Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Department of Mathematics

Choice Based Credit System (CBCS) in the light of NEP-2020

SEMESTER - VII

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			Marks	THEORY			PRACTICAL		L	T	P	CREDITS
				END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
GUMA302	GE	Remedial Mathematics	Max	60	20	20	0	0	3	0	0	3
			Min	24	16		0	0				

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

COURSE OBJECTIVES: To develop fundamental mathematical knowledge and problem-solving skills in functions, limits and continuity, differential calculus, integral calculus, matrices and determinants, and analytical geometry for engineering and science applications.

COURSE ALIGNMENT WITH UNSDG:

The Course aims to fulfil the United Nations Sustainable Development Goals, **SDG 4 (Quality Education)** and **SDG 9 (Industry, Innovation and Infrastructure).**

COURSE OUTCOMES:

After completion of the course, the student will be able to:

CO1 Understand and apply the concepts of functions, limits, and continuity.

CO2 Apply differential calculus to analyse functions and solve optimization problems.

CO3 Evaluate definite and indefinite integrals using standard integration techniques and their applications.

CO4 Perform operations on matrices and determinants and solve related problems.

CO5 Solve problems involving straight lines using analytical geometry.

TEACHING PEDAGOGY:

T1 Classroom teaching (white board), Power Point Presentations, Interactive lectures, Inquiry-based teaching

T2 ABL activities, Assignments, Flip Class/ Seminars, Quizzes, Oral Viva-voce examination

ASSESSMENT TOOLS:

ATL1 Quiz

ATL2 Activity Based Learning

ATL3 Midterm Exams

ATL4 Seminar Presentation

ATL5 Poster

ATL6 Assignments

ATL7 Oral Viva-voce examination

PREREQUISITES:

Basic knowledge of Arithmetic, Algebra, and Logical Thinking.

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SYLLABUS:

Module	Descriptors/Topics	Hours	Assessment Tools
I	**UNIT – I** **Function, Limit and Continuity:** Real valued function, Classification of real valued functions, limit of a variable and a function, Right hand limit and Left hand limit, Continuity of a function of one variable.	9	ATL1 ATL3 ATL6
II	**UNIT – II** **Calculus:** Introduction, Derivatives of a function, Derivative of a constant, Derivative of product of constant and function, Derivative of sum or difference of functions, Product rule, Quotient rule, Successive Differentiation, Conditions for a function to be a maximum or a minimum at a point for one variable.	9	ATL1 ATL3 ATL6
III	**UNIT – III** **Integration:** Introduction, Definition, Standard formulae, Rules of integration, Method of substitution, Method of partial fractions, Integration by parts, Definite integrals, Applications.	9	ATL1 ATL3 ATL6
IV	**UNIT – IV** **Matrices and Determinant:** Introduction to matrices, Types of matrices, Operations on matrices, Transpose of a matrix, Matrix multiplication, Determinants, Minors and Cofactors, Adjoint of a square matrix, Inverse of a matrix, Rank of a matrix.	9	ATL1 ATL3 ATL6
V	**UNIT-V** **Analytical Geometry:** Introduction, Quadrants, Distance formula, Section formula, Equation of Straight line (point slope form, Intercept form, Two-point slope form), Point of intersection of two straight lines, Angle between two straight lines, Line parallel to a given line, Line perpendicular to a given line.	9	ATL1 ATL3 ATL6
	Total Hours	**45**	

ADDITIONAL RESOURCES

A.	**Value addition to course content/ Skill enhancement content:**

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	NPTEL – Engineering Mathematics (https://nptel.ac.in/courses)
B.	**Remedial classes for slow learners:**
	As per the AUMP SOP for slow and fast learners.
Textbooks	
1.	B.S. Grewal, *Higher Engineering Mathematics*, Khanna Publishers.
2.	H.K. Dass, *Elementary Engineering Mathematics*, S. Chand Publications.
Reference Books	
1.	R.S. Aggarwal, *Basic Mathematics*, S. Chand Publications.
2.	S.L. Loney, *The Elements of Coordinate Geometry*, Arihant Publications.
3.	N.P. Bali, *Engineering Mathematics*, Laxmi Publications.
4.	R.K. Jain and S.R.K. Iyengar, *Advanced Engineering Mathematics*, Narosa Publishing House.
Suggested e- resources (Websites/e- books)	
1.	https://www.youtube.com/@satishshukla2553330 https://sites.google.com/view/satishmathematics1978/home
2.	https://youtube.com/@priyae-mathematics1030?si=pZJZYTytr-l5pV7q

COURSE ARTICULATION MATRIX (MAPPING OF COs WITH POs)

Course Outcomes	Correlation with POs												Correlation with PSOs		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1															
CO2															
CO3															
CO4															

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