

DEPARTMENT OF STATISTICS				<i>Certificate courses (PG students)</i>				
Sem	Course Type	Course Code	Course Title	Credits	Total Contact Hours	CIA	Ext	Total
	Certificate Course		Cluster analysis with R	2	30	50	50	100

Nature of Course			
Knowledge and skill	✓		Employability oriented
Skill oriented	✓		Entrepreneurship oriented

Course Objectives:

The main objectives of this course are to:

1. Comfortably perform basics operations in R
2. Understand cluster analysis concepts
3. Explore and execute the cluster analysis concepts for real time data using R

Unit	Description	Hours
1	Basic of R: Introduction to R – Installing R software – loading packages – Getting Help – importing your data into R – data Preparation - Package R required.	6
2	Clustering Distance measure: Method for measuring distances – Choosing distance measure – data standardization – Distance matrix computation – visualizing distance matrices.	6
3	Partitioning Clustering: K – Means Clustering – basic – algorithm – Computing K – means clustering in R – Advantages and disadvantages – K-Medoids – CLARA.	6
4	Hierarchical Clustering: Agglomerative Clustering - Comparing dendrograms – visualizing dendrograms – Headmaps.	6
5	Cluster validation: Assessing cluster tendency – determining the optimal number of cluster – Cluster validation statistics – choosing the best clustering algorithms – computing P-values for Hierarchical clustering.	6
	Total number of hours	30

Books for study:

1. AlboukadelKassambara (2017), MultivariateAnalysis – I:Practical Guide To Cluster Analysis in R Unsupervised Machine learning, STHDA.

Book for references:

1. Giordani, paolo, Ferraro mariabrigida, Martella, Francesca (2019),An Introduction to Clustering with R, Springer.
2. Brain S. Evertti, Sabine Landu, MorvenLeese and Daniel Stahl (2011), John Wiley and Sons Ltd, 5th editions, United Kingdom.