CIS 5355-110, 11764, Visual Analytics

Spring 2022
Texas A&M University-Central Texas

COURSE DATES, MODALITY, AND LOCATION

Course Dates: Jan 18, 2022 – May 13, 2022
Modality: This is a 100% online course. The lecture recordings will be provided via Canvas. The supplemental materials will also be made available online through the A&M-Central Texas Canvas Learning Management System [https://tamuct.instructure.com/].
Location: Online via Canvas

INSTRUCTOR AND CONTACT INFORMATION

Instructor: Dr. Khaldoon Dhou
Office: FH 323
Phone: 254-519-5437
Email: kdhou@tamuct.edu

Office Hours

My office hours will be on Monday and Tuesday from 8 AM to 11 AM. Because of the pandemic, I will hold my office hours virtually. You can email me and we can meet using Zoom, Skype, phone, or any way. If there is a need to meet face-to-face, please email me to arrange it. Please feel free to email me at anytime if you need any help. In other words, you are not limited to my office hours and you can always seek help.

Student-instructor interaction

I should respond to your emails within 24-48 hours and I do my best to answer very quickly. You can also email me to arrange an appointment with me. Because of the pandemic, I prefer to meet virtually, but I understand that there are times when a student needs to meet in person. So, I am open to either way while using a facial mask and maintaining a social distance in face-to-face meetings.

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]
    o   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

COURSE INFORMATION

Course Overview and description

This course helps students in creating and evaluating visualizations to be employed for various purposes and help decision-makers. Students will explore datasets and use them to build visualizations using existing software packages such as Tableau, Power BI, Google Data Studio available in the market. Additionally, students will evaluate the best practices of data visualization and adapt them to their work.

Course Objective or Goal

Upon the completion of the course, students should be able to develop visualizations of different types that help in making decisions.

Student Learning Outcomes
Upon the completion of the course, students should be able to

1. Evaluate data sets utilized in data visualization
2. Discuss the best practices behind building visualization tools
3. Create data visualizations using existing datasets that help in the decision-making process
4. Criticize the ethical aspects behind visualization research

Competency Goals Statements (certification or standards)

NA

Required Reading and Textbook(s)

Data Visualization: Exploring and Explaining with Data | 1st Edition
By Jeffrey D. Camm, James J. Cochran, Michael J. Fry, Jeffrey W. Ohlmann
Publisher: Cengage

Note: A student of this institution is not under any obligation to purchase a textbook from a university-affiliated bookstore. The same textbook may also be available from an independent

retailer, including an online retailer

Suggested readings and materials

Hands-on Data Visualization with Bokeh
By Kevin Jolly
Publisher: Packt
ISBN-13: 9781789135404

Functional Art, The: An introduction to information graphics and visualization, 1st edition
By Alberto Carlo
Publisher: Pearson
ISBN-13: 9780321834737

Exam Ref 70-778 Analyzing and Visualizing Data by Using Microsoft Power BI, 1st edition
By Daniil Maslyuk
Publisher: Pearson
ISBN-13: 9781509307029

Visualizing Technology Introductory, 7th edition
By Debra Geoghan
Publisher: Pearson
ISBN-13: 9780134817200

D3 Tips and Tricks v3.x: Interactive Data Visualization in a Web Browser (You can get it online for free)
By Malcolm Maclean
Publisher: Leanpub

Designing Great Visualizations
https://cdnlarge.tableausoftware.com/sites/default/files/whitepapers/designing-great-visualizations.pdf

Data Visualization 101: How to Design Charts and Graphs
https://cdn2.hubspot.net/hub/53/file-863940581-pdf/Data_Visualization_101_How_to_Design_Charts_and_Graphs.pdf

Getting Started with Data Visualization
http://www.boostlabs.com/wp-content/uploads/2016/10/Boost-Labs-Getting-Started-with-Data-Visualization.pdf

Data Visualization with D3.js – Full Tutorial Course
https://www.youtube.com/watch?v=_8V5o2UHG0E

Tableau for Data Science and Data Visualization – Crash Course Tutorial
https://www.youtube.com/watch?v=TPMlZxRRaBQ

Tweet Visualization and Sentiment Analysis in Python - Full Tutorial
https://www.youtube.com/watch?v=1gQ6uG5Ujiw

Matplotlib Crash Course
https://www.youtube.com/watch?v=3Xc3CA655Y4
Power BI Full Course - Learn Power BI in 4 Hours | Power BI Tutorial for Beginners | Edureka
https://www.youtube.com/watch?v=3u7MQz1EyPY

Python Matplotlib Tutorial | Matplotlib Tutorial | Python Tutorial | Python Training | Edureka
https://www.youtube.com/watch?v=yZTBMMdPOww

R And Visualization A Match Made In Heaven - Webinar | Edureka
https://www.youtube.com/watch?v=5V3jUS0pWVg

QlikView Tutorial For Beginners | What Is QlikView | Qlikview Tutorial | QlikView Training | Edureka
https://www.youtube.com/watch?v=xua3ahyWRdA

What is Tableau? - 1 | Data Visualization Tools | Tableau Tutorial for Beginners | Edureka
https://www.youtube.com/watch?v=g2mIG_nVUBI

Tableau Projects for Practice | Tableau Projects for Data Science | Tableau Training | Edureka
https://www.youtube.com/watch?v=If4YqaZtZ3c

Building Predictive Web Applications with R Shiny | 1-Hour Webinars
https://www.youtube.com/watch?v=oegRVT262Ig

How to create R Shiny apps | Complete Tutorial [2019 HD]
https://www.youtube.com/watch?v=3k3Iam-FAAc

Talk Data to Me: Data Visualization Best Practices (By Tableau)
https://www.youtube.com/watch?v=GnMSjSWDQNk

Best practices in visualization creation in Power BI Desktop
https://www.youtube.com/watch?v=2QMhm_5HVyo

How to effectively tell a story with your data and Power BI?
https://www.youtube.com/watch?v=E8Mz18i_po4

R Shiny Basics
https://shiny.rstudio.com/articles/basics.html

How to Build Shiny App
https://shiny.rstudio.com/articles/build.html

Report Like a Boss Using Google Data Studio
https://www.youtube.com/watch?v=C1w-yuTDUeM

Data Studio Help
https://support.google.com/datastudio/?hl=en#topic=6267740

COURSE REQUIREMENTS

Exams: There will be two exams that are worth 30 points (30%). Details about the exam will be provided to you later in the class

Assignments: During the semester, you will get different assignments that measure your understanding to the material and help you gain programming skills. Multiple submissions before the deadline are allowed. When needed, you must to zip the files before submission if the assignment has multiple files. Before you submit any assignment, run it on your computer and make sure it works. In addition, you need to submit a screenshot to prove that your code works. Assignments are worth 50 points (35%)

Discussions: Students are required to participate in the class/canvas discussions throughout the semester. You will see multiple discussions in canvas. You are expected to provide thoughtful posts as a response to the discussion questions, and provide a minimum of two responses to the posts shared by other students. Failure to provide thoughtful comments/responses will result in losing points. It is your responsibility to do good research by reviewing articles and other materials to support your argument. You must cite all the resources you use.

Project: There will be a final project that is worth 35 points (35%). The details will be provided later in the class.

Grading Criteria Rubric and Conversion

The final grade for the course will be based upon the following:

Item	Points	Percentage
Exams	30	30%

Assignments	25	25%
Discussions	15	15%
Project	30	30%
Total	100	100%

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

Posting of Grades

All student grades will be posted on the Canvas Grade Book and students should monitor their grading status through this tool. Grades will be posted within 7 days after of the due date

Grading Policies

I do not accept late work. However, I firmly believe that there are situations where a student cannot submit the work on time (i.e. sickness). If you believe you have a legitimate reason that did not allow you to finish the work and submit it by the deadline, please come and talk to me and depending on the situation, I can make an exception for you to make up the work. I will judge this on a case-by-case basis and it is up to me to accept your excuse or not. I always advise students to start working on the assignments as soon as they get them. I reserve the right to make changes to the syllabus during the course of the semester. Additionally, I reserve the right to provide any supplemental material including, but not limited to, handouts, journal articles, videos, case studies for the benefit of the students

COURSE OUTLINE AND CALENDAR

Complete Course Calendar

Below is a tentative schedule that is subject to change by instructor. I reserve the right

Weeks	Topics	Assignments Due
Week 1 **Jan 18 – Jan 23**	Chapter 1	Assignment 1 Choosing dataset
Week 2 **Jan 24 – Jan 30**	Chapter 2	Assignment 2 Discussion 1
Week 3 **Jan 31 – Feb 6**	Data visualization using Tableau	Assignment 3 Project proposal
Week 4 **Feb 7 – Feb 13**	Chapters 3	Assignment 4
Week 5 **Feb 14 – Feb 20**	Chapters 4	Assignment 5 Discussion 2
Week 6 **Feb 21 – Feb 27**	Interactive data visualization	Assignment 6
Week 7 **Feb 28 – Mar 6**	Interactive data visualization	Assignment 7
Week 8 **Mar 7 – Mar 13**	Chapter 5 Midterm	Assignment 8
Week 9 **Mar 14 – Mar 20**	Spring Break No classes	
Week 10 **Mar 21 – Mar 27**	Chapter 6	Assignment 9 Discussion 3 Project phase I
Week 11 **Mar 28 – Apr3**	Chapter 6	Assignment 10
Week 12	Chapter 7	Assignment 11

Apr 4 – Apr 10		
Week 13 **Apr 11 – Apr 17**	Chapter 8	Assignment 12
Week 14 **Apr 18 – Apr 24**	Chapter 9	Assignment 13 Discussion 4
Week 15 **Apr 25 – May 1**	Special topics in visualization	Assignment 14
Week 16 **May 2 – May 8**		Final Exam Final Project Project presentations

Important University Dates

January 17, 2022	Martin Luther King, Jr Day (University Closed)
January 18, 2022	Add, Drop and Late Registration Begins for 16- and First 8-Week Classes $25 Fee assessed for late registrants
January 18, 2022	Classes Begin for Spring Semester
January 20, 2022	Deadline for Add, Drop, and Late Registration for 16- and First 8-Week Classes
January 25, 2022	Deadline to Drop First 8-Week Classes with No Record
February 1, 2022	Deadline for Teacher Education Program Applications
February 2, 2022	Deadline to Drop 16-Week Classes with No Record
February 25, 2022	Deadline to Drop First 8-Week Classes with a Quit (Q) or Withdraw (W)
March 11, 2022	Classes end for 1st 8-Weeks Session
March 15, 2022	Deadline for Clinical Teaching/Practicum Applications
March 15, 2022	Deadline for Faculty Submission of First 8-Week Final Class Grades (due by 3pm)
March 14-18, 2022	Spring Break (No Classes - Administrative Offices Open)

March 21, 2022	Class Schedule Published for Summer Semester
March 21, 2022	Add, Drop, and Late Registration Begins for Second 8-Week Classes $25 Fee assessed for late registrants
March 21, 2022	Classes Begin for Second 8-Week Session
March 23, 2022	Deadline for Add, Drop, and Late Registration for Second 8-Week Classes
March 25, 2022	Deadline for Spring Graduation Application for Ceremony Participation
March 28, 2022	Deadline to Drop Second 8-Week Classes with No Record
April 1, 2022	Deadline for GRE/GMAT Scores to Graduate School Office
April 1, 2022	Deadline for School Counselor Program Applications
April 4, 2022	Registration Opens for Summer Semester
April 8, 2022	Deadline to Drop 16-Week Classes with a Quit (Q) or Withdraw (W)
April 16, 2022	Deadline for Final Committee-Edited Theses with Committee Approval Signatures for Spring Semester to Graduate School Office
April 29, 2022	Deadline to drop Second 8-week Classes with a Quit (Q) or Withdraw (W).
May 13, 2022	Deadline to Withdraw from the University for 16- and Second 8-Week Classes
May 13, 2022	Spring Semester Ends
May 13, 2022	Deadline for Applications for Tuition Rebate for Spring Graduation (5pm)
May 13, 2022	Deadline for Spring Degree Conferral Applications to the Registrar's Office. $20 Late Application Fee.
May 14, 2022	Spring 2022 Commencement at Bell County Expo 7 PM
May 16, 2022	Classes Begin for Minimester
May 17, 2022	Deadline for Faculty Submission of 16-Week and Second 8-Week Final Class Grades (due by 3pm)

TECHNOLOGY REQUIREMENTS AND SUPPORT

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

Drop Policy

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

[https://dynamicforms.ngwebsolutions.com/casAuthentication.ashx?InstID=eaed95b9-f2be-45f3-a37d-46928168bc10&targetUrl=https%3A%2F%2Fdynamicforms.ngwebsolutions.com%2FSubmit%2FForm%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.

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 information regarding the Student Conduct process, [https://www.tamuct.edu/student-affairs/student-conduct.html].

If you know of potential honor violations by other students, you may submit a report, [https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=0].

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 Access & Inclusion Canvas page (log-in required) [https://tamuct.instructure.com/courses/717]

Important information for Pregnant and/or Parenting Students

Texas A&M University-Central Texas supports students who are pregnant 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 Student Affairs [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, 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 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 Tutor Matching Services [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 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. For the Spring 2022 semester, 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 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.

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 400,000 eBooks and 82,000 journals, in addition to the 96,000 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 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/?g=6956]. 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 [http://tamuct.libguides.com/index].

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 Title IX 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 referral online [https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=2].

Anonymous referrals are accepted. Please see the Behavioral Intervention Team 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

NA

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.