

**VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.**  
**SYLLABUS FOR B.Sc. (CBCS)**  
**SEMESTER – I**  
**GEM – 101 (MATHEMATICAL BASICS AND QUANTITATIVE SKILLS)**  
**TWO HOURS PER WEEK (2 CREDITS)**  
Effective from June 2011.  
Marks:-50 (15 internal+35 external)

**Unit-1**

Function: Domain, Range, One-one, onto function, composition of functions,

Complex number: Algebra of complex number. Quadratic equation and its solution.

**Unit-2**

Exponential & Logarithmic function: Elementary properties.

Trigonometric functions: sine, cosine, tan, cot, cosec, sec and their inverse function.

Formulae:  $\cos(A\pm B)$ ,  $\sin(A\pm B)$ ,  $\tan(A\pm B)$ ,  $\sin(2\theta)$ ,  $\cos(2\theta)$ ,  $\tan(2\theta)$ .

**Unit-3**

Determinant:  $2\times 2$ ,  $3\times 3$  order, Expansion, elementary properties, Matrices:  $2\times 2$ ,  $3\times 3$  order,

Algebra of matrices (Addition, Scalar product, product of two matrices)

**Unit-4**

Vector algebra: Vector space  $R^2$  and  $R^3$ , Operation: Addition, scalar multiplication and vector multiplication, magnitude of vector, Inner product, Box/Triple product, angle between two vectors.

N.B. All the results / formulae are without proof.

**REFERENCES:**

- (1) Gujarat Rajya Pathya Pustak Mandal for std 11 and std 12.
- (2) A Textbook for class XI & XII, National Council of Educational Research and Training.
- (3) A Class Book of Mathematics for class XII by Chakrabarty S. K., Biswajit Bhagwati, S. Chand Publishers.
- (4) Differential Calculus By Shantinakaran, S. Chand Publications.
- (5) Integral Calculus By Shantinakaran, S. Chand Publications.

**NOTE:** Students who have not passed 12th Standard Exams with Mathematics, and are desiring of opting Mathematics. Students who have not passed 12th standard exam with mathematics and wish to opt mathematics/physics as Core I, Core II or Core III course shall be required to opt for "Mathematical Basics & Quantitative skills" as Generic Elective Course.

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**VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.**  
**SYLLABUS FOR B.Sc. (CBCS)**  
**SEMESTER – II**  
**GEM – 201 (MATHEMATICAL BASICS AND QUANTITATIVE SKILLS)**  
**TWO HOURS PER WEEK (2 CREDITS)**  
Effective from June 2011.  
Marks:-50(15 internal+35 external)

**Unit-1**

Limit: Definition & examples (without  $\epsilon$ - $\delta$ ), Limit of Polynomial functions, rational functions, trigonometric functions. Differentiation: Definition and examples, working rule of derivative, chain rule, derivative of inverse function, implicit function, parametric function, exponential function and logarithmic function .

**Unit-2**

Integration: Definition and examples, method of substitution for integration (trigonometric substitution), Integration by parts.

**Unit-3**

Definite Integration, Fundamental principle of definite integration.

**Unit-4**

Differential equations: Definition, Order & degree of differential equation, Solution of differential equation, differential equation of 1st order and 1st degree, variable separable method.

N.B. All the results / formulae are without proof.

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