

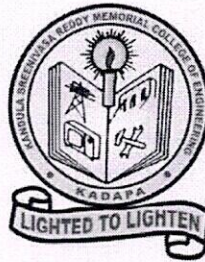
**KANDULA SRINIVASA REDDY MEMORIAL COLLEGE OF ENGINEERING
(AUTONOMOUS)**

KADAPA-516003. AP

(Approved by AICTE, Affiliated to JNTU A, Ananthapuramu, Accredited by NAAC)

(An ISO 9001-2008 Certified Institution)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING



Certification Course

On

“Introduction to MATLAB”

Resource Person : Sri.Md.Mahaboob pasha, Assistant Professor Dept. of ECE, KSRMCE

Course Coordinators: Sri.K.V.Subba reddy, Assistant Professor , Dept. of ECE, KSRMCE
Sri.M.Prabhakar, Assistant Professor, Dept. of ECE,KSRMCE

Duration: 30/12/2019 to 23/01/2020



K.S.R.M. COLLEGE OF ENGINEERING
(UGC-AUTONOMOUS)

Kadapa, Andhra Pradesh, India- 516 003

Approved by AICTE, New Delhi & Affiliated to JNTUA, Ananthapuramu.

An ISO 14001:2004 & 9001: 2015 Certified Institution

Lr./KSRMCE/ECE/2019/20/

Date:16/12/2019

To
The Principal,
KSRMCE,
Kadapa.

Respected Sir,

Sub: Permission to Conduct Certification Course on "Introduction to MATLAB"
30/12/2019 to 23/01/2020-Req- Reg.

The Department of Electronics and communication engineering is planning to offer a Value Added Course on "Introduction to MATLAB" to B. Tech. students. The course will be conducted from 30/12/2019 to 23.01.2020. In this regard, I kindly request you to grant permission to conduct a Certification Course.

Thanking you sir,

M. Prabhakar

Yours faithfully

(Sri.M.Prabahakar, Asst.Professor in ECED)

V.S.S.Mm/9
PRINCIPAL
K.S.R.M. COLLEGE OF ENGINEERING
KADAPA-516005, (A.P.)

*forwarded to the
Principal sir
G. H. H.*



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Cr./KSRMCE/ECE/2019-20/

Date: 17/12/2019

Circular

The Department of Electronics and communication engineering is offering a Certification Course on "Introduction to MATLAB" from 30/12/2019 to 23/01/2020 to B.Tech students. In this regard, interested students are requested to register their names for the Certification Course with Course Coordinator.

For further information contact the Course Coordinator.

Course Coordinator: Sri.M.Prabhakar, Asst .professor, Dept. of ECE.-KSRMCE.

HoD

Professor & H.O.D.
Department of E.C.E.
K.S.R.M. College of Engineering
KADAPA - 516 003

Cc to:

IQAC-KSRMCE



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DEPARTMENT OF ECE

REGISTRATION FORM

Certification Course on
"Introduction to MATLAB"
From 13/08/2019 to 30/08/2019

S.No	Full Name	Roll Number	Branch	Semester	Signature
1.	AKULA VENKATESH	199Y1A0401	ECE	I SEM	<i>venkatesh</i>
2.	AMBATI MOULEESWARA REDDY	199Y1A0402	ECE	I SEM	<i>Ambati</i>
3.	ANGAJALA KAVYA SREE (W)	199Y1A0403	ECE	I SEM	<i>Kavya</i>
4.	ANIMELA LAVANYA (W)	199Y1A0404	ECE	I SEM	<i>A. Lavanya</i>
5.	ANNEMMAGARI MOUNIKA (W)	199Y1A0405	ECE	I SEM	<i>mounika</i>
6.	AVULA VANAJA (W)	199Y1A0406	ECE	I SEM	<i>A. Vanaja</i>
7.	BOOSI VENKATA SAINATH REDDY	199Y1A0415	ECE	I SEM	<i>venkata</i>
8.	BUCHUPALLI MALATHI (W)	199Y1A0416	ECE	I SEM	<i>B. Malathi</i>
9.	C JASHWANTH VARMA	199Y1A0417	ECE	I SEM	<i>Varma</i>
10.	CHAGANTI TEJESH KUMAR REDDY	199Y1A0418	ECE	I SEM	<i>C. Tejesh</i>
11.	CHINTAKUNTA VEERA SIVA	199Y1A0430	ECE	I SEM	<i>Tejcu</i>
12.	CHINTHALAPALLI MADHURIMA (W)	199Y1A0431	ECE	I SEM	<i>C. Madhura</i>
13.	GOLLA PRASANNA KUMAR	199Y1A0448	ECE	I SEM	<i>Prasanna</i>
14.	JAMPALA ANJALI (W)	199Y1A0455	ECE	I SEM	<i>J. Anjali</i>
15.	K ANUSHA (W)	199Y1A0457	ECE	I SEM	<i>K. Anusha</i>
16.	K S GOWTHAMI (W)	199Y1A0458	ECE	I SEM	<i>Gowthami</i>
17.	KADAVAKUTI SOWMYA PRIYA (W)	199Y1A0459	ECE	I SEM	<i>Sowmya</i>

18.	KANAMARLAPUTI SRAVANI (W)	199Y1A0465	ECE	I SEM	Reba
19.	KATHERAPALLE SUNANDA (W)	199Y1A0466	ECE	I SEM	Reba
20.	KAYAM VINAY	199Y1A0468	ECE	I SEM	Reba
21.	KETHIREDDY PRASANTHI	199Y1A0469	ECE	I SEM	Reba
22.	KOMPALA SAI CHARAN	199Y1A0471	ECE	I SEM	Reba
23.	KONDURU SUMITHRA (W)	199Y1A0474	ECE	I SEM	Reba
24.	KOTHAMADDI NEHA (W)	199Y1A0475	ECE	I SEM	Reba
25.	KOTTHA REDDY ARCHANA (W)	199Y1A0477	ECE	I SEM	Reba
26.	KUNDHARAPU VENKATESH	199Y1A0479	ECE	I SEM	Reba
27.	KURUBA BYALLA YERRISWAMY	199Y1A0480	ECE	I SEM	Reba
28.	M SAI VARDHAN NAIDU	199Y1A0487	ECE	I SEM	Reba
29.	MACHIREDDY VENKATA SAI NATH REDDY	199Y1A0488	ECE	I SEM	Reba
30.	MADDIREDDY PRAKASH REDDY	199Y1A0490	ECE	I SEM	Reba
31.	MALISSETTY HARIKA (W)	199Y1A0492	ECE	I SEM	Reba
32.	MITTA VENKATA MANISHA (W)	199Y1A0496	ECE	I SEM	Reba
33.	MOPURU NAVANEETHA	199Y1A0499	ECE	I SEM	Reba
34.	MUGEPPA GARI PAVANI	199Y1A04A0	ECE	I SEM	Reba
35.	MUNDLAPATI RUCHITHA	199Y1A04A3	ECE	I SEM	Reba
36.	MUNNELLI SUJATHA (W)	199Y1A04A4	ECE	I SEM	Reba
37.	MURARI PRANITHA (W)	199Y1A04A5	ECE	I SEM	Reba
38.	MURARI SRAVANTHI (W)	199Y1A04A6	ECE	I SEM	Reba
39.	NALLABOTHULA POORNIMA (W)	199Y1A04A9	ECE	I SEM	Reba
40.	NAMALA JYOTHIKA GNANA CHANDRIKA (W)	199Y1A04B0	ECE	I SEM	Chandrika
41.	NANDIPATI MANEESHA	199Y1A04B1	ECE	I SEM	Mane
42.	P BHUMIKA (W)	199Y1A04B3	ECE	I SEM	Bhumika
43.	PATHAKUNTLA THULASISREE (W)	199Y1A04C1	ECE	I SEM	Thulasi
44.	PATIL SAIPRAJWAL	199Y1A04C2	ECE	I SEM	Saiprajwal
45.	PESALA SUDHA KOUSHIK	199Y1A04C4	ECE	I SEM	Sudha
46.	POLIREDDY GEETHA REDDY (W)	199Y1A04C5	ECE	I SEM	Geetha
47.	POTHA NAVEENA REDDY	199Y1A04C6	ECE	I SEM	Naveena
48.	RAMAPURAM NIHARIKA	199Y1A04C7	ECE	I SEM	Niharika
49.	SHAIK JAFRULLAH	199Y1A04D8	ECE	I SEM	Jafar
50.	SHAIK JEELAN	199Y1A04E0	ECE	I SEM	Jeelan
51.	SHAIK MEHA TAJ (W)	199Y1A04E2	ECE	I SEM	Meha
52.	SHAIK MOHAMMED GHOUSE	199Y1A04E3	ECE	I SEM	Mohammed

53.	SHAIK MUNAZZAH FATIMA (W)	199Y1A04E5	ECE	I SEM	<i>Munazza</i>
54.	SHAIK MUSAB AHAMED	199Y1A04E6	ECE	I SEM	<i>Musab</i>
55.	SHAIK RUMMESA KOUSAR	199Y1A04E7	ECE	I SEM	<i>Rummesa</i>
56.	SIDDAVATAM SUDHARSHAN	199Y1A04F0	ECE	I SEM	<i>Sudharshan</i>
57.	SINGAM SARVESWAR REDDY	199Y1A04F2	ECE	I SEM	<i>Sarveswar</i>
58.	SREERAMADASU VENKATA NAGA SAI	199Y1A04F3	ECE	I SEM	<i>Sai</i>
59.	SURA VISHNU VARDHAN REDDY	199Y1A04F5	ECE	I SEM	<i>Vardhan</i>
60.	SURABHI LAKSHMI PRIYA	199Y1A04F6	ECE	I SEM	<i>Priya</i>
61.	SYAMALA NANDINI (W)	199Y1A04F8	ECE	I SEM	<i>Nandini</i>
62.	TADIMARRI MOUNIKA	199Y1A04F9	ECE	I SEM	<i>Mounika</i>
63.	THANDRAPATI RAMANJANEYULU	199Y1A04G1	ECE	I SEM	<i>Raman</i>
64.	THUMMALA DEEPTHI (W)	199Y1A04G4	ECE	I SEM	<i>Deepthi</i>
65.	THUNGA AKASH REDDY	199Y1A04G5	ECE	I SEM	<i>Akash</i>
66.	TIRUPATHI NAVEEN KUMAR	199Y1A04G6	ECE	I SEM	<i>Naveen</i>
67.	UDITHE ANUHYA BHAI (W)	199Y1A04G8	ECE	I SEM	<i>Anuha</i>
68.	V SWETHA (W)	199Y1A04G9	ECE	I SEM	<i>Swetha</i>
69.	VADAKUPPALA SARATH KUMAR YADAV	199Y1A04H0	ECE	I SEM	<i>Sarath</i>
70.	VANAM VISHNU NAGA VARDHAN REDDY	199Y1A04H2	ECE	I SEM	<i>Vardhan</i>
71.	VATTALURU YUVARAJU	199Y1A04H4	ECE	I SEM	<i>Yuvaraju</i>
72.	YADDULAKONDU VINAY KUMAR	199Y1A04H8	ECE	I SEM	<i>Vinay</i>
73.	YANNAM SUNANDAMMA	199Y1A04I1	ECE	I SEM	<i>Sunandamma</i>
74.	YAPARLA PAVANI (W)	199Y1A04I2	ECE	I SEM	<i>Pavani</i>
75.	YARRAGUNTLA.OBULREDDY	199Y1A04I3	ECE	I SEM	<i>Obulreddy</i>
76.	YARRAMAREDDY SWESHITHA (W)	199Y1A04I4	ECE	I SEM	<i>Sweshitha</i>
77.	YARRANAGU APARNA (W)	199Y1A04I5	ECE	I SEM	<i>Aparna</i>
78.	YC PUNITH	199Y1A04I6	ECE	I SEM	<i>Punith</i>
79.	YELESAM THARUN KUMAR REDDY	199Y1A04I8	ECE	I SEM	<i>Tharun</i>
80.	YERRAGUNDU BHARATHI	199Y1A04I9	ECE	I SEM	<i>Bharathi</i>

M. Prabhakar
Coordinators

G. H. H.
HoD
Professor & H.O.D.
Department of E.C.E.
A.S.R.M. College of Engineering
KADAPA - 516 003

Certification Course
Course name : Introduction to MATLAB

Course Objectives:

1. To acquire basic knowledge about MATLAB
2. Understand the declaration of variables
3. Use of various operators
4. Understand the usage of functions

Course Outcomes:

After successful completion of the course the students will be able to

1. Understand the basic features of MATLAB
2. Understand about Array construction methods and plotting
3. Analyze the matrix operations
4. Design simple applications using MATLAB functions

UNIT:I

Basic features: Introduction – Starting MATLAB– MATLAB Workspace – About variables – comments, punctuation and aborting execution

UNIT:2

Mathematical functions: Elementary functions, Examples, Basic Plotting, Creating 2D and 3D plots.

UNIT:3

Arrays and Array Operations: Simple arrays – Array addressing – Array construction –Scalar Array Mathematics – Array, Array Mathematics –Array size.

UNIT:4

Linear Equations: Matrix inverse and Matrix functions

UNIT:5

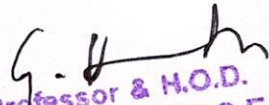
Fundamentals of programming: M – file scripts, examples, Input and Output commands, Creating a function file, user defined function.

Text books:

1. Hanselman Littlefield, “Mastering MATLAB”, Pearson Publications, 1st Edition, 2012.
2. David C. Kuncicky, “MATLAB Programming”, Prentice Hall, 2004

References:

1. Gerald & Wheatley, “Applied Numerical Analysis”, Pearson- 7th Edition, 2003.
2. R.S. Gupta, “Elements of Numerical Analysis”, second edition, Cambridge University Press, 2015.
3. Mathew & Fink, “Numerical Methods Using MATLAB”, Pearson, 1998.
4. Rudra Pratap, “Getting started with Matlab: A quick introduction for scientist & engineers” , Oxford, 2010.


Professor & H.O.D.
Department of E.C.E.
K.S.R.M. College of Engineering
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SCHEDULE

Department of ECE

Certification Course

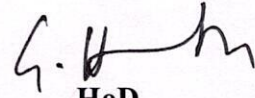
On

“Introduction to MATLAB” From 30/12/2019 to 23/01/2020

Date	Timing	Resource person	Topic to be covered
30/12/2019	3PM to 5 PM	Md Mahaboob Pasha	Inauguration, Introduction,
30/12/2019	4 PM to 5 PM	Md Mahaboob Pasha	Simple math, Examples
31/12/2019	3 PM to 5 PM	Md Mahaboob Pasha	MATLAB Workspace, About variables, comments,
31/12/2019	3 PM to 5 PM	Md Mahaboob Pasha	punctuation and aborting execution, Script M-files.
02/01/2020	3 PM to 5 PM	Md Mahaboob Pasha	2D, Subplots, Editing of plots, Examples
02/01/2020	3 PM to 5 PM	Md Mahaboob Pasha	3D Plots, Examples
04/01/2020	3 PM to 5 PM	Md Mahaboob Pasha	Simple arrays, Array addressing
04/01/2020	4 PM to 5 PM	Md Mahaboob Pasha	Array operations , Examples
06/01/2020	4 PM to 5 PM	Md Mahaboob Pasha	Array construction, Scalar Array Mathematics
06/01/2020	3 PM to 5 PM	Md Mahaboob Pasha	Array examples, Practice
07/01/2020	3 PM to 5 PM	Md Mahaboob Pasha	Array Mathematics, Array size practices
07/01/2020	4 PM to 5 PM	Md Mahaboob Pasha	Array arithmetic, practice
08/01/2020	4 PM to 5 PM	Md Mahaboob Pasha	If - Else - End Construction, Functions,
08/01/2020	3PM to 5 PM	Md Mahaboob Pasha	For loops,, Practice problems
09/01/2020	4 PM to 5 PM	Md Mahaboob Pasha	Matrix inverse , practice
09/01/2020	3 PM to 5 PM	Md Mahaboob Pasha	Matrix Indexing, arithmetics

10/01/2020	4 PM to 5 PM	Md Mahaboob Pasha	Matrix Functions , Practice
10/01/2020	3 PM to 5 PM	Md Mahaboob Pasha	Creating functions, exercise
20/01/2020	3 PM to 5 PM	Md Mahaboob Pasha	Creating M – File, examples
21/01/2020	3 PM to 5 PM	Md Mahaboob Pasha	Input and Output Commands, examples
21/01/2020	4 PM to 5 PM	Md Mahaboob Pasha	Simple programs using input and output commands
22/01/2020	3 PM to 5 PM	Md Mahaboob Pasha	Creating functions examples
22/01/2020	3 PM to 5 PM	Md Mahaboob Pasha	User defined functions, examples
23/01/2020	3 PM to 5 PM	Md Mahaboob Pasha	Examination
29-08-2019	4 PM to 5 PM	Md Mahaboob Pasha	Valedictory function

M. Prabhakaran
Coordinator(s)


HoD

Professor & H.O.D.
Department of E.C.E.
K.S.R.M. College of Engineering
KADAPA - 516 093

18.	199Y1A0465	KANAMARLAPUTI SRAVANI (W)	P	A	P	A	P	P	P	A	P	P	P	P	A
19.	199Y1A0466	KATHERAPALLE SUNANDA (W)	A	A	A	A	P	P	A	A	A	P	P	A	A
20.	199Y1A0468	KAYAM VINAY	P	A	P	A	P	A	P	A	P	A	P	A	P
21.	199Y1A0469	KETHIREDDY PRASANTHI (W)	A	A	P	A	A	A	A	A	P	P	A	P	
22.	199Y1A0471	KOMPALA SAI CHARAN	A	P	A	P	A	A	A	P	A	P	A	P	A
23.	199Y1A0474	KONDURU SUMITHRA (W)	A	P	A	P	A	A	A	P	A	P	A	P	A
24.	199Y1A0475	KOTHAMADDI NEHA (W)	P	A	P	A	P	A	P	A	P	A	P	A	P
25.	199Y1A0477	KOTTHA REDDY ARCHANA (W)	P	A	P	A	P	A	P	A	P	A	P	A	P
26.	199Y1A0479	KUNDHARAPU VENKATESH	P	P	P	P	P	A	A	P	P	A	A	P	P
27.	199Y1A0480	KURUBA BYALLA YERRISWAMY	P	P	P	P	P	A	A	P	P	A	A	P	A
28.	199Y1A0487	M SAI VARDHAN NAIDU	A	P	A	P	A	P	A	P	A	P	A	P	A
29.	199Y1A0488	MACHIREDDY VENKATA SAI NATH REDDY	P	A	P	A	P	A	P	P	P	P	P	A	P
30.	199Y1A0490	MADDIREDDY PRAKASH REDDY	P	A	A	P	P	A	A	A	A	A	A	P	P
31.	199Y1A0492	MALISSETTY HARIKA (W)	A	P	P	A	P	A	P	A	P	A	P	A	P
32.	199Y1A0496	MITTA VENKATA MANISHA (W)	A	P	A	A	P	A	P	A	P	A	P	A	P
33.	199Y1A0499	MOPURU NAVANEETHA (W)	P	A	P	A	P	A	P	A	P	A	P	A	P
34.	199Y1A04A0	MUGEPPA GARI PAVANI (W)	A	A	P	A	P	A	P	A	P	A	P	A	P
35.	199Y1A04A3	MUNDLAPATI RUCHITHA (W)	A	A	P	A	P	A	P	A	P	A	P	A	P
36.	199Y1A04A4	MUNNELLI SUJATHA (W)	A	P	A	P	A	P	A	P	A	P	A	P	A
37.	199Y1A04A5	MURARI PRANITHA (W)	A	P	A	P	A	P	A	P	A	P	A	P	A
38.	199Y1A04A6	MURARI SRAVANTHI (W)	P	A	P	A	P	A	P	A	P	A	P	A	P
39.	199Y1A04A9	NALLABOTHULA POORNIMA (W)	P	A	P	A	P	A	P	A	P	A	P	A	P
40.	199Y1A04B0	NAMALA JYOTHIKA GNANA CHANDRIKA (W)	A	P	A	P	A	P	A	P	A	P	A	P	P
41.	199Y1A04B1	NANDIPATI MANEESHA (W)	A	P	A	P	A	P	A	P	A	P	A	P	P
42.	199Y1A04B3	P BHUMIKA (W)	P	A	P	A	P	A	P	A	P	A	P	A	P
43.	199Y1A04C1	PATHAKUNTLA THULASISREE (W)	P	A	P	A	P	A	P	A	P	A	P	A	P
44.	199Y1A04C2	PATIL SAIPRAJWAL	A	P	A	P	A	P	A	P	A	P	A	P	A
45.	199Y1A04C4	PESALA SUDHA Koushik	A	P	A	P	A	P	A	P	A	P	A	P	A
46.	199Y1A04C5	POLIREDDY GEETHA REDDY (W)	P	A	P	P	P	P	P	P	P	A	A	P	
47.	199Y1A04C6	POTHA NAVEENA REDDY (W)	P	A	P	P	P	P	A	A	A	A	P	P	A
48.	199Y1A04C7	RAMAPURAM NIHARIKA (W)	P	P	A	A	P	P	A	A	P	P	A	A	P
49.	199Y1A04D8	SHAIK JAFRULLAH	A	A	P	P	A	A	P	P	A	A	P	P	A
50.	199Y1A04E0	SHAIK JEELAN	A	P	P	P	P	A	P	A	P	A	P	P	A

51.	199Y1A04E2	SHAIK MEHA TAJ (W)	P	A	P	P	A	P	A	A	P	A	P	A	P
52.	199Y1A04E3	SHAIK MOHAMMED GHOUSE	A	P	A	P	A	P	A	P	A	P	P	P	P
53.	199Y1A04E5	SHAIK MUNAZZAH FATIMA (W)	A	P	P	P	P	A	A	P	A	P	A	P	A
54.	199Y1A04E6	SHAIK MUSAB AHAMED	P	A	P	A	A	P	P	P	P	A	P	A	P
55.	199Y1A04E7	SHAIK RUMMESA KOUSAR (W)	P	A	P	P	A	P	A	A	P	A	P	A	P
56.	199Y1A04F0	SIDDAVATAM SUDHARSHAN	P	A	P	A	A	P	A	P	P	A	P	P	P
57.	199Y1A04F2	SINGAM SARVESWAR REDDY	A	P	P	P	P	A	A	P	P	P	P	A	A
58.	199Y1A04F3	SREERAMADASU VENKATA NAGA SAI	A	P	P	P	A	A	P	A	P	A	P	A	P
59.	199Y1A04F5	SURA VISHNU VARDHAN REDDY	P	A	P	P	P	P	A	A	P	P	A	A	A
60.	199Y1A04F6	SURABHI LAKSHMI PRIYA (W)	A	P	P	P	A	A	A	P	P	A	A	A	A
61.	199Y1A04F8	SYAMALA NANDINI (W)	P	P	P	P	A	A	P	A	P	A	P	A	P
62.	199Y1A04F9	TADIMARRI MOUNIKA (W)	P	A	P	P	A	P	A	A	A	A	A	A	P
63.	199Y1A04G1	THANDRAPATI RAMANJANEYULU	A	P	A	P	P	A	P	A	P	A	P	A	P
64.	199Y1A04G4	THUMMALA DEEPTHI (W)	A	P	P	P	P	A	A	P	P	P	P	P	A
65.	199Y1A04G5	THUNGA AKASH REDDY	A	A	P	P	P	P	P	P	A	P	A	P	P
66.	199Y1A04G6	TIRUPATHI NAVEEN KUMAR	P	A	P	P	P	P	A	A	A	P	P	P	P
67.	199Y1A04G8	UDITHE ANUHYA BHAI (W)	P	A	P	A	P	A	P	A	P	P	A	P	P
68.	199Y1A04G9	V SWETHA (W)	A	P	P	P	A	A	A	P	P	P	P	P	P
69.	199Y1A04H0	VADAKUPPALA SARATH KUMAR YADAV	P	P	P	A	A	P	P	P	A	P	A	P	A
70.	199Y1A04H2	VANAM VISHNU NAGA VARDHAN REDDY	P	A	P	P	A	P	A	A	P	A	P	A	P
71.	199Y1A04H4	VATTALURU YUVARAJU	A	P	P	P	P	A	A	P	A	P	A	P	A
72.	199Y1A04H8	YADDULAKONDU VINAY KUMAR	P	P	P	P	A	A	A	P	P	P	A	P	A
73.	199Y1A04I1	YANNAM SUNANDAMMA (W)	P	A	P	P	A	P	A	A	P	P	P	P	A
74.	199Y1A04I2	YAPARLA PAVANI (W)	P	P	A	A	P	A	P	A	A	P	P	P	P
75.	199Y1A04I3	YARRAGUNTLA.OBULREDDY	A	P	P	P	P	A	A	P	P	A	P	P	P
76.	199Y1A04I4	YARRAMAREDDY SWESHITHA (W)	A	P	A	P	A	P	A	P	A	P	A	P	A
77.	199Y1A04I5	YARRANAGU APARNA (W)	P	A	P	P	A	P	A	A	P	P	A	P	P
78.	199Y1A04I6	YC PUNITH	P	P	P	A	A	A	P	P	P	P	P	A	P
79.	199Y1A04I8	YELESAM THARUN KUMAR REDDY	A	P	A	P	P	A	A	P	P	P	A	A	A
80.	199Y1A04I9	YERRAGUNDU BHARATHI (W)	P	A	P	A	P	A	A	P	P	P	A	P	A

M. Prabhakar
Coordinator(s)

Professor & H.O.D.
Department of E.C.E.
K.S.R.M. College of Engineering
KADAPA - 516 003



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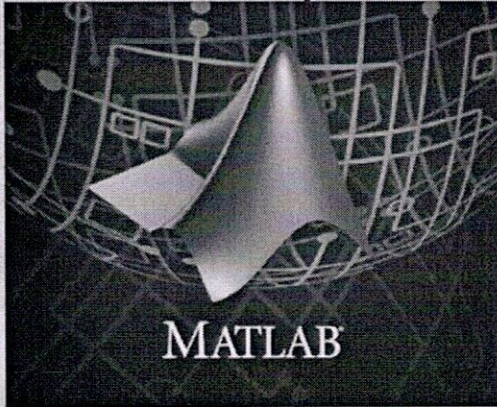
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Department of Electronics & Communication Engineering



Certification Course

On

Introduction to MATLAB

Duration

30/12/2019 to 23/01/2020

Venue

CRI Lab

Coordinators

Sri. K.V. Subba Reddy
Sri. M.Prabhakar

Resource Person

Sri. Md.Mahaboob Pasha

Dr. G. HEMALATHA
(Professor & Head)

Dr. V.S.S. Murthy
(Principa)

Prof. A. MOHAN
(Director)

Sri K. Sivannanda Reddy
(Correspondent, Secretary, Treasurer)

Sri K. Madan Mohan Reddy
(Vice - Chairman)

Sri S. Sankar Reddy
(Chairman)



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ACTIVITY REPORT

Certification Course on “*Introduction to MATLAB*”, from 30-12-2019 to 23-01-2020

Organized

by

Department of Electronics & Communication Engineering

Target Group	:	B.Tech Students
Details of Participants	:	80 Students
Resource person	:	Sri Md Mahaboob Pasha Assistant Professor ECE Department, KSRMCE
Coordinators	:	1) Sri K. V. Subba Reddy, Assistant Professor, Dept. of ECE. 2) Sri M. Prabhakar, Assistant Professor, Dept. of ECE.
Organizing Department	:	Electronics and Communication Engineering
Venue	:	CRI Lab
Description	:	

A certificate course on Introduction to MATLAB was conducted by Department Of Electronics and Communication Engineering (ECE) during 30-12-2019 to 23-01-2020. Sri Md Mahaboob Pasha, Assistant Professor, Department of ECE has acted as a resource person. In this course total 80 students participated and successfully completed the course.

Valedictory function was conducted on 23-01-2022; Students gave their feedback about the certification course. Principal and HOD ECE graced the valedictory function and distributed the certificates. Principal conveyed thanks to the resource person and coordinators. HOD congratulated the students and requested students to do projects using this knowledge.

Photos :

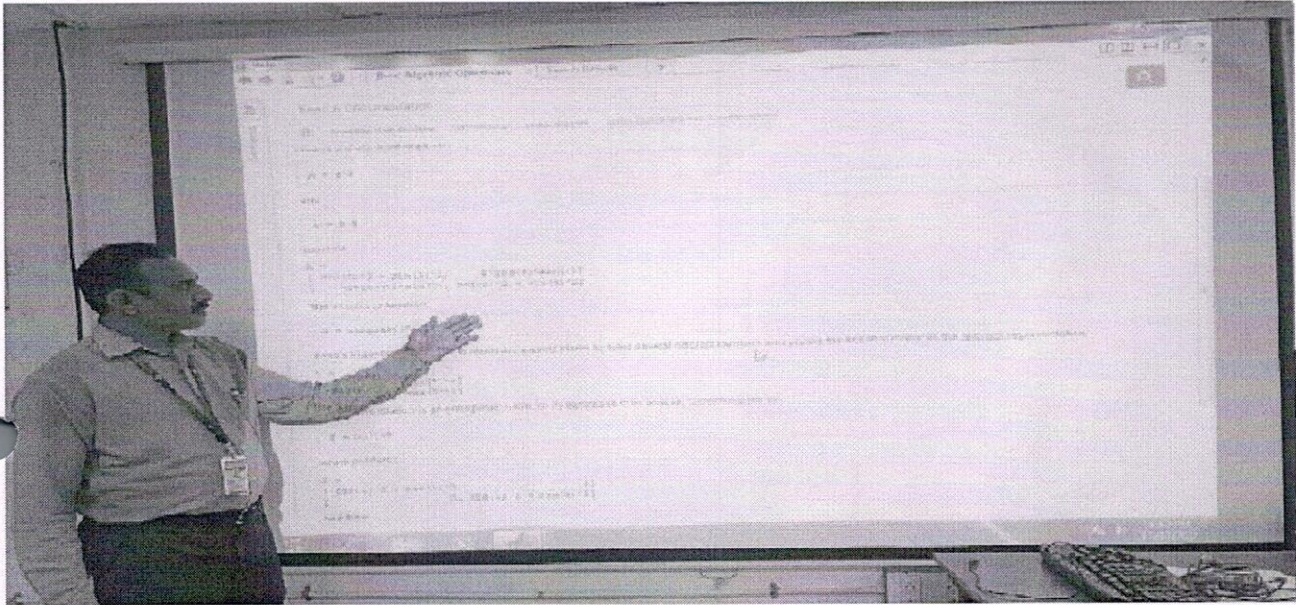


Fig :Resource person delivering the lecture

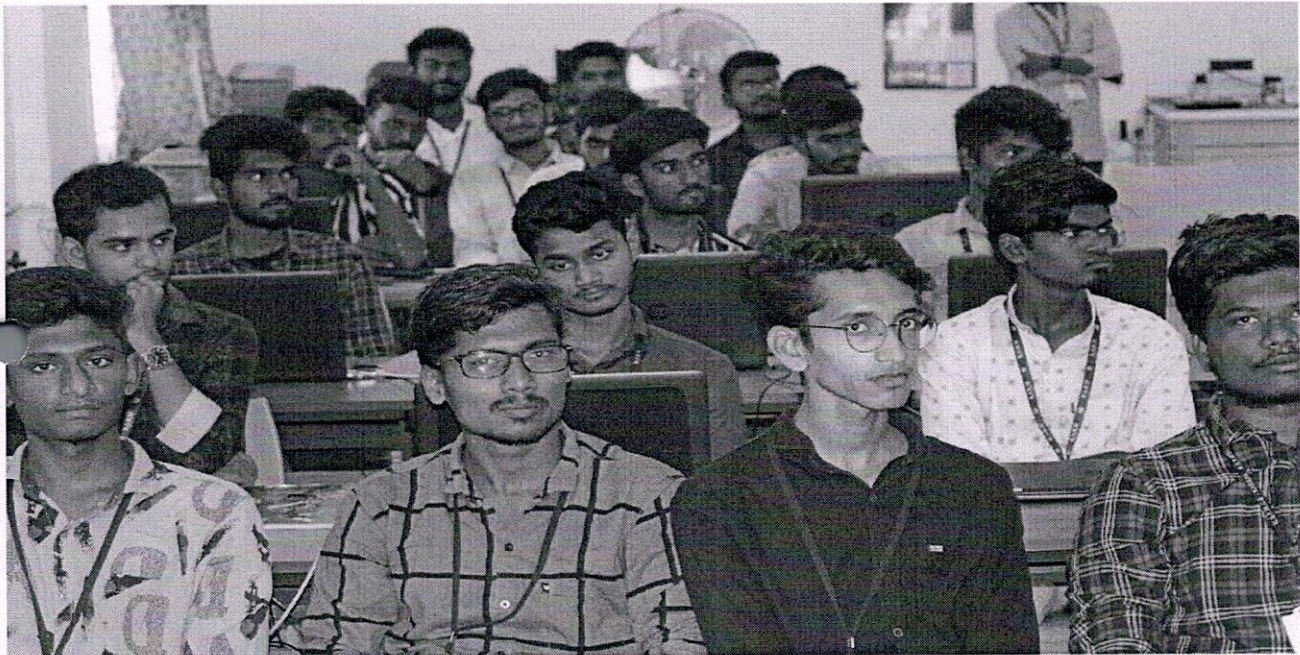


Fig: Students are engaging the practice regarding Matlab Programming Course

M. Prabhakar
Coordinators

G. H. H.
HoD
Professor & H.O.D.
Department of E.C.E.
K.S.R.M. College of Engineering
KADAPA - 516 093



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CERTIFICATE OF COMPLETION

This is to certify that Mr./Ms. p. Bhumika
bearing roll no 199Y1A04B3 has Completed a Certification
Course on "**Introduction to matlab**" organized by the department of **Electronics
& Communication Engineering** , KSRM College of Engineering from 30-12-
2019 to 23-01-2020

M. M. Kala
Coordinator

G. H. h
HoD, ECE

V. S. S. Murthy
Principal



KSRM COLLEGE OF ENGINEERING

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CERTIFICATE OF COMPLETION

This is to certify that Mr./Ms. yc. punith
bearing roll no 199Y1A0416 has Completed a Certification
Course on "**Introduction to matlab**" organized by the department of **Electronics
& Communication Engineering** , KSRM College of Engineering from 30-12-
2019 to 23-01-2020

M. Habeeb
Coordinator

G. H. H.
HoD, ECE

V. S. S. Murthy
Principal



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Kadapa, Andhra Pradesh, India- 516003.

CERTIFICATE OF COMPLETION

This is to certify that Mr./Ms. K. Anusha
bearing roll no 199Y1A0457 has Completed a Certification
Course on "**Introduction to matlab**" organized by the department of **Electronics
& Communication Engineering** , KSRM College of Engineering from 30-12-
2019 to 23-01-2020

M. Prabhakar
Coordinator

G. H. M.
HoD, ECE

V. S. S. Murthy
Principal



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FEEDBACK FORM

Certification Course on “*Introduction to MATLAB*”, from 30-12-2019 to 23-01-2020

Organized

by

Department of Electronics & Communication Engineering

NAME:

Roll No:

S.No	Feedback Item	Excellent	Very Good	Good	Average	Below Average
1	Organization of course and session planning by instructor.					
2	Clarity in content delivery.					
3	Content is relevant and useful					
4	Adequate opportunity to interact with trainer					
5	Judicious mix of concepts. Principles and practices.					
6	Assignments and tasks are interesting and challenging.					
7	Overall rating					

Any suggestions for improvement.

Signature



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Certification Course on
“Introduction to MATLAB”
13/08/2019 to 30/08/2019

Feedback responses

S.No.	Roll No	Year & Semester	Branch	Is the course content met your expectation	Is the lecture sequence well planned	The contents of the course is explained with examples	Is the level of course high	Is the course exposed you to the new knowledge and practices	Is the lecturer clear and easy to understand	Rate the value of course in increasing your skills	Any issues
1	199Y1A0401	B.Tech Isem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	3	5	Nothing
2	199Y1A0402	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	3	4	very good
3	199Y1A0403	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	5	Good
4	199Y1A0404	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	4	very good
5	199Y1A0405	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	4	5	Nothing
6	199Y1A0406	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	4	3	Good
7	199Y1A0415	B.Tech Isem	ECE	Yes	Yes	agree	Agree	Strongly agree	5	4	Good
8	199Y1A0416	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	5	4	Nothing
9	199Y1A0417	B.Tech I sem	ECE	Yes	Yes	Strongly	Agree	Strongly agree	5	5	Nothing

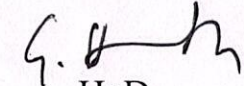
						agree						
10	199Y1A0418	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	4	3	Very Good	
11	199Y1A0430	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	4	5	Good	
12	199Y1A0431	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	5	4	Good	
13	199Y1A0448	B.Tech Isem	ECE	Yes	Yes	agree	Agree	Strongly agree	3	5	Nothing	
14	199Y1A0455	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	5	very good	
15	199Y1A0457	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	4	Nothing	
16	199Y1A0458	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	4	5	very good	
17	199Y1A0459	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	5	3	No	
18	199Y1A0465	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	3	4	Nothing	
19	199Y1A0466	B.Tech Isem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	5	Good	
20	199Y1A0468	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	3	3	Good	
21	199Y1A0469	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	5	Good	
22	199Y1A0471	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	5	5	Nothing	
23	199Y1A0474	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	4	4	Good	
24	199Y1A0475	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	4	4	Good	
25	199Y1A0477	B.Tech Isem	ECE	Yes	Yes	agree	Agree	Strongly agree	4	4	Good	
26	199Y1A0479	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	5	5	Nothing	
27	199Y1A0480	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	5	3	No	
28	199Y1A0487	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	4	4	No	
29	199Y1A0488	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	4	3	No	
30	199Y1A0490	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	4	No	
31	199Y1A0492	B.Tech Isem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	4	nothing	

32	199Y1A0496	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	5	3	Nothing
33	199Y1A0499	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	4	4	No
34	199Y1A04A0	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	4	5	Nothing
35	199Y1A04A3	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	5	Good
36	199Y1A04A4	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	3	5	Nothing
37	199Y1A04A5	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	3	4	very good
38	199Y1A04A6	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	5	Good
39	199Y1A04A9	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	4	very good
40	199Y1A04B0	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	4	5	Nothing
41	199Y1A04B1	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	4	3	Good
42	199Y1A04B3	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	5	4	Good
43	199Y1A04C1	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	5	4	Nothing
44	199Y1A04C2	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	5	Nothing
45	199Y1A04C4	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	4	3	Very Good
46	199Y1A04C5	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	4	5	Good
47	199Y1A04C6	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	5	4	Good
48	199Y1A04C7	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	3	5	Nothing
49	199Y1A04D8	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	5	very good
50	199Y1A04E0	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	4	Nothing
51	199Y1A04E2	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	4	5	very good
52	199Y1A04E3	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	5	3	No
53	199Y1A04E5	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	3	4	Nothing
54	199Y1A04E6	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	5	Good

55	199Y1A04E7	B.Tech Isem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	3	3	Good
56	199Y1A04F0	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	5	Good
57	199Y1A04F2	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	5	5	Nothing
58	199Y1A04F3	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	4	4	Good
59	199Y1A04F5	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	4	4	Good
60	199Y1A04F6	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	4	4	Good
61	199Y1A04F8	B.Tech Isem	ECE	Yes	Yes	agree	Agree	Strongly agree	5	5	Nothing
62	199Y1A04F9	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	5	3	No
63	199Y1A04G1	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	4	4	No
64	199Y1A04G4	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	4	3	No
65	199Y1A04G5	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	4	No
66	199Y1A04G6	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	4	nothing
67	199Y1A04G8	B.Tech Isem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	4	4	Good
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71	199Y1A04H4	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	4	4	No
72	199Y1A04H8	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	4	3	No
73	199Y1A04I1	B.Tech Isem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	4	No
74	199Y1A04I2	B.Tech I sem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	4	nothing
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79	199Y1A0418	B.Tech Isem	ECE	Yes	Yes	Strongly agree	Agree	Strongly agree	5	4	Nothing
80	199Y1A0419	B.Tech I sem	ECE	Yes	Yes	agree	Agree	Strongly agree	5	3	No

M. Prabhakar
Coordinator


HoD

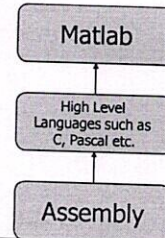
Professor & H.O.D.
Department of E.C.E.
K.S.R.M. College of Engineering
KADAPA - 516 003

Introduction to Matlab

Reference: İ.Yücel Özbek

What is Matlab?

- Matlab is basically a high level language which has many specialized toolboxes for making things easier for us
- How high?



Outline:

- What is Matlab?
- Matlab Screen
- Variables, array, matrix, indexing
- Operators (Arithmetic, relational, logical)
- Display Facilities
- Flow Control
- Using of M-File
- Writing User Defined Functions
- Conclusion

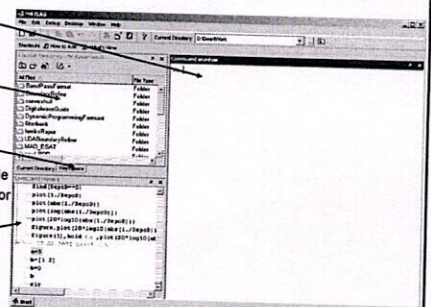
Matlab Screen

- Command Window
 - type commands

- Current Directory
 - View folders and m-files

- Workspace
 - View program variables
 - Double click on a variable to see it in the Array Editor

- Command History
 - view past commands
 - save a whole session using diary



Variables

- No need for types. i.e.,

```
int a;  
double b;  
float c;
```

- All variables are created with double precision unless specified and they are matrices.

```
Example:  
>>x=5;  
>>x1=2;
```

- After these statements, the variables are 1x1 matrices with double precision

Long Array, Matrix

- `t = 1:10`
t =
1 2 3 4 5 6 7 8 9 10
- `k = 2:-0.5:-1`
k =
2 1.5 1 0.5 0 -0.5 -1
- `B = [1:4; 5:8]`
x =
1 2 3 4
5 6 7 8

Array, Matrix

- a vector `x = [1 2 5 1]`

```
x =  
1 2 5 1
```

- a matrix `y = [1 2 3; 5 1 4; 3 2 -1]`

```
y =  
1 2 3  
5 1 4  
3 2 -1
```

- transpose `y = x'`

```
y =  
1  
2  
5  
1
```

Generating Vectors from functions

- `zeros(M,N)` MxN matrix of zeros

```
x = zeros(1,3)  
x =  
0 0 0
```

- `ones(M,N)` MxN matrix of ones

```
x = ones(1,3)  
x =  
1 1 1
```

- `rand(M,N)` MxN matrix of uniformly distributed random numbers on (0,1)

```
x = rand(1,3)  
x =  
0.9501 0.2311 0.6068
```


Operators (Element by Element)

- . * element-by-element multiplication
- ./ element-by-element division
- .^ element-by-element power

Basic Task: Plot the function $\sin(x)$ between $0 \leq x \leq 4\pi$

- Create an x-array of 100 samples between 0 and 4π .

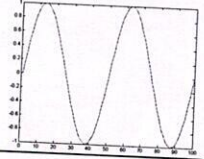
```
>>x=linspace(0,4*pi,100);
```

- Calculate $\sin(\cdot)$ of the x-array

```
>>y=sin(x);
```

- Plot the y-array

```
>>plot(y)
```



The use of “.” – “Element” Operation

```
A=[1 2 3; 5 1 4; 3 2 1]
A=
     1     2     3
     5     1     4
     3     2     1
```

```
x=A(1,:)
```

```
y=A(3,:)
```

```
x=
```

```
y=
```

```
1 2 3
```

```
3 4 1
```

```
b = x .* y
```

```
c = x ./ y
```

```
d = x.^2
```

```
b=
```

```
c=
```

```
d=
```

```
3 8 -3
```

```
0.33 0.5 -3
```

```
1 4 9
```

```
K= x^2
```

```
Error:
```

```
??? Error using ==> mpower Matrix must be square.
```

```
B=x*y
```

```
Error:
```

```
??? Error using ==> mtimes Inner matrix dimensions must agree.
```

Plot the function $e^{-x/3}\sin(x)$ between $0 \leq x \leq 4\pi$

- Create an x-array of 100 samples between 0 and 4π .

```
>>x=linspace(0,4*pi,100);
```

- Calculate $\sin(\cdot)$ of the x-array

```
>>y=sin(x);
```

- Calculate $e^{-x/3}$ of the x-array

```
>>y1=exp(-x/3);
```

- Multiply the arrays y and y1

```
>>y2=y*y1;
```


Matrix Index

- The matrix indices begin from 1 (not 0 (as in C))
- The matrix indices must be positive integer

Given:

A =

```

3 5 3
6 8 2
2 7 3
    
```

>> A(6)

```

ans =
7
    
```

>> A(3,2)

```

ans =
7
    
```

>> A(2,:)

```

ans =
6 8 2
    
```

>> A(1:2,2)

```

ans =
5
8
    
```

A(-2), A(0)

Error: ??? Subscript indices must either be real positive integers or logicals.

A(4,2)

Error: ??? Index exceeds matrix dimensions.

Operators (arithmetic)

- + addition
- subtraction
- * multiplication
- / division
- ^ power
- ' complex conjugate transpose

Concatenation of Matrices

- $x = [1 \ 2]$, $y = [4 \ 5]$, $z = [0 \ 0]$

A = [x y]

```

1 2 4 5
    
```

B = [x ; y]

```

1 2
4 5
    
```

C = [x y ; z]

Error:

??? Error using ==> vertcat CAT arguments dimensions are not consistent.

Matrices Operations

Given A and B:

```

>> A = [1 2 3; 4 5 6; 7 8 9]
A =
1 2 3
4 5 6
7 8 9
    
```

```

>> B = [3 5; 5 2 8; 3 6 9]
B =
3 5 2
5 2 8
3 6 9
    
```

Addition

>> X = A + B

```

X =
4 7 5
9 7 14
10 14 18
    
```

Subtraction

>> Y = A - B

```

Y =
-2 -3 1
-1 3 -2
4 2 0
    
```

Product

>> Z = A * B

```

Z =
22 27 45
55 66 102
88 105 159
    
```

Transpose

>> T = A'

```

T =
1 4 7
2 5 8
3 6 9
    
```


Operators (relational, logical)

- == Equal to
- ~= Not equal to
- < Strictly smaller
- > Strictly greater
- <= Smaller than or equal to
- >= Greater than equal to
- & And operator
- | Or operator

Control Structures

■ If Statement Syntax

```
if (Condition_1)
    Matlab Commands
elseif (Condition_2)
    Matlab Commands
elseif (Condition_3)
    Matlab Commands
else
    Matlab Commands
end
```

Some Dummy Examples

```
if ((a>3) & (b==5))
    Some Matlab Commands;
end
```

```
if (a<3)
    Some Matlab Commands;
elseif (b~=5)
    Some Matlab Commands;
end
```

```
if (a<3)
    Some Matlab Commands;
else
    Some Matlab Commands;
end
```

Flow Control

- if
- for
- while
- break
-

Control Structures

■ For loop syntax

```
for i=Index_Array
    Matlab Commands
end
```

Some Dummy Examples

```
for i=1:100
    Some Matlab Commands;
end
```

```
for j=1:3:200
    Some Matlab Commands;
end
```

```
for m=13:-0.2:-21
    Some Matlab Commands;
end
```

```
for k=[0.1 0.3 -13 12 7 -9.3]
    Some Matlab Commands;
end
```

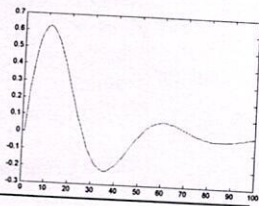

Plot the function $e^{-x/3}\sin(x)$ between $0 \leq x \leq 4\pi$

- Multiply the arrays y and y1 correctly

```
>>y2=y.*y1;
```

- Plot the y2-array

```
>>plot(y2)
```



Display Facilities

- title(.)

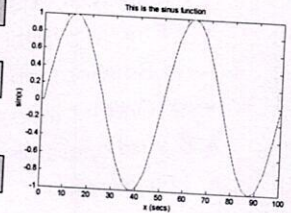
```
>>title('This is the sinus function')
```

- xlabel(.)

```
>>xlabel('x (secs)')
```

- ylabel(.)

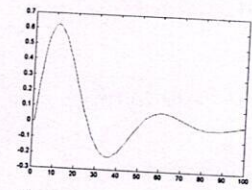
```
>>ylabel('sin(x)')
```



Display Facilities

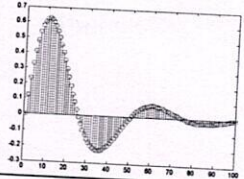
- plot(.)

```
Example:
>>x=linspace(0,4*pi,100);
>>y=sin(x);
>>plot(y)
>>plot(x,y)
```



- stem(.)

```
Example:
>>stem(y)
>>stem(x,y)
```



Putting several graphs in one window

- The subplot command creates several plots in a single window. Here is an example:

- >> t = (0:1:2*pi)';

- >> subplot(2,2,1)

- >> plot(t,sin(t))

- >> subplot(2,2,2)

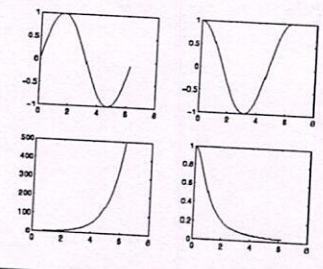
- >> plot(t,cos(t))

- >> subplot(2,2,3)

- >> plot(t,exp(t))

- >> subplot(2,2,4)

- >> plot(t,1./(1+t.^2))



Control Structures

While Loop Syntax

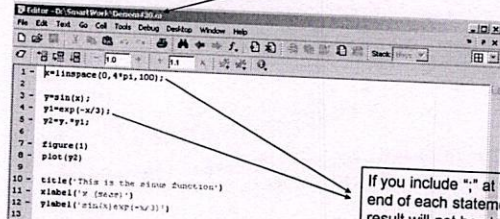
while (condition)
Matlab Commands
end

Dummy Example

```
while ((a>3) & (b==5))  
Some Matlab Commands;  
end
```

Use of M-File

Save file as *Denem430.m*

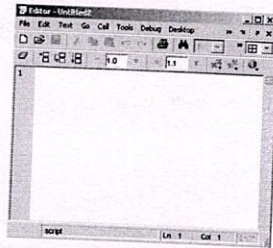
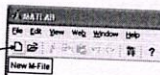


```
1 - h= linspace(0,4*pi,100);  
2  
3 - y=sin(x);  
4 - y1=exp(-x/3);  
5 - y2=y.*y1;  
6  
7 - figure(1)  
8 - plot(y2)  
9  
10 - title('This is the group function')  
11 - xlabel('x (sec)')  
12 - ylabel('sin(x)exp(-x/3)')  
13
```

If you include ";" at the end of each statement, result will not be shown immediately

Use of M-File

Click to create a new M-File



- Extension ".m"
- A text file containing script or function or program to run

Writing User Defined Functions

- Functions are m-files which can be executed by specifying some inputs and supply some desired outputs.
- The code telling the Matlab that an m-file is actually a function is

```
function out1=functionname(in1)  
function out1=functionname(in1,in2,in3)  
function [out1,out2]=functionname(in1,in2)
```

- You should write this command at the beginning of the m-file and you should save the m-file with a file name same as the function name

Writing User Defined Functions

- Another function which takes an input array and returns the sum and product of its elements as outputs

```
function [out1,out2]=sumprod(array)
1 out1=sum(array);
2 out2=prod(array);
3
```

- The function `sumprod(.)` can be called from command window or an m-file as

```
>> x=1:10;
>> [out1,out2]=sumprod(x)
out1 =
    55
out2 =
  3628800
```

Notes:

- "%" is the neglect sign for Matlab (equivalent of "//" in C). Anything after it on the same line is neglected by Matlab compiler.
- Sometimes slowing down the execution is done deliberately for observation purposes. You can use the command "pause" for this purpose

```
pause %wait until any key
pause(3) %wait 3 seconds
```

Writing User Defined Functions

- `%square.m` ---- Calculates the square of a number.

```
function y = square(x)
% calculate the square of the given number 'x'
% Arguments:
% x (input) value to be squared
% y (output) the result of the square
y = x*x;
end
% end of square function
```

Useful Commands

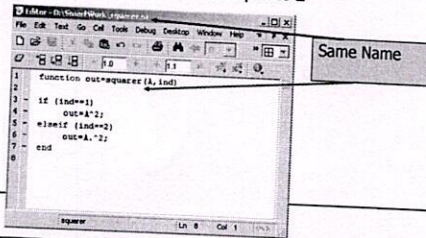
- The two commands used most by Matlab users are

```
>>help functionname
```

```
>>lookfor keyword
```


Writing User Defined Functions

- Examples
 - Write a function : out=squarer (A, ind)
 - Which takes the square of the input matrix if the input indicator is equal to 1
 - And takes the element by element square of the input matrix if the input indicator is equal to 2



The screenshot shows a MATLAB editor window with the following code:

```
function out=squarer(A, ind)
1
2
3   if (ind==1)
4       out=A.^2;
5   elseif (ind==2)
6       out=A.^2;
7   end
8
```

A callout box labeled "Same Name" points to the function name "squarer" in the code.