FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER: CAP 2741C

COURSE TITLE: Data Visualization

PREREQUISITE(S): COP 2822C and COP 2034C and CGS 2512C

COREQUISITE(S): None

CONDITION(S) : None

CREDIT HOURS: 2

CONTACT HOURS/WEEK: 3

CONTACT HOUR BREAKDOWN:

Lecture/Discussion:

Laboratory:

Other: Lecture/Lab Combined 3

FACULTY WORKLOAD POINTS: 3.0

STANDARDIZED CLASS SIZE ALLOCATION: 24

CATALOG COURSE DESCRIPTION:

This course teaches students how to build visual data models for analysis using commonly available tools including Microsoft Excel, Microsoft Power BI, Tableau and JavaScript libraries. Topics include charts, tables, graphs, maps, infographics and dashboards. The concepts are utilized in hands-on labs.

SUGGESTED TEXT(S): Thomas, S. *Data Visualization with Python and JavaScript.* O'Reilly Media, ISBN 978-1491920510 or latest edition.

Murray, D. *Tableau Your Data! Fast and Easy Visual Analysis with Tableau Software.* Wiley, ISBN 978-1119001195 or latest edition.

IMPLEMENTATION DATE: Spring Term 2020 (2202) – Proposal 2019-26

REVIEW OR MODIFICATION DATE: Fall Term 2021 (2218) – Proposal 2020-44  
Fall Term 2022 (2228) – Proposal 2021-42

COURSE TOPICS CONTACT HOURS

PER TOPIC

I. Introduction to Data Visualization 2

A. Explanatory vs. exploratory visualizations

B. Characteristics of useful visualizations

II. General concepts 3

A. Choosing appropriate visualization strategies

III. Common visualization tools 5

A. Power BI

B. Tableau

C. Pandas, Plotly, and Dash

D. JavaScript D3

E. Bokeh

IV. Importing data 3

V. Cleaning, shaping, selecting, and transforming data 4

VI. Visual reporting and analysis 8

VII. Creating dashboards 5

VIII. Lab Exercises 15

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| **Florida State College at Jacksonville** | | | | | | | | | | | | | **Course Learning Outcomes and Assessment** | | | | | | | | | | | |
| **SECTION 1** | | | | | | | | | | | | | | | | | | | | | | | | |
| Course Prefix and Number: | | | | | CAP 2741C | | | | | | | | | | | Semester Credit Hours (Credit): | | | | | | | | 2 |
| Contact Hours (Workforce): | | | | | | | |  |
| Course Title: | | | | | Data Visualization | | | | | | | | | | | | | | | | | | | |
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| **SECTION 2a *(To be completed for General Education courses only.)*** | | | | | | | | | | | | | | | | | | | | | | | | |
| ***TYPE OF COURSE (Place an “X” in the box next to those that are applicable.)*** | | | | | | | | | | | | | | | | | | | | | | | | |
|  | General Education Core (If selected, core discipline area will be identified in Section 4.) | | | | | | | | | | | | | | | | | | | | | | | |
|  | General Education (If selected, you must also complete Section 4, Section 5, and Section 8) | | | | | | | | | | | | | | | | | | | | | | | |
| **SECTION 2b** | | | | | | | | | | | | | | | | | | | | | | | | |
| ***TYPE OF COURSE (Place an “X” in the box next to those that are applicable.)*** | | | | | | | | | | | | | | | | | | | | | | | | |
|  | A.A. Elective | | | | | | | X | | A.S. Required Course | | | | | | | | | |  | A.S. Professional Elective | | | |
|  | A.A.S. Required Course | | | | | | |  | | A.A.S. Professional Elective | | | | | | | | | | X | Technical Certificate | | | |
|  | PSAV/Clock Hour/Workforce | | | | | | |  | | Development Education | | | | | | | | | |  | Apprenticeship | | | |
|  | Upper Division/Bachelors | | | | | | |  | | Other: | | If selected, use this space to title “other” option. | | | | | | | | | | | | |
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| **SECTION 3** | | | | | | | | | | | | | | | | | | | | | | | | |
| ***INTELLECTUAL COMPETENCIES (Place an “X” in the box next to those that are applicable.)*** | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | Reading |  | Speaking | | |  | | Critical Analysis | | | | | |  | | | Qualitative Skills | | | |  | Scientific Method of Inquiry | |
|  | | Writing |  | Listening | | |  | | Information Literacy | | | | | |  | | | Ethical Judgement | | | |  | Working Collaboratively | |
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| **SECTION 4 *(To be completed for General Education courses only.)*** | | | | | | | | | | | | | | | | | | | | | | | | |
| ***GENERAL EDUCATION DISCIPLINE AREA (Place an “X” in the box next to those that are applicable.)*** | | | | | | | | | | | | | | | | | | | | | | | | |
|  | Communications | | | | |  | | | | Humanities | | | |  | | | Mathematics | | | | | | | |
|  | Social and Behavioral Sciences | | | | | | | | | | | | |  | | | Natural Sciences | | | | | | | |
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| **SECTION 5 *(To be completed for General Education courses only.)*** | | | | | | | | | | | | | | | | | | | | | | | | |
| ***GENERAL EDUCATION LEARNING OUTCOME AREA (Place an “X” in the box next to those that are applicable.)*** | | | | | | | | | | | | | | | | | | | | | | | | |
|  | Communication | | | | |  | | | | Critical Thinking | | | |  | | | Information Literacy | | | | | | | |
|  | Scientific and Quantitative Reasoning | | | | | | | | | | | | |  | | | Global Sociocultural Responsibility | | | | | | | |
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| **SECTION 6** | | | | | | | | | | | | | | | | | | | | | | | | |
| ***LEARNING OUTCOMES*** | | | | | | | | | | | ***TYPE OF OUTCOME***  ***(General Education, Course or Program)*** | | | | | | | | ***METHOD OF ASSESSMENT*** | | | | | |
| Describe how data visualization is used in data science | | | | | | | | | | | Course | | | | | | | | Quizzes, exams | | | | | |
| Using provided criteria, select an appropriate visualization design strategy | | | | | | | | | | | Course | | | | | | | | Quizzes, exams, projects | | | | | |
| List and describe popular tools used to implement data visualization | | | | | | | | | | | Course | | | | | | | | Quizzes, exams | | | | | |
| Import data sets from external sources using Tableau, Power BI and Pandas | | | | | | | | | | | Course | | | | | | | | Quizzes, exams, projects | | | | | |
| Clean, shape, and transform data sets using Tableau, Power BI and Pandas | | | | | | | | | | | Course | | | | | | | | Quizzes, exams, projects | | | | | |
| Prepare visual reports and create dashboards using Tableau, Power BI, JavaScript D3, Plotly and Dash, and Bokeh | | | | | | | | | | | Course | | | | | | | | Quizzes, exams, projects | | | | | |

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| **SECTION 7** | | | |
| Faculty name(s): | David Singletary | Date: | 11/5/2021 |