



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Science

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

Generic Elective

Semester III

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME						L	T	P	CREDITS
			Marks	THEORY			PRACTICAL					
				END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
GUMA303	Generic Elective	Basics of Calculus	Max	60	20	20	0	0	4	0	0	4
			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:	
The student will have ability to:	
1.	To introduce fundamental concepts of calculus in an intuitive and application-driven manner.
2.	To develop problem-solving skills using differentiation and integration
3.	To apply calculus concepts in real-life scenarios
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 limits and continuity in real-world modeling
CO2	Apply derivatives for rate of change and optimization
CO3	Use integrals for area, volume, and accumulation
CO4	Solve engineering and scientific problems using calculus
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

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ATL6	Assignments
ATL7	Oral Viva-voce examination

PREREQUISITES:

Knowledge of Higher Secondary Mathematics

SYLLABUS:

Module	Descriptors/Topics	Hours	Assessment Tools
I	Functions, Limits, and Continuity Types of functions and graphs, limits, laws, continuity and applications.	12	ATL1 ATL3 ATL6
II	Differentiation Derivative definition and rules, Higher-order and implicit differentiation, Derivative and its geometrical and physical interpretation, Sign of derivatives and monotonic increasing and decreasing functions, Rolle's and Mean value theorems and applications.	12	ATL1 ATL3 ATL6
III	Applications of Derivatives Maxima, minima, optimization, curve tracing in cartesian and polar coordinates applications.	12	ATL1 ATL3 ATL6
IV	Integration Indefinite and definite integrals, fundamental theorem and integration techniques.	12	ATL1 ATL3 ATL6
V	Applications of Integration Length of curve, Area, and volume.	12	ATL1 ATL3 ATL6

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			ATL7
		Total Hours	60

ADDITIONAL RESOURCES

A.	Value addition to course content/ Skill enhancement content:
	https://www.youtube.com/@satishshukla2553330 https://sites.google.com/view/satishmathematics1978/home
B.	Remedial classes for slow learners:
	As per the AUMP SOP for slow and fast learners.

SUGGESTED READINGS:

Textbooks

1.	T. M. Apostol, Calculus, Volume I, 2 nd Ed, Wiley, 1967.
2.	Maurice D. Weir, J. Hass, C. Heil, P. Bogacki, Thomas' Calculus 15th Edition, Pearson, Delhi.
3.	B. S. Grewal, Higher Engineering Mathematics, Khanna Publishers, Delhi.
4.	Erwin Kreyszig, Advanced Engineering Mathematics, 10 th Ed, John Wiley Publisher

Reference Books

1.	R. G. Bartle and D. R. Sherbert, Introduction to Real Analysis, 5th Ed, Wiley, 1999.
2.	J. Stewart, Calculus: Early Transcendentals, 5th Ed, Thomas Learning (Brooks/ Cole), Indian Reprint, 2003.

Suggested e- resources (Websites/e- books)

1.	https://www.youtube.com/@satishshukla2553330
2.	https://youtube.com/@priya-mathematics1030?si=pZJZYTytr-l5pV7q

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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	PO 10	-	-	PSO1	PSO2	-
CO1															-
CO2															-
CO3															-
CO4															-

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