SVKM's Narsee Monjee Institute of Management Studies

Sunandan Divatia School of Science, Mumbai

Department of Statistics

B.Sc. Data Science

Program Structure

Semester I

Subject Name	Credits	Pre-requisite
Descriptive Statistics – I (Theory)	3	12th Mathematics & Statistics
Descriptive Statistics – I (Practical)	1	12th Mathematics & Statistics
Introduction to Probability Theory	4	12th Mathematics & Statistics
Elementary Number Theory	3	12th Mathematics & Statistics
Univariate Calculus	4	12th Mathematics & Statistics
Discrete Mathematics	4	12th Mathematics & Statistics
Foundations of Computer Science (Theory)	1	12th
Foundations of Computer Science (Practical)	0.5	12th
Introduction to R	1	12th
Environmental Studies	3.5	12th
Total	**25**	

Semester II

Subject Name	Credits	Pre-requisite
Descriptive Statistics – II (Theory)	3	Descriptive Statistics – I
Descriptive Statistics – II (Practical)	1	Descriptive Statistics – I, Introduction to R
Probability Models for Discrete Data	3	Introduction to Probability Theory
Probability Models for Continuous Data	4	Introduction to Probability Theory
Numerical Methods (Theory)	2	Elementary Number Theory
Numerical Methods (Practical)	1	12th Mathematics
Linear Algebra	4	12th Mathematics & Statistics
Introduction to Programming (Theory)	3	Foundations of Computer Science
Introduction to Programming (Practical)	1	Foundations of Computer Science
Effective Communication	2	Basic understanding of English
Total	**24**	

Semester III

Subject Name	Credits	Pre-requisite
Statistical Inference for Data Science – I	3	Probability Models for Discrete Data, Probability Models for Continuous Data
Sampling Distributions & Applications	3	Probability Models for Discrete Data, Probability Models for Continuous Data
Statistics Lab – I	1	Introduction to R
Multivariable Calculus	3	Univariate Calculus
Mathematics Lab - I	1	Univariate Calculus
Data Management	3	Introduction to Programming
Technology Lab – I	1	Introduction to Programming
Data Analysis using Python	1	Introduction to Programming
Research Writing	2	Basic understanding of English
Research Initiative in Data Science – I	2	Introduction to R, Introduction to Programming, Subjects taught in the current semester
Total	**20**	

Semester IV

Subject Name	Credits	Pre-requisite
Statistical Inference for Data Science – II	3	Probability Models for Discrete Data, Probability Models for Continuous Data, Statistical Inference for Data Science - I
Design of Experiments	3	Statistical Inference for Data Science – I, Sampling Distributions & Applications, Linear Algebra
Regression Analysis	3	Statistical Inference for Data Science – I, Sampling Distributions & Applications, Linear Algebra
Statistics Lab - II	1	Statistics Lab – I
Theory of Optimization & Graph Theory	3	Discrete Mathematics
Mathematics Lab - II	1	Mathematics Lab - I
Machine Learning – I	3	Basics of Regression Analysis, Linear Algebra
Technology Lab - II	1	Technology Lab - I
Data Wrangling with Python	1	Data Analysis using Python
Research Ethics	2	Research Writing
Research Initiative in Data Science – II	2	Research Initiative in Data Science – I
Total	**23**	

Semester V

Subject Name	Credits	Pre-requisite

Multivariate Analysis	3	Regression Analysis, Linear Algebra,
Operations Research	3	Nil
Statistics Lab – III	1	Statistics Lab - II
Differential Equations	3	Univariate Calculus
Machine Learning – II	3	Machine Learning – I
Technology Lab – III	1	Technology Lab – II
Big Data Analytics	1	Data Wrangling with Python
Employability Skills	2	Basic understanding of English
Research Initiative in Data Science – III	3	Research Initiative in Data Science – II
Total	**20**	

Semester VI

Subject Name	Credits	Pre-requisite
Markov Chains	3	Probability Models for Discrete Data, Probability Models for Continuous Data, Linear Algebra,
Time Series & Forecasting	3	Regression Analysis
Statistical Process Control	3	Probability Models for Continuous Data
Statistics Lab - IV	1	Statistics Lab – III
Deep Learning Techniques	3	Machine Learning – II
Technology Lab – IV	1	Technology Lab – III
Data Visualization and Modelling	1	Nil
Entrepreneurship Skills	2	Nil
Capstone Project	3	Research Initiative in Data Science – III
Total	**20**	

Note: Total number of Credits for B.Sc. Data Science is 132