MATLAB–

MATLAB® is a high-performance language for technical computing. It integrates computation, visualization, and programming in an easy-to-use environment where problems and solutions are expressed in familiar mathematical notation. MATLAB® features a family of application-specific solutions called toolboxes. The course will provide a hands-on learning experience in the basic as well as advance operation and utilization of MATLAB and Simulink to solve many technical computing problems in a fraction of the time it would take to write a program in scalar non-interactive language such as C or FORTRAN.

COURSE CONTENTS – 4 Weeks

Sr. No.	Topic	Duration
1.	**An Introduction to MATLAB**	**Week-1**
	• Matlab environment • Matlab data types, file types • Metric types and operation • Matlab coding practice • Matlab application area and industrial demand	
2.	**Object oriented programming in MATLAB** • Loops and conditional statements	**Week-1**
3.	**MATLAB Graphics-Image Processing**	**Week-2**

	• Introduction to Image types
	• Segmentation
	• Image Transforms
	• Morphology
	• Reconstruction
	• Vision analysis
	• Convolution and Correlation
	• Biomedical Imaging
	Mini projects
	    • Color tracking
	    • Gesture recognition
	    • Matlab gaming
	    • Graphical user interfaces
	    • Motion tracking
	    • Object recognition	

4.	**Matlab hardware interface-Arduino and Resberry-pi** Led, GUI Display, Relay, Motor, Sensor interfaces	**Week-3**
5.	**Digital Signal Processing**	**Week-3**

	• Audio signal processing
	• Designing of filters
	Mini projects
	    • Voice recognition
	    • Voice morphology	

6.	**Introduction to AI and automation**	**Week-4**

	• Concept of gesture & templates
	• Fuzzy logic
	• Artificial Neural network
	Mini project
	    • Face detection
	    • Fuzzy based Object length prediction
	    • Web based monitoring & Control	

	• Android application interface on matlab • Website design and sensor data upload	
7.	**MATLAB Simulink training** - Rectifier simulation - Power converter design - Arduino Simulink interface	
8.	**Project work based on list of recent IEEE project**	**Week-6**