



Nallamuthu Gounder Mahalingam College
(AUTONOMOUS)
Re-Accredited by NAAC and ISO 9001:2015
Affiliated to Bharathiar University, Pollachi-642001
Department of Mathematics (S.F.)
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DATA ANALYTICS USING R

Programme Outcome:

- Statistical computing which includes programming in R
- Writing R functions

Course Outcome:

- Collect detailed information using R profiler
- Configure statistical programming software
- Reading data into R
- Accessing R packages
- Basic Programming skills in R studio

Department	Mathematics	
Programme	VALUE ADDED	Effective From the Year :2019 onwards
Subject code : 19UMA4C1		
Title	: Data Analytics using R	Semester: III & IV
Total hours	30	Credit:1
Objectives	The main objective of the programme is to introduce the concept of analyzing data with R software. Finding Mean, Median, Mode, Standard Deviation, Skewness, Kurtosis, Histogram, Cumulative frequency charts, One Sample t-Test, Chi-Square test etc for both in whole population and subgroups of population which should develop the data analysis skills of the students in various fields.	
Unit	Contents	Hrs
Unit-I	Introduction: Collection of data- sampling method- scaling techniques	

	Introduction to R: Filtering data using brackets-Filtering data with subset- Recording continuous variables- Sorting data frames- Compute new variables- R-codes	4 hours
Unit-II	Creating frequency tables and Cross tables: Frequency tables in base R – Cross tables and percentage analysis. Graphic representation of frequency distribution: Scatter plot – Box plot charts	4 hours
Unit-III	Descriptive statistics using R: Mean- Median- Mode – Range – Quartile – Inter quartile range- Standard Deviation – Skewness in R	4 hours
Text Book	R for everyone: Advanced Analytics and Graphics by Jared P. Lander. Pearson Publishers	
Reference Book	Exploratory Data analysis with R, By Roger D Peng. Lean Publisher. 2015	

Theory- Question Paper Pattern

Max Marks:50	External : 40	Internal : 10	
Section	Pattern(online)	Mark	Total
Part A	Multiple choice (40 Questions)	40 * 1	40
		Total	: 50


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MATHEMATICS FOR MACHINE LEARNING

Programme Outcome:

- To introduce students, the basic concepts and techniques of Machine Learning.
- To develop the skills by using recent machine learning software for solving practical problems.

Course Outcome:

- Co1:** understand complexity of Machine Learning algorithms and their limitations;
- Co 2:** understand modern notions in data analysis oriented computing;
- Co 3:** be capable of confidently applying common Machine Learning algorithms in practice and implementing their own;
- Co 4:** be capable of performing distributed computations;
- Co5:** be capable of performing experiments in Machine Learning using real-world data.

Department	Mathematics(SF)	
Programme	VALUE ADDED	Effective From the Year :2019 onwards
Subject code :		
Title	: Mathematics for Machine Learning	Semester: III & IV
Total hours	40	Credit:1

UNIT – I

Linear Algebra

Systems of linear equations – Matrices – Solving systems of linear equations – Vector Spaces – Basis and Rank.

UNIT-II

Matrix Decomposition

Determinant and Trace – Eigen values and Eigen vectors – Cholesky Decomposition – Eigen decomposition and Diagonalization.

UNIT-III

Dimensionality Reduction with principal component Analysis

Problem setting – Maximum variance perspective – projection perspective – Eigenvector computation and low-Rank Approximations-PCA in High Dimensions-Key steps of PCA in practice.

Text Book : " MATHEMATICS FOR MACHINE LEARNING " by M.P . Peisenroth, A.A.Faisal and C.S.Ong, Published by 2020, Cambridge university press.

Theory- Question Paper Pattern

Max Marks:50	External : 40	Internal : 10	
Section	Pattern(online)	Mark	Total
Part A	Multiple choice (40 Questions)	40 * 1	40
		Total	: 50


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