Week 2: Probability and Probability Distribution (Total video duration= 3.5 hours. You will be required to spend 40 minutes/day along with practicing datasets and quizzes)

Learning Outcomes from the Module:

After learning from this module, learners will be able to understand:

- Basic concepts of probability
- Marginal Probability
- Bayes' Theorem
- Probability Distributions-Binomial, Normal and Poisson
- Hands-on in Python to understand application of all the three types of Probability Distributions

Mentor Session Duration:	Faculty Name:	No. of videos:
2 hours	Dr. P K Viswanathan and Mr. Gurumoorthy	10

Video No.	Video Name	Duration of the video	Topics Covered	Conceptual or Hands On
1	Basics of Probability	37:38	What is Probability, Why is it important to learn, rules of probability and application of probability. We will also learn concepts like event, experiment & sample space, mutually exclusive events and independent events.	Conceptual
2	Marginal Probability	15:58	A type of probability calculated using a contingency table. A contingency table consists of rows and columns of two attributes at different levels with frequencies or numbers in each of the cells.	Conceptual
3	Bayes' Theorem	17:56	It is a conditional probability which helps to find the probability of an event given we have prior knowledge of conditions related to that event.	Conceptual
4	Probability Distributions	25:10	We will learn how probability distributions for an event are constructed based on past or sample data. We will be introduced to three distributions: Binomial, Poisson, and Normal. We will further our understanding of Binomial Distribution and a case study on Mastercard users will be used to illustrate the use of binomial distribution.	Conceptual

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Video No.	Video Name	Duration of the video	Topics Covered	Conceptual or Hands On
5	Poisson Distribution	19:39	We will study another discrete distribution: Poisson Distribution and how it relates to Binomial distribution. A case study will then be used to illustrate the Poisson probability calculations.	Conceptual
6	Normal Distribution	33:18	We will learn about a very important continuous probability distribution: Normal distribution. A case study on Breakfast cereals will be used to solve a Normal distribution problem.	Conceptual
7	Case Study Example for Normal Distribution	14:05	A case study will be solved to further our understanding of Normal Distribution.	Hands-On in Excel
8	Normal Distribution Hands-on using Python	15:49	Understanding how to do hands-on in Python for Normal Distribution using Breakfast Cereal example and mean salaries of data scientist example.	Hands-On in Python
9	Poisson Distribution Hands-on using Python	11:51	Understanding how to do hands-on in Python for Poisson Distribution using customer arrival in bank example and defect analysis of laptop assembly example.	Hands-On in Python
10	Binomial Distribution Hands-on using Python	20:21	Understanding how to do hands-on in Python for Binomial Distribution using credit card issue example and defect analysis of laptop assembly example.	Hands-On in Python

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Few textbooks that you can refer to:

1

Business Statistics : A First Course

By Kathryn A Szabat David M. Levine, P. K. Viswanathan, David Stephan

2

Statistics for Business and Economics

by David R. Anderson, Dennis J. Sweeney