

Dr.Mahalingam College of Engineering and Technology, Pollachi-642003

Office of Dean Research and Innovation

Report

“MATLAB – Hands-on Training”

Date: 31.07.2023

About the Session

The Office Dean Research and Innovation organized a Knowledge Sharing Session for the benefit of the Faculty members of Science and Humanities (Mathematics division) from MCET. The session details are given below for your kind reference.

S.No	Name of the Resource Person	Topic	Date & Time	Venue	No of Participants
1	Dr.R.Sudhakar, HoD-ECE	Basics of MATLAB – Handson Training	23.06.2023 9:30 am – 12:30 pm	Programming and IOT Lab(C315)	9

Topics Covered:

- Matlab and Matlabdesktop
- Creating a matrix
- Matlab Operators
- Matrix and array operations
- Data handling
- Special Matrices and Vectors
- Addressing Parts of a Matrix
- Formats
- Conditional branching
- Looping
- Handling complex numbers
- Plots
- Solution to DEs
- Basic visualization

Introduction to MATLAB

- Matrix Laboratory
- 1970s.
- Ability to handle vector and matrix data types in a natural way
- Other software packages: Maple and Mathematica
- MATLAB has all the standard scalar arithmetic operators: addition (+), subtraction (-), multiplication (*), and division (/)
- “special” constants : pi and j or i
- understands variables (Case Sensitive)

Matlab Programs

- Programs in Matlab are: Scripts, or Functions
- Scripts: Matlab statements that are fed from a file into the Command Window and executed immediately

- Functions: Program modules that are passed data (arguments) and return a result (i.e., $\sin(x)$)
- These can be created in any text editor (but Matlab supplies a nice built-in editor)

Creating a matrix

- It is a collection of functions that extend the capability of the MATLAB ® numeric Computing environment
- Many of the toolbox functions are MATLAB M-files, series of MATLAB statements that implement specialized image processing algorithms.

Creating Matrix

```
A = [1 2 3;4 5 6;7 8 9];
A = 1   2   3
     4   5   6
     7   8   9
b = [1 2 3 4];
b = 1   2   3   4
c = [1;2;1;-13];
c = 1
     2
     1
    -13
```

Matrix and array operations

```
>> a=[1 2 3]; b=[4 5 6]
>> a+b = [5 7 9]
>>a-b=[-3,-3,-3]
>>a.*b=[4 10 18]
>>a.^ b=[1 32 729]
>>a./b=[0.2500 0.4000 0.5000]
>>a.\b=[4.0000 2.5000 2.0000]
```

Usage of 'Who' and 'Whos' commands

```
>> a=[1 2 3 4 5];
>> b=2:10;
>> who
```

Handling complex numbers

- **a=complex(3,4)**
- **ans = 3.0000 + 4.0000i**

- **abs(a)**
- **ans=5**
- **angle(a)**
- **ans =0.9273**

Clearing the Workspace

```
>> a=[1 2 3;4 5 6;7 8 9] a = 1 2 3 4 5 6 7 8 9
>> clear all
>> a
```

Data handling

- $x = 1:10$
- $x = 1:0.5:4$
- $x = 10:-1:1$
- $\text{linspace}(0, \pi/2, 10)$
- $1.234 \times 10^5, -8.765 \times 10^{-4}, 10^{-15}, -10^{12}$.
- $(1.234e5, -8.765e-4, 1e-15, -1e12)$

Addressing Parts of a Matrix

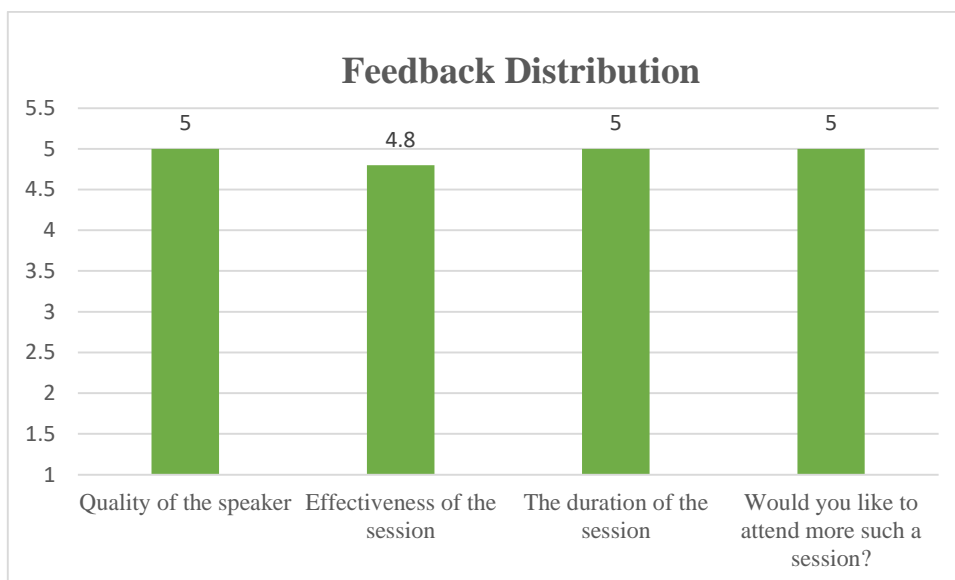
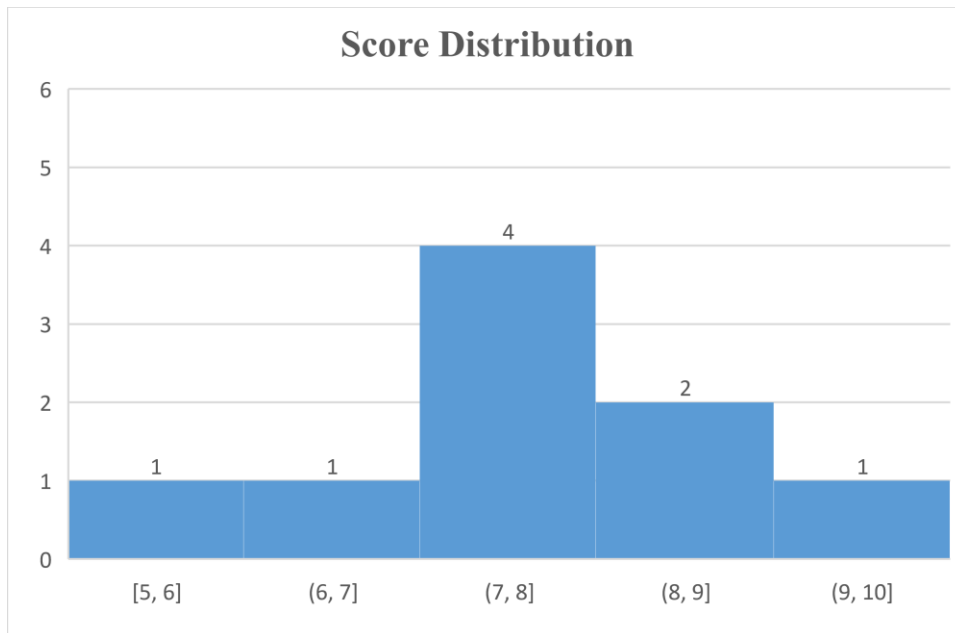
```
>> A=diag([1 2 3])
>> A(2,3)=-1
>> A(2,3) colon operator
>> A(:,1) (only 1st column,all the elements in the row)
>> A(2,:)(only 2nd row, all the elements in the column)
>> A(:,[1 2])(two columns)
>> A(:,1:2:4)(first and third columns)
>> A(:) ( appending all the columns into one column)
```

Valedictory Address

Dr. J. Ramprasath winded up the session with a Vote of Thanks. He extended his gratitude of thanks to Resource Person and all participants for the successful completion of Workshop. He also honors the resource person and presents him with a certificate of appreciation.

Feedback and Assessment

Feedback was collected from all participants and they shared positive views about the session. Based on the topic discussed multiple choice questions assessment was given to participants to assess the effectiveness of the session.



1.. For $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \\ 10 & 11 & 12 \end{bmatrix}$; what is the size of the matrix

- a) 3 X 3
- b) 5 X 5
- c) 2 X 2
- d) 4 X 3 ✓**

2. The output of $A(:,1)$

- a) only 1st column, all the elements in the row ✓**
- b) only 1st row, all the elements in the column
- c) only 1st diagonal values
- d) only 1st co diagonal values

3. $A(:)$ implies

- a) appending all the columns into one column ✓**
- b) appending all the rows into one column
- c) appending all diagonal values
- d) appending all the columns into one row

4. The command to remove 2nd row in a matrix is

- a) `a(:,1)=[]`
- b) `a(1,:)=[]`
- c) `a(:,2)=[]`
- d) **`a(2,:)=[]` ✓**

5. Reserved words in 'MATLAB' appears in _____ colour

- a) yellow color
- b) **Blue Color** ✓
- c) green color
- d) red color

6) If `a=[1,2 3 4]`; `b=2 3 4 5`; `N=[a b]` what is the size of 'N' matrix

- a) 1 X 4
- b) 2 X4
- c) **1 X 8** ✓
- d) 2 X 8

7) Given number `A=12.345678901234567`, after executing `format short`, the number of decimal places in the output is _____

- a) 5
- b) **4** ✓
- c) 8
- d) 14

8) If `a=complex(3,4)` and if the command `abs(a)` is executed, the output is _____

- a) 3
- b) 4
- c) **5** ✓
- d) 3.4

9) `stem(x,y)` is a _____ plot

- a) continuous
- b) **discrete** ✓
- c) staircase
- d) mesh

10) The output of `x = 10:-1:8` is

- a) 1,2,8
- b) **10,9,8** ✓
- c) 10,9,8,7
- d) 10,9

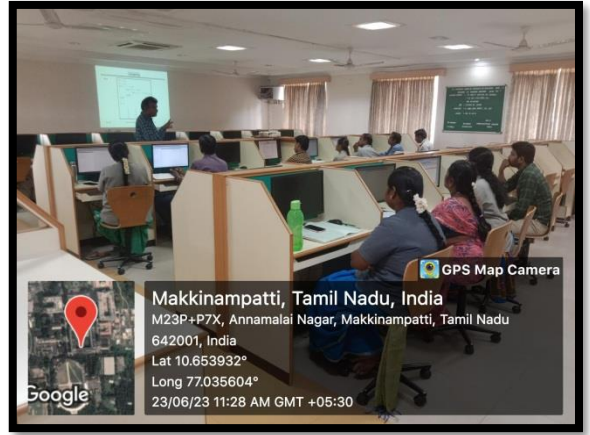
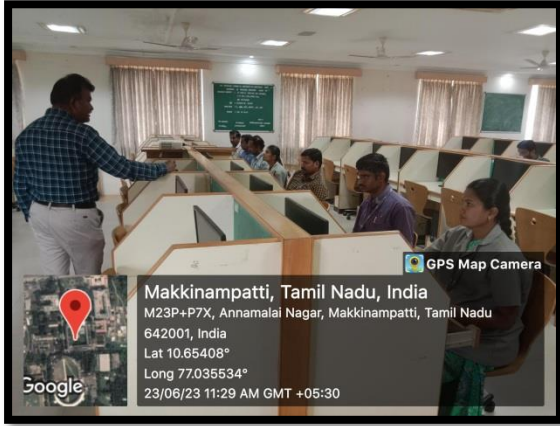
Interaction:

What are the basic language tools needed to write MATLAB code?

C language is needed as very basic tool to write MATLAB coding.

Outcomes

- ❖ As outcomes of the session, participants can understand Basics of MATLAB and have an ability to do Mathematical operations in MATLAB.



S. Rukmaney
Dean R&I

[Signature]
Principal

--Sd--
Secretary

Dr.Mahalingam College of Engineering and Technology, Pollachi-642003

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Detailed Feedback

Topic: Basics of MATLAB - Hands-on Training

Resource Person: Dr. R. Sudhakar, HoD/ECE

Date: 23.06.2023

1. How do you rate the quality of the speaker?

Factor	Percentage(%)	Rating
Excellent	100	5
Good	0	-
Average	0	-
Satisfactory	0	-
Poor	0	-

2. How do you rate effectiveness of the session?

Factor	Percentage(%)	Rating
Excellent	80	5
Good	20	4
Average	0	-
Satisfactory	0	-
Poor	0	-

3. The duration of the session is

Factor	Percentage	Rating
Appropriate	100	5
Too short	0	-
Too Long	0	-

4. Would you like to attend more such a session?

Factor	Percentage	Rating
Yes	100	5
No	0	-

Dr.Mahalingam College of Engineering and Technology, Pollachi**Office of Dean Research and Innovation****Topic: Basics of MATLAB - Hands-on Training****Resource Person: Dr. R. Sudhakar, HoD/ECE**

S.No.	Name of the Faculty	Designation with Department	Total score
1	Dr N Pankajam	AP(SG)/S&H	10
2	Dr. T. Sekar	AP/S&H	9
3	Vishalakshi k	AP/S&H	9
4	R.Nishanthi	AP/S&H	8
5	MythuraDevi P	AP/S&H	8
6	Dr. L. Senthil Kumar	AP(SG)/S&H	8
7	Dr. R. Ramesh	AP/S&H	8
8	Dr. Saravanakumar S	AP/S&H	7
9	Muthukumar T	AP/S&H	5

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Knowledge Sharing Session - Faculty Attendance

Venue: Program & IoT Project Lab(C315)

Time: 9:30 am – 11:30 am

Date:23.06.2023

S.No.	Name of the Faculty Members with Designation	Department	Signature
1.	Ms. P. MYTHURADEVI, AP	S&H-MATHS	P. Mythu
2.	Ms. R. Nishanthi	SRH - Maths	R. Nishanthi
3.	Dr. R. RAMESH	S&H-Maths	R. Ramesh
4.	Dr. L. SENTHIL KUMAR	S&H-Maths	L. Senthil Kumar
5.	T. MUTHUKUMAR AP/MATHS	S&H-Maths	T. Muthukumar
6.	K. VISHALAKSHI AP/MATHS	S&H-Maths	K. Vishalakshi
7.	Dr. N. Parthasarathy, AP (S&H) Maths	S&H-Maths	N. Parthasarathy
8.	Dr. Saravanan Kumar AP/Maths	S&H-Maths	Saravanan Kumar
9.	Dr. T. SEKAR AP/MATHS	S&H-MATHS	T. Sekar
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