**Post Graduate Govt. College for Girls, Sector-42, Chandigarh**

**Teaching Plan (OddSemester) Session (2019-2020)**

**Class: BCA II (3rd semester) Name of the Teacher: Ms. Nidhi Goyal**

**Subject: Computer Oriented Numerical Methods Period : 5th and 2nd**

**Paper : BCA-16-304 Room No : 202 and 101 (IT Block)**

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| **S. No** | **Dates** | **Topics to be Covered** |
| Week 1 | 23-07-2019 to 27-07-2019 | Introduction about the subject .  Introduction to differentiation, integration and matrix algebra. |
| Week 2 | 29-07-2019 to 03-08-2019 | Introduction, Types of Non-Linear Equations:  Polynomial Equations, Transcendental Equations, Methods of Finding Solutions of NonLinear equations: Direct Method, Iterative Method. |
| Week 3 | 05-08-2019 to 10-08-2019 | Iterative Methods: Bisection Method, False-Position Method |
| Week 4 | 13-08-2019 to 17-08-2019 | Secant Method, Newton - Raphson Methods, Zeros of a polynomial using Birge – Vieta Method |
| Week 5 | 19-08-2019 to 24-08-2019 | Convergence of Iterative Methods, Comparison between Iterative Methods. |
| Week 6 | 26-08-2019 to 31-08-2019 | Simultaneous Linear Equations: Solution of Simultaneous Linear Equations using Direct and Iterative Methods: Direct Methods: Gauss – Elimination Method |
| Week 7 | 02-09-2019 to 07-09-2019 | Gauss-Jordan Method, Concept of Pivoting |
| Week 8 | 09-09-2019to 14-09-2019 | Iterative Method: Gauss-Seidal Method. Data Representation and Computer Arithmetic: Introduction, Concept of Exact and Approximate Numbers, Concept of Significant digits, Representation of Numbers in Memory |
| Week 9 | 16-09-2019 to 21-09-2019 | Storage of Integer Numbers: Signed Representation, 1’s Complement Representation, 2’s Complement Representation, Floating Point Numbers and their storage, Normalization and their consequences |
| Week 10 | 23-09-2019 to28-09-2019  (Youth Festival 24-09-2019 to 27-09-2019) | Floating Point Arithmetic |
| Week 11 | 30-09-2019 to 05-10-2019 | Errors, Measures of Accuracy: Absolute Error, Relative Error and Percentage Error, Error types: Data Errors, Truncation Errors, Round-Off Errors, Computational Errors, Rules, Relationship between Relative Error and Significant digits and Error Propagation: Error Propagation in Addition Operation, Subtraction Operation, Multiplication Operation and Division Operation. |
| Mid Semester Exams | | |
| Week 12 | 16-10-2019 to 19-10-2019 | Interpolation: Introduction, Lagrange Interpolation, Inverse Interpolation, Finite Differences: Forward Differences, Backward Differences, Divided Differences |
| Week 13 | 21-10-2019 to 26-10-2019 | Difference Tables: Forward Difference Table, Backward Difference Table, Divided Difference Table, Observations regarding Difference Tables |
| Week 14 | 29-10-2019 to 02-11-2019 | Newton’s Method of Interpolation: Newton’ s Forward Difference Interpolation Formula, Newton’ s Backward Difference Interpolation Formula, Newton’ s Divided Difference Interpolation Formula. |
| Week 15 | 04-11-2019 to 09-11-2019 | Numerical Integration: Introduction, Newton-Cotes Integration Formulae: Trapezoidal Rule, Simpson’s 1/3rd Rule, Simpson’s 3/8th Rule. |
| Week 16 | 11-11-2019 to 16-11-2019 | Approximation: Approximation of functions: Taylor Series Representation, Chebyshev Polynomials. |
| Week 17 | 18-11-2019 to 23-11-2019 | Solution of Ordinary Differential Equations: Introduction, Euler’s Method, Runga–Kutta Methods: 2nd order & 4th order |
| Week 18 | 25-11-2019 to 30-11-2019 | Predictor Corrector Methods: Modified Euler’s Method. Revision of Syllabus |