

Academic Calender July-Dec 2016

Lesson Plan

| Week | Dates | Days | Lecture Schedule | List of Holidays |
|------|-----------------------|------|-------------------------|-------------------------------|
| 1st | 20/07/2016-23/07/2016 | 4 | Total Days: 100 | List of Holidays |
| 2nd | 25/07/2016-30/07/2016 | 6 | Holidays : 08 | Sem. Break:11 oct.-16oct.2016 |
| 3rd | 01/08/2016-06/08/2016 | 6 | Total Teaching Days: 92 | Aug. 15: Independence day |
| 4th | 08/08/2016-13/08/2016 | 6 | | Aug. 25: Janmashtami |
| 5th | 16/08/2016-20/08/2016 | 5 | | Sep. 12: Id-ul-Zuha |
| 6th | 22/08/2016-27/08/2016 | 5 | | Oct. 02: M.Gandhi B'Day |
| 7th | 29/08/2016-03/09/2016 | 6 | | Oct. 11: Dussehra |
| 8th | 05/09/2016-10/09/2016 | 6 | | Oct. 12: Muharram |
| 9th | 13/09/2016-17/09/2016 | 5 | | Oct. 30: Diwali |
| 10th | 19/09/2016-24/09/2016 | 6 | | Oct. 14: Guru Nanak B'Day |
| 11th | 26/09/2016-01/10/2016 | 6 | | |
| 12th | 03/10/2016-08/10/2016 | 6 | | |
| 13th | 10/10/2016-15/10/2016 | 1 | | |
| 14th | 17/10/2016-22/10/2016 | 6 | | |
| 15th | 24/10/2016-29/10/2016 | 6 | | |
| 16th | 31/10/2016-05/11/2016 | 6 | | |
| 17th | 07/11/2016-12/11/2016 | 6 | | |

Department : Mathematics
Course : B.Sc.(Physical Sciences)
Semester : I(Sec: A+B+C)
Subject : Calculus and Matrices (MAPC-111)
Teacher : Dr. Md Sanam Suraj

Teaching Schedule (July-Dec. 2016)

Number of Class/Week: 5 Theory+1 Tutorial

| Week | Topics | Remarks |
|------|---|---|
| 1st | <ul style="list-style-type: none"> ★ Introduction to "SEQUENCES" ★ Examples of various sequences, Chap:11[1] ★ The Fibonacci sequences <ul style="list-style-type: none"> ● Sequence arising from tower of Hanoi game ● Type os sequences e.g. Bounded sequence, Monotonic Seq. etc | |
| 2nd | <ul style="list-style-type: none"> ★ Convergence of sequence ★ Algebra of convergent sequence ★ Proof of Convergence of Seq.(1) $\frac{(-1)^n}{n}$, (2) $\frac{1}{n^2}$, (3) $(1 + 1/n)^2$ ★(4) $\frac{\sin n}{n}$, (5) x^n with $0 < x < 1$ | [1] Thomas, G.B. & Finney, R.L., Pearson Education. |

| Week | Topics | Remarks |
|------|--|---------------|
| 3rd | <ul style="list-style-type: none"> ★ Graphs of Simple functions ★ Trigonometric & inverse trigonometric function ★ A polynomial function, Exponential function ★ Logarithmic function, Hyperbolic function ★ Successive differentiation, Leibnitz's theorem | |
| 4th | <ul style="list-style-type: none"> ★ Recursion formula for higher derivative ★ Function of two variables, Graph of level curves of 2 variables ★ Partial differentiation up to second order ★ Taylor & Maclaurin's series of function ★ (i) $Exp(x)$ (ii) $log(1+x)$ (iii) $sin2x$ etc | Assignment:1 |
| 5th | <ul style="list-style-type: none"> ★ Polynomial approximation and error estimation ★ Formation and solution of differential Eqn. ★ Example of various Models ★ Exponential growth model, Radioactive decay model | Test:1st |
| 6th | <ul style="list-style-type: none"> ★ Temperature cooling/heating problem ★ Simple Pendulum, Biological rhythms ★ Administration of medicine and cell division ★ Introduction of Complex number | |
| 7th | <ul style="list-style-type: none"> ★ Representation of complex number, addition, subtraction ★ Multiplication and division of complex number & examples ★ Examples and Exercise | |
| 8th | <ul style="list-style-type: none"> ★ General eqn. of a straight line ★ Parametric eqn. of a straight line ★ Lines half planes ★ Circles in the argand planes | |
| 9th | <ul style="list-style-type: none"> ★ Discs in terms of complex plane ★ Statement of Fundamental theorem Algebra ★ De Moivre's theorem for rational indices ★ Example & Exercise | Assignment:2 |
| 10th | <ul style="list-style-type: none"> ★ complex number continued... ★ Introduction to Matrices ★ Types and properties of matrices ★ Elementary operation ★ Inverse of matrices | |
| 11th | <ul style="list-style-type: none"> ★ Rank of Matrices ★ Exercise ★ System of linear equations ★ Illustrative example of above concepts from geometry Physics, Chemistry, Combinatorics and Statistics | |
| 12th | <ul style="list-style-type: none"> ★ Introduction to Vector in R, R^2, R^3 ★ Vector operations ★ Vector space, Linear Combination ★ Concept of Linear dependence & Independence | |
| 13th | <ul style="list-style-type: none"> ★ Introduction to Basis | Assignment: 3 |
| 14th | <ul style="list-style-type: none"> ★ Basis and dimension ★ Theorem & Examples ★ Introduction to subspace | |

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|------|--|---------|
| 15th | <ul style="list-style-type: none"> ★ Subspace continued... ★ Example of subspace ★ Introduction to linear transformation ★ Examples and theorems | |
| 16th | <ul style="list-style-type: none"> ★ Special Transformation ★ Projection, Dilation and contraction, Rotation, Reflection etc ★ Matrix representation of linear transformation ★ Composition of two transformation ★ Examples and theorems | Test:3 |
| 17th | <ul style="list-style-type: none"> ★ Eigenvalues and Eigenvector ★ Eigenspaces ★ Examples and theorems ★ Revision | |