

Data Comm and Infrastructure - 10373 - CIS 3347 - 110 Spring 2023

Texas A&M University-Central Texas

COURSE DATES, MODALITY, AND LOCATION

Course Dates: January 17, 2023 – May 12, 2023

Time: Online **Day**: Online

Classroom: Online Canvas

INSTRUCTOR AND CONTACT INFORMATION

Instructor: Dr. Piyush Vyas

Office: 323G Hr.: Tuesday – 12:00pm to 2:00pm & Thursday – 4:00 pm to 6:00 pm

Phone: TBD

Email: Piyush.vyas@tamuct.edu or Canvas Inbox

This is a 100% online course and uses the A&M-Central Texas Canvas Learning Management System [https://tamuct.instructure.com/].

Office Hours

Tuesday – 12:00pm to 2:00pm & Thursday – 4:00 pm to 6:00 pm

I am available to all students on **an appointment basis**. Please send an email to Piyush.vyas@tamuct.edu to schedule an appointment. Meeting options are either via team, zoom or telephone. All appointments will be confirmed with an email from me to your Warrior email account. When sending an email to me, please utilize only your Warrior account. Emails sent from other providers will not be answered.

Student-instructor interaction

I will respond to all student emails within 24 - 48 hours of receipt.

Emergency Warning System for Texas A&M University-Central Texas

SAFEZONE. SafeZone provides a public safety application that gives you the ability to call for help with the push of a button. It also provides Texas A&M University-Central Texas the ability to communicate emergency information quickly via push notifications, email, and text messages. All students automatically receive email and text messages via their myCT accounts.

Downloading SafeZone allows access to push notifications and enables you to connect directly for help through the app.

You can download SafeZone from the app store and use your myCT credentials to log in. If you would like more information, you can visit the SafeZone website [www.safezoneapp.com].

To register SafeZone on your phone, please follow these 3 easy steps:

- 1. Download the SafeZone App from your phone store using the link below:
 - o iPhone/iPad: [https://apps.apple.com/app/safezone/id533054756]
 - Android Phone / Tablet
 [https://play.google.com/store/apps/details?id=com.criticalarc.safezoneapp]
- 2. Launch the app and enter your myCT email address (e.g. {name}@tamuct.edu)
- 3. Complete your profile and accept the terms of service

For updates on COVID information, please monitor the University <u>website</u> [https://www.tamuct.edu/covid19/]

COURSE INFORMATION

Course Overview and description

A study of voice and data communications technologies, concepts, and applications, including communications terminology, hardware, software, protocols, and managerial issues in data and voice communications. Topics include alternatives available in hardware, software, and transmission facilities; design integration; and selection and implementation of communications solutions. In addition, students explore the current and future impact and directions of these technologies.

Course Objective or Goal

Student Learning Outcomes

At the conclusion of the course, the student will be able to:

- **Clo1**. Illustrate network behavior and principles employed in an organization and the underlying operation of the communication networks.
- **Clo2**. Demonstrate the details of data and signals in Computer Networking and analyze the correct operation of various protocols
- Clo3. Understand the basic principles of Internet protocols and various internet services.
- **Clo4**. Describe the fundamental principles of information technology security

Outcome	Clo1	Clo2	Clo3	Clo4
Common Core				
Pslo1: Communicate effectively on technical subjects appropriate to the discipline	Р	Р	Р	
Pslo2: Recognize a reasoned resolution to an ethical challenge in computing context				
Pslo3: Apply knowledge to address the IT security needs of an organization				Р
Pslo4: Design appropriate computing solutions to business problems				

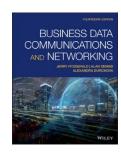
Required Reading and Textbook(s)

Title: Business Data Communications and Networking

Author: Jerry FitzGerald, Alan Dennis, Alexandra Durcikova.

ISBN: 978-1119702849

Edition: 14



Textbook companion website:

https://www.wileystudentchoice.com/

https://www.wiley.com/en-

us/Business+Data+Communications+and+Networking%2C+14th+Edition-p-9781119702665

Supplemental Material: The course textbook will be supplemented with other materials including handouts, oral presentations, software demonstration, PowerPoint presentations, etc.

COURSE REQUIREMENTS

Reading Assignments:

All assigned chapters will be used as a basis for canvas discussions. Students are expected to study the required chapter before each class session.

Students are required to complete one midterm exam, one final exam, five class tests, four homework assignments, one course presentation (Video narration and a PowerPoint slide) and four discussion questions. The topic of all exams will be declared in the canvas portal. Canvas discussions are counted towards class participation points for this course.

Class Tests

There will be five class tests for this course. The class tests will be conducted online through Canvas course website. Each class test will be worth **20** points.

Exams

There will be one midterm and one final exam. The midterm exam will contain **150** points, and the final exam will contain **150** points. The final exam will NOT be comprehensive for this course. **Labs**:

There will be 3 labs on cisco packet tracer/Wireshark. Each lab contains **50** points.

Assignments

3 assignments (homework assignments) will be given to the students. The due dates of these assignments will be posted in canvas course portal. Each assignment will be worth **50** points.

Signature Assignments

1 Signature assignment will be given to the students. The due dates of these assignments will be posted in canvas course portal. Each assignment will be worth **200** points.

Class participations

Following the course chapter presentations in every week is mandatory for this course. Canvas discussions (as well as class attendance) will be counted as a part of class participation. Canvas discussions will be posted on the Discussions tab in Canvas portal whenever required.

Course Presentation

This course will require students to present a topic related to Data Communication. Students will prepare a PowerPoint slide and upload it to the Canvas portal. This presentation is worth **100** points.

Grading Criteria Rubric and Conversion

The distribution of points in different activities and the grading scheme are mentioned below: Grading Criteria

Rubric and Conversion

Required Activity	Quantity	Points	Total
Tests / Quiz	5	20	100
Labs	3	50	150
Assignments	3	50	150
Signature Assignment	1	200	200
Presentation	1	100	100
Exams	2	150	300
Total			1000

Percentage	Letter Grade
89.5-100%	A
79.5-89.4%	В
69.5-79.4%	С
59.5-69.4%	D
0-59.4%	F

Signature assignments for PSLO 1:

Choose from the following topics (or use your own topic that is related to course content) for your research report:

- 1. IPV6 Implementation (IPV6 structure, feasibility of implementing an IPv6 protocol, business ramifications of implementing IPv6)
- 2. Wired Network Security (Controlling access, Access rights, Protocols, Security policy design issues, Standards)
- 3. Wireless Network Security (Configuring wireless access points/adapters, WLAN vulnerabilities, Protocols, WPS, WEP, WPA2, IEEE standards)
- 4. Cryptography (Includes Encryption, Decryption, Digital signatures, PKI, PGP)
- 5. Network Design and Management (Network Modeling, Feasibility studies, Capacity Planning, Creating a Baseline, Network Admin skills)
- 6. Research topic on Network Diagnostic Tools (At least Six tools)

A total of minimum 5 - 7 pages with minimum of 2000 -2500 excluding the cover page and references.

For PSLO4:

Using a chart format, describe eight possible threats to a data network (such as hardware, software, files, circuits, internal personnel, physical security, external people, and users). Describe a total of eight possible solutions to these conceivable threats.

Rubrics for Signature Assignments PSLO1:

Sub-competency	Exceeds Expectation	Meets Expectations	Needs	NA
	S		Improvement	
Readability	 Logically Organized Easy to follow Effective and smooth transitions 	 Some digressions, ambiguities, and irrelevances Difficult to follow with some rereading needed Ineffective transitions 	 No apparent organization Difficul t to follow with frequent rereading needed Poor transitions 	No Response

Content	 Central idea well- developed Clarity of purpose 	 Central idea vague or too broad Some sense of purpose throughout the paper 	Central idea and clarity of purpose absent in the paper	No Response
Language • Vocabulary • Tone	 Sophisticat ed and correct use of vocabulary Clear and appropriate tone for intended audience 	 Frequent misuse of correct vocabulary Some level of inappropriate tone 	 Unsophis ticated and inappropriate use of vocabulary Inappropriate tone for the audience 	No Response
Format	Professional format	Unorganized format	No format	No Response
Grammar Sentence structure Punctuation /mechanics	 Use of complex sentences for effect and impact No punctuation or mechanical 	 Use of compound sentences Several punctuation and/or mechanical errors 	 Use of simple, choppy sentences Many punctuation n and/or mechanical errors 	No Response
Citations Proper attribution to avoid plagiarism Correct form (example : APA, MLA, Chicago)	All factual information cited Citations and references adhere to a professional style (example e: APA, MLA, Chicago)	Some citations missing where needed Citations and references inconsistent with a professional style	No citations for factual information Citations and references do not follow a professional style	No Response

PSLO 4:

Criterion	Exceeds	Meets Expectations	Needs Improvement	NA
	Expectation			

Perform Risk Analysis Perform Inventory Analyze Risks Prioritize Risks	 Correctl y identifies current risks Places risks in proper order for funding 	 Identify es > 80% of the risks Risks are mostly prioritized 	of the risk Unable to prioritize	No credible response
Create Security Policy Create risk- based security policy Assign responsibilities	Use recognized policy template Establish separate security organization Assign clear responsibility s	Uses existing IT organization At least 75% of tasks are assigned d	security organization on present	No credible response
Recommend Technical Solutions Recommend type and	 Recomme nd perimeter defense devices Design 		No evidence of dedicated perimeter	No credible response
placement of security devices Recommend monitoring system	internal detection systems Use real-time monitoring system	Monito ring system is not real- time	or internal systems No monitoring g system	
Due Diligence Periodic Review for effectiveness Ensure compliance Conduct drills	• Plan is reviewed at least annually • User training is conducted every 6 months • Drills at least annually •	• Plan is reviewed d between n 12- 18 months User training between n 6 -12 moths Drills on ad- hoc basis	No plan for review User training does not reinforce d No drills schedule d	No credible response

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Posting of Grades

Grades will be posted to the Canvas grade book as assignments are graded. This will typically be done once all students have submitted the assignment.

Grading Policies

All assignments must be submitted before the posted deadline. No late assignments will be accepted.

COURSE OUTLINE AND CALENDAR

Complete Course Calendar

Week	Dates	Learning Materials	Deliverables		
1	01/17/23 - 01/22/23	Orientation and Course Introduction	Meet & Greet Discussion Forum		
1	01/1//23 - 01/22/23	Offentation and Course introduction	& Quiz 1 (on course orientation)		
2	01/23/23 - 01/29/23	Chapter 1			
3	01/30/23 - 02/05/23	Chapter 2	Assignment1		
4	02/06/23 - 02/12/23	Chapter 3	Quiz2		
5	02/13/23 - 02/19/23	Chapter 4	Quiz3		
6	02/20/23 - 02/26/23	Chapter 5	Lab 1		
7	02/27/23 - 03/05/23	Chapter 6	Assignment 2		
8	03/06/23 - 03/12/23	Mid Term Exam No Classes			
	03/13/23 - 03/19/23				
		Spring Break			
9	03/20/23 - 03/26/23	Chapter 7	Lab 2		
10	03/27/23 - 04/02/23	Chapter 8	Assignment 3		
11	04/03/23 - 04/09/23	Chapter 9	Quiz 4		
12	04/10/23 - 04/16/23	Chapter 10	Signature Assignment 4		
13	04/17/23 - 04/23/23	Chapter 11	Quiz 5		
14	04/24/23 - 04/30/23	Chapter 11 continue	Lab 3		
15	05/01/23 - 05/07/23	Chapter 12	PPT		
16	05/08/23 - 05/12/23	Final Exam & Course End			

Important University Dates

Please see the attached link for the A&M-Central Texas Academic Calendars, which track important deadlines and dates for the school year and semesters: https://www.tamuct.edu/registrar/academic-calendar.html

TECHNOLOGY REQUIREMENTS AND SUPPORT

This course will use Microsoft Office 365 software. As a University student, you can download the software at no cost. Please access this University link for download instructions: https://tamuct.onecampus.com/task/all/office365-software

Technology Requirements

This course will use the A&M-Central Texas Instructure Canvas learning management system. **We** strongly recommend the latest versions of Chrome or Firefox browsers. Canvas no longer supports any version of Internet Explorer.

Logon to A&M-Central Texas Canvas [https://tamuct.instructure.com/] or access Canvas through the TAMUCT Online link in myCT [https://tamuct.onecampus.com/]. You will log in through our Microsoft portal.

Username: Your MyCT email 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.

Online Proctored Testing

A&M-Central Texas uses Proctorio for online identity verification and proctored testing. This service is provided at no direct cost to students. If the course requires identity verification or proctored testing, the technology requirements are: Any computer meeting the minimum computing requirements, plus web camera, speaker, and microphone (or headset). Proctorio also requires the Chrome web browser with their custom plug in.

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

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 Warrior Center for Student Success, Equity 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 Office of Access and Inclusion, WH-212; or call (254) 501-5836. Any information you provide is private and confidential and will be treated as such.

For more information, please visit our <u>Access & Inclusion</u> Canvas page (log-in required) [https://tamuct.instructure.com/courses/717]

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. Any deviation by students from this expectation may result in a failing grade for the assignment and potentially a failing grade for the course. All academic misconduct concerns will be referred to the Office of Student Conduct. When in doubt on collaboration, citation, or any issue, please contact your instructor before taking a course of action.

For more <u>information regarding the student conduct process</u>, [https://www.tamuct.edu/student-affairs/student-conduct.html].

If you know of potential honor violations by other students, you may <u>submit a referral</u>, [https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout id=0].

Drop Policy

If you discover that you need to drop this class, you must complete the <u>Drop Request</u> Dynamic Form through Warrior Web.

[https://federation.ngwebsolutions.com/sp/startSSO.ping?PartnerIdpId=https://eisprod.ec.tamuct.edu:443/samlsso&SpSessionAuthnAdapterId=tamuctDF&TargetResource=https%3a%2f%2fdynamicforms.ngwebsolutions.com%2fSubmit%2fStart%2f53b8369e-0502-4f36-be43-f02a4202f612].

Faculty 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. Once you submit the completed 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.

Important information for Pregnant and/or Parenting Students

Texas A&M University-Central Texas supports students who are pregnant, experiencing pregnancy-related conditions, and/or parenting. In accordance with requirements of Title IX and related 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. Students should seek out assistance as early in the pregnancy as possible. For more information, please visit [https://www.tamuct.edu/student-affairs/pregnant-and-parenting-students.html]. Students may also contact the institution's Title IX Coordinator. If you would like to read more about these requirements and guidelines online, 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 Associate Dean in 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 virtually and in-person. Student success coaching is available online upon request.

If you have a question, are interested in becoming a tutor, or in need of success coaching contact the Warrior Center for Student Success, Equity and Inclusion at (254) 501-5836, visit the Warrior Center at 212 Warrior Hall, or by emailing WarriorCenter@tamuct.edu.

To schedule tutoring sessions and view tutor availability, please visit <u>Tutor Matching Services</u> [https://tutormatchingservice.com/TAMUCT] or visit the Tutoring Center in 111 Warrior Hall.

Chat live with a remote tutor 24/7 for almost any subject from on your computer! Tutor.com is an online tutoring platform that enables A&M-Central Texas students to log in and receive online tutoring support at no additional cost. This tool provides tutoring in over 40 subject areas except writing support. Access Tutor.com through Canvas.

University Library & Archives

The University Library & Archives provides many services in support of research across campus and at a distance. We offer over 350 electronic databases containing approximately 631,525 eBooks and 75,149 journals, in addition to the 97,443 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 24 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 virtually through WebEx, Microsoft Teams or in-person at the library. Schedule an appointment here

[https://tamuct.libcal.com/appointments]. 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 <u>Library website</u>

[https://tamuct.libguides.com/index]

University Writing Center

University Writing Center: Located in Warrior Hall 416, the University Writing Center (UWC) at Texas A&M University—Central Texas (A&M—Central Texas) is a free service open to all A&M—Central Texas students. The hours of operation are from 10:00 a.m.-5:00 p.m. Monday thru Thursday in Warrior Hall 416 (with online tutoring available every hour as well) with satellite hours available online only Monday thru Thursday from 6:00-9:00 p.m. and Saturday 12:00-3:00 p.m.

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 UWC is here to help!

Students may arrange a one-to-one session with a trained and experienced writing tutor by making an appointment via WCOnline [https://tamuct.mywconline.com/]. In addition, you can email Dr. Bruce Bowles Jr. at bruce.bowles@tamuct.edu if you have any questions about the UWC, need any assistance with scheduling, or would like to schedule a recurring appointment with your favorite tutor.

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 Wellness and 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 <u>Title-IX</u> webpage [https://www.tamuct.edu/compliance/titleix.html].

Behavioral Intervention

Texas A&M University-Central Texas cares about the safety, health, and well-being of its students, faculty, staff, and community. If you are aware of individuals for whom you have a concern, please make a referral to the Behavioral Intervention Team. Referring your concern shows you care. You can complete the <u>referral</u> online

[https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout id=2].

Anonymous referrals are accepted. Please see the <u>Behavioral Intervention Team</u> website for more information [https://www.tamuct.edu/bit]. If a person's behavior poses an imminent threat to you or another, contact 911 or A&M-Central Texas University Police at 254-501-5805.

OTHER POLICIES

The instructor reserves the right to modify the course syllabus during the semester for the benefit of the students.

The instructor can deduct the grades for late submissions to be fair with others' timely submissions.

The instructor reserves the right to supplement materials presented in the text with additional course material that may help the students better understand a topic(s).

Copyright Notice

Students should assume that all course material is copyrighted by the respective author(s). Reproduction of course material is prohibited without consent by the author and/or course instructor. Violation of copyright is against the law and Texas A&M University-Central Texas' Code of Academic Honesty. All alleged violations will be reported to the Office of Student Conduct.

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Business); 1001 Leadership Place, Killeen, TX 76549; 254-519-5437; Fax 254-501-5825; Piyush.vyas@tamuct.edu