent C reference.

- Kerninghan, B.W. and Ritchie, D.M. (1988). The C Programming Language. (2nd ed). Prentice Hall.

Additional supplemental materials may also be provided on our learning management system, Blackboard, to complement the textbook.

Grading

Grade received for the Lecture and Lab (recitation) course will be the same. In this course we will follow a 1000-point scale. Final letter grades are based on the following point scale and percentage scale:

Grade	Point Scale (out of 1000)	% scale
A	930 – 1000	93.0% – 100%
A-	900 – 929	90.0% – 92.9%
B+	870 – 899	87.0% – 89.9%
B	830 – 869	83.0% – 869%
B-	800 – 829	80.0% – 829%
C+	770 – 799	77.0% – 799%
C	730 – 769	73.0% – 769%
C-	700 – 729	70.0% – 729%
D+	670 – 699	67.0% – 699%
D	630 – 669	63.0% – 669%
D-	600 – 629	60.0% – 629%
F	0 – 599	0% – 59.9%

The final grade is divided into the following coursework components:

Coursework	Points (out of 1000)	% weightage
zyBook Activities	100	10%
Quizzes	100	10%
Programming Assignments	150	15%
Projects	150	15%
Midterm Exam 1	150	15%
Midterm Exam 2	150	15%
Final Exam	200	20%
Total	**1000**	**100%**

zyBook Activities (100 points total) (10% of grade)

A total of 11 zyBooks activities will be provided, each worth 10 points. Out of these, one activity with the lowest grade will be dropped leading to total allowable points of 100. *Ignore the points mentioned on zyBooks – they are automated points only for use within zyBooks. Even though the activities have different points mentioned on zyBooks, we will consider all activities as worth the same number of points - 10.*

	Each zyBook activity (except the last) should be finished by the end of the corresponding week, Sunday night at 11:59 pm. The last activity will be due on the last day of the class at 11:59 pm. Students are highly recommended to finish each week's zyBooks reading assignment, before coming to the live sessions. Each week there will be one zyBook activities assignment which will consist of one or more chapters. zyBooks activities are divided into the following: • Participation Activities (PAs) – Apart from the text in each chapter unit, there will be animations and some questions. You will get full points for these if you participate, even if your answers are wrong. • Challenge Activities (CAs) – For these activities, you will be required to complete and get the correct answers before moving forward. The system will give you the correct answer if your answer is incorrect. You can attempt these activities as many times as needed. • zyLabs or Lab Activities (LAs) – These are small programming activities connected to each chapter to gain basic coding experience for those topics. You can attempt these activities as many times as needed, until you get the correct output. *LAs are different from programming assignments, explained in the section below.*
Quizzes **(100 points total)** **(10% of grade)**	A total of 11 quizzes will be provided, each worth 10 points. Out of these, one quiz with the lowest grade will be dropped leading to total allowable points of 100. Quizzes consist of 5 to 20 multiple-choice and short answer questions related to the topics mainly covered in the corresponding week as well as topics from the previous weeks. Each quiz will be timed, with only 1 allowed attempt and will be administered on Blackboard. Each quiz (except the last) will be due Sunday night at 11:59 pm. The last quiz will be due on the last day of the class at 11:59 pm.
Programming Assignments **(150 points total)** **(15% of grade)**	A total of 11 programming assignments will be provided, each worth 15 points. Out of these, one assignment with the lowest grade will be dropped leading to total allowable points of 150. *Programming assignments are different from LAs.* Programming assignments are small coding problems focused on the topics of the week. Guidelines for each programming assignment can be found in the Chapter 19 of zyBooks. Students are required to work on these programs on the CS Fox Linux servers and then submit the files on zyBooks for auto-grading. Each programming assignment (except the last) should be finished by the end of the corresponding week, Sunday night at 11:59 pm. The last assignment will be due on the last day of the class at 11:59 pm.
Projects **(150 points total)** **(15% of grade)**	A total of 3 projects will be provided, each worth 50 points, leading to total allowable points of 150. Standard due will be Sunday night at 11:59 pm. Projects are major programming assignments that require about 2-3 weeks to complete. These are individual programming assignments. Students are required to work on these projects on the CS Fox Linux servers and then submit the files on Blackboard for manual grading by TA/grader.
Exams **(500 points total)** **(50% of grade)**	There are 3 total exams – Midterm Exam 1, Midterm Exam 2, and Final Exam. Both Midterm exams will be worth 150 points each. Whereas, the Final exam will be worth 200 points). All exam will be cumulative exams, with topics covered until the day of the exam. Each exam will be open only during a specified amount of time and must be finished within that time. Only 1 attempt will be allowed. Exams will be conducted online through Blackboard using Proctorio as the official proctoring tool. Only a limited number of Proctorio functionalities will be used.

	Detailed information will be provided on the course Blackboard website. There are no makeups for exams except for university sanctioned events. The dates and times are on the Course Schedule on Blackboard.
Submissions	All work must be submitted through Blackboard or zyBooks. Any attempts to submit assignments via another platform (e.g., email) will not be considered or accepted. **Late work is not accepted.** Do not attempt to submit work past the deadline. It will not be read nor considered for grading and will receive a score of 0. All submissions will be checked for plagiarism.
Course Modules	The course is divided into **11 modules**. Each module focuses on a major topic of the course and contains lecture content and coursework. Individual folder will be created for each module on Blackboard. Typical sequence to follow: 1. Complete the **zyBooks activity**. 2. Watch the **pre-recorded videos** on the side to gain more practical knowledge along with the textbook reading. These videos are to supplement your learning experience alongside zyBooks. However, there would be some course content that may only be available (or explained better and in detail) in the recorded videos and not on zyBooks. 3. Complete the end of module **programming assignment** on zyBooks. 4. Complete the end of module **quiz** through Blackboard. Live sessions, for both lecture as well as lab (recitation), will also be organized each week to provide more programming examples related to the topic. It is highly recommended to finish the first two parts before coming to the live sessions - complete zyBooks activity and watch video.
Course Schedule	This schedule is **tentative**. It may be revised throughout the semester depending on the progress of the class. See Blackboard for a more detailed and updated schedule. • Week-01: Day One, Linux, Vim, C Hello World, Variables/Assignments, Branches (Module-01) • Week-02: Loops, Arrays, Strings (Module-02) • Week-03: Pointers & Memory (Module-03) • Week-04: User-Defined Functions (Module-04) • Week-05: Structs (Module-05) • Week-06: Midterm Exam-1 • Week-07: File Input/Output (Module-06) • Week-08: Command Line Arguments, Modular Compilation (Module-07) • Week-09: Recursion (Module-08) • Week-10: Midterm Exam-2 • Week-11: Algorithms, Searching & Sorting (Module-09) • Week-12: Data Structures, Linked Lists (Module-10) • Week-13: Linked Lists (cont'd) (Module-10) • Week-14: Binary Search Trees (Module-11) • Week-15: Binary Search Trees (cont'd) (Module-11) • Week-16: Final Exam
Collaboration	In this course, you are encouraged to collaborate on programming assignments, but direct copying is not allowed. You must write your own code. Copying other people's code with minor modifications on individual projects is regarded as a serious case of cheating. Because patterns of cheating do not always become apparent until after several assignments have been completed, you should be aware all your assignments are available to your instructor on Blackboard.

Communications	• Students are expected to maintain an active online presence in the course. Be sure to stay in contact with the teaching staff and other students through **Blackboard or Discord**. Do not share any sensitive information on public platforms such as Discord. • Check your email at least once a day. Always feel free to reach out to the teaching staff when you have questions. • Apart from the instructor, numerous TAs and tutors will be monitoring the Discord channel for the course. Please post any question you may have. • Apart from live sessions and Discord, **email** is another preferred method of communication. When emailing the Instructor and/or TAs, user your **UTSA email address** and be sure to include CS 1714-(Section No) in the subject line. Please allow for 1-2 business days for a response. • Major grade issues can only be discussed by setting up a video call with the instructor. Students must have their webcams and microphones activated for these meetings, along with their student IDs.
Technologies	• As an online course, you are required to have a **computer** with speakers and headphones (camera recommended). You can use your own personal device (laptop or desktop). If you need to borrow a device, contact the Tech Café (techcafe@utsa.edu / 210-458-5555 / website) to inquire about checking out a laptop for the semester. • For more information on accessing desktop computers on campus in the labs and the library, visit the UTSA Student Connect Computer Lab information page. • Be sure to have a stable **internet** connection to access all online materials. Review the minimum tech requirements for online learning. • Access to the Microsoft Office suite and Adobe Creative Cloud suite. These tools are provided free of charge to UTSA students and you can learn more about this software, including instructions on how to access these programs by visiting the Digital Tool Resources page. Apart from the above basic technologies, following will also be used: • **Blackboard** will be the main website and the primary tool for information distribution. • Recorded lectures on **Blackboard** will be provided through **Panopto and/or PlayPosit** • **Blackboard Collaborate Ultra** will be the primary modality through which live sessions will be conducted, both lectures as well as labs/recitations. • **ZyBooks** is our required textbook which would contain weekly participation activities as well as programming assignments. Be sure to purchase the book by the first day of the course. • Office hours will be conducted as part of the live sessions through **Blackboard Collaborate Ultra** at the designated course times. • **Discord** will be the primary tutoring platform. Instructor, TAs, and other CS tutors will be available on Discord throughout the week, to help with any material related to the course, including assignments. This has been a very effective format of getting help with the course. Please use this to your advantage as much as you can. Detailed information will be available on the course Blackboard website. • **CS Fox Servers** will be the primary Linux accounts provided to you for creating and testing your C code. **CS/UTSA VDI** account will provide a virtual desktop for students who do not have a Windows computer. More information will be provided on Blackboard and recorded lecture videos. • All exams will be conducted online within a fix time window. **Proctorio** is the official proctoring tool provided by UTSA. This course will also be

	using Proctorio with limited functionalities for all the exams. Google Chrome is the recommended browser. Issues may happen if using Internet Explorer or Safari. Detailed information will be provided on the course Blackboard website.
Class Recordings	The instructor may record meetings of this course. Any recordings will be available to all students registered for this class as they are intended to supplement the classroom experience. Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless Student Disability Services has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Student Disability Service accommodation. If the instructor or a UTSA office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law. For more information on your privacy and class recordings, review Student Privacy (FERPA) in Virtual Classrooms and Other Educational Recordings and the Guide to Secure Video Conferencing Tools.
Copyright	Course materials created by the teaching staff, such as slides, handouts, recorded videos, assignments, and exam content, are considered the intellectual property of the teaching staff. These materials are provided to you for your use. Distribution or dissemination of these materials outside of UTSA requires the consent of the instructor.
Common UTSA Syllabus	Visit https://provost.utsa.edu/syllabus.html for common information on UTSA policies and services regarding disabilities, dishonesty, counseling and tutoring, plus the Roadrunner Creed.
Disclaimer	This Syllabus is provided for informational purposes regarding the anticipated course content and schedule of this course. It is based upon the most recent information available on the date of its issuance and is as accurate and complete as possible. The instructor reserves the right to make any changes deemed necessary and/or appropriate. The instructor will make my best efforts to communicate any changes in the syllabus in a timely manner. Students are responsible for being aware of these changes.