VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
SYLLABUS FOR B.Sc. (MATHEMATICS)
Semester: I, II
Effective from June 2017

Semester	Paper	Name of the Paper	Hours	Credit	Marks
I	**MTH-101**	Trigonometry	3	3	70 (20 Internal + 50 External)
	MTH-102	Differential Calculus	3	3	
II	**MTH-201**	Theory of Matrices	3	3	
	MTH-202	Integral Calculus and Differential Equations	3	3	

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
SYLLABUS FOR B.Sc. (MATHEMATICS)
SEMESTER - I
MTH-101
(Trigonometry)

Effective from June 2017

Marks : 70 (20 internal + 50 external)
(3 Hours / Week - Credits : 3)

Unit I:
De' Moivre's theorem, It's applications, Trigonometric functions for multiple arguments.

Unit II:
Euler's expressions, Evaluation of Indeterminate forms by using Euler's expressions, Hyperbolic functions for real arguments and their inverses.

Unit III:
Exponential, Circular and Hyperbolic functions of complex variables and their identities, Euler's Theorem, Relations between circular and Hyperbolic functions.

Unit IV:
Logarithm of complex quantities, Separations of Logarithmic, inverse circular and inverse hyperbolic functions in to their real and imaginary parts.

The course is covered by the following reference books :

1. Shantinarayan : Text book of Matrices, S. Chand and Co.
2. S. L. Loney : Plane Trigonometry, Part I and II, Mc Millan and Co. London.
3. R. S. Verma, K. S. Shukla : Text book of Trigonometry, Pothishala Pvt. Ltd. Allahabad.
4. N. P. Bhamore & et al : કોલેજ આધુનિક ગણિતશાસ્ત્ર, પોપ્યુલર પ્રકાશન, સુરત.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
SYLLABUS FOR B.Sc. (MATHEMATICS)
SEMESTER - I
MTH-102
(Differential Calculus)

Effective from June 2017

Marks : 70 (20 internal + 50 external)
(3 Hours / Week - Credits : 3)

Unit I:
Successive differentiation, Calculation of n^{th} derivatives of some standard functions (rational functions and product of powers of sine and cosine functions).

Unit II:
Leibnitz theorem and its applications, Indeterminate forms, L' Hospital Rule.

Unit III:
Rolle's Theorem and its geometrical interpretation, Lagrange's Theorem and its geometrical interpretation, Cauchy theorem, Taylor's theorem, Increasing – decreasing function.

Unit IV:
Maclaurin & Taylor series expansions, Curvature and radius of curvature (except Polar form), Asymptotes, Concavity and Convexity.

The course is covered by the following reference books :

1. Shantinarayan : Differential and Integral Calculus, S. Chand and Co. New Delhi.
2. Gorakhprasad : Differential Calculus, Pothishala Pvt. Ltd., Allahabad.
3. M. R. Spiegel : Theory and Problems of Advanced Calculus, Schaum's Publishing Co., New York.
4. N. P. Bhamore & et al. : કોલેજ આધુનિક ગણિતશાસ્ત્ર, પોપ્યુલર પ્રકાશન, સુરત.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
SYLLABUS FOR B.Sc. (MATHEMATICS)
SEMESTER - II
MTH-201
(Theory of Matrices)

Effective from June 2017

Marks : 70 (20 internal + 50 external)
(3 Hours / Week - Credits : 3)

Unit I:
Introduction of matrices, Different types of matrices, Operations on matrices, Properties of operations of matrices.

Unit II:
Elementary row operations, Row-reduced echelon form, Linear independence of rows, Row rank, Rank of a matrix, Inverse of matrix by row-reduced echelon form.

Unit III:
Method of diagonalization, Trace of matrix and its properties, Solving a system of homogenous & non homogenous linear equations using row-reduced echelon form.

Unit IV:
Eigen values & Eigen vectors of a matrix, characteristic equation of a matrix, Application of Cayley - Hamilton theorem to find an inverse of a matrix.

The course is covered by the following reference books :

1. Krishnamurthy, Mainra, Arora : An Introduction to Linear Algebra, Affiliated East - West Press Pvt. Ltd., N. Delhi.
2. Erwin Kreyszig : Advanced Engineering Mathematics, Wiley India (P) Ltd., 2009.
3 Santinarayan : Text book of Matrices, S. Chand and Co., New Delhi.
4. N. P. Bhamore & et al : કોલેજ આધુનિક ગણિતશાસ્ત્ર, પોપ્યુલર પ્રકાશન, સુરત.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
SYLLABUS FOR B.Sc. (MATHEMATICS)
SEMESTER - II
MTH-202
(Integral Calculus and Differential Equations)

Effective from June 2017

Marks : 70 (20 internal + 50 external)
(3 Hours / Week - Credits : 3)

Unit I:
Reduction formulae for integration of $sin^n x$, $cos^n x$, $tan^n x$, $cot^n x$, $sec^n x$, $cosec^n x$, $sin^p x\, cos^q x$, $x^m \cos nx$, $x^m \sin nx$.

Unit II:
Application of Integral calculus: Length of a curve, Intrinsic equations (except polar coordinates).

Unit III:
Linear differential equations of first order: Exact differential equation, Linear differential equation, Bernoulli's differential equation, Lagrange's equation, Clairaut's equation.

Unit IV:
Linear Differential Equations with constant coefficients: Complimentary functions, Particular Integral, General Solution, Methods for finding Particular Integral.

The course is covered by the following reference books :

1. Shantinarayan : Integral Calculus, S. Chand and Co., New Delhi.
2. Gorakhprasad : Integral Calculus, Pothishala Pvt. Ltd., Allahabad .
3. D. A. Murray : Differential Equations, Tata Mc Graw Hills.
4. Frank Ayres : Theory and problems on Differential Equations, Mc Graw Hill Book Co., New York..
5. N. P. Bhamore & et al: કૉલેજ આધુનિક ગણિતશાસ્ત્ર, પોપ્યુલર પ્રકાશન, સુરત.