

## DSBA-HCIP 5122: Visual Analytics and Storytelling

### Course Information

<i>Course Number/Section</i>	<b>DSBA-HCIP 5122</b>
<i>Course Title</i>	<b>Spring 2023</b>
<i>Days &amp; Times</i>	Thursday at 5:30pm
<i>Location</i>	Main Campus, College of Education 166

### Instructor Contact Information

<i>Instructor</i>	<b>Stephen Rohrer</b>
<i>Email Address</i>	srohrer@uncc.edu
<i>Zoom:</i>	
<i>Office Hours</i>	7-8:30pm Thursdays following in-class sessions
<i>email or call/text</i>	252-267-2035 (cell)
<i>TA</i>	Emil Svensson
<i>Email Address</i>	esvensso@uncc.edu
<i>Office Hours</i>	Via email or schedule zoom meeting

### Course Prerequisites

- Graduate/Ph.D. student standing or permission of instructor.

### Course Description:

#### DSBA-HCIP 5122: Visual Analytics and Storytelling

The data science cycle includes many phases, including problem definition, data acquisition, data engineering, analysis, reporting, interpreting, visualization, and presentation of the results of analysis/insights derived. This course covers the last three steps in this sequence. It introduces the field of visual analytics, which integrates interactive analytical methods and visualization, and utilizes this to build analytical stories that influence decision makers. Topics include: critical thinking, visual reasoning, perception/cognition, principles of interaction with an audience, building of visuals into a story to influence, and delivery of presentations whether in person or through video conferencing tools.

## Student Learning Objectives

The objectives of this course are to learn how to:

- Evaluate and critique visualization designs
- Learn visualization techniques & theory
- Identify and select appropriate graphs for analyses
- Develop interactive data visualizations
- Design and implement dashboards
- Principles and best practices in data storytelling
- Present data to stakeholders using charts and graphs with a presentation

## Student Learning Outcomes. Students will:

1. demonstrate proficiency in dashboard design and development in Tableau and Power BI
2. Evaluate the credibility, ethics, and aesthetics of data visualizations
3. Understand the principles of data and graphic design
4. Create well-designed data visualizations with appropriate tools
5. Share data and graphics in open forums
6. Articulate best practices in data visualization
7. Develop and interpret a wide range of graphs in Tableau for analyses
8. Enhance and customize visualizations for a specific business context
9. Verbally communicate persuasive, data-driven business insights

HCIP Students:

5. Apply best practices in the design of new and/or critique of existing population health data sources and visualizations. Students in the HCIP section will have the opportunity to work with a health data source and be assessed in their assignments.

## Grading and Assessment Criteria: Outcomes are assessed by:

- 20% Assignments
- 40% Datacamp labs
- 20% Midterm dashboard
- 20% Final Project and presentation

## Grading Scale for Course:

A 90-100    B 80-89    C 70-79    U 69 and below

## Late Assignments, Test Grades, and Group Project Grades:

Late Assignments (assignments submitted past the due date) will receive 5 points off for every day it is late without prior written approval with the TA or professor.

Assignments over a week late can still receive a 50 so long as it is turned in prior to the final class date. Assignments never submitted or completed will receive a 0.

Tests can not be retaken without written approval from the professor.

Project grades are based on the sole work of the individual, and the assignment being submitted on time.

**TEXT (Optional):**

- Winning The Room: Creating and Delivering an Effective Data-Driven Presentation 1st Edition, Franks, Wiley Press, 2022
- Avoiding Data Pitfalls: How to Steer Clear of Common Blunders When Working with Data and Presenting Analysis and Visualizations 1st Edition, Jones, Wiley Press, 2019
- Storytelling with Data: A Data Visualization Guide for Business Professionals 1st Edition, Knaflic, Wiley Press, 2015

**OTHER RESOURCES:** Access to Datacamp will be provided free of charge to students enrolled in the class. Students will create accounts using their @uncc.edu email with the link provided on canvas.

**SOFTWARE:** Students will be able to use MAC and Windows. Students must have access to the internet. Instructions for installing the software will be available as a part of assignments

- Tableau, a popular dashboard and visualization tool (required)
- Microsoft BI, a modern dashboard and reporting tool (required)
- Jupyter Notebook, a popular data science and analysis tool (required)
- PowerPoint or Google Slides, common presentation tools (required)

**CLASS MEETING SCHEDULE:**

Date	Event
January 12, 2023	Week 1 Class
January 19, 2023	Week 2 Class
January 26, 2023	Week 3 Class
February 2, 2023	Week 4 Class
February 9, 2023	Week 5 Class
February 16, 2023	Week 6 Class
February 23, 2023	Week 7 Class
March 2, 2023	Week 8 - Spring Recess - <b>No Class</b>
March 9, 2023	Week 9 Class
March 16, 2023	Week 10 Class
March 23, 2023	Week 11 Class
March 30, 2023	Week 12 Class
April 6, 2023	Week 13 Class
April 13, 2023	Week 14 Class
April 20, 2023	Week 15 Class
April 27, 2023	Week 16 Class
May 4, 2023	Week 17 Class
May 11, 2023	Week 18 - Week of Finals

## TOPICS

These topics and their order are subject to change by the professor. The topics below cover a range of themes and subjects discussed throughout the class, along with assignments.

- Introduction to visual analysis and analytical storytelling
- Introduction to Jupyter Notebook, Assignment
- Effective visuals - Color, Tableau tutorial I, Tableau Assignment
- Effective visuals - Reducing clutter, Tableau tutorial II
- Developing your story (theory), Developing your story (example)
- Cognitive aspects of visualization, Multidimensional Visualization
- Midterm dashboard
- Midterm Presentations
- Case study discussions, Hiring by machines
- Text Analysis and Visualization
- The persuasive power of visualization, Delivering presentations, Final Project Instructions
- Geospatial Visualization, PowerBI
- Effective communications for storytelling
- Final Project
- Final Project Presentations, The presentations would take place during our final exam time

## **Midterm and Final Project**

Our course projects will provide you the opportunity to explore and experience dashboard development and presentation delivery.. You will develop these as an individual student, not as a group. Each individual will have the chance to choose between several projects provided by the professor. A student can pitch an idea for an original project as well.

The Midterm project will require proper design, development and implementation of a Tableau dashboard that addresses an opportunity. The project is not trivial but not so complex that it requires more than the time allotted. Your project can be hosted locally but web or cloud is recommended on Tableau public domain.

The Final project has several milestones in the form of project deliverables in order to keep your work progressing. Project deliverables must be met; no late work will be accepted.

Projects will be supported by dashboards, visualizations, analyses and a presentation demonstrating the project. The final project is to be done as an individual assignment, no group work!

## **Course Format and Activities**

This course is designed to mirror the curriculum developed by Dr. Wenwen Dou. This course will draw materials primarily from lectures and handouts/ materials posted on the course website. Students will study the materials and complete all the course requirements. In order to properly address the assignments for this class, you will need to put in a considerable amount of time and energy. Please log on often to check for announcements, assignments, course documents, news forums, grades daily to stay informed.

### **Reading:**

At this time, there is no required textbook.

### **Group discussion:**

The most vital use of Discussion Forums is to exchange ideas with other classmates. It is important that you check into the forums regularly. You are encouraged to ask questions regarding the required readings, discuss the unit topics, share information and resources with classmates, and respond to problems posted by your classmates or instructor. You should read everyone's posts and responses to the topics that interest you.

### **Submission of Work:**

- Follow each assignment instruction; all work should be uploaded into the assignment link as requested. Datacamp Assignments are graded in Datacamp. It is the students' responsibility to keep his/her copies of all work submitted to the instructor. All work is to be turned in by the due date, no late work will be accepted.

**Policy on Academic Integrity:** The university policy 407, the Code of Student Academic Integrity, applies. This policy is available at <http://legal.uncc.edu/policies/up-407>.

Academic honesty is absolutely essential. Cheating, plagiarism or other academic misconduct will not be tolerated. If you are caught cheating, you will not pass this course and will be subject to any and all penalties specified in the code of Student Academic Integrity. **If a student is found cheating, she or he will receive a ZERO for that assignment. If a student is found cheating a second time, she or he will receive an "F" for the course.**

Examples of violation academic integrity include, but are not limited to:

- pretending that somebody else's work is yours so that you can get a higher grade than your own work merits
- falsifying data
- lying in order to extend a deadline or gain some other special advantage
- helping other people to do any of these things
- copying answers on tests
- using prohibited reference materials (such as notes or books) during an exam
- turning in papers that you have not written yourself or that you wrote for a different course
- quoting material without marking it as quoted and without attributing it to its source (or closely paraphrasing material without attributing it to its source)
- misrepresenting a medical or family emergency or other personal contingency in order to delay a scheduled exam or to get extra time on an assignment
- pretending to have a disability you do not have (or exaggerating one you do have) in order to gain an unwarranted advantage unavailable to other students
- modifying graded material and then resubmitting it to "correct the error in grading"

### **Rules Governing Students with Special Requirements**

Students with disabilities which require accommodations should:

1. Register with the Office of Disability Support Services and 504 Compliance to provide documentation
2. Bring the necessary information indicating the need for accommodation and what type of accommodation is needed. This should be done during the first week of classes or as soon as the student receives the information. If the instructor is not notified in a timely manner, retroactive accommodations may not be provided.

## Miscellaneous Requirements

1. All requests to change grading of any course work must be submitted in writing within a week after the grades are made available. Requests must be specific and explain why you feel your work deserves additional credit.
2. All requests about missing (or zero) grades must be submitted in writing to the instructor within a week after the grades are announced. After that period the grade stands.
3. Please note that a student will not automatically receive an "I" grade when he/she misses some work, or misses the final exam. An "I" is given to those students who have a passing average at the time of the 'incident'. I grades must go through a formal approval process and must be based on extenuating or emergency circumstances according to UNCC policy.
4. Submission of work: It is the student's responsibility to ensure that the instructor has received work submitted. This is especially important when work is submitted electronically.
  - a. If you use email, ensure that you keep a copy of the sent email, and ask for a 'read receipt'.
  - b. If submitting via our online course site Canvas, always keep a copy of your work.
5. Communication Protocol:
  - (a) Questions, Comments, and Requests
    - For any questions or clarification of class material, please ask them on the Discussion Board in Canvas whenever possible. Everyone in the class is encouraged to help answer the questions. If satisfactory answers do not emerge, the instructor and/or TA will answer.
    - For any comments or requests, please send email to the instructor and TA..
  - (b) Canvas
    - Announcements will be posted in Canvas. Make sure to check the assignment area frequently enough to stay informed.
    - There are obviously things that are not appropriate for the Canvas discussion area, such as solutions for assignments (violation of honor code).
  - (c) Emails
    - Each student is given an email account by UNC-Charlotte. This is the account that will be used by your instructor. Changes to class assignments or other course information will be posted online and may be sent to you. Check your email daily. Do not send email to your instructor from any other account, as it will be considered spam, and be deleted.

- Please use Canvas, not emails, for general questions, unless you wish to keep your questions or comments private.
- When emailing your instructor, please use a specific subject line starting with "DSBA-HCIP 5122: [Assignment name] - [Last Name]."

#### Student Responsibilities:

Please refer to University Policy 406 - The Code of Student Responsibility, <http://legal.uncc.edu/policies/up-406>, for specific information. In addition to the responsibilities specified by the University, for this course, it remains the student's responsibility to be aware of enrollment status, assignment due dates, changes to the syllabus, and deadlines for the UNCC academic calendar. Each student is responsible for his/her attendance and properly withdrawing from the course if necessary.

#### Disclaimer

This syllabus is intended to give the student guidance in what may be covered during the semester and will be followed as closely as possible. However, the professor reserves the right to modify, supplement and make changes as needed.

Good luck in class! I am looking forward to working with you this Fall and sharing my knowledge.