Part 2
Department Master Syllabus
Camden County College
Blackwood, New Jersey

Course Number:	**Course Title:**
DSC-250	Data Visualization and Presentation

Department/Program: Math/Data Science

Date of Review: March 2020

(This Department Master Syllabus has been examined by the program/department faculty members and it is decided that no revision is necessary at this time.)

Date of Revision: New Course, March 2020

(This Department Master Syllabus has been examined by the program/department faculty members and it is decided a change requiring a revision is necessary at this time.)

N.B. A change to the course materials alone (textbooks and/or supplementary materials) may not constitute a revision. Any other change to the items listed below on this form is considered a revision and requires approval by the department/program faculty at a department/program meeting and by the division at a Chairs and Coordinator meeting.

Credits:3

Contact Hours **Lecture:** 2 **Lab:** 2 **Other:** 0

Prerequisites: DSC-203

Co-requisites: None

Course Description: Using modern data visualization software tools the student will practice design principles and techniques for presenting large, complex data sets from a variety of sources into meaningful stories and visualizations. Topics include: creating and structuring stories to match the audience, choosing appropriate visuals including graphs, charts and color schemes, dashboards. Students will review, critique, and provide feedback to case studies and presented student work.

Student Learning Outcomes (SLOs)

Course specific student learning outcomes
Upon completion of this course the student will be able to:

Explain the importance of succinctly presenting accurate visual data as a story to inform decision making as assessed by written homework reports and projects.

Differentiate between visualization for analysis and presentation for a defined audience as assessed by quizzes and homework projects.

Apply appropriate design principles to the creation of dashboards, graphs and charts as assessed by quizzes and homework papers and projects.

Utilize standard practice data visualization techniques based on requirements imposed by the data as

assessed by homework papers and projects.

Analyze, critique, and revise data visualization presentations as assessed by labs, tests, and projects.

As assessed by:
Students will be evaluated on the degree to which student learning outcomes are achieved. A variety of methods may be used such as tests, class participation, programming projects, homework assignments, online learning tools, etc.

General Education Student Learning Outcomes

If this course has applied for General Education Elective Status the general education student learning outcomes listed below must exactly match those the sponsor has identified on the General Education Request form.
General Education SLOs:
N/A
As assessed by:
N/A

Program Learning Outcomes

List all course level student learning outcomes that interconnect to a particular program learning outcome.

All CSLOs target portions of each of the DSC.AAS PSLOs

1. Exhibit professionalism and adopt ethical decision-making principles for the analysis, management and presentation of data with an understanding of one's responsibilities within a professional setting.
2. Develop solid analytical reasoning, critical thinking and technical skills in order to extract, mangle, analyze and present data for multiple disciplines to broad audiences that follow professional standards to enhance understanding and decision-making.
3. Demonstrate the ability to work independently and as a member of a team with modern technical tools to accomplish data life cycle project goals and meet deadlines.
4. Communicate technical knowledge effectively for a broad range of persons that include customers, managers, and peers.

Describe the assessment of the interconnected program learning outcome(s).
Various course level assessment instruments will be used to target specific program learning outcomes.

Course Outline:

I. Storytelling and the power of visual data stories
   A. Evolution of data storytelling
   B. Power of stories and visualizations
   C. Exploratory v. explanatory analysis
   D. Audience analysis for storytelling

II. Using Tableau Tools
    A. Desktop, Online and Server options
    B. Navigating the Tableau interface
        1. Sheets, Dashboards and Stories
        2. Shelves, cards and legends
        3. Dimensions and measures
        4. Continuous and discrete
    C. Live v. extract data connection options
III. Review data preparation and analysis
    A. Pivoting
    B. Joining
    C. Handling null/missing data
IV. Choosing appropriate visual graphics and charts
    A. Bar and line charts
    B. Donut and pie charts
    C. Scatter plots
    D. Packed bubble charts and tree maps
    E. Heat maps
    F. Maps connecting to geographical regions
V. Design Standards and Issues
    A. Color considerations
    B. Formatting: borders, shading, banding and shapes
VI. Student Presentation Projects and Case Studies Review
    A. Planning your story and storyboarding its data
    B. Building the story
    C. Dashboard
    D. More advanced visualizations
        1. Timelines
        2. Likert scales
        3. Word clouds

Course Activities:
The classroom activities will include formal and informal lectures, structured, supervised labs using software tools to practice the course content with modern visualization tools. There will also be discussion sessions for case studies analysis and student presentations review, critique, and feedback. During lectures, new material, assigned readings and sample case studies will be explored. Students are expected to contribute to the discussion and present their work for review.

Course Materials:
Textbook(s): TBD

Supplemental Materials: : Tableau (Free software tool)

Software Licenses: N/A

Computers: Students will need access to a computer for assigned projects and homework

Course Assessment Plan

How often and by what means will the effectiveness of this course as part of the curriculum be assessed?

Assessment cycle to be determined by the members of the department. Students will be evaluated on the degree to which student learning outcomes are achieved. Assessment instruments may be in the form of tests and/or programming projects.