

## Course Syllabus

### Course Information

- **Course Number and Title:** IDC 4943.01 Data Analytics Capstone II
- **Credit Hours:** 3 credits
- **Current Academic Term:** Spring 2022

### Instructor Information

- **Instructor:** Dr. Jim Mennie
- **Office:** IST 2037
- **Office Hours:** MWF 1 – 2 PM, or by appointment
- **Office Phone:** 863-874-8657 (cell 813-838-4572)
- **E-mail:** [jmennie@floridapoly.edu](mailto:jmennie@floridapoly.edu)
- **Class Meeting Day, Time & Location:** M,W,F 12:00 – 12:50 PM, IST 1012

### Course Details

- **Course Website:** <https://floridapolytechnic.instructure.com/courses/3863>
- **Official Catalog Course Description:** This course is part two of the senior capstone sequence for data science and business analytics. This advanced course covers critical thinking and problem-solving techniques applied to data analytics projects. The goal of this course is to carry out an industry-relevant project in applied data science and business analytics that synthesizes concepts from data acquisition, analytics, visualization, data management, modeling, and application development and deployment. Students will complete intensive research and produce significant written documentation of the project.
- **Course Pre-Requisites:** IDC 4942 Data Analytics Capstone I
- **Communication/Computation Skills Requirement (6A-10.030):** No
- **Required Texts:** None
- **Suggested Texts:** (i) “Data Visualization: A practical introduction” by Kieran Healy <https://socviz.co/>  
(ii) “The Art of Data Science” by Roger Peng and Elizabeth Matsui ISBN-13: 978-1365061462 <https://leanpub.com/artofdatascience>
- **Course Objectives:** Students will work in interdisciplinary teams to complete an industry sponsored project where data and business analytics tools and methods are put into

practice. This course is designed to assess students' abilities to apply the concepts, terminologies, foundations and principles practiced during their academic career and enforce good development techniques as learned throughout the data and business analytics curriculum. All students will be required to utilize project management techniques, professional communication skills and demonstrate transferable skills in team management and leadership.

- **Course Learning Outcomes:**

Upon successfully completing this course, learners will be able to:

1. Demonstrate ability to collect and organize relevant data
2. Demonstrate ability to work effectively as part of a team
3. Analyze, identify and define the technology requirements appropriate to the solution of a data analytics problem.
4. Demonstrate mastery of analytical approach
5. Gain experience communicating with both internal and external project stakeholders.
6. Complete the project assigned during IDC 4942 from design development and testing so that the project may be seamlessly finalized.

- **Alignment with Program Outcomes:** Alignment with program learning outcomes

	Course Learning Outcome					
Data Science Program Student Outcomes	1	2	3	4	5	6
(1) Demonstrate an in-depth knowledge of fundamental data science concepts	X	X	X	X		X
(2) Analyze a given data science problem and be able to formulate a correct solution in terms of the datasets needed, the learning techniques required and the software technologies to be utilized			X	X		
(3) Turn data into actionable insights by using advanced analytics, visualization, reporting and machine learning			X		X	
(4) Demonstrate relevant statistical concepts and know how to apply these to data science problems in practice			X	X	X	
(5) Apply emerging artificial intelligence technologies to applicable problems			X	X		

	Course Learning Outcome					
Business Analytics Program Student Outcomes	1	2	3	4	5	6
(1) Demonstrate a firm understanding of fundamental business issues and processes	X		X			X
(2) Analyze a given business problem and apply the appropriate analytics techniques to realize the business goals			X			X
(3) Think critically and demonstrate creative decision-making skills			X	X		X

(4) Develop analytical and quantitative skills			X	X		X
(5) Communicate clearly, effectively and logically in a business situation		X			X	X
(6) Successfully manage a team of analytics and engineering professionals in leading-edge technology projects						X
(7) Plan, analyze and forecast across multiple business operations			X	X	X	X
(8) Demonstrate relevant statistical concepts and know how to apply these to business analytics problems in practice.				X		X
(9) Apply analytics techniques to the specific challenges of their chosen concentration			X	X		X

This is an upper- level course and as such the expectation from students is elevated. Students are expected to assess and evaluate the data they collect or are provided with. Additionally, they are expected to draw conclusions and develop a course of action predicated upon the data.

### **Academic Support Resources**

- **Library:** Students can access the Florida Polytechnic University Library through the student portal [Pulse](#) and [Canvas](#), on and off campus. Students may direct questions to the Success Desk in the Commons or by email, [library@floridapoly.edu](mailto:library@floridapoly.edu).
- **ASC:** The Academic Success Center, located in the Commons and at ASC East, provides a range of services. Students may direct questions to [success@floridapoly.edu](mailto:success@floridapoly.edu).

### **Course Policies:**

**Attendance:** Students are expected to attend class. Students whose absences exceed those allowed by the course syllabus may see a reduction in their final letter grade. If you know that you will miss a class for any reason discuss the situation with your instructor BEFORE the class is missed. Only valid and documented excuses will be considered. Any documentation must be submitted within 1 week of your absence. Class attendance will be taken at every class period. The department considers attendance a vital part of the learning process and as a result, there will be a penalty for missed classes. Also, due to the disruption caused to your classmate's learning process late arrivals will likewise incur a penalty. As a result, this course is implementing the following final grade reduction policy for absences or late arrivals

Number of unexcused missed meetings	Effect on final grade
0 to less than 10 %	No penalty
From 10% up to 20%	1/3 of a Letter Grade reduction
From 20 % up to 30 %	2/3 of a Letter Grade reduction
30% or more	1 Letter Grade reduction

- **Class Participation:** Asking and answering questions and solving problems in class is strongly encouraged.
- **In-Class Quizzes:** In-class pop quizzes will be given occasionally to assist students in practicing problem-solving and conceptual understanding. These will be graded and account for a portion of your final grade under “Professionalism and Participation”.
- **Grading Scale:**  
Grades will be determined according to the following scale.

A	93% – 100%	B	83% – <86%	C	73% – <76%	D	63% –
	<66%	A–	90% – <93%	B–	80% – <83%	C–	70% – <73%
	60% – <63%	B+	86% – <90%	C+	76% – <80%	D+	66% – <70%
			F		0% – <60%		

- **Assignment/Evaluation Methods:**

Participation in all course activities is a very important element of this course, is a basic expectation, and counts for part of your grade. Course participation consists of active and respectful involvement in class discussions, presentations, peer feedback, postings, replies, projects, and other interactions. The course grade takes into account quality, quantity, and timeliness of student participation.

<i>Assignment</i>	<i>Percentage</i>
Professionalism, Attendance and Participation	10%
Assignments and meetings with sponsor	10%
Weekly progress reports	10%
Midterm Presentation	15%
Midterm Report	15%
Project Final Report	20%
Project Final Presentation	20%
Total	100%

- **Late Work/Make-up work:** Each student must keep current on assignments. *Late assignments are not graded, unless permission has been obtained from the instructor in advance.* Medical emergencies with valid documentation would be about the only exception. Any other documentation will be evaluated on a case by case basis.
- **Lecture Expectations:** Lecture meets for fifty minutes, three times per week. The intent of lecture time is for you to develop your conceptual understanding and practice problem

solving. The lecture will be interactive - you are expected, at appropriate times, to work with your neighbor, express your thoughts, ask and answer questions, discuss ideas, patiently listen to and respect other's ideas.

- **Classroom Rules** ○ Laptops/tablets should only be used for class purpose. Please refrain from reading news, doing crossword puzzles, surfing the internet, using e-mail or chat programs or working on assignments of other courses during this class. ○ Cell phones and all other portable electronics including tablets **MUST** be on silent/mute mode and put away completely out of sight unless being used for class purposes. ○ Please do not engage in any activity (talking to your neighbors) that will disrupt the classroom and disturb your instructor and fellow students.
  - If you are coming to class, be on time.
- **CANVAS Policy:** Assignments, announcements, and information will be posted on CANVAS. Students are responsible for checking CANVAS regularly to be aware of their assignments and other class information. Please see the end of this document for guidelines for submission of assignments.
- **Email Policy:** All students are required to use **studentuserID@floridapoly.edu** email system (most preferable) OR the CANVAS e-mail system to communicate with the instructor. On occasion, email may be used to disseminate important class-related assignments, announcements and information. Students are responsible for any information or assignments given in e-mail.

### University Policies

- **Academic Integrity:** All students must commit to the highest ethical standards in completion of all academic pursuits and endeavors: [Academic Integrity](#)
- **Reasonable Accommodations:** Students who qualify for course or classroom adjustments under the Americans with Disabilities Act (ADA) must register with the Office of Disability Services: [Request for Disability Services](#)
- [Accommodations for Religious Observances, Practices and Beliefs](#)
- **Title IX:** Florida Polytechnic University is committed to ensuring a safe, productive learning environment on our campus that prohibits sexual misconduct, including discrimination based on sex or gender, harassment, stalking, sexual assault, sexual exploitation, or intimate partner violence. If you or someone you know needs assistance, you may speak to any university employee; however, they have an obligation to report the incident to the Title IX Coordinator, who will keep that information private to the greatest extent possible. If you want to speak to someone permitted to keep your disclosure confidential, seek assistance from the Florida Polytechnic University Ombudsman, BayCare's Student Assistance Program, 1-800-878-5470 and locally within

the community at Peace River Center, 863-412-2700 (24-hour hotline) or 863-412-2708 to schedule an appointment. If you or someone you know feels unsafe or may be in imminent danger, please call the Florida Polytechnic University Police Department 863-874-8472 or the local Police Department 911 immediately. For more information about policy, reporting options and resources at Florida Polytechnic University and the community, please visit the [Title IX Website](#).

### **Course Schedule**

The course schedule is listed on the next page. Please note that this is a tentative course calendar that may be modified as required based on the progression of the class.

*The instructor reserves the right to modify this schedule as required by the progression of the class.*

<b>Date</b>	<b>Topic</b>	<b>Deliverables/Actions</b>
January 10	Evaluation of Fall semester and expectations for the Spring Semester	
January 12	Report Generation/Report Requirements	<b>Assignment #1 due January 19</b>
January 14	Meet with Sponsor	<b>Weekly Report #1 Due on January 16</b>
January 17	No classes Martin Luther King Jr. Holiday	
January 19	Literature Review/Reading Research Papers	
January 21	Stating & Refining Research Questions	<b>Weekly Report 2 Due on January 23</b>
January 24	Progress Review	
January 26	Data Analysis	<b>Assignment #2 due February 2</b>
January 28	Meet With Sponsor	<b>Weekly Report #3 Due on January 30</b>
January 31	Progress Review	
February 2	Elevator Pitch Review	

February 4	Meet with Sponsor	<b>Weekly Report #4 Due on February 6</b>
February 7	Progress Review	
February 9	Capstone Pitch Presentations	
February 11	Meet With Sponsor	<b>Weekly Report #5 due February 13</b>
February 14	Progress Review	
February 16	Midterm Presentations	<b>Assignment #3 due February 23</b>
February 18	Meet with Sponsor	<b>Weekly Report #6 due February 20</b>
February 21	Progress Review	
February 23	Meet with Individual Teams	
February 25	Meet with Sponsor	<b>Weekly Report #7 due February 27</b>
February 28	Progress Review	<b>Assignment #4 due March 2</b>
March 2	Meet with Individual Teams	
Mar 5-13	SPRING BREAK – NO CLASSES	
March 14	Progress Review	
March 16	Meet with Individual Teams	
March 18	Meet with Sponsor	<b>Weekly Report #8 due March 25</b>
March 21	Progress Review	
March 23	Plan for Project Wrap Up	<b>Assignment #5 due March 30</b>
March 25	Meet with Sponsor	<b>Weekly Report #9 due March 27</b>
March 28	Progress Review	
March 30	Capstone Pitch Practice	
April 1	Meet with Sponsor	<b>Assignment #6 due April 6</b>
April 4	Progress Review	<b>Weekly Report #10 due April 3</b>
April 6	Meet with Individual Teams	
April 8	Meet with Sponsor	
April 11	Progress Review	
April 13	Final Capstone Pitch Practice	
April 15	Final Meet with Sponsor	<b>Assignment #7 due April 20</b>
April 18	Final Progress Review	

April 20	Final Meeting with Individual groups	
April 22	Final Presentations	
April 25	Final Presentations	
April 27	Final Presentations	
April	Capstone Showcase	

### **Important Dates**

January 10	M	First Day of Classes
January 10-14	M-F	Drop/Add Week
January 14	F	Deadline - No Academic or Fee Liability
January 17	M	Martin Luther King Jr. Holiday - No Classes
April 15	F	Withdrawal without Academic Penalty Deadline (W assigned)
April 27	W	Last Day of Classes
April 28-29	Th-F	Reading Days - No Classes
April 30, May 1-5,	S, M-Th.	Final Exams
May 11	W	Final Grades Available Online

### **Protecting Intellectual Property (IP) and Confidential Data**

Teams have an obligation to protect both IP and data that clients share with them. All Florida Poly faculty, staff and students are legally bound to protect IP and confidential data. Do not post IP or data at non-password-protected websites. Questions about IP should be directed to the mentor or university's attorneys trained in IP issues. Ask the instructor if you need contact information for Florida Poly professionals working with these issues.

### **Weekly Reports**

These weekly reports are used to track the progress of the projects and address any issues, concerns or difficulties. Students are provided with a template that has questions on their progress and accomplishments for the week, any difficulties encountered, goals and action items for next week etc. Twelve weekly reports will be submitted throughout the entire semester.

### **Assignments**

The assignments are designed to build on each other to help students in completing the final project report. Throughout the semester, each of the assignments will comprise a portion of the final report. By completing each assignment, the students will be able to combine the concepts learned from each assignment to make up the majority of the final report.

### **Rubric for Report and Presentations**

The midterm and final presentations and reports will be evaluated using the following rubrics.





## Report Rubric

Objective	Category	Below Expectations	Weak	Average	Good	Excellent
	Score	1	2	3	4	5
Students can write professional quality documents	Introduction	Opening is off-topic and inappropriate to the purpose, not concise and no clarity	Opening is somewhat related to the topic and appropriate to the purpose but is not concise and clear	Opening is related to the topic and appropriate to the purpose. Somewhat clear and concise	Opening is related to the topic and appropriate to the purpose. Clear and concise	Strong opening that is clear and concise
	Organization	Disorganized; incorrect format; unclear direction	Somewhat organized; incorrect format; unclear direction	Organized; correct format; unclear direction	Organized; correct format; clear direction	Correct formatting, strong clarity and organization in the development of main points
	Literature Review	Does not present information from any source	Presents information from irrelevant sources representing limited points of view/approaches	Presents information from relevant sources representing limited points of view/approaches	Presents in-depth information from relevant sources representing limited points of view/approaches	Synthesizes in-depth information from relevant sources representing limited points of view/approaches
	Research Design	Does not provide information on research design	Inquiry design demonstrates misunderstanding of the methodology or theoretical framework	Critical elements of the methodology or theoretical framework are missing, incorrectly developed or unfocused	Critical elements of the methodology or theoretical framework are appropriately developed however, more subtle elements are ignored or unaccounted for	All elements of the methodology or theoretical framework are skillfully developed and may be synthesized from across disciplines or relevant subdisciplines
	Analysis	Incorrect, Irrelevant, no supporting evidence	Correct, irrelevant, no supporting evidence	Correct, relevant, no supporting evidence	Relevant and correct with supporting evidence	Relevant, correct, complete, incorporates innovative insights
	Next Steps	Missing or content does not support conclusion	Conclusion irrelevant to the findings	Conclusion somewhat relevant to the findings	Conclusion relevant to the findings	Strong conclusion that is clear, complete and compelling
	Grammar & Spelling	Uses language that often impedes meaning due to errors	Uses language that often sometimes meaning due to errors	Uses language that generally conveys meaning to readers with clarity, although writing includes some errors	Uses straightforward language that conveys meaning to readers. Language has few errors	Uses graceful language that communicates meaning to readers with clarity and fluency and is virtually error free
	Reference Style (APA)	Did not follow APA style	Numerous errors in APA style, did not cite sources correctly, formatting issues	Some errors in APA style, cited correctly but formatting issues persist	Minimum errors in style and formatting but does not detract from readability	No errors in APA style
	Peer Evaluation	10 points				

Total points for Report = 50

## Presentation Rubric

Objective	Category	Below Expectations	Weak	Average	Good	Excellent
	Score	1	2	3	4	5
Students can demonstrate mastery of communication technology	Use of Media	Lack of media detracts from the presentation objective	Misuse of media that detracts from the presentation objective	Use of media barely supports and contributes to the presentation objective	Use of media supports and contributes to the presentation objective	Use of media supports, clarifies and reinforces the presentation objective
	Quality of Slides (weighted twice)	Very poor quality. Not enough or too much colors, fonts and animations that detract from project objective	Poor quality. Not enough or too much colors, fonts and animations that detract from project objective	Fonts, colors and animations barely support the presentation objective	Fonts, colors and animations support the presentation objective	Fonts, colors and animations support, clarify and reinforce the presentation objective
Students can develop and deliver a compelling oral talk with relevant facts and information	Opening statement	Opening is off-topic and inappropriate to the purpose, not concise and no clarity	Opening is somewhat related to the topic and appropriate to the purpose but is not concise and clear	Opening is related to the topic and appropriate to the purpose. Somewhat clear and concise	Opening is related to the topic and appropriate to the purpose. Clear and concise	Strong opening that is clear and concise
	Organization	Disorganized; incorrect format; unclear direction	Somewhat organized; incorrect format; unclear direction	Organized; correct format; unclear direction	Organized; correct format; clear direction	Correct formatting, strong clarity and organization in the development of main points
	Literature Review	Does not present information from any source	Presents information from irrelevant sources representing limited points of view/approaches	Presents information from relevant sources representing limited points of view/approaches	Presents in-depth information from relevant sources representing limited points of view/approaches	Synthesizes in-depth information from relevant sources representing limited points of view/approaches
	Analysis	Incorrect, Irrelevant, no supporting evidence	Correct, irrelevant, no supporting evidence	Correct, relevant, no supporting evidence	Relevant and correct with supporting evidence	Relevant, correct, complete, incorporates innovative insights
	Next Steps	Missing or content does not support conclusion	Conclusion irrelevant to the findings	Conclusion somewhat relevant to the findings	Conclusion relevant to the findings	Strong conclusion that is clear, complete and compelling
	Timing	Presentation is too short, insufficient coverage of material	Presentation is too long. Unable to cover all the material	Able to cover all the material within five extra minutes	Utilizes allotted time to provide sufficient coverage of material	Well-paced coverage of material within the allotted time

Students can deliver an oral talk with clarity and appropriate poise	Delivery Techniques	Does not participate in the oral presentation	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.
Total Points = 50						