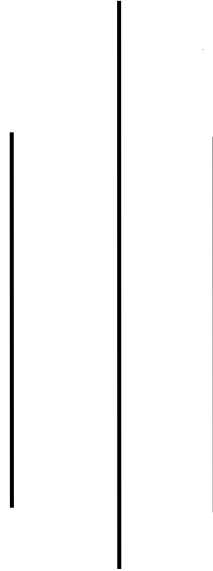# KATHMANDU UNIVERSITY

## DHULIKHEL, KAVRE

**Subject: COMP-407: Digital Signal Processing**

**Lab no: 1: Introduction to MATLAB**

**Submitted By:**

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Group: CE 4$^{th}$ year 1$^{st}$ sem
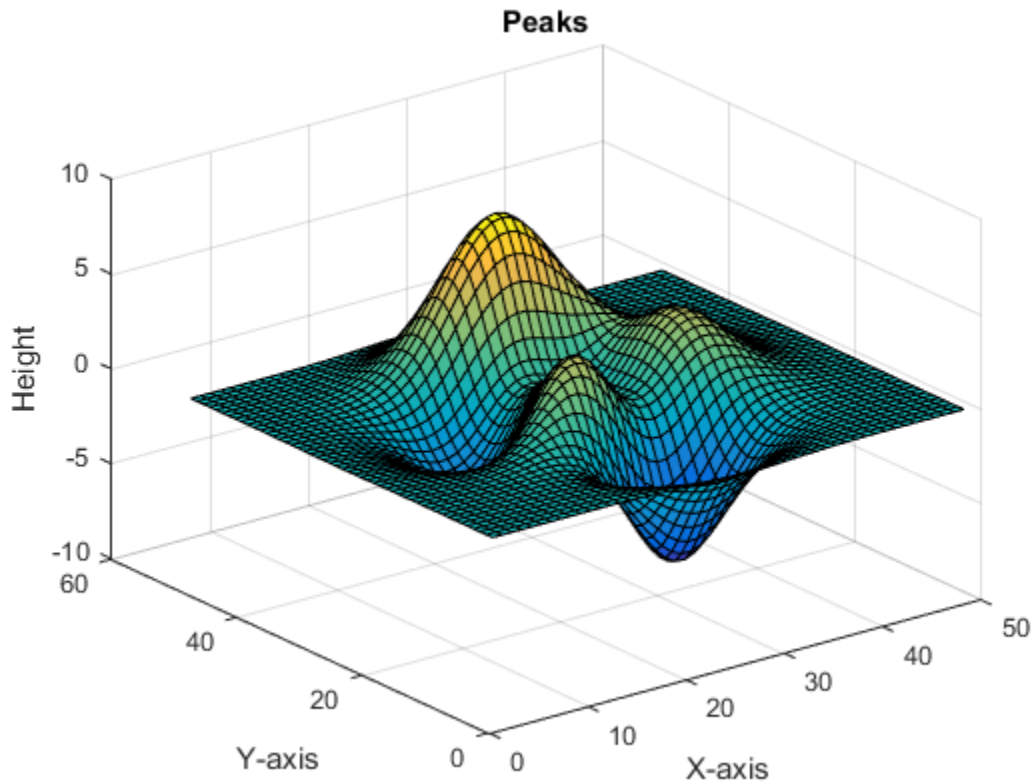Level: UNG

**Submitted To:**

Satyendra Nath Lohani Sir

**Introduction to Matlab**

**1. To study important commands of MATLAB software**
   **clc, close, xlabel, ylabel, zlabel, title, figure, subplot, linspace, stem, bar, plot.**

**Code**

```
clc                %the screen is cleared
f1=figure;         %a figure window is opened
surf(peaks);       %a 3d surface plot is created
xlabel('X-axis')
ylabel('Y-axis')
zlabel('Height')
title('Peaks')
```



```
x=linspace(1,19,10);   %returns a row vector of 10 evenly spaced points between x1=1 and x2=19.
                        %Default no of points=100
y=x*2;
close(f1);         %the figure window f1 is closed
f2 = figure;       %figure window f2 is created
figure(f2);        %figure window f2 is selected
subplot(3,1,1);    % divides the current figure into an 3 -by- 1 grid and creates axes in the position specified by p=1
stem(x,y); %plots the data sequence, Y, at values specified by X. The X and Y inputs must be vectors or matrices of
the same size.
xlabel('X')
ylabel('Y')
title('Stem diagram')
```
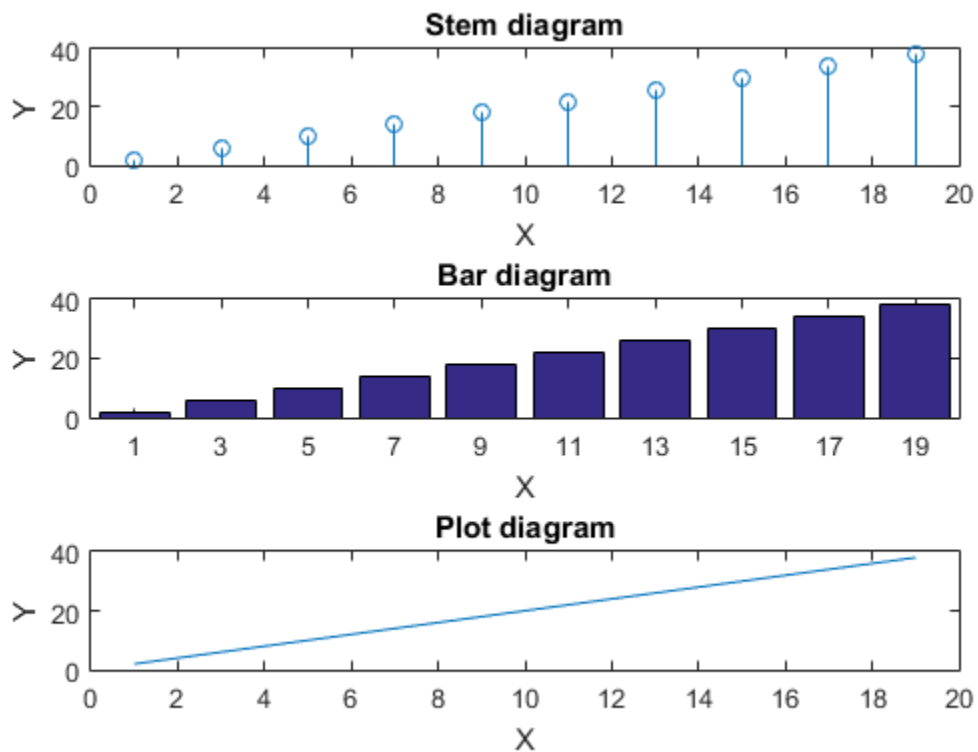
```
subplot(3,1,2);
bar(x,y);   %draws the bars at the locations specified by x.
xlabel('X')
ylabel('Y')
title('Bar diagram')

subplot(3,1,3);
plot(x,y);   %creates a 2-D line plot of the data in Y versus the corresponding values in X.
xlabel('X')
ylabel('Y')
title('Plot diagram')
```



## 2. Familiarization with MATLAB environment.
### a) Create a matrix, A of size 3*4.

```
>> A=[1 2 3 4
5 6 7 8
9 10 11 12]

A =

    1    2    3    4
    5    6    7    8
    9   10   11   12
```

**b) Create another matrix, B of size 4*3.**

\>\> B=[1 2 3
4 5 6
7 8 9
10 11 12]

B =

```
 1   2   3
 4   5   6
 7   8   9
10  11  12
```

**c) Add Matrix A and B. Subtract A from B.**

\>\> C=A+B

Error using  -+
Matrix dimensions must agree.

\>\> D=A-B
Error using  -
Matrix dimensions must agree.

**d) Multiply A and B. Multiply B And 4 [Errors Feason ?]**

\>\> E=A*B

E =

```
 70   80   90
158  184  210
246  288  330
```

F=B*A

F =

```
 38   44   50   56
 83   98  113  128
128  152  176  200
173  206  239  272
```

**e) Transpose matrix A and B. Multiply the transposed matrices.**

>> AT=A'

AT =

```
    1    5    9
    2    6   10
    3    7   11
    4    8   12
```

>> BT=B'

BT =

```
    1    4    7   10
    2    5    8   11
    3    6    9   12
```

>> G=AT*BT

G =

```
    38    83   128   173
    44    98   152   206
    50   113   176   239
    56   128   200   272
```

## Conclusion:

Thus, we familiarized with the above MATLAB commands and viewed the results of these commands in MATLAB.