

 2023-2024	Spring 2024, Second 8 Weeks DATA205N Data Visualization Section ZZ
Department	Department of Mathematics & Science
Instructor	Prof. K. Seefeld, EdD
NCC Email	kseefeld@ccsnh.edu
Telephone Number	(603) 578-6815 ext. 1554
Office Hours and location	130B NCC Library
Office Hours	Monday 1-3 pm and Friday 9-11 am <i>*Also available on Zoom during these times per request (please email) and by appointment</i>
Class Days/Meeting Time	Online, asynchronous with a weekly deadline structure
Class Location	Canvas

Rationale

This course teaches students how to represent information (data) visually and in doing so gain skills of effective communication using non-verbal methods. Students will learn to interrelate information and use visualized information to story tell and make convincing and influencing arguments based on data. The skillset acquire in this course has wide applicability in careers in communication, business, sciences, and many other professional fields.

Course Description

In this course students will learn to apply design principles and techniques of effectively visualizing data. Students will develop an understanding of how visual representations are used in the analysis of complex real-world data. Class projects will require students to practice creating and presenting interactive visualizations. A current data visualization tool such as Tableau will be utilized.

Course Competencies

At the successful completion of this course the student should be able to:

- Use data visualization techniques to perform exploratory data analysis (EDA)
- Produce a data dashboard with a focused business application and present this (via video) to the class.
- Explain how data visualizations (and changing colors, emphasis, etc.) can be used to influence decision making.
- Choose appropriate chart type to display data and make basic charts.
- Use best practices of design (data to ink ratio, pre attentive attributes, etc.) in data visualizations.
- Describe the impact of color use in data visualizations and select the most effective color palettes.
- Identify issues where data visualization can be misleading.

Essential Questions

- What is the best visualization technique to use given the data being presented?
- How are color and other design attributes used to influence a data story?
- What are caveats/biases/ethical considerations when presenting data visually?
- How can multiple visualizations be combined in a dashboard to present a comprehensive data story?

Required Materials

Textbook(s):

Camm, Data Visualization: Exploring and Explaining with Data 1e (Cengage)

ISBN: 9780357631355

Software (no cost to students, course videos will explain how to obtain/install)

Microsoft Excel software

Tableau

Technology:

To be successful at NCC, students need to have access to the proper technological devices. The requirements for NCC students can be found here: [Computer Technology Requirements](#). Students in need of the appropriate technological equipment should review NCC's short-term or full-semester Laptop Loan Program <https://nashuacc.edu/current-students/technology/computer-technology-requirements/>.

Laptops that meet NCC technology specifications are available for purchase at the NCC bookstore. Financial aid may be used for purchases made at the bookstore. Contact the bookstore for more information <https://www.bkstr.com/nashuaccstore/home>

Course Structure and Expectations

This course is 100% online with no live meetings. It requires students to have the ability to work independently. There are however course activities designed to foster a sense of community in the class. Although we will not be together at the same time you will interact with each other and get to know your classmates during this course.

Canvas is the home base for the class – all work and course activities occur on Canvas. This course will follow a structured weekly pattern where weeks (except for week 1) begin on Friday 8 am and ends on the following Friday at 4 pm (there is an overlap on Fridays, and I am generally more available to assist online students on Fridays). All work for that week must be done when expected – this is not a self-paced course. Many of the course components build upon each other so following the course pace is important.

Every week I will post a video for you as a weekly overview (I will be making these weekly, so they are current for the class). This is a short 'class' orienting you to the week's work and

discussing any issues or special things for that week. This will be the first thing you will do each week. Often a weekly discussion online will be held to allow for interactivity with other students. The text will be relatively closely followed (see schedule) and provides a reference for you and a guide for the class. Assignment will be given using the interactive online text either as labs (doing work with the software) or short answer type questions to assess knowledge.

This course will culminate with students completing a story telling data dashboard (using a dataset of the students' interest/choosing). Production of this will be mentored by the instructor the last few weeks of the course. Students will present this (via online videos) and share with classmates.

There are no quizzes or exams in this class as this is an applied course.

Policy on using AI.

You are allowed to use AI in this class for supportive purposes and encouraged to explore the potential and power of AI. If you use generative AI for any course work, please note this and cite that you have done so.

Grading:

Dashboard Project	25%
Discussions	25%
Text questions	25%
Excel/Tableau practice	25%

In this course the Dashboard Project serves as your final exam. This project will entail you selecting data early in the course (of your choice) and making and presenting (via online screenshot video and voice over) a data dashboard illustrative of design principles and best practices learned in this course. Grading rubrics and guidelines will be presented week 5 and the project is due the last week of the class, week 7.

Discussions occur weekly online and a weekly topic, issue or resource will be presented as the discussion topic. It is important to post and reply to at least 2 classmates. In an online course these discussions mimic face to face interaction. Discussions are graded primarily for participation and students are welcome to share viewpoints and ideas if they are not improper or extremely off topic. The instructor reads but does not moderate or interfere with student discussions as this part of the course should primarily be student led.

Each week on Canvas are one or more book chapters that have on Canvas associated HW type questions from that chapter presented in quiz format. Students are expected to independently read the associated chapters although weekly overview videos will highlight topics. These you have two attempts to do (in other words if you get a grade you don't like you may redo them) and you may look up/review material (these are not quizzes per se but questions to answer the point essentially to have you spend time interacting with the text material). This is the Text questions portion of your grade.

In the first 5 weeks of the class are hands on practice exercises in Excel and Tableau, most but not all come from the book (note the book data needs to be downloaded from Cengage and the Tableau data comes from within Tableau). Please submit for each question a SCREENSHOT image of your work (which is almost always a graph you produce) in the appropriate question and this will be graded after the due data in Canvas. DO NOT upload full documents (do NOT upload your excel work just screenshots of the question on hand).

The time to negotiate a disappointing grade is immediately after the grade is awarded (within 72 hours of posting the grade) and not the end of the semester. I am generally very good about promptly posting grades.

Final course grades are assigned based on the standard scale below.

		B+	87-89	C+	77-79	D+	67-69		
A	93-100	B	83-86	C	73-76	D	63-66	F	< 60
A-	90-92	B-	80-82	C-	70-72	D-	60-62		

Available Support Services

NCC Library:

Get help with research for your papers and assignments from the NCC librarian and staff. Email ncclibrary@ccsnh.edu

Tutoring and Writing Center:

The Tutoring and Writing Center, located in the library, offers free academic support services to all NCC students. <https://library.nashuacc.edu/home/tutoring>

Accessibility:

Students who think they may have or have a documented disability (physical, learning, or mental health) and/or had an IEP or 504 Plan in high school who may need classroom accommodations must meet with the Accessibility Services Coordinator to set up an NCC Reasonable Accommodation Plan (RAP). For more information view the Accessibility page: <https://www.nashuacc.edu/student-services/disability-accessibility-information> and/or contact Jodi Quinn, Accessibility Services Coordinator (office located in the library), at jquinn@ccnsh.edu or (603) 578-8996.

CARE Team:

Students in need of assistance in the areas of mental health or basic support services (such as food, clothing, shelter, substance abuse or others) should contact the [NCC CARES Team](#).

Student Assistance Program:

Students in need of confidential counseling services should visit the [NCC Student Assistance Program](#) page on the NCC website

English for Speakers of Other Languages:

The ESOL Program provides a variety of services for non-native speakers of English.

<https://nashuacc.edu/programs/esol-esl/>

College Policies

Non-Discrimination:

The NCC Equity Committee is designated to coordinate compliance with the Non-Discrimination Policy and handles all concerns of discrimination that occur on campus that are not covered under Title IX. View more information here [Non-Discrimination Policy and Grievance Procedure](#)

Title IX:

Classroom instructors at Nashua Community College are encouraged to create and maintain a safe learning environment in which students feel able to share opinions and related life experiences in classroom discussions, in written work, and in meetings with professors. To the greatest extent possible, this information will be kept private. However, staff and faculty have a legal obligation to report information concerning sexual misconduct, violence and exploitation of individuals per federal statute and in compliance with established policies and procedures at Nashua Community College. If you have been subjected to sexual misconduct, violence or exploitation, we encourage you to contact your NCC Title IX Coordinator, Vice President of Student and Community Affairs, Lizbeth Gonzalez, for support and assistance. She can be reached at Nashua Community College, 505 Amherst Street, Nashua, NH, 603-578-8928 or lgonzalez@ccsnh.edu. You may also contact Bridges, the local crisis center, for free and confidential services at their 24hr support line 603-883-3044. You do not need to be in crisis to call. Nashua Community College encourages you to download uSafeUS® <https://usafeus.org/>, a free and confidential app that helps protect yourself and your community. Additional information including resources can be found here [Title IX Policy and Grievance Procedure](#).

Attendance:

Regular attendance and active participation are essential for academic success and NCC takes student attendance very seriously.

Every student should carefully review the [NCC attendance policies](#).

NCC Academic Failure Policy

Students with excessive absences or who display disruptive classroom behavior may be subject to the college's Academic Failure policy. All students should carefully review the policy found here: [AF Policy | Nashua Community College](#)

Classroom Audio Recording Policy

[Classroom Audio Recording Policy | Nashua Community College](#)

Canvas:

Canvas is the online learning management system used by instructors and learners at Nashua Community College. Information regarding the specific uses of Canvas and Canvas help for students can be found here: [Canvas | Nashua Community College](#)

Forgotten Login Information:

If you have forgotten your Easy Login Password information, please visit the following link: <https://password.ccsnh.edu/accounts/Reset>

EAB Alerts:

Faculty can issue "Alerts" for students at any time. The administration at NCC encourages professors to issue alerts for any student who may be having difficulty in the course. When a faculty member raises an alert, both the student and student's advisor receive an automated email based on the alert raised. Faculty can issue an alert through EAB Navigate on the college website or directly using the following link:

<https://nashuacc.campus.eab.com>

College Email System:

Nashua Community College utilizes a college email system as a means of the College sending official information to enrolled students, and for students to send communication to their instructors and College personnel. Specific details regarding the use of the college's email system can be found here [College Email System | Nashua Community College](#)

Sensitive Materials Policy:

During the semester, in order to cover certain academic topics, there may be occasions to view or discuss material which may not meet the student's own personal definition of appropriateness. In those cases, students should refer to the [NCC Sensitive Materials Policy](#)

Academic Conduct:

All students are expected maintain high standards of academic integrity as they complete their coursework at NCC. Cheating and plagiarism are violations of the Student Code of Conduct and all instances of academic dishonesty are taken very seriously by the College.

[Cheating](#)

[NCC Plagiarism Policy](#)

Diversity, Equity, and Inclusion Statement:

[Diversity, Equity, and Inclusion Statement | Nashua Community College](#)

NCC Credit Hour Guidelines:

[Credit Hour Guidelines | Nashua Community College](#)

Course Calendar

Week	Starts	Ends	Topic	Chapters
1	18-Mar	22-Mar	Course overview, Introduction, Truth telling, setup Excel and Tableau	1 and 9
2	22-Mar	29-Mar	Types of graphs - selecting correct type	2
3	29-Mar	5-Apr	Design best practices pre attentive attributes, Gestalt principles, data ink ratios, other issues	3
4	5-Apr	12-Apr	Color - use and issues	4
5	12-Apr	19-Apr	Analytics - data summary, some statistics basics	5 and 6
6	19-Apr	26-Apr	Storytelling with data	7
7	26-Apr	3-May	Dashboards and project presentations	8