I.	Course ID (department & number): DSC-217 and CSC-217
II.	Course Name: Fundamentals of Data Science
III.	Number of Credits Awarded for Course: 3
IV.	Prerequisite or Co-requisite courses or academic standing (if applicable): CSC-118 Python Programming
V.	Indicate if New or Modified Course: New
VI.	Semester and Year Course will First be Offered: Fall 2023
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 will introduce the students to a data science cycle, including manipulating, processing, cleaning, and visualizing data in Python language + Jupyter Notebook environment, for making reasonable decisions and communicating results. Lab hours reinforce concepts introduced and during lecture.
IX	Outline of Course Objectives *Upon successful completion of this course, students will be able to*: 1. Explain the concepts of Data Science 2. Outline the various phases of data analysis including acquiring, purifying, organizing, analyzing, manipulating, processing, and visualizing data 3. Use Python built-in data structures and add-on libraries like pandas and NumPy to manipulate data. 4. Use Python plotting libraries to visualize data 5. Apply data science concepts and skills to solve problems with real-world data sets(using hands-on labs). 6. Assess how data analysis can advance research in all applicable disciplines.
X.	Texts, Journals and Other Materials used in Course Python for Data Analysis 2/E by Wes McKinney ISBN-10: 1491957662 • ISBN-13: 1491957660 ©2018 • O'Reilly

XI.	**Grade Determinants**
	Homework Assignments and
	      In-class Exercise (10%) /labs (20%) 30%
	      Exams 3 exams (20% each) 60%
	      Analyze and present a 10%
	      research article from the *Data Science Journal*	

XII.	**Number of Papers & Examinations**
	      Students analyze a research article from the *Data Science Journal* (Homework assignment of week 14). 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 to Data Science	Install Anaconda (Python 3) ▸ https://www.anaconda.com/download	1
2,3	Python Basics and Jupyter Notebook	Installing Python and Jupyter Notebook ▸ Running Jupyter Notebook	1,2,4
4,5	Introduction to Python Data Science libraries	Lab 1	1,3
6	**Review and Exam 1**		
7	Data loading and storage. Data cleaning and preparation	Lab 2	1,2
8,9	Data wrangling **	Lab 3	4, 5

	10	**Review and Exam 2**			
	11,12	Data visualization	Lab 4		4, 5
	13	Data aggregation **	Lab 5		4, 5
	13	Time Series ***	Lab 6		4, 5
	14	Analyze and present a research article from the *Data Science Journal* https://datascience.codata.org/articles/			**6**
	15	Review and Final Exam			