MATHEMATICS FOR ARCHITECTURE II
SH155

Lecture : 3	**Year : I**
Tutorial : 1	**Part : II**
Practical : 0	

Course Objectives:

To equip students with a sound understanding of vector, matrices, probability and statistics enabling them to effectively apply these principles in their respective fields.

1   Vector Algebra and Calculus   (10 hours)

- 1.1   Two and three dimensional vectors
- 1.2   Scalar products and vectors products of three and four vectors
- 1.3   Reciprocal system of vectors
- 1.4   Vector differentiation and integration: velocity and acceleration
- 1.5   Directional derivative and gradient
- 1.6   Divergence and curl

2   Matrices and Their Applications   (10 hours)

- 2.1   Algebra of matrices
- 2.2   Rank of matrices and its application in system of linear equations
- 2.3   Vector space, linear dependence and independence
- 2.4   Linear Transfomations
- 2.5   Eigen value, Eigen vectors and Cayley-Hamilton theorem with applications

3   Statistics   (10 hours)

- 3.1   Measure of Central tendency: mean, median and mode
- 3.2   Measure of partition : range, inter quartile range, quartiles, deciles and percentiles
- 3.3   Measures of dispersion : mean deviation, standard deviation
- 3.4   Correlation and regression
- 3.5   Measures of skewness and curtosis

4   Probability   (10 hours)

- 4.1   Review of basic probability
- 4.2   Conditional probability, Bayes' theorem
- 4.3   Random variable and probability distribution
- 4.4   Binomial and Poisson's distribution

5   Mensuration   (5 hours)

    5.1   Area of regular polygon, area of irregular rectilinear figures, field book
    5.2   Estimation of area using Trapezoidal Rule and Simpson's Rule

Tutorials
1. Vector Algebra and Calculus
2. Matrices and Their Applications
3. Statistics
4. Probability
5. Mensuration

Final Exam
The questions will cover all the chapters in the syllabus. The evaluation scheme will be as indicated in the table below:

Chapters	Hours	Mark distribution*
1.	10	14
2.	10	14
3.	10	14
4	**10**	**14**
5	**5**	**4**
Total	**45**	**60**

    * There may be minor deviation in marks distribution.

References
1. Erwin Kreyszig, Advance Engineering Mathematics, John Willey and Sons Inc.
2. James Stewart, Calculus: Early Transcendental, Cengage Learning
3. Richard A. Johnson, Probability and Statistics for Engineers 7th edition, Miller and Freund's publication
4. Solid Mensuration with Proofs: Willis F. Kern and James R. Bland, Second Edition, John Wiley and sons.
5. Mensuration for indian schools and colleges Part 1: Orient Longman;1993