Lesson Plan
B.Sc. Mathematics/B.Sc. Mathematics and Computing (1st Semester)
Calculus (MTU-101-V)

Week-1	I	Limit of a function
	II	Limit of a function
	III	ε-δ definition of limit
	IV	Limit at infinity
Week-2	I	Infinite limits
	II	Continuity of a real valued function, Geometrical interpretation of continuity
	III	Continuity of a real valued function
	IV	Types of discontinuities
Week-3	I	Properties of continuous functions
	II	Indeterminate forms, L'Hôspital's rule
	III	Indeterminate forms, L'Hôspital's rule
	IV	Indeterminate forms, L'Hôspital's rule
Week-4	I	Differentiability of a real valued function, Geometrical interpretation of differentiability
	II	Differentiability of a real valued function
	III	Differentiability of a real valued function
	IV	Differentiability of a real valued function
Week-5	I	Relation between differentiability and continuity
	II	Properties of differentiable functions
	III	Chain rule of differentiation
	IV	Chain rule of differentiation
Week-6	I	Successive differentiation
	II	Calculation of nth derivatives
	III	Leibnitz's theorem
	IV	Questions based on Leibnitz's theorem
Week-7	I	Darboux's theorem
	II	Rolle's theorem, Geometrical interpretation
	III	Rolle's theorem, Geometrical interpretation
	IV	Questions based on Rolle's theorem
Week-8	I	Lagrange's mean value theorem, Geometrical interpretation of mean value theorems
	II	Questions based on Lagrnage's mean value theorem
	III	Cauchy's mean value theorem
	IV	Questions based on Cauchy's mean value theorem
Week-9	I	Taylor's theorem
	II	Maclaurin's and Taylor's series expansions
	III	Maclaurin's and Taylor's series expansions
	IV	Maclaurin's and Taylor's series expansions
Week-10	I	Concavity, Points of inflection

	II	First and second derivative test for relative extrema
	III	Singular points
	IV	Tangents at origin
Week-11	**I**	Asymptotes
	II	Asymptotes parallel to axes
	III	Tracing of curves
	IV	Tracing of curves
Week-12	**I**	Tracing of curves
	II	Parametric representation of curves
	III	Tracing of parametric curves
	IV	Polar coordinates
Week-13	**I**	Tracing of curves in polar coordinates
	II	Tracing of curves in polar coordinates
	III	Doubts
	IV	Doubts

Lesson Plan
B.Sc. Mathematics/B.Sc. Mathematics and Computing (1st Semester)
Calculation with Vedic Mathematics (MTU-107-V)

Week-1	I	History of Vedic Mathematics
	II	History of Vedic Mathematics
	III	Introduction to Sutras and Upsutras
Week-2	I	Addition in Vedic Mathematics without carrying, Dot method
	II	Addition in Vedic Mathematics without carrying, Dot method
	III	Addition in Vedic Mathematics without carrying, Dot method
Week-3	I	Subtraction
	II	Subraction
	III	Nikhilam Navatashcaramam Dashatah (All from 9 last from 10)
Week-4	I	Nikhilam Navatashcaramam Dashatah (All from 9 last from 10)
	II	Fraction-Addition and subtraction
	III	Fraction-Addition and subtraction
Week-5	I	Multiplication of two numbers of two digits
	II	Multiplication of two numbers of two digits
	III	Multiplication of two numbers of three digits
Week-6	I	Multiplication of two numbers of three digits
	II	Multiplication of two numbers
	III	Multiplication of two numbers
Week-7	I	Multiplication of two numbers
	II	Multiplication of two numbers
	III	Multiplication by Urdhva Tiryak sutra
Week-8	I	Division
	II	Division
	III	Division
Week-9	I	Division
	II	Paravartya Yojayet method (three-digit divisor)
	III	Division by Urdhva Tiryak Sutra (Vinculum method)
Week-10	I	Division by Urdhva Tiryak Sutra (Vinculum method)
	II	LCM and HCF
	III	LCM and HCF
Week-11	I	Square of two-digit numbers
	II	Squares of numbers ending in 5: Ekadhikena Purvena Sutra
	III	Square of numbers
Week-12	I	Square of numbers: Duplex method
	II	Square roots
	III	Square roots: Dwandwa Yoga (duplex) Sutra
Week-13	I	Square roots: Dwandwa Yoga (duplex) Sutra
	II	Doubts
	III	Doubts

Lesson Plan
M.Sc. Mathematics (1st Semester)
Abstract Algebra (MTP-103-V)

Week-1	I	Conjugacy
	II	Conjugacy
	III	Class equations
	IV	p-groups
Week-2	I	Sylow p-subgroups
	II	Sylow theorems
	III	Sylow theorems
	IV	Sylow theorems
Week-3	I	Applications of Sylow theorems
	II	Applications of Sylow theorems
	III	Survey of groups upto order 15
	IV	Description of groups of order p^2 and $p.q$
Week-4	I	Normal and subnormal series
	II	Normal and subnormal series
	III	Solvable series, Derived series
	IV	Solvable groups
Week-5	I	Solvability of S_n-the symmetric group of degree $n \geq 2$
	II	Solvability of S_n-the symmetric group of degree $n \geq 2$
	III	Central series
	IV	Nilpotent groups and their properties
Week-6	I	Nilpotent groups and their properties
	II	Nilpotent groups and their properties
	III	Jordon Holder's Theorem
	IV	Jordon Holder's Theorem
Week-7	I	Rings
	II	Rings
	III	Integral domains
	IV	Integral domains
Week-8	I	Field
	II	Ideals
	III	Prime and maximal ideals
	IV	Quotient- rings
Week-9	I	Prime fields, Field of quotients of an Integral domain
	II	Homomorphism
	III	Homomorphism
	IV	Homomorphism
Week-10	I	Euclidean domains
	II	Principal ideal domains
	III	Unique factorization Domain
	IV	Relation between Euclidean Domain, Principal Ideal Domain and Unique

		Factorization Domain
Week-11	**I**	Gauss lemma
	II	Irreducible polynomial
	III	Irreducible polynomial
	IV	Eisenstein's irreducibility criterion
Week-12	**I**	Eisenstein's irreducibility criterion
	II	Primitive polynomials, Cyclotomic polynomials
	III	Unique factorization in R[x] where R is a Unique factorization Domain
	IV	Finite fields
Week-13	**I**	Finite fields
	II	Construction of finite fields
	III	Doubts
	IV	Doubts

Lesson Plan
B. Tech. IT (1st Semester)
Mathematics-I (Calculus and Linear Algebra) (MTU-149-V)

Week-1	I	Evolutes and involutes
	II	Evolutes and involutes
	III	Evaluation of definite and improper integrals
	IV	Evaluation of definite and improper integrals
Week-2	I	Evaluation of definite and improper integrals
	II	Beta and Gamma functions and their properties
	III	Beta and Gamma functions and their properties
	IV	Beta and Gamma functions and their properties
Week-3	I	Applications of definite integrals to evaluate surface areas of revolutions
	II	Applications of definite integrals to evaluate surface areas of revolutions
	III	Applications of definite integrals to evaluate volumes of revolutions
	IV	Applications of definite integrals to evaluate volumes of revolutions
Week-4	I	Rolle's theorem
	II	Questions based on Rolle's theorem
	III	Lagrange's Mean value theorem and Cauchy's Mean Value Theorem
	IV	Questions based on Lagrange's Mean Value Theorem
Week-5	I	Questions based on Cauchy's Mean Value Theorems
	II	Taylor's and Maclaurin theorems with remainders
	III	Questions based on Taylor's and Maclaurin theorems
	IV	Questions based on Taylor's and Maclaurin theorems with remainders
Week-6	I	Indeterminate forms and L'Hospital's rule
	II	Indeterminate forms and L'Hospital's rule
	III	Maxima and Minima
	IV	Matrices: addition and scalar multiplication, matrix multiplication
Week-7	I	Linear Independence, Rank of a matrix
	II	Rank of a matrix
	III	Determinants
	IV	Cramer's Rule
Week-8	I	Inverse of a matrix
	II	Linear systems of equations
	III	Gauss elimination method
	IV	Gauss elimination method
Week-9	I	Gauss-Jordan elimination method
	II	Vector Space
	III	Linear dependence of vectors
	IV	Basis, dimension
Week-10	I	Basis, dimension
	II	Linear transformations (maps)
	III	Linear transformations (maps)
	IV	Range and kernel of a linear map, rank and nullity

Week-11	**I**	Inverse of a linear transformation
	II	Rank- nullity theorem
	III	Composition of linear maps
	IV	Matrix associated with a linear map
Week-12	**I**	Eigenvalues, eigenvectors and eigenbases
	II	Eigenvalues, eigenvectors and eigenbases
	III	Symmetric, skew-symmetric and orthogonal Matrices
	IV	Diagonalization
Week-13	**I**	Inner product spaces
	II	Gram-Schmidt orthogonalization process
	III	Doubts
	IV	Doubts