VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.

SYLLABUS FOR B.Sc. (MATHEMATICS)

Semester: I , II

Effective from December 2013

Semester	Paper	Name of the Paper	Hours	Credit	Marks
I	**MTH-101**	Trigonometry	3	3	100 (30 Internal + 70 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 Dec. 2013
Marks:100 (30 internal + 70 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, McMillan & Co. London.
3. R.S.Verma & K .S. Shukla : Text book of Trigonometry, Pothishala Pvt. Ltd. Allahabad.
4. N.P.Bhamore & et al : આધુનિક ગણિતશાસ્ત્ર , ભાગ-૧, પોપ્યુલર પ્રકાશન, સુરત.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
SYLLABUS FOR B.Sc. (MATHEMATICS)
SEMESTER - I
MTH-102
(Differential Calculus)
Effective from Dec. 2013
Marks:100 (30 internal + 70 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 & cosine functions).

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

Unit III:
Rolle's Theorem (Only Statement) and its geometrical interpretation, Lagrange's Theorem and its geometrical interpretation, Cauchy theorem.

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

The course is covered by the following reference books :

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

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
SYLLABUS FOR B.Sc. (MATHEMATICS)
SEMESTER - II
MTH-201
(Theory of Matrices)
Effective from Dec. 2013
Marks:100 (30 internal + 70 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:
Equivalent system of linear equations, 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. N.P.Bhamore & et al : આધુનિક ગણિતશાસ્ત્ર , ભાગ-૧, પોપ્યુલર પ્રકાશન, સુરત.
3. Santinarayan : Text book of Matrices, S. Chand & Co.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.
SYLLABUS FOR B.Sc. (MATHEMATICS)
SEMESTER - II
MTH-202
(Integral Calculus and Differential Equations)
Effective from Dec. 2013
Marks:100 (30 internal + 70 external)
(3 Hours / Week - Credits : 3)

Unit I:
Reduction formulae for integration of $\sin^n x$, $\cos^n x$, $\tan^n x$, $\cot^n x$, $\sec^n x$, $\operatorname{cosec}^n x$.

Unit II:
Application of Integral calculus: length of a curve, Intrinsic equations (Cartesian & parametric coordinates).

Unit III:
Differential equations of first order and first degree, Exact differential equation, Integrating factors, Linear differential equation, Bernoulli's differential equation.

Unit IV:
Differential equations of first order and higher degree, solvable for x, y, p. Lagrange's equation, Clairaut's equation.

The course is covered by the following reference books :

1. Shantinarayan : Integral Calculus, S. Chand & Co., New Delhi.
2. Gorakhprasad : Integral Calculus, Pothishala Pvt. Ltd., Allahabad .
3. N.P.Bhamore & Patel : આધુનિક ગણિતશાસ્ત્ર ભાગ-૨, પોપ્યુલર પ્રકાશન સુરત.
4. D.A. Murray : Differential Equations. Tata McGraw Hills.
5. Frank Ayres : Theory and problems on Differential Equations, McGraw Hill Book Co., New York.