I.	Course ID (department & number): DSC-218 and CSC-218
II.	Course Name: Data Visualization
III.	Number of Credits Awarded for Course: 3
IV.	Prerequisite or Co-requisite courses or academic standing (if applicable): **CSC-118 Python Programming I OR CSC-120 R Programming, DSC-120 R Programming.**
V.	Indicate if New or Modified Course: New
VI.	Semester and Year Course will First be Offered: Spring 2024
VII.	Name and Telephone Number and/or e-mail address of department chair or other appropriate contact person: Heather DeVries, Academic Representative to NJ Transfer hdevries@hccc.edu 201-360-4660
VIII.	Detailed Course Description: This course introduces students to the principles and techniques of data visualization. Students learn how to use Power BI to Drive Dashboard, the value of visualization, design principles of visualization, visualization with Data Tables, using shapes to create Infographics, visualizing performance comparison, visualizing parts of a whole, and visualizing changes over time. R and/or Python programming language will be used to teach students how to manage datasets and use plotting systems. Labs will be used to reinforce concepts introduced during lectures.
IX	Outline of Course Objectives *Upon successful completion of this course, students will be able to*: 1. Demonstrate the concepts and various phases of Data Visualization. 2. Use Python data science libraries to demonstrate data sets. 3. Discuss the significance of data visualization in data analysis. 4. Analyze various data sets using the Power BI Decomposition Tree. 5. Apply data visualization designs to solve problems with real-world data sets.

X.	Texts, Journals and Other Materials used in Course

Visualization Analysis and Design by Tamara Munzner
SBN-10: 9781466508910 • ISBN-13: 978-1466508910.
2) Recommended textbooks:
Python for Data Analysis 2/E by Wes McKinney
ISBN-10: 1491957662 • ISBN-13: 1491957660 ©2018 •

XI.	Grade Determinants

Homework Assignments and In-class Exercise (10%) /labs (20%) ======➔30%
Exams 3 exams
(Exam I 15%, Exam II 20%, Exam III 20%) =======================➔55%
Analyze and present a
research article (from the *Data Science Journal or other resources)*
======➔15%

95 to 100	A	90 to 94	A-	86 to 89	B+	80 to 85	B
76 to 79	B-	70 to 75	C+	65 to 69	C	64 to 0	F

XII.	Number of Papers & Examinations

Students select topics from current news, collect related data and write a report. Students analyze a research article from various resources such as the Data *Science Journal* (Homework assignment of week 15).
https://datascience.codata.org/
https://datascience.codata.org/articles/
In the 500–1000-word writing, students should:

1. Briefly describe the article and explain the content of the article to the reader. When reading the article, students must find detailed information that identifies the topic of the article.
2. Determine the author's purpose or why the author thinks the research topic is relevant and important.
3. Determine the research methods.
4. Check whether the author has cited other research articles and conducted similar research. If so, when talking about research methods and evidence, students should mention and explain it.

XIII.	Schedule of Topics to be Covered

Session	Topic	lab	SLO
1	Introduction: What is Visualization, and why do it	Install or get access to required (updated)tools and compilers.	1, 3
2	Data and Task Abstraction	watch and analyze related video provided by author	1, 2

	3	Analysis: Four Levels for Validation	watch and analyze related video provided by author	2
	4	Marks and Channels		5
	5	Rules of Thumb	Lab1	3
	6	**Review and Exam I**		
	7	Arrange Tables (Tabular Data Visualization) *Project selection and assignment*	Lab 2	2
	8	Interactive Views *Check on project's progress*	Lab 3	2, 5
	9	Spatial Data Visualization *Project first draft*	Lab 4	3
	10	**Review and Exam II**		
	11	Arrange Networks and Trees *Check on project's progress*	Lab 5	4 5
	12	Map Color and Other Channels Check on project's progress	Lab 6	3
	13	Analysis Case Studies	Lab 7	2, 3
	14	**Review and Final Exam (Exam III)**		
	15	Project Presentation		