**Session 1**

Start with Matlab\_basic\_manual

1. Variable declaration (variable rules google – not that important) – special variables (pi, inf, NaN, I and j), not equal to (~) other relational and logical operations (>,<,>=,&, &&, etc same as C), clc, clear all, close all.
2. Array declaration – Use of “input” , “display”, semicolon
3. Matrix declaration (next row, next column, use of …), assignment, operations (inverse, transpose, multiplication ( dimension mismatch), addition, scalar multiplication, concatenation ( with how to define all three elements in a row or column, extracting a submatrix), pick any element in the matrix, use of repmat()
4. “Whos” – rarely anyone knows and “diary”

Extra – Matlab treats all variables as matrices, array = one dimensional matrix

1. Frequently used - zeros, ones, eye, rand, diag, size, length, det, inv, eig, rank, ceil, floor, round, log, asin, acos, max, min, abs, angle (phase i.e tan inverse)
2. Plotting with example – plot, subplot, grid, axes, title, label, legend – explain every line

**Session 2**

Quick revision

One secret – job fair – give your resume to mathworks for sure. Control systems , sp nd comms, embedded systems, - interview is way easy.

* editor window layout options, current folder (put the path to the folder in which the file is saved, preferably don’t change it at least until you complete the code), press tab auto complete long variable or function names, Variable name format eg (google) – in interview they will ask to send code better be professional, Does not recognize 0,
* **3-d plot** -> help meshgrid, surf, contour, contour3 -> show toolboxes option -> while googling you will come across toolbox options make sure you are not checking that and checking functions (fx) and not toolbox or Simulink options (blocks), get toolboxes free for a month, command window up arrow stores history, publish code (mathworks site, stackoverflow, forums, etc), breakpoints, save workspace and import later
* **User Defined functions** -> show eg – function name has to be same, use function keyword, what to return square braces, save in the same folder of calling function. %% -> section in the codes
* **Plot sine** -> grid, loglog, semilog,
* **Looping** -> auto-indent (useful specially to find missing *end*), while loop (show how to end infinitely running prog), for loop(avoid , vectorize instead)
* **Preallocation** -> tic toc or run & time,
* repmat, whos, dec2bin, bin2dec,

**Efficient Programming –**

1. Avoid for loop -> VVVIMP
2. Pre-allocate arrays (zeros and ones)
3. In-built functions (generally efficient)
4. Variable names in MATLAB (also avoid already defined names like sum, product, etc)