

# CSCI 491/591: Data Visualization

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## I- Course Orientation

# About me : Neda Nazemi (NEH-dah nah-ZEH-mee)

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- Ph.D. in Systems Engineering (Uva)
- MSc. in Environmental Engineering (UVa)

## Teaching:

- Intro to DS (CSCI-291)
- Intro to Data Mining (CSCI-347)
- Data Visualization (CSCI-491)
- Adv. Data Mining (CSCI-550)

## Research:

- AI and ML for social good



Isfahan, Iran



Alma's first snow  
experience in Bozeman



# How to Communicate

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- Post your question on the class Canvas chat
- Office Hours: MWF 02:00 am- 02:50 pm
- Email me: [neda.nazemi@montana.edu](mailto:neda.nazemi@montana.edu)
- Stop by my office: Barnard Hall 359

# About You (Assignment 0)

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Please create a single slides with the following information about you:

- An interesting photo of yourself
- Your name (with pronunciation hints)
- Hometown (include country/region if you think I won't know)
- Current Degrees
- What type of job to hope to land upon graduation (title & industry)
- Two things you hope to learn in this course
- One fact about you

# Ice Breaker

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# iClicker

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If you have not enrolled in class on iClicker yet, join using QR code:



Have you used iClicker before:

1. Yes
2. No

# Learning Objectives

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- Theory of information visualization and visual analytics
- Different methods and techniques for visualizing various data types and understanding which way is suitable for a given data and a specific purpose.
- The skill of producing compelling data visualizations using different visualization tools

# Textbooks

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[Safari Books Online \(O'Reilly for Higher Education\) : Montana State University \(MSU\) Library](#)



- [Fundamentals of Data Visualization](#) (main)
- [Visualization with Matplotlib](#) (Chapter 4 of [Python Data Science Handbook](#))
- [Plotting and Visualization](#) (Chapter 4 of [Numerical Python: Scientific Computing and Data Science Applications with Numpy, SciPy, and Matplotlib](#))
- [Data Visualization Trends and Challenges Toward Multidisciplinary Perception](#)
- [Data Visualization: the state of the art](#)
- [Information Visualization: perception for design 3<sup>rd</sup> edition](#)
- [Hands-on Data Visualization](#)
- [Storytelling with Data: Let's Practice!](#)
- [The Visual Display of Quantitative Information, E. Tufte. Graphics Press, 2001.](#)
- [Envisioning Information, E. Tufte. Graphics Press, 1990.](#)
- [The big book of Dashboards](#)

# Software and Programming language

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- Course examples will use Python packages (matplotlib, seaborn, bokeh, ...)
  - There is a wealth of freely available material (manuals, tutorials, videos, etc.) on python programming available online.
- I use Jupyter Lab as IDE for my teaching material. Make sure you have installed it and ready to use in-class
- Feel free to use any programming language or packages for your assignment and final projects.
- Have your laptop with you for in-class activities.

# Evaluation & Grading

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Grading	Points
Quizzes	150
Assignments	300
Peer grading	100
Exam	200
Final Project	250
Participation (Bonus)	20
<b>Sum</b>	<b>1020</b>

# Quiz

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- In-class quizzes.
- No makeup for missing any quiz but the lowest grade will be dropped out.
- The quizzes will cover the previous lectures



# Assignments

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EVZ5BG

- There will be written and coding assignments about every other week.
- The assignments should be turned in on both gradescope and d2l.

# Exam

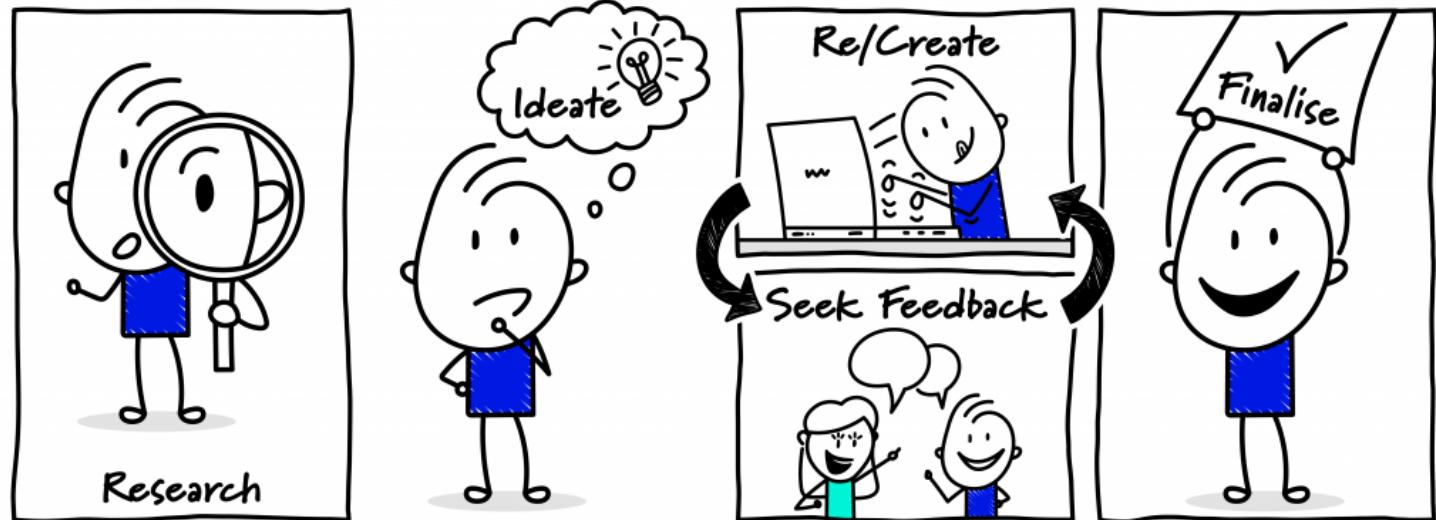
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- One in-class exam scheduled for week 12

# Final Project

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- Students should propose a project to design, develop, and present a complete information visualization solution.
- Teams of 2 or 3



# Participation

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- If you participate in all iClicker activities, you will receive full bonus points.
- If you miss one or two polls but are always active in class or canvas discussions, you will still receive the credit.
- The correctness of your answers does not matter for gaining these two points.

# Participation

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**For all assignments/exams, if you cannot do it because:**

- Of illness - must be actively under a doctor's care (Dr's note) – can't just be home in bed
- Death in the family
- Competition

**YOU MUST CONTACT ME AHEAD OF TIME.** Contacting me after the due date will cause you to get a 0 for exams and regular 10% deduction for each day for assignments.

# AI policy

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## Allowed for assignments

- Brainstorming ideas, outlining, pseudocode, test ideas, debugging hints, explanations of concepts or errors
- Code review suggestions
- Help locating documentation or references

## Not allowed:

- Any use of AI during quizzes or exams
- Submitting AI generated code, text, figures, or analyses as your own without disclosure and substantial personal revision
- Using AI to bypass the intent of an assignment or to generate full solutions

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# Good Luck!

