Rathnavel Subramaniam College of Arts & Science (Autonomous), Sulur, Coimbatore

School of Computer Studies (SCS)

M. Sc Computer Science

2019 -2020

PROGRAMME OUTCOMES (POs) :

PO1	To provide outcome based education in the respective disciplines and to impart skills which will enable the students secure job in their core disciplines in this digitally transforming era.
PO2	To develop the art of critical thinking, creativity and to imbibe emerging trends thereby to excel in their interested domains of specializations.
PO3	To inculcate and develop research competence systematically besides the capacity to analyze the viability of new ideas, entrepreneurship and professionalism based on the students' choice and aptitude.
PO4	To instill a culture of life-long learning and the ability to understand the socio-economic issues.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

On the completion of M.Sc. (CS) Degree the Postgraduates will be competently able

S.No	PSO
PSO1	To perform the Job Roles such as BI Developer, Excel Developer, Big data Analyst and Data Analysts
PSO2	To acquaint the skill sets of Mathematics, Statistics, Python and R Programming.
PSO3	To interpret, analyze and provide solutions to problems in ETL,

	Visualization using Tableau, Pentaho , Visualization using Excel and Bigdata Technologies (Spark, Hadoop, Pig & Hive).
PSO4	To demonstrate the skill sets of Descriptive Analytics, Predictive Analytics and Machine Learning.

GRADUATE ATTRIBUTES:

- DISCIPLINE KNOWLEDGE
- PROBLEM ANALYSIS
- CRITICAL THINKING
- MODERN TOOLS USAGE
- SOFT SKILLS
- SELF LEARNING
- LIFE LONG LEARNING
- INDIVIDUAL & TEAM WORK
- PROJECT MANAGEMENT & FINANCE

COURSE OUTCOMES (COs):

Semester	Title of the Paper	Course Outcomes
Semester I	Mathematics for Machine learning	• Understand the basic concepts of Linear algebra with respect to Data science applications • Implement Matrices concepts, its operations and transformation • Understand Eigenvectors, Eigenvalues in the regard of data problems • Carry out Multivariate calculus and chain rule by means of its applications • Demonstrate the applications of Taylor series , linearization and optimization

		• Implement the operations of Principal Component Analysis
	Statistics using R	• Explore the data for Exploratory Data Analysis • Explore Categorical Data and Introduction to Inference • Explore the data using Normal and Binomial Distribution. • Explore and Analyze the data using Hypothesis Testing • Explore and Analyze the data using T-distribution, ANOVA and Bootstrapping • Explore and Apply the Simulation based Inference for Proportions and Chi-Square Testing
	Programming Lab I (R for Data Science)	• Understand and Apply the concepts of Data Visualization with ggplot2 • Understand and Apply the concepts of Data Transformation with dplyr • Understand and Apply the concepts of Tibbles with tibble and Data Import with readr • Understand and Apply the concepts of Tidy Data with tidyr • Understand and Apply the concepts of Relational Data with dplyr • Apply the concepts by using R Markdown
	Programming Lab II (Data Visualization using Excel I)	• Understand and apply the concepts of basic Excel functions for data formatting, representation and analysis. • Demonstrate the role of various types of charts in Business Applications by using Excel

		• Understand the applications of Excel in Business Management • Solve the problems in the Business Management domain by using Excel • Analyze and represent the data effectively in Financial Building and Planning • Understand the analysis of databases and apply the concepts for Evaluation and reporting using excel
Semester II	Business Intelligence using Pentaho	• Discuss the basic concepts of Business Intelligence • Explain the basic concepts of Data Warehouse, Pentaho Data Integration • Execute Pentaho Data Integration • Execute Pentaho Data Transformation • Draw reports by using Pentaho and Execute Pentaho Data Integration Job • Implement a project for ETL Job
	Machine Learning	• Apply the statistical learning concepts in R-programming • Implement Linear Regression for the given Dataset • Construct Multiple linear regression model for a given scenario • Implement Classification algorithm and compare its performance • Carry out the model evaluation with different approaches • Carry out variable selection and regularize it with high dimension dataset
	Data Visualization using Excel II	• Demonstrate the advanced Excel functions named Ranges, Circular Referencing,

		lookup, and Array Formula. • Creation of Dynamic Charts by using Advanced Charting techniques • Preparing Dashboards for effective data representation • Understand and apply the basic Macro functions in Excel • Demonstrate the basic of Statistics Functions and Analysis in Excel • Applying the concepts of excel functions, macros, dashboards and regression in Projects
	Programming Lab III (Business Intelligence using Pentaho)	• Execute the data Migration using PDI • Implement Pentaho Data Integration using CSV file • Execute Pentaho Data Integration • Execute Pentaho Data Transformation • Draw reports using Pentaho and Execute Pentaho Data Integration Job • Implement a project for ETL Job
	Programming Lab IV (Machine Learning)	• Apply the statistical learning concepts in R-programming • Implement Linear Regression for a given dataset • Construct Multiple linear regression model for a given scenario • Implement Classification algorithm and compare its performance • Carry out the model evaluation with different approaches • Carry out variable selection and regularize it with high dimension dataset

	Elective- Social Network Analysis	• Understand the concepts of text mining, Natural language Processing, Social Media Mining • Describe the role of text mining techniques in performing sentiment Analysis in Social Media • Understand the twitter data and apply the twitter data to solve business problems based on tweets • Understand the face book data and apply suitable techniques to convert the data into valuable information which can be used to solve a problem or a business case • Understand text classification techniques of text mining and apply the same to Social media data. • Understand text clustering techniques of text mining and apply the same to Social media data
	Business Intelligence using Tableau	• Discuss the basic concepts of Data Visualization, Tableau and Visual Analytics • Illustrate the Visual Analytics using Highlighting, sorting and Filtering • Implement Dashboard using tableau • Draw Maps using Polygon Map and Background Images • Prepare Reports using Calculation • Prepare Charts using Tableau
	Predictive Analytics	• Apply the Non-Linear methods with single input variables, additive models • Implement tree based methods for model

Semester III		building with a given dataset • Apply support vector machine approach for linear classifications • Implement SVM for non-linear classifications • Carry out Principal component analysis for a given scenario • Perform clustering techniques k-means, hierarchical with a given dataset
	Elective- Financial Analytics	• Understand the basic functions of Banking and Financial Services • Demonstrate Descriptive Analysis using Financial Institutions datasets • Understand the types of Data Structures in Financial Services and demonstrate the creation and maintenance of customer data • Understand the sources of data for marketing services and develop efficient model to reach out right customers. • Understand Credit Risks in Banking and develop Risk Scoring Models. • Understand the types of frauds and create methodologies to identify a fraud.
	EDC- Big data Technologies	• Understand the concept and challenge of Big data and the importance to analyze the bigdata • Build an ability to use Hadoop framework to store, retrieve and process Bigdata and Extend conceptual understanding of Hadoop and Distributed File System • Understand the principles of data warehouse modeling and Building a data warehouse • Apply the mechanism of capturing the data

		from batch data store using Sqoop • Apply Pig Scripts to extract knowledge from BigData • Organize the Big data by using Hive
	Programming Lab V (Business Intelligence using Tableau)	• Implement Visual Analytics by using Tableau • Execute Visual Analytics by using highlighter • Demonstrate different types of reports using tableau • Create Dashboard using parameters and calculated field • Prepare Dash boards using Calculation • Demonstrate Charts using Tableau
	Programming Lab VI (Predictive Analytics)	• Carry out polynomial regression, step functions Using R-programming • Apply tree based methods for model building with a given dataset • Develop a non linear predictive model using support vector classifier • Implement SVM for non-linear classifications • Perform Principal component analysis for a given scenario • Apply clustering techniques k-means , hierarchical with a given dataset
Semester IV	Major Project & Viva Voce	• Build a Real time Project, enhancing learning through Python for Data Science and Big Data Technologies. • Holistic understanding of predictive analytics.