SYLLABI AND SCHEME OF EXAMINATIONS FOR MULTIDISCIPLINARY COURSES FOR UNDER GRADUATE PROGRAMS (SINGLE MAJOR / MULTIDISCIPLINARY/ BACHELOR OF SCIENCE (MATHEMATICS) 4-YEAR PROGRAMS)

(Based on Curriculum and Credit Framework for UG Programs under NEP)

WITH EFFECT FROM THE SESSION 2024-25

MAHARSHI DAYANAND UNIVERSITY ROHTAK (HARYANA)

SYLLABI AND SCHEME OF EXAMINATIONS FOR MULTIDISCIPLINARY COURSES FOR UNDER GRADUATE SINGLE MAJOR/MULTIDISCIPLINARY PROGRAMS/ SINGLE MAJOR PROGRAM AFTER 2nd SEMESTER OF MULTIDISCIPLINARY PROGRAM

Name of the Department	Nomenclature of Multidisciplinary Course (MDC) @ 3 credits	Course Code	Credits Distribution			Total Credits	Workload			Total Workload	Marks				
			L	T	P		L	T	P		Theory		Practical		Total Marks
											Internal	External	Internal	External	
Mathematics	Introductory Mathematics	24MATX01MD01	02	01	0	03	**02**	**1N**	**0**	**2+1N**	25	50	-	-	75
Mathematics	Mathematical Reasoning	24MATX02MD01	02	01	0	03	02	**1N**	**0**	**2+1N**	25	50	-	-	75
Mathematics	Applicable Mathematics	25MATX03MD01	02	01	0	03	02	1N	0	**2+1N**	25	50	-	-	75

N : Number of Groups in the Class

L: Lecture; T: Tutorial; P: Practical

Note:

A student has to opt for three Multidisciplinary Courses in first three semester from the pool of the courses offered in the disciplines other than those of Major disciplines and Minor disciplines and the one not studied at 10+2 or equivalent level.

Syllabi for Multidisciplinary Course in Mathematics

Semester I

Session: 2024-25

Name of Program	Not to be filled	**Program Code**	Not be filled
Name of the Course	**Introductory Mathematics**	**Course Code**	**24MATX01MD01**
Hours per Week	**03**	**Credits**	**03**
Maximum Marks	**75 (50 Theory + 25 Internal)**	**Time of Examinations**	**03 Hours**

Note:
Examiner will set nine questions and the candidates will be required to attempt five questions in all. Question number one will be compulsory containing four short answer type questions from all sections. Further, examiner will set two questions from each section and the candidates will be required to attempt one question from each Section. All questions will carry equal marks.

Course Learning Outcomes (CLO):

CLO 1 Obtain various properties related to numbers**.**
CLO 2 Solve problems related to Profit, Loss and ages.
CLO 3 Use the concept time and work, distance and solve calendar based problems.

Section - I

Numbers, H.C.F. and L.C.M. of Numbers, Decimal and Fractions, Simplification, Square roots and cube roots, Surds and indices.

Section - II

Problems on numbers, Average, Percentage, Profit and Loss, Ratio and proportion.

Section - III

Problem on ages, Partnership, Time and work, Time and distance.

Section - IV

Problems on trains, Mixure problem, Problems based on Calendar and clock.

References:

1. Aggarwal, R.S., Quantitative aptitude for Competitive exams, S. Chand Co. Pvt. Ltd., New Delhi, Eighth edition, 2017.
2. Guha, A., Quantitative aptitude for Competitive exams, McCraw Hill

Semester II

Session: 2024-25

Name of Program	Not to be filled	**Program Code**	Not be filled
Name of the Course	**Mathematical Reasoning**	**Course Code**	**24MATX02MD01**
Hours per Week	**03**	**Credits**	**03**
Maximum Marks	**75 (50 Theory + 25 Internal)**	**Time of Examinations**	**03 Hours**

Note:
Examiner will set nine questions and the candidates will be required to attempt five questions in all. Question number one will be compulsory containing four short answer type questions from all sections. Further, examiner will set two questions from each section and the candidates will be required to attempt one question from each Section. All questions will carry equal marks.

Course Learning Outcomes (CLO):

CLO 1 Solve problems related to coding-decoding.
CLO 2 Handle various mathematical and logical operations.
CLO 3 Read and use various graphs and diagrams.

Section - I

Analogy, Classification, Series Completion, Coding-Decoding, Blood relation, Puzzle Test.

Section - II

Sequential output tracing, Logical Venn Diagram, Alphabet Test, Number, Ranking and Time sequence test.

Section - III

Mathematical operation, Logical sequence and Word, Arithmetical Reasoning.

Section - IV

Data Interpolation and Reasoning: Tabulation, Bar Graphs, Line Graphs, Pie Chart, Venn Diagrams, Analytical Reasoning, Mirror images.

References:

1. Aggarwal, R.S., A Modern Approach to Verbal and Non-Verbal Reasoning, S. Chand Co. Pvt. Ltd., New Delhi, Revised Edition, 2018.
2. Sundstrom, T., Mathematical Reasoning, Writing and Proof, Version 2.1, Sundstrom2-1.pdf (sc.edu)

Semester III

Session: 2025-26

Name of Program		**Program Code**	
Name of the Course	**Applicable Mathematics**	**Course Code**	**25MATX03MD01**
Hours per Week	**03**	**Credits**	**03**
Maximum Marks	**75 (50 Theory + 25 Internal)**	**Time of Examinations**	**03 Hours**

Note:

Examiner will set nine questions and the candidates will be required to attempt five questions in all. Question number one will be compulsory containing four short answer type questions from all sections. Further, examiner will set two questions from each section and the candidates will be required to attempt one question from each Section. All questions will carry equal marks.

Course Learning Outcomes (CLO):

CLO 1 Determine the type of matrices and compute the elementary operations on the matrices.
CLO 2 Solve problems related to interest and annuities.
CLO 3 Use sets and Venn diagrams to solve many problems related to various types of data.

Section - I

Theory of Sets: Meaning, elements, types, presentation and equality of Sets, Union, Intersection, Complement and Difference of Sets, Venn Diagram, Cartesian Product of two Sets, Applications of Set Theory.

Section - II

Matrices and Determinants: Definition of a Matrix ; Types of Matrices, Algebra of Matrices; Properties of determinants; Calculation of values of Determinants upto third order; adjoint of a Matrix, elementary row and column operations; Finding inverse matrix through adjoint; Solution of a system of Linear equations having unique Solution and involving not more than three variables.

Section - III

Compound Interest: Certain different types of interest rate; Concept of present value and amount of a sum.

Section - IV

Annuities: Types of annuities; Present value and amount of an annuity, including the case of continuous compounding.

References:

1. Allen B.G.D: Basic Mathematics; Mcmillan, New Delhi.

2. Volra. N. D. Quantitative Techniques in Management, Tata McGraw Hill, New Delhi.

3. Kapoor V.K. Business Mathematics: Sultan chand and sons, Delhi.