

Contents

Module-1

Six Week Summer Training program – Embedded C and Microcontroller

Weeks	Training Content Description	Duration
Week-1	Day-1 → Introduction and Orientation	3 Hours
	Day-2 → Introduction to Microcontroller	3 Hours
	Day-3 → Microcontroller Kit assembling	3 Hours
	Day-4 → Introduction to Embedded System and C-Language	3 Hours
	Day-5 → Microcontroller Reset Circuit and Power Supply	3 Hours
Week-2	Day-1 → My First Program in Embedded-C (LED Blink)	3 Hours
	Day-2 → Loops – If-Else, While and For loops	3 Hours
	Day-3 → Introduction to Timers and Delays	3 Hours
	Day-4 → Introduction to Arrays and Programming	3 Hours
	Day-5 → Introduction to Functions and Programming	3 Hours
Week-3	Day-1 → Introduction to LCD and Interfacing	3 Hours
	Day-2 → LCD Interfacing and Character Display	3 Hours
	Day-3 → Doubt Clearing Session	3 Hours
	Day-4 → ASCII Code and LCD	3 Hours
	Day-5 → LCD and Timer Application	3 Hours
Week-4	Day-1 → Digital Clock Programming on LCD	3 Hours
	Day-2 → Transistor Interfacing with Microcontroller	3 Hours
	Day-3 → Relay Interfacing with Microcontroller	3 Hours
	Day-4 → Switch Interfacing with Microcontroller	3 Hours
	Day-5 → External Interrupts and programming	3 Hours
Week-5	Day-1 → Application of external interrupts	3 Hours
	Day-2 → Transistor, Switch, LED and interrupts Together	3 Hours
	Day-3 → RS-232 Communication and Connection	3 Hours
	Day-4 → RS-232 Communication (Programming)	3 Hours
	Day-5 → Introduction to PWM	3 Hours
Week-6	Day-1 → Introduction to PWM	3 Hours
	Day-2 → PWM Programming	3 Hours
	Day-3 → Recap of the Training	3 Hours
	Day-4 → Doubt Clearing Session	3 Hours
	Day-5 → Viva Questions and Certificate Distribution	3 Hours

Module-2

Six Week Summer Training on Standardization Services – ISO/NABL and Calibration

Weeks	Training Content Description	Duration
Week-1	Day-1 → Introduction and Orientation	3 Hours
	Day-2 → Introduction to Calibration and Testing	3 Hours
	Day-3 → NABL	3 Hours
	Day-4 → BIS	3 Hours
	Day-5 → ISO Standards	3 Hours
Week-2	Day-1 → Calibration Report Understanding	3 Hours
	Day-2 → Calibration Standards	3 Hours
	Day-3 → Statistical Error Analysis	3 Hours
	Day-4 → True Value and Real Value	3 Hours
	Day-5 → Good Lab Practices	3 Hours
Week-3	Day-1 → Temperature Measurement	3 Hours
	Day-2 → Temperature Standards	3 Hours
	Day-3 → Temperature Calibration	3 Hours
	Day-4 → Calibration Reports, Errors and Analysis	3 Hours
	Day-5 → Case Study	3 Hours
Week-4	Day-1 → Pressure Measurement	3 Hours
	Day-2 → Pressure Standards	3 Hours
	Day-3 → Pressure Calibration	3 Hours
	Day-4 → Calibration Reports, Errors and Analysis	3 Hours
	Day-5 → Case Study	3 Hours
Week-4	Day-1 → Weights Measurement	3 Hours
	Day-2 → Weight Standards	3 Hours
	Day-3 → Weight Calibration	3 Hours
	Day-4 → Calibration Reports, Errors and Analysis	3 Hours
	Day-5 → Case Study	3 Hours
Week-6	Day-1 → Electrical Parameters Calibration	3 Hours
	Day-2 → Dimensional Calibration and Metrology	3 Hours
	Day-3 → Humidity Calibration	3 Hours
	Day-4 → Mechanical Calibrations	3 Hours
	Day-5 → Case study	3 Hours

Module-3

Six Week Summer Training → Product Development (Temperature/Level Control System)

Weeks	Training Content Description	Duration
Week-1	Day-1 → Introduction and Orientation	3 Hours
	Day-2 → Introduction to Different Control Systems	3 Hours
	Day-3 → Introduction to Feed Back	3 Hours
	Day-4 → Temperature/Level Measurement	3 Hours
	Day-5 → Case Study	3 Hours
Week-2	Day-1 → Introduction to Microcontroller and Embedded C	3 Hours
	Day-2 → Basic Programming with Microcontroller	3 Hours
	Day-3 → LED Introduction and Testing	3 Hours
	Day-4 → PCB Introduction and Assembling	3 Hours
	Day-5 → Power Supply and Testing	3 Hours
Week-3	Day-1 → My First Microcontroller Program	3 Hours
	Day-2 → ADC Introduction and Interfacing	3 Hours
	Day-3 → ADC Interfacing and Testing	3 Hours
	Day-4 → ADC Interfacing and Testing	3 Hours
	Day-5 → Temperature/Level Sensor Interfacing	3 Hours
Week-4	Day-1 → LCD Introduction	3 Hours
	Day-2 → LCD Interfacing	3 Hours
	Day-3 → Strings Manipulation using LCD ad Microcontroller	3 Hours
	Day-4 → Temperature Display using LCD and Microcontroller	3 Hours
	Day-5 → Transistor/Switch Introduction	3 Hours
Week-5	Day-1 → Transistor/Switch Interfacing	3 Hours
	Day-2 → Relay Introduction ad Interfacing	3 Hours
	Day-3 → Algorithm Development	3 Hours
	Day-4 → Algorithm Development	3 Hours
	Day-5 → Algorithm Development	3 Hours
Week-6	Day-1 → Algorithm Testing	3 Hours
	Day-2 → Control Results Analysis and Correction	3 Hours
	Day-3 → Control Results Analysis and Correction	3 Hours
	Day-4 → Error Analysis	3 Hours
	Day-5 → Results and Conclusion	3 Hours

Module-4

Six Week Summer Training on C/C++ Language

Weeks	Training Content Description	Duration
Week-1	Day-1 → Introduction and Orientation	3 Hours
	Day-2 → Introduction to Data Types	3 Hours
	Day-3 → Output Print Formats	3 Hours
	Day-4 → My First Program in C	3 Hours
	Day-5 → For Loop	3 Hours
Week-2	Day-1 → If-Else Loop	3 Hours
	Day-2 → Do-While and While Loop	3 Hours
	Day-3 → Switch Statements	3 Hours
	Day-4 → Concept of Arrays	3 Hours
	Day-5 → String and String Array	3 Hours
Week-3	Day-1 → Number Systems	3 Hours
	Day-2 → Byte Updation and Preservation Programming	3 Hours
	Day-3 → Bits and Bytes	3 Hours
	Day-4 → Introduction to Functions	3 Hours
	Day-5 → Functions Programming	3 Hours
Week-4	Day-1 → Logical AND/OR/Ex-OR Programming	3 Hours
	Day-2 → Shift/Rotate Programming	3 Hours
	Day-3 → BIOS Commands	3 Hours
	Day-4 → Disk Input/output	3 Hours
	Day-5 → Type Casting	3 Hours
Week-5	Day-1 → Memory Concept	3 Hours
	Day-2 → Pointers	3 Hours
	Day-3 → Structures and Unions	3 Hours
	Day-4 → Doubt Clearing Session	3 Hours
	Day-5 → Doubt Clearing Session ad Certificate Distribution	3 Hours
Week-6	Day-1 → Concept of OOPS	3 Hours
	Day-2 → OOPS Programming	3 Hours
	Day-3 → More on OOPS	3 Hours
	Day-4 → Doubt Clearing Session	3 Hours
	Day-5 → Doubt Clearing Session ad Certificate Distribution	3 Hours

Module-5

Six Week Summer Training on Matlab based projects (DSP, Image Processing)

Weeks	Training Content Description	Duration
Week-1	Day-1 → Introduction and Orientation	3 Hours
	Day-2 → Introduction to Matlab and Data Types and Arrays	3 Hours
	Day-3 → Working with Signal and their Properties, Generation and Plotting-	3 Hours
	Day-4 → Signal Pole-Zero Analysis	3 Hours
	Day-5 → Signal Analysis using Filters (Low pass, High pass, Band pass, Stop band, FIR and IIR etc.)	3 Hours
Week-2	Day-1 → Signal Analysis using Wavelet Decomposition/Transform	3 Hours
	Day-2 → Signal Analysis using Fourier Transform (FFT)	3 Hours
	Day-3 → Signal Analysis using Discrete Cosine Transform (DCT)	3 Hours
	Day-4 → Statistical Analysis of Signal	3 Hours
	Day-5 → Convolution and De-convolution of Signal	3 Hours
Week-3	Day-1 → Basic Image Processing Concepts, Image Formats, Image Read and Show	3 Hours
	Day-2 → Image Enhancement and Thresholding Techniques	3 Hours
	Day-3 → Morphological Operations	3 Hours
	Day-4 → Edge Detection Algorithms	3 Hours
	Day-5 → Image Transforms – Discrete Wavelet Transform (DWT)	3 Hours
Week-4	Day-1 → Image Transforms – Fast Fourier Transform (FFT)	3 Hours
	Day-2 → Image Transforms – Discrete Cosine Transform (DCT)	3 Hours
	Day-3 → Image Segmentation – K-Means Clustering	3 Hours
	Day-4 → Image Segmentation – Pixel Neighborhood Technique	3 Hours
	Day-5 → Image Segmentation – Watershed Algorithm	3 Hours
Week-5	Day-1 → Image Segmentation – Other Techniques	3 Hours
	Day-2 → Pattern and Texture Analysis	3 Hours
	Day-3 → Disk File Handling and Formatting	3 Hours
	Day-4 → Interpolation and Extrapolation	3 Hours
	Day-5 → Best Fit Plotting – Curve Fitting	3 Hours
Week-6	Day-1 → Classifiers – SVM	3 Hours
	Day-2 → Classifier - ANN	3 Hours
	Day-3 → Fuzzy Logic System	3 Hours
	Day-4 → Recap and Doubt Clearing Session and General Interaction	3 Hours
	Day-5 → Common Interaction and Certificate Distribution	3 Hours