

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.

SYLLABUS FOR B.Sc. (MATHEMATICS)

SEMESTER - I

CCM-101/CEM-101/EDM-101*

(Trigonometry)

Effective from June 2011

Marks:100 (30 internal + 70 external)

(4 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 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. Shantinakaran : 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 : અભિજ્ઞ ગણિતશાસ્ત્ર , ભાગ-1, પોલી ડાક કોલેજ સુરત.

*CCM-Core Compulsory Mathematics, CEM- Core Elective Mathematics, EDM-Discipline centric elective

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SYLLABUS FOR B.Sc. (MATHEMATICS)

SEMESTER - I

CCM-102/CEM-102/EDM-102*

(Differential Calculus)

Effective from June 2011

Marks:100 (30 internal + 70 external)

(4 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 and Lagrange's Theorems along with their geometrical interpretations, Cauchy theorem, Increasing - Decreasing functions.

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. Shantinayakan : Differential & Integral Calculus, S. Chand & Co. New Delhi.
2. Gorakhprasad : Differential Calculus, Pothishala Pvt. Ltd., Allahabad.
3. N.P.Bhamore & et al. : અનુક્રમિક ગણિતશાસ્ત્ર , ભાગ-2, પોણુલર કાશનુ સુરત.
4. M. R. Spiegel : Theory and Problems of Advanced Calculus, Schaum's Publishing Co., New York.

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SYLLABUS FOR B.Sc. (MATHEMATICS)

SEMESTER -II

CCM-201/CEM-201/EDM-201*

(Theory of Matrices)

Effective from June 2011

Marks:100 (30 internal + 70 external)

(4 hours / Week - Credits : 3)

Unit I:

Introduction of matrices, Different types of matrices, Operations on matrices, Properties of operations of matrices, Adjoint of a matrix, Inverse of a matrix.

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, Cayley-Hamilton theorem & its application 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 : આ ડ્રુનિક ગણિતશાસ્ત્ર , ભાગ-1, પો ડુલર કાશન ડુરત.
3. Santinarayan : Text book of Matrices, S.Chand & co.

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SYLLABUS FOR B.Sc. (MATHEMATICS)

SEMESTER -II

CCM-202/CEM-202/EDM-202*

(Integral Calculus and Differential Equations)

Effective from June 2011

Marks:100 (30 internal + 70 external)

(4 hours / Week - Credits : 3)

Unit I:

Reduction formulae for integration of $\sin^n x$, $\cos^n x$, $\tan^n x$, $\cot^n x$, $\sec^n x$, $\operatorname{cosec}^n x$, $\sin^p x \cos^q x$, $x^m \cos nx$, $x^m \sin nx$.

Unit II:

Applications of Integral calculus, length of a curve, Intrinsic equations (Cartesian & parametric coordinates).

Unit III:

Differential equations of first order and first degree, differential equations having separable variables, Homogenous differential equation, 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. Shantinayakan : Integral Calculus, S. Chand & Co., New Delhi.
2. Gorakhprasad : Integral Calculus, Pothishala Pvt. Ltd., Allahabad .
3. N.P.Bhamore & Patel : આ ક્રમિક ગણિતશાસ્ત્ર , ભાગ-2, પોલી ડાકર કલેજી 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.

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