

DISCLAIMER: This is a sample syllabus that is subject to change at instructor discretion.



Course Syllabus

Semester, Year, Section

Course Information

MTH-120 Introduction to Data Through Visualization

3 Credit Hours

Online, Asynchronous

Instructor Information

Instructor Name:

Email Address:

Instructor Contact Preferences:

Communicating With the Instructor

When questions arise throughout the course, please remember to check the following resources for an answer before reaching out to me:

1. Course Syllabus
2. Announcements
3. The Question Center discussion board

Question Center Discussion

The Question Center Discussion is an excellent place to ask questions and get answers from peers and me. You are encouraged to post your questions here before contacting me unless it is a time-sensitive matter. If you have questions of a personal nature, such as relating to a personal emergency, questioning a grade on an assignment, or something else that needs to be communicated privately, you are welcome to contact me directly via email.

Technology Help

If you have a question about the technology used in the course, please contact the Doane University Service Center for assistance; their contact information is listed later in the syllabus. If third-party tools are utilized in the course, please contact them directly.

Course Details

Catalog Description

This course introduces students to statistical thinking and data analytics through the use of visualization software.

Course Prerequisites

No course prerequisites. Must meet Doane's general Math Readiness.

Course Textbook and Materials

Course Pack - MTH-120: Intro to Data through Visualization

You will need to download and print the MTH-120 Course Pack. The course pack is a companion to the lecture videos in this course. You will work through items in the course pack as you are watching the videos each week.

Required Technology

- Computer with access to Canvas, Google Sheets, and Tableau Public (online)

Learning Objectives and Course Outline

Program Objectives

1. Communicate mathematical arguments and results clearly by choosing the appropriate representation for the intended audience and purpose.
2. Develop solutions to open-ended problems by making conjectures and gathering evidence that supports or refutes these conjectures.
3. Use appropriate technology to enhance their mathematical thinking and understanding.

Course Objectives

By the end of the course, you will be able to:

1. Identify proper data structures
2. Manipulate and clean spreadsheet data
3. Create visualizations for a variety of data types
4. Communicate of the meaning of visualizations



5. Explain pertinent characteristics about a data set

Doane Core Outcomes

These can be found on the [Philosophy of the Undergraduate Core at Doane](#) website. This course also satisfies the Mathematical Thinking FAK of the Doane Core: Students will learn basic strategies of mathematical thought in order to analyze complex scenarios, make connections, solve problems, explain conclusions, and think more effectively. Students will work to analyze and model mathematical situations using a variety of techniques to solve problems effectively and communicate a clear understanding of conclusions.

Course Outline

Module	Topic	Assessments & Activities	Aligned Objectives
1	Data Definitions and Overview	Lecture 1.1 - What is Data? Lecture 1.2 - Types of Variables and Data Module 1 Homework Assignment	Identify basic data structures Classify types of variables and datasets Formulate research questions
2	Data Collection and Cleaning	Lecture 2.1 - Data Collection Lecture 2.2 - Data Cleaning Module 2 Homework Assignment Quiz - Data Overview (Modules 1-2)	Explain best practices for data collection. Identify common data quality issues and describe strategies to mitigate them. Apply data cleaning and organization techniques.
3	Data Summaries using Sheets	Lecture 3.1 - Intro to Sheets Lecture 3.2 - Basic Summaries in Sheets Lecture 3.3 - Advanced Summaries and Techniques Module 3 Homework Assignment	Develop spreadsheet fluency. Compute data summaries. Create new variables within datasets. Apply conditional spreadsheet functions.



Module	Topic	Assessments & Activities	Aligned Objectives
4	Pivot Tables and Spreadsheet Visualizations	Lecture 4.1 - Pivot Tables Lecture 4.2 - Basic Spreadsheet Visualizations Lecture 4.3 - Spreadsheet Visualizations from Pivot Tables Module 4: Homework Assignment	Construct and interpret pivot tables. Apply conditional formatting. Create and interpret basic visualizations in sheets.
5	Visualization Principles and Tableau Intro	Lecture 5.1 - Visualization Principles Lecture 5.2 - Tableau Intro Visualization Examples Discussion Module 5: Homework Assignment	Apply fundamental principles of data visualization. Find and critically evaluate real-world data visualizations. Show basic readiness for Tableau.
6	Single Variable Visualizations	Lecture 6.1 - Single Variable Viz - Intro and Bar Chart Lecture 6.2 - Single Variable Viz - Pie Chart, Histogram, Box Plot Module 6: Homework Assignment	Select an appropriate single variable visualization type. Create a single variable visualization. Summarize and interpret the single variable visualization.
7	Multivariable Visualizations	Lecture 7.1 - Multivariable Viz - Intro and Cat. vs. Cat. Lecture 7.2 - Multivariable Viz - Cat. vs. Num. Lecture 7.3 - Multivariable Viz - Num. vs. Num. Module 7: Homework Assignment	Select an appropriate multivariable visualization type. Create a multivariable visualization. Summarize and interpret the multivariable visualization.
8	Dashboards	Lecture 8.1 - Dashboards Lecture 8.2 - Final Project Example	Select an appropriate advanced visualization type.



Module	Topic	Assessments & Activities	Aligned Objectives
		Final Project	Create visualizations that tell a cohesive story together in a dashboard. Summarize and interpret the dashboard.

Course Requirements

This is an online course, and there will **not be any face-to-face class sessions**. All communications, submissions of assignments, course interactions, and posting of grades will utilize Canvas LMS (<https://doane.instructure.com>). You must have a **reliable internet connection** throughout the course.

Attendance/Participation

Attendance in an online course means logging into Canvas regularly and participating in all the activities posted in the course. In addition, check your Doane University email account regularly, as I may send important information about the course.

Class Preparation

Preparation for class means reading the assigned readings and reviewing all information required for that module. You should plan to work on this course every day. Regular engagement is expected for online courses.

Netiquette Guidelines

At heart, netiquette (etiquette for the Internet) is simple, including good manners and business courtesy. Some of it may seem basic, but some infringements can result in major problems for others or create an unintended insult to another user. The guidelines are adapted from Virginia Shea's *The Core Rules of Netiquette* (1994). Please review the [Netiquette Guidelines](#) in the Student Resource Center for more information.

Computer Requirements

To successfully use Canvas, please refer to Doane University's [minimum computer requirements](#). This also includes:

- Reliable computer and internet connection
- A web browser (Chrome or Mozilla Firefox)
- Adobe Acrobat Reader (free)
- Word processing software—Microsoft Word or Google Docs



- Webcam and mic*

*A webcam is optional for privacy purposes during video conferencing and recording.

Campus Network or Canvas Outage

When access to Canvas is not available for an extended period of time (greater than one entire evening - 6 pm until 11 pm), you can reasonably expect that the due date for assignments will be changed to the next day.

Drop and Add Dates

If you feel it necessary to withdraw from the course, please contact your advisor for full details on the types of withdrawals available and their procedures.

Federal requirements state that students must complete 75% of the coursework to be eligible to receive an incomplete for the course. Students who fall more than two weeks behind cannot meet this requirement.

Access to Course

You can access the course in Canvas starting from the first day of the course and for 15 days after the term ends. If you need access beyond those 15 days, you must submit a request with a valid reason, which the administration must approve.

Academic Integrity

Fundamental to our mission, core values, and reputation, Doane University adheres to high academic standards. Students of Doane University are expected to conduct themselves in a manner reflecting personal and professional integrity. Disciplinary actions may be taken against students whose academic behavior is not congruent with the expectations of the University. Students are responsible for adhering to the standards detailed in this policy. Not being familiar with these standards does not mean that the students will not be accountable for adherence to them. Additional details on the Academic Integrity policy for violating academic integrity are published in the undergraduate and graduate catalogs. Please review [Doane University's Academic Integrity Policy](#).

Course Grading

Submitting Assignments

Unless otherwise communicated to me, all assignments must be submitted via Canvas. Each assignment will have a designated place to submit your work. All materials, assignments, and deadlines are subject to change without prior notice. You are responsible for staying in touch with me and reviewing the course site, including Announcements, regularly to learn about changes to assignments or due dates.



Grading Scale

Assignment of letter grades is based on a percentage of points earned. The letter grade will correspond with the following percentages achieved. All course requirements must be completed before a grade is assigned.

Letter grades will be determined from numerical grades as follows (decimals rounded up):

A+	98-100%	A	93-97%	A-	90-92%
B+	87-89%	B	83-86%	B-	80-82%
C+	77-79%	C	73-76%	C-	70-72%
D	60-69%	F	0-59%		

Grading Scheme

The following outlines the weighted breakdown for how grades will be calculated:

Lectures – 25%

Homeworks – 35%

Quiz (Module 2) – 5%

Discussion (Module 5) - 10%

Final Project – 25%

Tutoring Services

Students can access a **free online tutoring service** within their Canvas account. You can connect with a live free tutor or submit a paper to get feedback before submitting.

Proctored Assessments

This course **may contain proctored quizzes and exams, which are not optional**. For these proctored events, Doane uses YuJa Verity, a secure, online proctoring service that allows you to complete your exam from any chosen location at any time. Proctoring assures your instructor that any suspicious activity by test takers will be monitored and reported. The cost of the proctoring is included in the tuition and fees for this course.

Late or Missed Assignments

Unless you discuss a late assignment with me before the assignment due date, your assignment will lose 20% each day it is late. Any missing assignments will be recorded as 0s.

Assignment & Assessment Feedback

Please allow 1-3 days for feedback on assignments. Be sure to review all of my feedback, as this will help you reflect on what you have learned while receiving suggestions for improvement.



Grade Appeals

Students who believe that their grade was miscalculated due to a mathematical error should contact the instructor within **ten (10) days of the grade posting**. Students are encouraged to talk with their advisor to offer an assessment of the concern and clarify the steps of the appeal process. More information is published in the [Undergraduate and Graduate Catalogs](#).

Support and Services

Technical Support

If you need technical assistance, please access the [Self-Service Portal](#). The help desk can be reached at 402-826-8411 or by email at helpdesk@doane.edu.

Accessibility Statement

In compliance with the Rehabilitation Act of 1973, Section 504, and the Americans with Disabilities Act of 1990, professional disability specialists and support staff at Doane University facilitate a comprehensive range of academic support services and accommodations for qualified students with disabilities. Doane University staff coordinate student transitions from high schools and community colleges, conduct in-service training for faculty and staff, enable the resolution of accessibility issues, conduct community outreach, and facilitate collaboration among Doane University staff on disability policies, procedures, and accommodations.

Accommodations & Disability Services

[Doane University's Disability Services Office](#) will guide accommodations and universal access. To request accommodation, please complete the [Self-Identification Form](#) and visit the website for additional information as soon as possible.

Academic Support

Doane University offers all of its students access to [Academic Support](#) services.

Title IX Requirements: Mandatory Reporting

At Doane, all university employees, including faculty, are considered Mandatory Reporters. As a Mandatory Reporter, I am required to report incidents of sexual misconduct and relationship violence to the Title IX Coordinator and, thus, cannot guarantee confidentiality. This means that if you tell me about an incident of sexual harassment, sexual assault, domestic violence, dating violence, stalking, and/or other forms of prohibited discrimination, I have to share the information with the University's Title IX Coordinator. My report does not mean that you are officially reporting the incident. This process is in place to ensure you have access to and are able to receive the support and resources you need. Please visit the [Campus Advocacy, Prevention, and Education \(CAPE\) Project](#) for additional information, including confidential resources.



Anti-Harassment Policy

Doane University, referred to as the "University," is committed to providing all University community members with a safe and non-discriminatory learning, living, and working environment. This policy addresses the University's responsibilities under Title IX, the Violence Against Women Reauthorization Act of 2013, and the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act ("Clery Act"). More information is published in the [Student Handbooks](#).

Instructional Technology Accessibility and Privacy Policies

[Technology accessibility and privacy policies](#) are available on the Student Resource Center within the Canvas LMS.

Regular and Substantive Interaction

The U.S. Department of Education mandates that online courses include "regular and substantive interaction" (RSI) between students and instructors to be considered distance education. This course adheres to the RSI expected of all distance education courses. The course adheres to the regular component through

- a clear schedule of due dates for lessons, readings, and assessments, and
- an instructor of record who monitors student progress in the course and alerts the students who are not engaging adequately in the course.

The substantive interaction is achieved through

- assessment of students' work with feedback on a scheduled basis
- an active discussion board about course content monitored by the instructor
- providing information about the course content on a regular basis or in response to questions.

Syllabus Addendum & Disclaimer

I (the instructor) view the course syllabus as an educational contract between myself and each student. Every effort will be made to avoid changing the course schedule, but unforeseen events may make syllabus changes necessary. I reserve the right to make changes to the syllabus as deemed necessary. Students will be notified promptly of any syllabus changes via email or course site announcements. Please check your Doane University email and the course site announcements often.

Syllabus Changes

The instructor and Doane University reserve the right to change this course syllabus. All students will be notified of any changes.

Syllabus Addendum

Each student is responsible for knowing the policies, resources, and expectations specified in the [Doane Syllabus Addendum](#).



