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# CAP 2741C: Data Visualization

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**Welcome!**



Welcome and thank you for enrolling in this course!

Please take a few minutes to read the syllabus in its entirety. Exploring all the topics in this syllabus and related links will help you succeed in this course.

I am looking forward to working with you and having a great semester!

David Singletary  
Professor, Computer & Information Technology  
Florida State College at Jacksonville

## Professor Information

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Professor: David Singletary  
Office Hours: Mon 1:00 PM - 2:00 PM South Campus B106 or Online/WebEx  
Tue 10:00 AM - 12:00 PM Online/WebEx Only  
Tue 6:00 PM - 9:00 PM South Campus B106 or Online/WebEx  
Sat 10:00AM - 12:00 PM Online/WebEx Only  
And by appointment  
WebEx: <http://fscj.webex.com/meet/ProfS>  
Office Phone: 904-646-2212  
Email: [David.Singletary@fscj.edu](mailto:David.Singletary@fscj.edu)

## Instructor Response

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You can anticipate responses to inquiries and questions within 24 - 48 business hours of receipt.

Please use your student email to contact me instead of a phone call. Please include your full name and the course prefix and number in the body of the email. Avoid using the Canvas messaging system, it only shows your most recent message, not the conversation thread. If you call my office number, I can only listen to the message; I cannot return phone calls.

You can email me to make an appointment to meet via Cisco's WebEx Meeting Application, please provide 24 hours' notice and also provide several alternative times when you will be available so I can reserve a meeting time slot which is convenient for both of us. When I schedule the meeting you will receive a notification via email. During office hours, you can use your computer or phone to join me in my virtual office. I will admit one person at a time, in the order they arrive, so everyone can have a private conversation. You may have to wait in the virtual waiting room if I am already speaking with someone, but I will know you have arrived.

## Campus Information

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This online course is offered by the Florida State College at Jacksonville (FSCJ) Online. For questions or concerns, please feel free to call the FSCJ Online Resource Center (904-997-2628). For technical assistance, please contact the Help Desk at 877-572-8895 or 904-632-3151 or via [Student Computing Resources](#).

## Course Description

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

## Course Learning Outcomes

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Upon completion of the course, the student will be able to:

1. Describe how data visualization is used in data science.
2. Using provided criteria, select an appropriate visualization design strategy.
3. List and describe popular tools used to implement data visualization.
4. Import data sets from external sources using Tableau, Power BI and Pandas.
5. Clean, shape, and transform data sets using Tableau, Power BI and Pandas.
6. Prepare visual reports and create dashboards using Tableau, Power BI, JavaScript D3, Matplotlib and Bokeh.

## Course Information

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Subject/Catalog #: Title	CAP 2741C: Data Visualization
Class Number	3182
Number of Credit Hours	2
Term/Year/Session/Length	Spring 2022/A15/15 Weeks/Independent Study
Course Prerequisites	COP 2822, COP 2034C, CGS 2512C
Course Co-requisites	None

## Important Dates

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Class Begins	Monday, January 10, 2022
100% Refund Deadline	Tuesday, 1/18/2022
Withdraw with "W" Deadline	Monday, 3/24/2022
Class Ends	Sunday, 5/1/2022
College Holiday(s)	
Monday January 17 Martin Luther King Jr. Day Monday February 21 Presidents' Day Monday - Sunday March 14-20 Spring Break	

These dates are critical for this course. Additional critical dates for this course can be found by choosing the appropriate term links in the [Academic and Registration Calendars](#) at the Florida State College at Jacksonville website.

## Instructional Materials

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If you have not done so already, obtain your textbook and related course materials. Visit your nearest campus bookstore or order online via the student portal, [myFSCJ](#), or the [Follett Online Bookstore](#). Be sure to order using your course and instructor's name and the four-digit class number.

Please note that some courses may require a text plus additional software or a publisher's web access code. If purchasing a used text, be sure to check on and obtain all the required materials.

### Required Materials

1. The Big Book of Dashboards

Edition #: 1  
Author: Steve Wexler  
Publisher: Wiley  
Year: 2017  
ISBN: 978-1119282716

2. Tableau Your Data

Edition #: 2  
Author: Daniel Murray  
Publisher: Wiley  
Year: 2016  
ISBN: 978-1119001195

3. Microsoft Power BI Complete Reference

Edition #: 1  
Author: Devin Knight  
Publisher: Packt  
Year: 2018  
ISBN: 978-1789950045  
Notes: Freely available on O'Reilly database

## Course Delivery

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This course will be delivered online using the Canvas course management system. Specific course technology requirements can be found in the Canvas Course Orientation Assignment in the Start Here module.

## Accessibility

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If you require specific accommodations to complete this course, contact a campus Student Support Coordinator. Office locations and contact information are posted on the College's [Student Support Services](#) site. You may also reach the Associate Director at 904-361-6216.

## Assigned Work

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In each module, you may have activities to complete. Detailed information and instructions for each assignment can be found in the modules of the online classroom.

To see all the assignments due in this course, refer to the *Course Summary* (under *Syllabus*) in the online classroom.

All work must be your own. Your graded assignments will be screened for signs of plagiarism or copying from other students. Do not copy and paste content from the Internet. Evidence of copying from other students or the Internet will result in a 0 for the entire assignment and may result in receiving a failing grade for the course.

## Graded Projects

You will complete 10 graded module projects consisting of charts, reports, and dashboards. These assignments will assess content covered in each module of the course. Each module project is worth 40 points, for a total of 400 points.

You will complete 2 milestone projects, one approximately halfway and one approximately three-quarters into the semester. Each milestone project is worth 100 points, for a total of 200 points.

You will complete a final project in this course, worth 100 points.

*All projects are graded using the rubric included below in this syllabus.*

## Review Quizzes

You will take 10 review quizzes in this course. These quizzes are open-book, open-note, untimed assignments which are comprised of multiple-choice/true-false/matching/short-answer questions. The purpose of these quizzes is to serve as a review of concepts covered by each module of the course and may be taken multiple times up to the due date, with the highest score being recorded. Review quizzes are worth 20 points each, for a total of 200 points.

## Practice Exams

You will take 10 practice exams, each of which are timed, closed-book, no-note multiple choice mini-exams modeled after portions of the Tableau Desktop Specialist exam. These exams may be taken multiple times up to the due date/time, with the highest score being recorded. Practice exams are worth 10 points each, for a total of 100 points.

## Grade Distribution (Course Grade)

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Your final letter grade will be determined by totaling the points earned on all graded coursework.

Assigned Work	# and Point Value	Total Points
Review Quizzes	10 @ 20 points	200
Practice Exams	10 @ 10 points	100
Module Assignments	10 @ 40 points	400
Milestone Projects	2 @ 100 points	200
Final Project/Final Exam	1 @ 100 points	100
Total Points Possible		1,000

Grade	Points
A	900-1,000
B	800-899
C	700-799
D	600-699
F	0-599

## I Grade - Incomplete

Incomplete (I) grades may be awarded based on the criteria in the College catalog.

## Course Guidelines and Policies

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### Academic Dishonesty

Academic dishonesty, in any form, has severe consequences. Please review the appendices in the current College catalog entitled *Expectations of Student Conduct* and *Procedures for Handling Alleged Academic Dishonesty*.

Note: Online tools that scan written assignments for signs of plagiarism may be used to screen your assignment submissions. For plagiarism prevention assistance, refer to the Research Companion Guide on the [College's Library and Learning Commons](#) resources site.

**Do not copy and paste content from the web, this includes the use of solutions from cheat sites such as [chegg.com](#) or [coursehero.com](#).** If you need real-time help with course material use the FSCJ LLC tutors or meet with your instructor during office hours or pre-scheduled appointments. Evidence of copying from other students or from the web will result in a 0 for the entire assignment and may result in receiving a failing grade for the course.

## Attendance

Attendance is measured in this course by your timely completion of required course activities. If you fail to sufficiently participate in the course before the official refund deadline, you can be dropped for non-attendance. If the official withdrawal date has passed and you fail to attend scheduled class meetings or fail to show sufficient progress in the course, a failing grade of F will be assigned and the date of your last recorded attendance will be noted which may result in financial aid repayment for this semester and possible longer term penalties. See the College's page on Grading policies (<https://catalog.fscj.edu/content.php?catoid=43&navoid=6232>) for more information.

## Late Work

Late work will be accepted only at the discretion of, and by prior arrangement with, your instructor. Late submissions, when accepted, may incur a substantial penalty.

## Extra Credit

Extra credit opportunities may be occasionally provided to the class during the course. Any extra credit points earned will normally be applied to the Programming Assignment total unless specified otherwise. No makeups will be allowed for extra credit opportunities. No individual assignments or individual extra credit opportunities will be provided at any time during this course, please do not ask.

## Calendar of Activities

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The Calendar of Activities is a summary of the lessons and course activities for each module.

Week(s)	Assigned Work	Points Possible	Due Date
<b>Module 1: Introduction to Data Visualization</b> Assigned Readings <ul style="list-style-type: none"> <li>Ch. 1,2,3 (Wexler)</li> <li>Ch. 1 (Murray)</li> </ul>			
1/10	Review Quiz 1	20	1/16
1/10	Practice Exam 1	10	1/16
1/10	Module Project 1	40	1/16
<b>1/17</b>	<b>Holiday - Martin Luther King Jr. Day</b>		<b>1/17</b>
<b>Module 2: Accessing and Visualizing Data with Tableau</b> Assigned Readings <ul style="list-style-type: none"> <li>Ch. 4,5,6 (Wexler)</li> <li>Ch. 2,3 (Murray)</li> </ul>			
1/18	Review Quiz 2	20	1/23
1/18	Practice Exam 2	10	1/23
1/18	Module Project 2	40	1/23
<b>Module 3: Creating Calculated Fields and Using Tableau Maps</b> Assigned Readings <ul style="list-style-type: none"> <li>Ch. 7,8,9 (Wexler)</li> <li>Ch. 4,5 (Murray)</li> </ul>			
1/24	Review Quiz 3	20	1/30
1/24	Practice Exam 3	10	1/30
1/24	Module Project 3	40	1/30



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Week(s)	Assigned Work	Points Possible	Due Date
<b>Module 4: Ad Hoc Analysis</b> Assigned Readings <ul style="list-style-type: none"> <li>Ch.10,11,12 (Wexler)</li> <li>Ch. 6,7 (Murray)</li> </ul>			
1/31	Review Quiz 4	20	2/6
1/31	Practice Exam 4	10	2/6
1/31	Module Project 4	40	2/6
<b>Module 5: Creating Dashboards with Tableau</b> Assigned Readings <ul style="list-style-type: none"> <li>Ch.13,14,15 (Wexler)</li> <li>Ch. 8 (Murray)</li> </ul>			
2/7	Milestone Assignment 1	100	2/13
<b>Module 6: Introduction to Power BI</b> Assigned Readings <ul style="list-style-type: none"> <li>Ch.16,17,18 (Wexler)</li> <li>Ch. 1,2 (Knight)</li> </ul>			
2/14	Review Quiz 5	20	2/20
2/14	Practice Exam 5	10	2/20
2/14	Module Project 5	40	2/20
<b>2/21</b>	<b>Holiday - Presidents' Day</b>		<b>2/21</b>
<b>Module 7: Modeling Data with Power BI</b> Assigned Readings <ul style="list-style-type: none"> <li>Ch.19,20,21 (Wexler)</li> <li>Ch. 3,4 (Knight)</li> </ul>			
2/22	Review Quiz 6	20	2/27
2/22	Practice Exam 6	10	2/27

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Week(s)	Assigned Work	Points Possible	Due Date
2/22	Module Project 6	40	2/27
Module 8: Visualizing Data with Power BI Assigned Readings <ul style="list-style-type: none"> <li>Ch.22,23,24 (Wexler)</li> <li>Ch. 5, 6 (Knight)</li> </ul>			
2/28	Review Quiz 7	20	3/6
2/28	Practice Exam 7	10	3/6
2/28	Module Project 7	40	3/6
Module 9: Creating Dashboards with Power BI Assigned Readings <ul style="list-style-type: none"> <li>Ch.25,26,27 (Wexler)</li> <li>Ch. 13 (Knight)</li> </ul>			
3/7	Milestone Assignment 2	100	3/13
3/14	Spring Break		3/20
Module 10: Python Tools for Visualization Assigned Readings <ul style="list-style-type: none"> <li>Ch.28,29,30 (Wexler)</li> <li>Plotly/Dash tutorials (<a href="https://plotly.com/python/plotly-fundamentals">https://plotly.com/python/plotly-fundamentals</a>)</li> </ul>			
3/21	Review Quiz 8	20	3/27
3/21	Practice Exam 8	10	3/27
3/21	Module Project 8	40	3/27
Module 11: JavaScript and D3 Assigned Readings <ul style="list-style-type: none"> <li>Ch.31,32,33 (Wexler)</li> <li>D3.js Introduction (<a href="https://d3js.org">https://d3js.org</a>)</li> <li>D3 Graph Gallery (<a href="https://www.d3-graph-gallery.com/index.html">https://www.d3-graph-gallery.com/index.html</a>)</li> </ul>			
3/28	Review Quiz 9	20	4/10

Week(s)	Assigned Work	Points Possible	Due Date
3/28	Practice Exam 9	10	4/10
3/28	Module Project 9	40	4/10
Module 12: JavaScript and Bokeh Assigned Readings <ul style="list-style-type: none"> <li>Ch.34,35,36 (Wexler)</li> <li>Bokeh First Steps (<a href="http://docs.bokeh.org/en/latest/docs/first_steps.html#first-steps">http://docs.bokeh.org/en/latest/docs/first_steps.html#first-steps</a>)</li> </ul>			
4/11	Review Quiz 10	20	4/17
4/11	Practice Exam 10	10	4/17
4/11	Module Project 10	40	4/17
Module 13: Final Project/Final Exam			
4/18	Final Project/Final Exam	100	5/1
Total Points Possible		1,000	

**Special Note:** The instructor reserves the right to modify this syllabus. You will be notified of any changes.

## Project Rubric

The graded projects for this course consist of charts, reports, and dashboards. Grading criteria are as follows:

Assignment Requirements		
81-100%	Meets or exceeds expectations	Submission conforms to specified assignment requirements
61-80%	Acceptable, needs improvement	Submission partially conforms to specified assignment requirements
0-60%	Not acceptable	Submission does not conform to specified requirements
Use of relevant course concepts		

81-100%	Meets or exceeds expectations	Submission incorporates course concepts as presented up to the date of the assignment
61-80%	Acceptable, needs improvement	Submission partially incorporates course concepts as presented up to the date of the assignment
0-60%	Not acceptable	Submission does not incorporate course concepts as presented up to the date of the assignment
<b>Aesthetics</b>		
81-100%	Meets or exceeds expectations	Submission makes correct use of aesthetics
61-80%	Acceptable, needs improvement	Submission makes partially correct use of aesthetic
0-60%	Not acceptable	Submission does not use aesthetics correctly

## The Next Step

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Your next step is to become familiar with the online classroom. Begin with the course announcement(s) and the *Start Here* module.