

**Integrated M.Sc. (Physics) (Semester 1)****Teaching Schedule****Subject Code: (060100104)****Subject Name : GE1 Mathematics****Course Objectives:**

The emphasis of course is on applications in solving problems of interest to physicists.

The students are to be examined entirely on the basis of problems, seen and unseen

Unit	Sub Unit	No. of Lecture(s)	Topics	Reference Chapter/ Additional Reading	Teaching Methodology to be used
<b>Unit 1: Determinants and Matrices</b>					
	1.1	3	Basic concept of determinants and matrices, Addition/subtraction, Product	BM#2	Chalk & Talk OR Presentation
	1.2	3	Inverse up to 3X3 matrix, Solution of simultaneous equations up to three variables	BM#2	
	1.3	3	Eigen value And Eigen vector, Unit Matrix	BM#2	
	1.4	3	Symmetric And Antisymmetric Matrix	BM#2	
	1.5	2	Orthogonal Matrix, Application of determinants and matrices.	BM#2	
<b>Unit 2: Trigonometry And Logarithm</b>					
	2.1	2	Basic concept of trigonometry	BM#2	Chalk & Talk OR Presentation
	2.2	2	Units of angles(degree and radian), Allied & compound angles	BM#2	
	2.3	2	Multiple–submultiples angles	BM#2	
	2.4	2	Graph of sine and cosine, Periodic function	BM#2	
	2.5	2	Sum and factor formulae, Inverse trigonometric function	BM#2	
	2.6	2	Application of trigonometry	BM#2	
	2.7	2	Basic concept of logarithm	BM#2	
	2.8	2	Rules and related examples, Application of logarithm.	BM#2	

<b>Unit 3: Differentiation and Integration</b>					
	3.1	3	Introduction, Differentiation, Geometric meaning, Derivative using first principle, Derivative of standard functions, Working rules, Derivative of Inverse trigonometric functions	AM#3	Chalk & Talk OR Presentation
	3.2	3	Differentiation of composite function, Differentiation of parametric functions, Differentiation of implicit function	AM#3	
	3.3	3	Derivative using logarithms, Successive differentiation	AM#3	
	3.4	3	Applications of differentiation	AM#3	
	3.5	3	Introduction, Integration of standard functions, Integration by Substitution	AM#3	
	3.6	3	Integration by parts, Integration using partial fraction	AM#3	
	3.7	3	Definite integrals, Theorem on definite integrals	AM#3	
	3.8	3	Application of Integration.	AM#3	
<b>Unit 4: Introduction To Probability</b>					
	4.1	2	Independent random variables: Probability distribution functions; Binomial, Gaussian, and Poisson, with examples.	HK#6	Chalk & Talk OR Presentation
	4.2	2	Mean and variance. Dependent events: Conditional Probability	HK#6	
	4.3	2	Bayes' Theorem and the idea of hypothesis testing	HK#6	

**Subject Co-ordinator**

**Vikas Patel**

**Jignesh Jariwala**

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**Dr. Shree Mishra**

Text Book:

1. "Advance Mathematics (Group-1)" –Atul Prakashan (AM)
2. "Basic Mathematics"-Atul Prakashan (BM)

Reference Book:

1. H. K. Dass – "Element of Engineering Mathematics" – S. Chand.(HKD)
2. H. K. Dass – "Applied Mathematics for Polytechnics" – 10<sup>th</sup> Edition, CBS publishers and Distributors Pvt. Ltd.(HK)
3. Ravish singh And Mukund Bhatt-"Engineering Mathematics"-A Tutorial Approach Tata Mc Graw Hill.(RS)
4. Anthony Croft and others –"Engineering Mathematics"-3<sup>rd</sup> edition, Pearson Education Publication.(AC)
5. W. R. Neelkanth - "Applied Mathematics - I", Sapna Publication.(WR)