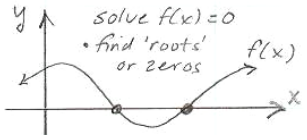
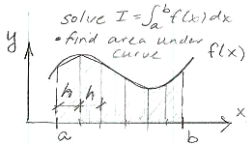
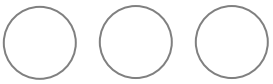
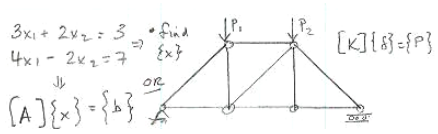
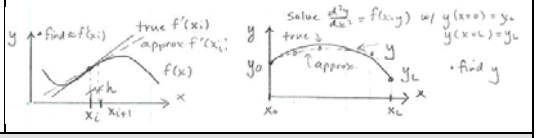
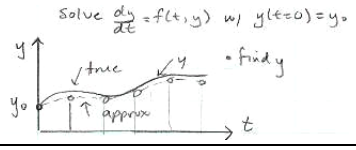
CE 201 – CIVIL ENGINEERING COMPUTING

Week	Tentative Course Topics	Programming Assignment	
1	Introduction to Course Intro to MATLAB Numerical Methods for Root Finding	Root-Finding Bisection Method Newton's Method	
2	Advanced Programming - Variables - Control Statements - Plotting in 2D	Numerical Integration Trapezoidal Rule Simpson's Rule	
3	Input/Output using the screen, files, and dialogs Advanced Graphics MATLAB functions	Manning's Equation	$Q(cfs) = \frac{1.49}{n} R_h^{2/3} S^{1/2} A$ 
Structures Application – Beam Deflection			
4	Systems of linear equations Arrays and Matrices Advanced Control	Solving Systems of Linear Equations Gaussian Elimination Pivoting	
5	Nonlinear ODEs Boundary Value Problems Basic GUI Development	Numerical Differentiation Forward/Backward/Central Difference Formulas Solving BVP ODEs using the Finite Difference Method	
Water Resources Application – Detention Basin Routing			
6	Nonlinear ODEs Initial Value Problems	Solving IVP ODEs Euler Method Runge- Kutta Method Routing Problems	
7	Detention Basin Routing Advanced GUI Callbacks	Beam Deflection Problems Routing Problems