Practice Signals and Systems lesson 1
Introduce the course regulations and get acquainted with Matlab

Name: Hứa Phương Nam
Class: K14-AIR
SIS ID: 20010745

1. Objectives

- Introduce the practical implementation plan for the course.
- Specify regulations and requirements for students.
- Provide students with fundamental knowledge of MATLAB, acquainting them with basic commands and operations in MATLAB.

2. Content

2.1. Work plan for the course:

- The first 8 lessons consist of 8 practical exercises.
- 9
th lesson Final Exam on MATLAB.
- Grade announcement. Review of the conditions for the final exam.

2.2. Regulations and Requirements:

Attendance: Attend 100% of the lessons. Absences or leaves of any form are not acceptable. In cases of unavoidable absence, students must provide evidence and submit a written request to the department leadership for approval. Approved cases may be allowed to make up for missed practical lessons.

- Students are required to register their seating positions corresponding to the computer workstation in the laboratory and take responsibility for that computer during the practical sessions, even if they are using their personal laptops.

- Students are required to submit practical reports (PR) on Canvas after each lesson. Utilize the provided template and name the report according to the specified guidelines. The deadline for submission is 2-3 days. This is a mandatory requirement for participation in the subsequent practical sessions**.**

2.3. Getting Acquainted with MATLAB

Use slide Lam quen voi Matlab.ppt
+ Introduction to MATLAB
+ Install Matlab, toolbox signal processing, ...
+ commands: clear; clc; close; save, load, ..
+ work with file.m
+ work with matrix: Create a row vector, column vector, n×n matrix, using the commands linspace, logspace, length.....

+ Convert polar coordinates, Descartes, work with complex numbers...
+ Generate sine signals with different phases.

Ex1: Working with vectors/matrices

- Create a vector consisting of 100 evenly spaced values in the range from 50 to 500.
- Create a vector with evenly spaced values in the range from 50 to 500 with a step of 15. Find the number of elements in the vector.
- Create two arbitrary vectors, x and y, each with 100 elements. Perform addition, subtraction, multiplication, and division operations with these two vectors

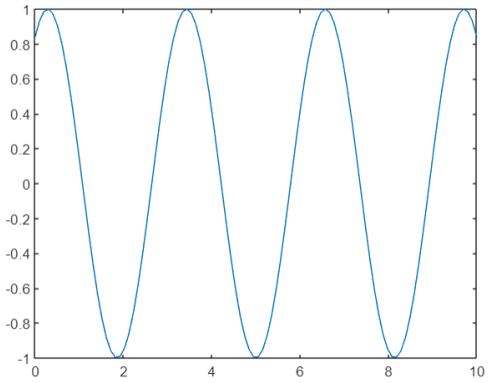
```
%clc % clear %closed all
%Bài 1
%a
a=50:100:500 ;
%b
b= 50:15:500 ;
c=numel(b)  ;
disp(c)
%c
d=1:1:100
e=2:2:200
f=d.*e
```

Ex2: Let's create two complex numbers x and y. Find the values of real part, imaginary part, magnitude, angle, phase, complex conjugate, product of x and y. Use the cart2pol and pol2cart commands to convert between coordinate systems.

```
%Bài 2
x=5+6i
y=7+8i
real(x)
imag(x)
abs(x)
angle(x)
conj(x)
real(y)
imag(y)
abs(y)
angle(y)
conj(y)
d=x.*y
x = 1 + 2i;
y = 3 + 4i;
r = real(x);
theta = real(y);
[r, theta] = cart2pol(r, theta);
```

Ex3: Get familiar with common functions: sin, cos, tan, asin, acos, atan, exp (get the power of e), log (natural logarithm), log10 (base 10 logarithm), sqrt (square root), abs (absolute value).
Create a continuous time signal of sinusoidal form $x(t) = A\sin(\omega t+\varphi)$ with $0 \leq t \leq 10$. In which, A is the month of birth, ω = integer part of year of birth divided by month of birth, φ = date of birth .

```
A=1
omega=2
phi =1
t = linspace(0, 10, 100)
x = A * sin(omega * t + phi)
plot(t, x);
```



Ex4: Create a signal with random values with $0 \leq t \leq 100$. Use the rand() function.

```
t=0:0.1:100;
sig=rand(1,length(t))
plot(t,sig)
```