Course Name	Decision Support Systems (Introduction to Data Science)
Instructor	Dr. Ivan Garibay
Dates	21 August - 6th December 2018
Days	Tuesday and Thursday
Time	10:30 A.M - 11:45 A.M
Duration	1:15 Minutes

Class Structure :

	Theory	30 Minutes
	Practicum	25 Minutes
	Problem Solving	15 Minutes
	Practice Homewor	Minutes

Unit	Lecture	Week	Date	Part	Topics Covered	Reference	Notebook Name (GitHub) (later change to: DSS.Unit01. Lecture01.YYY)	Assignments
Unit 1: Introduction	Lecture 1.1	1	08/21/18	PART I Data Science Tools (Python Essentials)	Introduction to Jupyter and Python	1- https://docs.python.org/3/tutorial/ 2- https://www.coursera.org/learn/python-programming-introduction	DSS-Unit01-Lecture02.2018.ipynb	Project and Team Selection Announcement - Grade
	Lecture 1.2		08/23/18				DSS-Unit01-Lecture01.2018.ipynb	Practice HW - No Grade
Unit 2: Python Data Structures and Functions	Lecture 2.1	2	08/28/18		Data Structures (Tuples, Lists, Dicts, Sets, etc.)	1- https://docs.python.org/3/tutorial/ 2- https://www.coursera.org/learn/python-programming-introduction	DSS-Unit02-Lecture01.2018.ipynb	Practice HW - No Grade
	Lecture 2.2		08/30/18 Dr.Garibay - Out of Office (AL)		Functions in Python		DSS-Unit02-Lecture02.2018.ipynb	Practice HW - No Grade Project and Team Selection Due - Grade
Unit 3: Scientific Computing with Python using NumPy	Lecture 3.1	3	09/04/18		Basic Numpy	Python Data Science Handbook Chapter 2 Ref Link	DSS-Unit03-Lecture01.2018.ipynb	Practice HW - No Grade
	Lecture 3.2		09/06/18 Dr.Garibay - Out of Office (DARPA 60)		Advanced NumPy - Matplotlib	Made referencing the linalg documentation LinAlg Docs - Python for Data Analysis(chapter 9) -Python Data Science Handbook (Chapter 4)	DSS-Unit03-Lecture02.2018.ipynb	HW1 Announcement - Grade

Unit 4: Data Analytics with Python using Pandas	**Lecture 4.1**	**4**	09/11/18		Intro to Pandas- Series, DataFrame	- Python for Data Analysis(chapter 5- page:123-165) -https://www.tutorialspoint.com/python_pandas	DSS-Unit04-Lecture01.2018.ipynb	Practice HW - No Grade
	Lecture 4.2		09/13/18			- Python for Data Analysis(chapter 5- page:123-165) -https://www.tutorialspoint.com/python_pandas	DSS-Unit04-Lecture02.2018.ipynb	**HW1 Due**
Unit 5: Data Analytics: Loading, Cleaning and Preparing Data	**Lecture 5.1**	**5**	09/18/18		Pivot Table, etc.	- Python for Data Analysis(chapter 8) -Python Data Science Handbook (Chapter 3)	DSS-Unit05-Lecture01.2018.ipynb	**Project Update Announcement - Grade**
	Lecture 5.2		09/20/18		Data loading, Data Cleaning, and Preparation	- Python for Data Analysis(chapter 6- 7 page:1167-220) - Python Data Science Handbook (page: 120-128)	DSS-Unit05-Lecture02.2018.ipynb	Practice HW - No Grade
Unit 6: Math Modeling: Graphs and Probabilities	**Lecture 6.1**	**6**	09/25/18	**PART II Building Data-Driven Models** **Math Modeling**	Graphing Data and Probabilities in MatPlotLib	- Python for Data Analysis(chapter 9) -Python Data Science Handbook (Chapter 4)	DSS-Unit06-Lecture01.2018.ipynb	Practice HW - No Grade
	Lecture 6.2		09/27/18				DSS-Unit06-Lecture02.2018.ipynb	Practice HW - No Grade
Unit 7: Math Modeling: Linear Programming	**Lecture 7.1**	**7**	**10/02/18 Dr.Garibay - Out of Office (Fed R&D Agency WS)**		Linear Programming	This class material still needs to be decided	DSS-Unit07-Lecture01.2018.ipynb	Practice HW - No Grade
	Lecture 7.2		10/04/18			- https://docs.scipy.org/doc/scipy-0.18.1/reference/generated/scipy.optimize.linprog.html - https://pythonhosted.org/PuLP/	DSS-Unit07-Lecture02.2018.ipynb	**Project Update Due - Grade**
Unit 8: Statistical Modeling: Data and Calculations	**Lecture 8.1**	**8**	10/09/18		Descriptive Stats	CH03 Introduction to Data Science Pages 29-50	DSS-Unit08-Lecture01.2018.ipynb	Practice HW - No Grade
	Lecture 8.2		10/11/18				DSS-Unit08-Lecture02.2018.ipynb	Practice HW - No Grade
Unit 9: Statistical	**Lecture 9.1**	**9**	10/16/18		Statistical Inference	CH04 Introduction to Data Science Pages 51-64	DSS-Unit09-Lecture01.2018.ipynb	**HW2 Announcement - Grade**

Modeling: Data Processing	**Lecture 9.2**	**9**	10/18/18	**PART III Machine Learning Models**	Supervised Learning:: SVM and Random Forest	Intro to Data Science (ch05) - Python Data Science Handbook (pages: 262-266, 311-330, 331-381, 405-432) - Python for Data Analysis (pages: 250-264, 373-378)	DSS-Unit09-Lecture02.2018.ipynb	Practice HW - No Grade
Unit 10: Machine Learning Modeling, Recommender Systems	**Lecture 10.1**	**10**	**10/23/18 Ramya - Out of Office**				DSS-Unit10-Lecture01.2018.ipynb	Practice HW - No Grade
	Lecture 10.2		**10/25/18 Dr.Garibay, Ramya - Out of Office (CSSSA)**		Recommender Systems	CH09 Introduction to Data Science - Recommender Systems Pages 165-179	DSS-Unit10-Lecture02.2018.ipynb	Practice HW - No Grade
Unit 11: Machine Learning Modeling: Regression	**Lecture 11.1**	**11**	10/30/18		Regression analysis	- Intro to Data Science (ch06) - Python Data Science Handbook (pages: 262-266, 311-330, 331-381, 390-396) - Python for Data Analysis (pages: 250-264, 373-378)	DSS-Unit11-Lecture01.2018.ipynb	Practice HW - No Grade
	Lecture 11.2		11/01/18				DSS-Unit11-Lecture02.2018.ipynb	Practice HW - No Grade
Unit 12: Machine Learning Modeling: Unsupervised, Network Analysis	**Lecture 12.1**	**12**	11/06/18		Unsupervised Learning and Network Analysis	CH07 Introduction to Data Science - Pages 115-132	DSS-Unit12-Lecture01.2018.ipynb	**HW2 Due - Grade**
	Lecture 12.2		11/08/18			CH08 Introduction to Data Science - Network Analysis Pages 141-163	DSS-Unit12-Lecture02.2018.ipynb	Practice HW - No Grade
Final Project Presentations		**13**	11/13/18	**PART IV Student's Final Project Presentations**	Team Presentations			Grade
			11/15/18		Team Presentations			Grade
Final Project Presentations		**14**	11/20/18		**No class: Thanksgiving**			
			11/22/18		Team Presentations			Grade
Final Project Presentations		**15**	11/27/18		Team Presentations			Grade

Final Project Presentations	15	11/29/18		Team Presentations	Grade

**Note: Projects: Sales Force Allocation, Stochastic Customer Forecasting, Projectile Motion, Critical Path Finding, Simplex Method Animation, Project of own choice(Should submit project outline). Projects focus on : Recommender Systems, Math/Statistical Modeling, Machine Learning. Team Size: 5(Cannot be changed later)