**Lesson Plan**

**Name of faculty: Ms. Sapna , Visiting Faculity**

**Discipline: ECE**

**Semester: IV**

**Subject: Numerical Analysis**

Lesson Plan Duration: 15 weeks (from January, 2018 to April, 2018)

Work Load(Lecture/Practical) per week (in hours): Lectures: 03 hours, Practicals-04 hours, Tutorials:02hours

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| **Week** | **Theory** | |
|  | **Lecture day** | **Topic(Including assignment/ test)** |
| 1st |  | Solution ofalgebraicand transcendental equation by the method of bisection. |
|  | -do- |
|  | -do- |
|  | The method of false position |
| 2nd |  | -do- |
|  | -do- |
|  | Newton-Raphson method |
|  | -do- |
| 3rd |  | -do- |
|  | Graeffe’s Root squaring method |
|  | -do- |
|  | -do- |
| 4th |  | Eigen value problem by power method and Jacobi method. |
|  | -do- |
|  | -do- |
|  | Gauss elimination and Gauss-Jordan methods-. |
| 5th |  | -do- |
|  | -do- |
|  | Method of Triangularization and Crout’s reduction. |
|  | -do- |
| 6th |  | -do- |
|  | Iterative methods: Gauss-Jacobi, Gauss-Seidel and Relaxation methods |
|  | -do- |
|  | -do- |
| 7th |  | Matrix inversion by Gauss - Jordan elimination, |
|  | -do- |
|  | -do- |
|  | Crout’s , Doolittle and Choleski Methods. |
| 8th |  | -do- |
|  | -do- |
|  | Finite Differences, Relation between operators |
|  |  |
| 9th |  | Interpolation by Newton’s forwardand backward difference formulae for equal intervals. |
|  | Newton’s divided difference method and Lagrange’s method for unequal intervals |
|  | Gauss Central difference formulae, Bessel and Stirling formulae. |
|  | Newton’s forward difference formula to compute derivatives, , |
| 10th |  | Newton’sbackward difference formula to compute derivatives |
|  | -do- |
|  | -do- |
|  | Derivatives using Central difference formulae, to find the maxima and minima of a tabulated function. |
| 11th |  | -do- |
|  | -do- |
|  | Newton’s Cotes formulae, Trapezoidal and Simpson’s 1/3rdand 3/8thrules, Romberg method. |
|  | -do- |
| 12th |  | -do- |
|  | Single step methods: Taylor series method, RungeKutta method of fourth order only. |
|  |  |
|  |  |
| 13th |  | Picard’smethod of successive approximation, Euler, Modified Euler’s and Improved Euler methods, |
|  |  |
|  |  |
|  | Multistep methods: Milne and Adams– Bashforth methods. |
| 14th |  |  |
|  |  |
|  | **Curve fitting:** Introduction, Principle of Least squares, |
|  | -do- |
| 15th |  | Method of Least squares, |
|  | Fitting of a straightline, parabola and exponential functions. |
|  | -do- |
|  | -do- |