MatLab Syllabus

I. Introduction to MatLab

1. **MatLab as {best} calculator**
2. **Standard MatLab windows**
3. **Operations with Variables**
   a. Naming
   b. Checking existence
   c. Clearing
   d. Operations

4. Arrays
   a. Column and rows: creation and indexing
   b. Size and length
   c. Multiplication, Division, Power
   d. Operations

5. Writing script files
   a. Logical variables and operators
   b. Flow control
   c. Loop Operators

6. Writing functions
   a. Input/output arguments
   b. Function visibility, path
   c. Example: MatLab startup

7. Simple graphics
   a. 2D plots
   b. Figures and subplots

II. Data and data flow in MatLab
1. **Data types**
   a. Matrix, String, Cell and Structure
   b. Creating, accessing elements and manipulating of data of different types

2. File Input-Output
a. MatLab files
b. Text files
c. Binary files
d. Mixed text-binary files

3. Communication with external devices
a. Serial port
b. Parallel port
c. Sound port
d. Video port

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III. Function minimization and parameters search

1. Polynomial fit
a. 1D & 2D fits
b. Data windowing
c. Error bounds

2. Arbitrary function fit
a. Error function
b. Fixing Parameters

3. Goodness of fit
a. 2 criteria
b. Error of parameters

IV. Handle graphics and user interface

1. Pre-defined dialogs
2. Handle graphics
a. Graphics objects
b. Properties of objects
c. Modifying properties of graphics objects

3. Menu-driven programs
a. Controls: uimenu and uicontrol
b. Interactive graphics
c. Large program logic flow.