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44-613

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# Data Visualization

Fall 2022

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## COURSE SYLLABUS



## **I. Course Title**

CSIS 44-613 Data Visualization

## **II. Course Credit**

Three credit hours

## **III. Prerequisites**

Coursework equivalent to general statistics and programming.

## **IV. Course Professors**

Lead Professor

Name: Ajay Bandi

Title: Associate Professor

Phone: (660)562-1199

Email: [ajay@nwmissouri.edu](mailto:ajay@nwmissouri.edu)

Office Hours: Hours: By appointment

Office Location: : CH 2250

## **V. Course Description**

This course covers the design and development of exploratory diagrams and graphics for various data sets. The course may include concepts such as chart and graph design, networks, topological graphs, display of multi-dimensional data, effective use of space and color, animations, interactive visualizations, mapping, cartography, web data acquisition, and advanced visualization tools.

## **VI. Course Rationale**

This course allows students to learn how to use appropriate standard and advanced visualization techniques for large data sets. This course will familiarize students to visualization tools (ex: MS Excel, and Tableau).

## VII. Course Outcomes

Upon completion of the course students will be able to:

Student Learning Outcomes:	Assessment methods:
CO 1: Recognize the business needs to recommend data-driven solutions CO 2: Analyze the data sets to generate various diagrams, charts, or graphs CO 3: Apply appropriate data visualization techniques, skills, and tools necessary for different data domains CO 4: Design interactive dashboards & storyboards using Tableau for decision making CO 5: Communicate results to the stakeholders with a cohesive data story CO 6: Identify the most appropriate visualization method for a given type of data and task CO 7: Develop skills to both design and critique visualizations	Assignments, Quizzes, Threaded discussions, Projects

## VIII. Materials

Textbook or supplementary materials

There are no required textbooks for this course.

Other Resources

Online materials as provided on the Northwest Online.

## IX. Course Outline and Expectations

Instructional Methods and Techniques

This course is delivered entirely as online seminar. Participation is expected and required. Because of this instructional method, it is imperative that each student reads the

assigned material and attends classroom discussions, threaded discussions. Students will be responsible for reading materials, engaging in classroom discussions, and completing assignments.

## Participation/Attendance

“Students are expected to attend all classes as specified in the course syllabi for each course. However, specific attendance policies may vary from instructor to instructor. Each instructor will clarify the attendance policy at the beginning of each course. It is the responsibility of the student to promptly notify his or her instructor when unable to attend class. Students receiving veterans’ benefits should consult with the coordinator of Veterans’ Affairs for the additional attendance requirements.

A student may make up class work without penalty if engaged in University activities endorsed by the Provost or prevented from attending by circumstances considered adequately extenuating by the course instructor.

After the add period until the end of the drop period, an instructor may request the Office of the Registrar to delete a student from the class roster due to non-attendance.”

<http://nwmissouri.smartcatalogiq.com/en/2016-2017/Undergraduate-Catalog/Policies-and-Regulations/Academic-Policies/Attendance>

## Code of Academic Integrity

Please refer to the following link to view Northwest Missouri State University’s Code of Academic Integrity Policy

<http://www.nwmissouri.edu/policies/academics/Academic-Integrity.pdf>

## Family Educational Rights and Privacy Act (FERPA)

Please refer to the following link to view Northwest Missouri State University’s policy for Family Educational Rights and Privacy Act (FERPA):

<http://www.nwmissouri.edu/policies/academics/Family-Educational-Rights-and-Privacy-Act.pdf>

## Accessibility and Accommodations

Northwest Missouri State University complies with Section 504 of the Rehabilitation Act of 1973 and the American with Disabilities Act of 1990.

If a student has a documented disability that qualifies under ADA and requires accommodations, he/she/they should contact the Accessibility and Accommodations Office for information and assistance. Disabilities accommodated under ADA may include living, learning, psychological, physical disabilities, or chronic health disorders.

Information about supporting documentation requirements and the accommodations application can be found at the University Title IX and Equity, Accessibility & Accommodations website <https://www.nwmissouri.edu/titleixequity/accessibility/index.htm>

Students with questions about learning accommodations should contact the Accessibility Coordinator in the Title IX and Equity, Accessibility and Accommodations Office at [ADA@nwmissouri.edu](mailto:ADA@nwmissouri.edu).

If you have been approved for a learning accommodation and received an accommodations approval letter, or if you have emergency medical information you choose to share with me, or if you need special arrangements in case the building must be evacuated, please inform me immediately.

## Non-Discrimination and Anti-harassment Statement

Northwest Missouri State University (the “University”) is committed to maintaining an environment for all faculty, staff, students, and third parties that is free of illegal discrimination and harassment. In keeping with that policy, the University prohibits discrimination and harassment by or against any faculty, staff member, student, applicant for admissions or employment, customer, third-party supplier or any other person (collectively the “University Community”) because of their race, color, religion, national origin, sex, sexual orientation, gender identity, pregnancy, ancestry, age, disability, genetic information, veteran status, or any other legally-protected class (collectively “protected statuses”). <http://www.nwmissouri.edu/diversity/titlevi.htm>

## Course Communication Policy

In this course, we will use Canvas communication system or email the instructor at [ajay@nwmissouri.edu](mailto:ajay@nwmissouri.edu).

## Course Communication Guidelines (Netiquette)

Participate and interact with all the students professionally in threaded discussions.

# X. Technology Requirements

## Computer/Technology Requirements

- Ability to use the Canvas learning environment.
- Proficiency in using MS Word, MS Excel, MS PowerPoint and attaching these files to your assignment submissions.

## Northwest Online (Canvas)

Access to Northwest Online is at: <https://www.nwmissouri.edu/online>

# XI. Grading and Evaluation

Final Grade Calculation for students enrolled in 44-613.

Assessments	Points
Quizzes	5
Assignments	210
Threaded Discussions	85
Final Project	50
<b>Total</b>	<b>350</b>

## Grading

In determining the final course grade, the following scale is used:

Graduate Credit (44-613)	
Percent Range	Grade
90-100%	A
>= 80% and < 90%	B
>= 70% and < 80%	C
>= 60% and < 70%	D
below 60%	F

## Rubrics

See under Assignments in Northwest Online.

## Quizzes

Under any circumstance, students will be allowed to take each quiz only once before the due date.

## Late Work Policy

No late work is allowed. Files with incorrect extensions and naming conventions receive 0 credit.

# XII. Course Evaluation

At the end of this course, students are encouraged to complete a course evaluation that will be distributed to them via email and through a course link.

# XIII. Course Topics

Module	Content
Module 1	Introduction to visualization concepts and tools
Module 2	Data cleaning, preparation, and ethics
Module 3	Charts I
Module 4	Charts II
Module 5	Geospatial data visualization
Module 6	Dashboards and storyboards
Module 7	Final project

# XIV. Additional Course Information

Syllabus Subject to Change

While information and assurances are provided in this course syllabus, it should be understood that content may change in keeping with new research and literature and that events beyond the control of the instructor could occur. Students will be informed of any substantive occurrences that will produce syllabus changes.