

**SIES College of Commerce and Economics (Autonomous),
Sion (East)**

Department of Information Technology

M.SC (DS)

PROGRAM OUTCOMES

PO- 1: Learners will acquire proficiency in the field of Data Science.

PO- 2: Learners will upgrade and strengthen analytical and research skills.

PO- 3: Learners will apply acquired knowledge, tools, and techniques in an ethical and professional manner.

PO- 4: Learners will enhance future ready skills for Industry and Academics.

PO- 5: Learners will be trained in leadership skills and demonstrate social responsibilities with sensitivity towards sustainability.

Program: M.Sc. (Data Science)

Year: Part I

Semester: I

Course: Statistical Methods and Linear Programming

Course Outcomes:

After completion of the course,

No	Course Outcome	PO Mapping
CO 1 (Remember)	The learner will be able to identify the fundamentals concepts of expert system and its applications.	PO1
CO 2 (Understanding)	The learner will be able to analyse probability and concept of fuzzy sets for solving AI based problems.	PO1

CO 3 (Applying)	The learner will be able to apply Moments to calculate measures of skewness and kurtosis.	PO1, PO3, PO4, PO5
CO 4 (Analysing)	The learner will be able to analyse different Measures of Central Tendency.	PO1, PO2, PO4, PO5
CO 5 (Evaluating)	The learner will be able to evaluate Linear Programming Problems Formulation of problems and solving by graphical and simplex methods.	PO1, PO4, P)5
CO 6 (Creating)	The learner will be able to plan and design solutions by various soft computing approaches for a given problem.	PO1, PO3

Program: M.Sc. (Data Science)

Year: Part I

Semester: I

Course: Advanced Database Management Systems

Course Outcomes:

After completion of the course,

No	Course Outcome	PO Mapping
CO 1 (Remember)	The learner will be able to identify advance database concepts and database models.	PO1
CO 2 (Understanding)	The learner will be able to apply and analyse various terms related to transaction management.	PO1

CO 3 (Applying)	The learner will be able to apply queries on database.	PO1, PO3, PO4, PO5
CO 4 (Analysing)	The learner will be able to analyse the concept of object- relational database in development of various real time software.	PO1, PO2, PO4, PO5
CO 5 (Evaluating)	The learner will be able to evaluate different database designs and architecture.	PO1, PO4
CO 6 (Creating)	The learner will be able to create and manage different types of databases.	PO1, PO3

Program: M.Sc. (Data Science)

Year: Part I

Semester: I

Course: Data Mining for Business Intelligence

Course Outcomes:

After completion of the course,

No	Course Outcome	PO Mapping
CO 1 (Remember)	Learners will be able to identify various patterns hidden in the data set and they can recognise useful data and they can identify how business intelligent systems are useful	PO-2,PO-4
CO 2 (Understanding)	Learners will be able to demonstrate the Data Mining concepts in python and they can demonstrate the necessary libraries to be used in algorithms using python	PO-2,PO-4
CO 3 (Applying)	Learners will be able to apply the life cycle of Knowledge Discovery Process which starts from attaching necessary libraries,Loading	PO-2,PO-4

	Data,Data Preprocessing,Dividing the data into training set and test,apply the model and understading the accuracy of the model	
CO 4 (Analysing)	Learners will be able to analyse the Data using various Data Mining algorithms and they can test with new data set which helps them to understand the subject thoroughly	PO-2,PO-4
CO 5 (Evaluating)	Theoretical concepts of Data Mining are applied and tested Practically with dummy data set to assess and evaluate the deep understanding of the subject	PO-2,PO-4
CO 6 (Creating)	Learners will have a good understanding of the fundamental issues and challenges of data mining ,model selection,model complexity.Learners will understand the strength and weaknesses of many popular approaches of Data Mining	PO-2,PO-4

Program: M.Sc. (Data Science)

Year: Part I

Semester: I

Course: Data Science - I

Course Outcomes:

After completion of the course,

No	Course Outcome	PO Mapping
CO 1 (Remember)	The Learner will be able to describe basics of R programming.	PO-1, PO-4
CO 2 (Understanding)	The Learner will be able to explain interfaces of R, Vectorizing Matrix operations.	PO-1, PO-4
CO 3 (Applying)	The Learner will be able to illustrate different control structures, functions and scoping rules of R.	PO-1, PO-4

CO 4 (Analysing)	The Learner will be able to analyse the coding standards of R and explain debugging in R.	PO-1, PO-2, PO-4
CO 5 (Evaluating)	The Learner will be able to evaluate R programming with data analysis case study.	PO-1, PO-2, PO-4
CO 6 (Creating)	The Learner will be able to design data analysis models using R programming.	PO-1, PO-2, PO-4

Program: M.Sc. (Data Science)

Year: Part I

Semester: II

Course: Advanced Statistical Methods

Course Code: MDS201

After completion of the course,

No	Course Outcome	PO Mapping
CO 1 (Remember)	Learners will be able to identify the fundamentals concepts of expert system and its applications.	PO-1, PO-2, PO-4
CO 2 (Understanding)	Learners will be able to demonstrate probability and concept of fuzzy sets for solving AI based problems.	PO-2, PO-4
CO 3 (Applying)	Learners will be able to apply fuzzy system for solving problems.	PO-2, PO-4
CO 4 (Analysing)	Learners will be able to analyse the applications of genetic algorithms in different problems related to artificial intelligence.	PO-2, PO-4
CO 5 (Evaluating)	The learner will be able to summarize knowledge representation techniques in natural language	PO-2, PO-4, PO-3
CO 6 (Creating)	The learner will be able to plan and design solutions by various soft computing approaches for a given problem	PO-2, PO-4, PO-5

Program: M.Sc. (Data Science)

Year: Part I

Semester: II

Course: Machine Learning

Course Code: MDS202

After completion of the course,

No	Course Outcome	PO Mapping
CO 1 (Remember)	Learners will be able to identify various patterns hidden in the data set and they can recognise useful data in order to apply Machine Learning Algorithms	PO-1, PO-2, PO-4
CO 2 (Understanding)	Learners will be able to demonstrate the concepts in python and necessary libraries to be used in Machine Learning algorithms using python.	PO-2, PO-4
CO 3 (Applying)	Learners will be able to apply the life cycle, necessary libraries, Loading Data, Data Pre-processing, training set and test, apply the model and understanding the accuracy of the model.	PO-2, PO-4
CO 4 (Analysing)	Learners will be able to analyse the Data using various machine Learning algorithms and test with new data set which helps them to understand the subject thoroughly	PO-2, PO-4
CO 5 (Evaluating)	Learners will be able to apply and test practically with dummy data set to assess and evaluate the deep understanding of the subject.	PO-2, PO-4, PO-3
CO 6 (Creating)	Learner will be able to develop understanding of the fundamental issues and challenges of machine learning data, model selection, model complexity.	PO-2, PO-4, PO-5

Program: M.Sc. (Data Science)

Year: Part I

Semester: II

Course: Linear Algebra

Course Code: MDS203

After completion of the course,

No	Course Outcome	PO Mapping
CO 1 (Remember)	Students will learn to describe linear structures verbally, geometrically, symbolically, and numerically.	PO-2, PO-3
CO 2 (Understanding)	The learner will be able to Understand algebraic and geometric representations of vectors in \mathbb{R}^n and their operations, including addition, scalar multiplication and dot product	PO-2, PO-3
CO 3 (Applying)	Students will learn to apply the terminology and notation of Linear Algebra correctly and appropriately in a variety of abstract and applied contexts.	PO-3, PO-2
CO 4 (Analysing)	The learner will be able to analyse and implementation of algorithms used to solve linear algebra problems.	PO-2, PO-3
CO 5 (Evaluating)	The learner will be able to compute the matrix calculations for at least $3 \times 3, 3 \times 3$ matrices: row echelon form, reduced row echelon form, matrix inverse, and a variety of arithmetic operations.	PO-2, PO-3
CO 6 (Creating)	Students will learn to construct linear models for a variety of applied problems.	PO-2, PO-3

Program: M.Sc. (Data Science)

Year: Part I

Semester: II

Course: Research Methodology

Course Code: MDS204

After completion of the course,

No	Course Outcome	PO Mapping
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CO 1 (Remember)	The learner will be able to define different methodologies and techniques used in research work.	PO-1, PO-2, PO-3
CO 2 (Understanding)	The learner will be able to explain basic computer skills necessary for the conduct of research.	PO-1, PO-2
CO 3 (Applying)	The learner will be able to apply the basic function and working of analytical instruments used in research	PO-1, PO-2
CO 4 (Analysing)	The learner will be able to analyse the required numerical skills necessary to carry out research.	PO-1, PO-2, PO-4
CO 5 (Evaluating)	The learner will be able to summarize the research problem, appropriate research design.	PO-1, PO-2
CO 6 (Creating)	The learner will be able to devise the concepts and procedures of sampling, data collection, analysis and reporting.	PO-1, PO-2, PO-5