Course Name	**Decision Support Systems**
Instructor	**Dr. Ivan Garibay**
TA	**Ramya Akula**
Dates	**21 August - 6th December 2018**
Days	**Tuesday and Thursday**
Time	**10:30 A.M - 11:45 A.M**
Duration	**1:15 Minutes**

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Part	Unit	Lecture	Week	Date	Topics Covered	References	Notebook Name (GitHub igaribay/DSSwithPython)	Assignments
PART I Decision Support Tools: Python Essentials	**Unit 1: Introduction**	**Lecture 1.1**	**1**	08/21/18	Introduction to Jupyter and Python	https://docs.python.org/3/tutorial/ https://www.coursera.org/learn/python-programming-introduction	DSS-Unit01-Lecture01.2018.ipynb	**Final Project and Team Selection Announcement**
		Lecture 1.2		08/23/18			DSS-Unit01-Lecture02.2018.ipynb	
	Unit 2: Python Data Structures and Functions	**Lecture 2.1**	**2**	08/28/18	Data Structures (Tuples, Lists, Dicts, Sets, etc.) Functions in Python	https://docs.python.org/3/tutorial/ https://www.coursera.org/learn/python-programming-introduction	DSS-Unit02-Lecture01.2018.ipynb	HW1 Announcement
		Lecture 2.2		08/30/18	---no class--- students work on HW1			
	Unit 3: Scientific Computing with Python using NumPy	**Lecture 3.1**	**3**	09/04/18	Basic NumPy	Python Data Science Handbook, Chapter 2: Introduction to NumPy	DSS-Unit03-Lecture01.2018.ipynb	**Project Proposal and Team Selection Due**
		Lecture 3.2		09/06/18	---no class--- students work on HW1			
	Unit 4: Data Analytics with Python using Pandas	**Lecture 4.1**	**4**	09/11/18	Introduction to Pandas-Series, DataFrames	Python for Data Analysis, Chapter 5: Getting Started with Pandas, pages:123-165) https://www.tutorialspoint.com/python_pandas	DSS-Unit04-Lecture01.2018.ipynb	
		Lecture 4.2		09/13/18			DSS-Unit04-Lecture02.2018.ipynb	**HW1 Due** **Project Update Reminder**

	Unit 5: Data Analytics: Loading, Cleaning and Preparing Data	**Lecture 5.1**	**5**	09/18/18	Data loading, Data Cleaning, and Preparation	Python for Data Analysis, Chapter 6: Data Loading Storage and File Formats, pages 153-173	DSS-Unit05-Lecture01.2018.ipynb	
		Lecture 5.2		09/20/18		Python for Data Analysis, Chapter 7: Data Wrangling: Clean, Transform, Merge, Reshape, pages 175-211	DSS-Unit05-Lecture02.2018.ipynb	
PART II Mathematical and Statistical Models	**Unit 6: Math Modeling: Graphs and Probabilities**	**Lecture 6.1**	**6**	09/25/18	Data Visualization and Group Operations	Python Data Science Handbook, Chapter 4: Visualization with Mathplotlib, pages 217-330	DSS-Unit06-Lecture01.2018.ipynb	
		Lecture 6.2		09/27/18		Python for Data Analysis, Chapter 9: Data Aggregation and Group Operations, pages 249-283	DSS-Unit06-Lecture02.2018.ipynb	
	Unit 7: Math Modeling: Linear Programming	**Lecture 7.1**	**7**	10/02/18	---no class--- students work on project update			
		Lecture 7.2		10/04/18	Linear Programming	https://docs.scipy.org/doc/scipy-0.18.1/reference/generated/scipy.optimize.linprog.html https://pythonhosted.org/PuLP/	DSS-Unit07-Lecture01.2018.ipynb	**Project Update Due** **HW2 Announcement**
	Unit 8: Statistical Modeling	**Lecture 8.1**	**8**	10/09/18	Descriptive Stats	Introduction to Data Science, Chapter 3: Descriptive Statistics, pages 29-50	DSS-Unit08-Lecture01.2018.ipynb	
		Lecture 8.2		10/11/18	Statistical Inference	Introduction to Data Science, Chapter 4: Statistical Inference, pages 51-64	DSS-Unit08-Lecture02.2018.ipynb	
	Unit 9: Machine Learning Modeling, Supervised Learning	**Lecture 9.1**	**9**	10/16/18	Supervised Learning: SVM and Random Forest	Introduction to Data Science, Chapter 5: Supervised Learning, pages 67-96 Python Data Science Handbook (pages: 262-266, 311-330, 331-381, 405-432) Python for Data Analysis (pages: 250-264, 373-378)	DSS-Unit09-Lecture01.2018.ipynb	
		Lecture 9.2		10/18/18			DSS-Unit09-Lecture02.2018.ipynb	**HW2 Due** **Final Project Reminder**
	Unit 10: Network	**Lecture 10.1**	**10**	**10/23/18**	Network Analysis	Introduction to Data Science, Chapter 8: Network Analysis, pages 141-164	DSS-Unit10-Lecture01.2018.ipynb	

PART III Machine Learning and Network Models	**Analysis**	**Lecture 10.2**	**10**	**10/25/18**	Guess Lecture on Network Science: Dr. Edwin Nassiff			
	Unit 11: Machine Learning Modeling: Regression	**Lecture 11.1**	**11**	10/30/18	Regression Analysis	Introduction to Data Science, Chapter 6: Regression Analysis, pages 97-114 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	
		Lecture 11.2		11/01/18			DSS-Unit11-Lecture02.2018.ipynb	
	Unit 12: Machine Learning Modeling: Unsupervised Learning	**Lecture 12.1**	**12**	11/06/18	Unsupervised Learning	Introduction to Data Science, Chapter 7: Unsupervised Learning, pages 115-139	DSS-Unit12-Lecture01.2018.ipynb	
		Lecture 12.2		11/08/18			DSS-Unit12-Lecture02.2018.ipynb	
PART IV Student's Final Project Presentations	**Final Project Presentations**		**13**	11/13/18	Team Presentations			**Final Project Due**
				11/15/18	Team Presentations			**Final Project Due**
	Final Project Presentations		**14**	11/20/18	---no class--- Thanksgiving			
				11/22/18	Team Presentations			**Final Project Due**
	Final Project Presentations		**15**	11/27/18	Team Presentations			**Final Project Due**
				11/29/18	Team Presentations			**Final Project Due**

**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)