Tentative Weekly Lectures Schedule: Numerical Analysis , Burden and Faires , 9th Ed

Week	Contents / Topics	Exercise	Questions	Exam
1	**Error analysis:** Introduction of Numerical Computing ,ChoppingRoundoff and truncation error ,Absulute ,relative and percentage error ,Taylor polynomial,.Significant figures, Nested arithemetic, loss of significance.	1.1 1.2	1,2,11,13 1,4,5-8,13	A1
2	**Solution(Root) of equations in one variable:** The Bisection or Binary-search method. Fixed Point iteration. (x=g(x)) Tolerance $10^{-5}, 10^{-4}$	2.1 2.2	1-6,12,13 1-6,9-11,14	
3	Newton's Raphson and Secant Method.			
4	Method of False position (Regula falsi).	2.3	1-10	
5	**Interpolation and Polynomial approximation:** Lagrange interpolation polynomial of degree one,two and three Divided.	3.1	1,2,5,6	
6	**Mid 1 Exam**			
7	Divided difference table and interpolating polynomial. Newton Forward and Backward difference formula	3.3	1-6,9	A2
8	Newton centered difference (stirling) formula.			
9	**Numerical differentiation :** Differentiation using Forward and Backward differences 3-point Endpoint and Midpoint formula 5-point Endpoint and Midpoint formula	4.1	1,2,5,6,18, 25,26	
10	**Numerical Integration:** Trapezoidal and Simpson's rule Closed and open Newton-Cotes formulas. Composite Numerical Integration: Trapezoidal , Simpson's and Midpoint formula	4.3 4.4	1,2,5-10,22 1-4,7,8,11	
11	**Mid 2 Exam**			
12	**Differential Equations:** Euler's method , 2-RK method , Mid Point formula Modify Euler and Huen's method , 4-RK method	5.2 5.4	1,2,5 1-4 5-8 , 9-12 13-16	A3
13	**Direct Method for solving linear system:** LU decomposition (Dolittle and Crout) Symmetric ,Singular ,Diagonally dominant and positive definite matrices LDL^t Factorization , cholesky method	6.5 6.6	1,2,3-6 1-3,5,11,12	
14	**Iterative Techniques:** Iterative methods for solving linear system Gauss-Siedel and Jacobi's methods.	7.3	1,2,3,4	
15	**Difference Operator analysis:** $\Delta, \nabla, \delta, \mu$,D and E operators and their relations.	Handout will be provided		
16	Revision / Matlab Prog. / Presentation (optional)			

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