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Hours: By Appointment

BAN 350 - Information Visualization

Course Syllabus

Course Meetings:	None
Course Mode:	Online Asynchronous
Course Location:	Online

Materials & Books

Required

- [Course notes for Information Visualization](#), Suleiman (free)
- Other readings may be provided in Brightspace

Reference Text (suggested and free)

- [R for Data Science](#), Grolemund and Wickham
- [ggplot2: Elegant Graphics for Data Analysis](#), Wickham

Technology Requirements

- RStudio.cloud site (free, see Brightspace) and you will need to sign up for a free account on [rpubs.com](#)
- DataCamp (free, see Brightspace)
- [R](#) and [RStudio desktop](#) (optional if you want to work without internet access, also free)
- [Tableau](#) and Tableau Prep (product keys and instructions will be provided in Brightspace)
- [See the "Technology" section](#) for information on Brightspace's tech requirements.

Course Description

In this course, students will learn to create charts, maps, and other visualizations to tell stories and to create effective graphical displays of evidence. Students will learn to critically evaluate examples from print media and the internet while learning the foundations of data visualization. *BAN 300 - Data Management, is a prerequisite for this course.*

Learning Outcomes

Upon successful completion of this course, students will:

1. **understand** why visualization matters and how to **truthfully represent data** visually
2. **learn** how to use visualization to support decision making and critical thinking
3. **understand** the **grammar of graphics** and how to select appropriate visualizations
4. **develop proficiency** in creating static and interactive visualizations for a variety of disciplines
5. **build a narrative structure** with visualizations combined with writing and the spoken word
6. appreciate **human perception** and its impact on design

Structure & Format

This course is asynchronous online. It is fairly technical and work-intensive and you need an understanding of basic statistics.

Grading Criteria

Assignments are used to test your ability to create visualizations while employing the concepts and heuristics learned in this course. For the first half of the course, assignments will be submitted in Piazza (with code hidden) and Blackboard (as an Rmd file containing all your code). For the second half, we will be using Piazza only to submit assignments. There are rubrics in Blackboard for each assignment to aid you in getting the maximum possible grade you can achieve.

Quizzes are used to test your knowledge of the material covered through the readings, videos, and any other media assigned in class.

Participation will solely be judged on CampusWire participation. See the grading rubric in Brightspace for details.

There will be three **self-directed learning** (i.e., DataCamp) **modules**, due throughout the semester.

The **project** will be a "deeper dive" into a more robust interactive visual story or dashboard using

Tableau. For those that don't want to go deeper in Tableau, an alternate set of training will be available. The project will be due during Final Exam week. See the schedule for details.

Assignment / Assessment	Value
Quizzes (2 @ 10% each)	20%
Assignments (8 @ 5% each, lowest grade dropped)	35%
Self-Directed Learning Assignments (3 @ 7% each)	21%
Participation	10%
Project	14%

Course Evaluations

At the end of each semester, every student has the opportunity to provide constructive feedback on their courses. It is important to me that you take the time to let me know your thoughts about the course. I use your feedback to make improvements to the course materials, assignments, and outcomes.

Course Policies

Grading Scale

100-93%	=	**A**	79-77%	=	**C+**
92-90%	=	**A-**	76-73%	=	**C**
89-87%	=	**B+**	72-70%	=	**C-**
86-83%	=	**B**	69-60%	=	**D**
82-80%	=	**B-**	60% or lower	=	**F**

Attendance and Late Work

You may turn in assignments early. However, work submitted after an assignment due date, unless otherwise cleared by the instructor, will be penalized. **The first assignment and tutorial will not be accepted late.** Assignments submitted more than 3 days after their due date without prior contact with the instructor will not be accepted.

Withdrawal from the Course

Last day to drop for 100% refund and no transcript record: Monday, January 31

Last day to drop with a grade of "W": Friday, April 1

For more information, review [USM's Add/Drop and Withdrawal Policies](https://usm.maine.edu/reg/addingdroppingwithdrawal)[1].

Academic Integrity / Plagiarism

Everyone associated with the University of Southern Maine is expected to adhere to the principles of academic integrity central to the academic function of the university. Any breach of academic integrity represents a serious offense. Each student has a responsibility to know the standards of conduct and expectations of academic integrity that apply to academic tasks. Violations of student academic integrity include any actions that attempt to promote or enhance the academic standing of any student by dishonest means. Cheating on an examination, stealing the words or ideas of another (i.e., plagiarism), making statements known to be false or misleading, falsifying the results of one's research, improperly using library materials or computer files, or altering or forging academic records are examples of violations of this policy which are contrary to the academic purposes for which the University exists. Acts that violate academic integrity disrupt the educational process and are not acceptable.

Evidence of a violation of the academic integrity policy will normally result in disciplinary action. A copy of the complete policy may be obtained from the [Dean of Students Office website](https://usm.maine.edu/community-standards-mediation/academic-integrity)[2] or by calling and requesting a copy at **(207) 780-5242**.

Final Examinations / Final Project

There are no final examinations in this course. Students will have the option of completing a final project in Tableau or completing two specific DataCamp courses.

It is a USM academic policy that no tests or exams may be scheduled during the last week of classes.

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[1] https://usm.maine.edu/reg/addingdroppingwithdrawal
[2] https://usm.maine.edu/community-standards-mediation/academic-integrity

Course Schedule

Readings / Assignment Schedule **(subject to alteration with notice)**

Assessments are typically due on a Friday at 11:59 PM, unless otherwise specified. Check Brightspace's calendar for more information.

Week ending (Friday)	Topics and Activities	Due
1/17-27	Module 0: The Prequel (for those with minimal R/Rstudio experience) Module 1: Introduction; Visualizing numeric data	Assignment 1
2/3	Module 2: Visualizing categorical data	Assignment 2
2/10	Module 3: Visualizing temporal data	Assignment 3 SDL 1
2/17	Module 4: Visualizing spatial data	Assignment 4 Quiz 1
2/24	Module 5: Table design	Assignment 5
3/3	Module 6: Visualization odds and ends	Quiz 2
3/10	Work on Self Directed Learning Assignments 2 and 3	SDL 2 & 3
3/17	Spring break (begins 3/13)	
3/24	Module 7: Introduction to Tableau	NA
3/31	Module 8: Adding interactivity to visualizations	Assignment 6
4/7	Module 9: Designing dashboards	Assignment 7
4/14	Module 10: Designing stories	Assignment 8
4/21	Module 11: Integrating R and Tableau	NA
4/28	Project work	Project due 5/ 2 (Tuesday)

Technology

Technology Support Center (Help Desk)

If you need technical support at any time during the course (especially concerning Brightspace), please contact the Technology Support Center:

Phone: (207) 780-4029 or **1-800-696-4357**

Email: help@maine.edu

- You need a maine.edu account to access most of our online resources. If you can't remember your account information, [visit the UMS User Account Management website](#)[3] or contact IT at **1-800-696-4357** and ask them to help you access your maine.edu account.

- [The USM Portal](#)[4] can be used to reach your student email, Brightspace, MaineStreet and most other university online tools through a single website.

- If this is the first time you've used Brightspace, [Log into our Brightspace website](#)[5] and tap the "Student Training" link in the right-hand column of the page.

Computer Access

Participants will need a reliable PC or a Mac with the latest version of a web browser. In addition, you will need a broadband Internet connection (DSL or faster). Below is a suggested list of recommended software you may need to access electronic resources for this course.

Latest Versions of Web Browsers

- [Mozilla Firefox](#)[6] (Windows / MacOS) - Recommend

- [Google Chrome](#)[7] (Windows/MacOS) - Recommended

- [Safari](#)[8] (MacOS - Update through the App Store)

Note that Brightspace and many other web-based applications used in USM courses do not work well in

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[3] http://accounts.maine.edu/
[4] https://my.usm.maine.edu/
[5] https://courses.maine.edu/d2l/home/6667
[6] http://mozilla.com/firefox
[7] http://www.google.com/chrome/
[8] http://www.apple.com/safari/

Microsoft's web browser, Edge.

Brightspace Technical Requirements

D2L recommends having the latest version of whatever browser is being used on any computer or mobile device. Brightspace works very well on mobile Apple and Android devices via web browser. The Brightspace Pulse app in the Apple App Store and Google Play also allows you to receive notifications regarding your courses on your device.

Netiquette

Our text-based communication is vital in this course since it is the primary - and possibly only - way we will connect with each other. Please be careful and considerate in all your communications with each other and your instructor.

The online medium is poor at conveying tone. Consider what you are saying and remember that your intent might not be inferred by your readers (fellow students and instructors). Take a moment to re-read everything you write: assume that it will be taken in the worst possible light. And extend courtesy to others: assume the most charitable light possible. Both of these steps will make communication easier and far more civil.

Student Data Retention

Your maine.edu account is issued to you for as long as you are a student of this or any other University of Maine System campus. There are various limits on how long IT can retain data you have stored through this account depending on which services you have used. Below are the major points, but we encourage you to [visit the UMS User Account Management website](#)[9] for full details on maine.edu account policies.

Assignments and other work stored in Brightspace

Do NOT treat important academic work in old Brightspace courses as your sole copy. Each semester, all courses receive a fresh Brightspace page commonly referred to as a "shell." Course shells older than two years are automatically purged from the system, but sometimes instructors remove old course shells manually on their own. It is strongly recommended that you make backups of any work you have submitted to Brightspace before or shortly after your course ends. **Especially if your program requires you to maintain a portfolio of work you have done.**

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[9] http://accounts.maine.edu/

Google Products

Your maine.edu account is also a fully functional Google Account with access to Gmail, Google Drive, and most of Google's other products. After leaving the university, either through graduation or simply not registering for courses, credit-earning students have 5 years before their maine.edu account is removed. The limit is 2 years for non-credit students. This includes files and email stored in Google's products using your maine.edu account. If this data is important to you, or if you need to retain it for a portfolio or future certification, you must **make and maintain your own personal backups of these files.** Consider using Google Takeout[10] to backup this data prior to separating from the University.

Box & Others

If you are using Box through your maine.edu account, please be aware that your storage can only be maintained for one year after you have graduated, or otherwise separated from the university.

University Policies & Support Resources

ADA & Electronic Accessibility Notification & Accommodations

The university is committed to providing students with documented disabilities equal access to all university programs and services. If you think you have a disability and would like to request accommodations, you must register with the Disability Services Center. Timely notification is essential. The Disability Services Center can be reached by calling **(207) 780-4706** or by email at **dsc-usm@maine.edu**. If you have already received a faculty accommodation letter from the Disability Services Center, please provide me with that information as soon as possible. Please make a private appointment so that we can review your accommodations.

The following is a list of accessibility resources for the software we use in this course:

- Brightspace Accessibility information[11]

- Google Suite Accessibility information[12]

Learning Commons

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[10] https://takeout.google.com
[11] https://www.d2l.com/accessibility/standards
[12] https://support.google.com/a/answer/1631886?hl=en

Tutoring at USM is for all students, not just those who are struggling. Tutoring provides active feedback and practice, and is available for writing, math, and many more subjects. Walk-in tutoring is available at the Glickman Library in Portland, the Gorham Library, and the LAC Writing Center.

- For best service, we recommend [making an appointment at the Learning Commons scheduling website.](#)[13]
- Questions about tutoring should be directed to **Naamah Jarnot** at **(207) 780-4554**.
- Interested in becoming a more effective, efficient learner? [Check out the AGILE website!](#)[14]

Counseling

Counseling is available for USM students. The best way to schedule an appointment is by phone at **(207) 780-5411**.. More information is available on the [University Health and Counseling Services website](#)[15].

Recovery Oriented Campus Center (ROCC)

A peer support community for students in recovery from substance abuse and other mental health conditions is available at USM. More information may be found online at the [Recovery Oriented Campus Center website](#)[16] or by containing ROCC at **(207) 228-8141**.

Non-Discrimination Policy & Bias Reporting

The University of Southern Maine is an EEO/AA employer, and does not discriminate on the grounds of race, color, religion, sex, sexual orientation, transgender status, gender expression, national origin, citizenship status, age, disability, genetic information or veteran's status in employment, education, and all other programs and activities. The following person has been designated to handle inquiries regarding non-discrimination policies:

Amie Parker, Interim Director of Equal Opportunity

The Farmhouse, University of Maine Augusta

Augusta, ME 04333,

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[13] https://usm.maine.edu/learningcommons/schedule-tutoring-appointment
[14] https://usm.maine.edu/agile
[15] https://usm.maine.edu/uhcs
[16] https://usm.maine.edu/recovery

(207) 581-1226, TTY 711 (Maine Relay System).

Incidents of discrimination or bias at USM should be reported to Associate Vice President for Student Affairs **David Roussel** at **(207) 780-5242**.

Statement of Religious Observance for Students

Absence for Religious Holy Days

The University of Southern Maine respects the religious beliefs of all members of the community, affirms their rights to observe significant religious holy days, and will make reasonable accommodations, upon request, for such observances. If a student's religious observance is in conflict with the academic experience, they should inform their instructor(s) of the class or other school functions that will be affected. It is the student's responsibility to make the necessary arrangements mutually agreed upon with the instructor(s).

Title IX Statement

The University of Southern Maine is committed to making our campuses safer places for students. Because of this commitment, and our federal obligations, faculty and other employees are considered mandated reporters when it comes to experiences of interpersonal violence (sexual assault, sexual harassment, dating or domestic violence, and stalking). Disclosures of interpersonal violence must be passed along to the University's Deputy Title IX Coordinator who can help provide support and academic remedies for students who have been impacted. More information can be found at the Campus Safety website[17] or by contacting Sarah E. Holmes at **sarah.e.holmes1@maine.edu** or **(207) 780-5767**.

If students want to speak with someone confidentially, the following resources are available on and off campus:
- **University Counseling Services:** (207) 780-4050
- **24 Hour Sexual Assault Hotline:** 1-800-871-7741
- **24 Hour Domestic Violence Hotline:** 1-866-834-4357

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[17] https://usm.maine.edu/campus-safety-project

Policy On Acceptable Conduct In Class Settings

If a student substantially disrupts a class, the professor may ask the student to align with this policy on conduct in a class setting. If the student refuses, the professor may, at their discretion, ask the student to leave. If the professor takes this step, they must attempt to communicate with the student and provide informal counsel and advice. The professor may elect to notify their dean of the situation as well. If the student disrupts the class again, the professor may, at their discretion, provide a written notification to the student, describe the offending behavior, and refer the student's case to the appropriate academic dean and notify the dean of students that an official student conduct code violation has occurred. The [Student Conduct Process is detailed on the Community Standards and Mediation website](https://usm.maine.edu/community-standards-mediation/conduct-process)[18].

Covid Face Covering Requirement

Per USM and the University of Maine System, all students, faculty, and staff members are required to wear a face covering, including during all face-to-face classes. Resident students are exempted from this requirement when in their own room in the residence hall. Students seeking additional exceptions from this requirement should refer to the **Disability Accommodations** section of this syllabus. [Full information on Covid restrictions and guidelines](https://www.maine.edu/together/community-guidance/everyone/) can be found on the University of Maine System website[19].

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[18] https://usm.maine.edu/community-standards-mediation/conduct-process
[19] https://www.maine.edu/together/community-guidance/everyone/