iESR™

i3indya Embedded Systems & Robotics

i3indya™Technologies

®

Innovation • Intelligence • Information

One of the FAVORITE PLACE

of Engineers/Professionals..!

i3indya Embedded Systems & Robotics

Course	:	i3indya Embedded Systems & Robotics (iESR)
Certification	:	Participation Certificate by i3indya™ Technologies
Study Material	:	Books & CD Free to each participant
Robotics Toolkit	:	Free to Each Participant Projects: 27 Projects Covered in 30 Days

FEES & DURATION

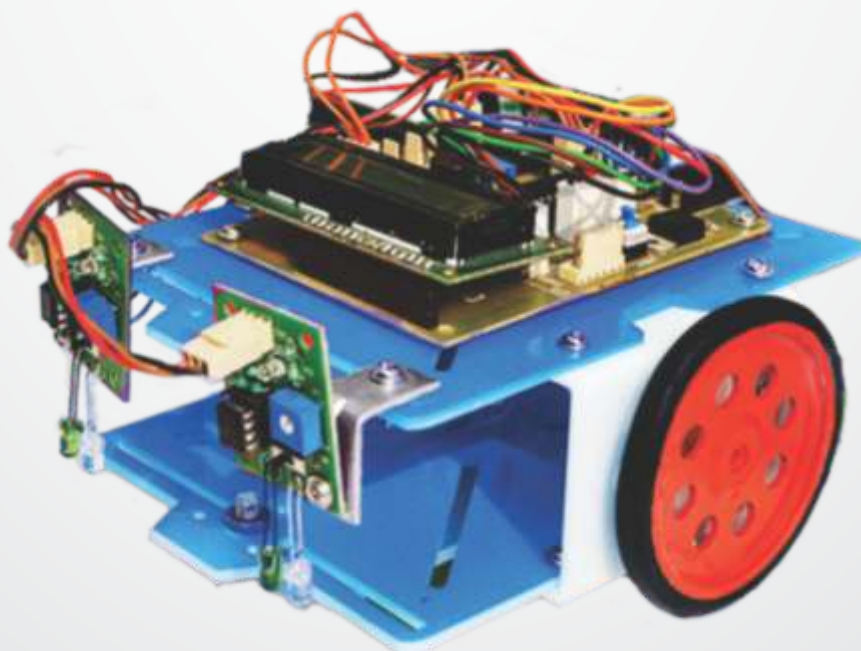### BASIC + ADVANCE COURSE

Fees: Rs.**10,900**/- + Taxes i.e Rs. **11990/-** (including taxes) per candidate

Duration: 30 Days/90 hrs

BASIC COURSE

Fees: Rs. **7,900/-** + Taxes i.e. **Rs. 8685/-** (including taxes) per candidate

Duration: 15 Days/45 hrs

TOPICS TO BE COVERED

BASIC MODULE

DAY	TOPICS	TIMING
1	Introduction to i3indya & Robotics Introduction to Embedded System AVR Series Micro-Controllers & ATMEGA 16 Drivers & Software Installation	3 hours
2	LED Interfacing with ATMEGA 16 – Theory **Practical 1**: Glowing LEDs in a pattern of your choice **Seven Segment Displays – Theory** **Practical 2**: Displaying Digits on Seven Segment Displays **LED Matrix – Theory** **Practical 3**: Generating Patterns on LED Matrix **Practical 4**: Display Alphabets on LED Matrix	3 hours
3	LCD Interfacing with ATMEGA 16 – Theory **Practical 5**: Displaying Text on LCD	3 hours
4	LCD Interfacing Continued.. **Practical 6**: Scrolling Text on LCD **Practical 7**: Creating Simple Animation on LCD **Project 1**: Digital Clock	3 hours
5	DC Motor Interfacing with ATMEGA 16 – Theory L293D IC & Its Need - Theory **Practical 8**: Learning Interfacing of Motor with LEDs & LCD **Practical 9**: Controlling Direction of Rotation of a Motor **Stepper Motor Interfacing with ATMEGA 16 - Theory** **Practical 10**: Rotation in forward and backward direction **Practical 11**: Controlling speed of stepper motor **Practical 12**: Rotating stepper motor at given angle/distance	3 hours

DAY	TOPICS	TIMING
6	Working of IR Sensors – Theory Digital IR Sensors – Theory **Practical 13**: Detecting White and Black surface with Digital IR Sensors. **Practical 14**: Controlling Motor with Digital IR Sensor. **Practical 15**: Calculating Speed of a moving robot. Introduction to ADC – Theory Analog IR Sensors - Theory **Practical 16**: Measuring Distance of an object using Analog IR Sensors. **Practical 17**: Controlling Motor using Analog IR Sensor.	3 hours
7	**Project 2:** Line Follower Robot **Project 3:** Wall Follower Robot **Project 4:** Tachometer Prototype **Project 5:** Visitor Counting Application Assignment & Revision	3 hours
8	Buzzer interfacing with ATMEGA 16 – Theory **Practical 18:** Generating Beep through Buzzer Interfacing of Temperature Sensor – Theory **Practical 19:** Calibrating Sensor value with Temperature Range **Project 6:** Digital Thermometer **Project 7:** Temperature Controlled Fan **Project 8:** High Temperature Alarm	3 hours
9	Keypad Interfacing with ATMEGA 16 – Theory **Practical 20**: ON\OFF LED\Motor\Buzzer using single key **Linear Keypad - Theory** **Practical 21**: Controlling Motor (ON\OFF, Direction of Rotation) using Linear Keypad **Practical 22**: Writing text on LCD using Linear Keypad **Project 9**: Stop Watch	3 hours
10	Matrix Keypad Interfacing – Theory **Project 10**: Keypad Operated Robot **Project 11**: Mobile Phone Keypad prototype	3 hours

DAY	TOPICS	TIMING
11	Project 12: Password Controlled Application – ATM Prototype **Project 13**: Calculator Assignment & Revision	3 hours
12	PWM – Theory **Practical 23:** Controlling brightness of a LED. Speaker (Monotone) Interfacing with ATMEGA 16 **Practical 24:** Generating different frequencies from Speaker **Practical 25:** Integrating Keypad with Speaker **Practical 26:** Integrating IR Sensor with Speaker **Project 14:** Digital PIANO	3 hours
13	Interfacing RGB LED **Practical 27**: Generating different colours from RGB LED **Practical 28**: Integrating Keypad with RGB LED **Practical 29**: Traffic light prototype using single LED Interfacing LDR Sensor with ATMEGA 16 **Practical 30**: Colour detection using LDR sensor in Analog Mode **Project 15**: Colour Changing Spy Bot using LDR & RGB LED*	3 hours
13	Assignment & Revision	3 hours
14	**Exam – Theory & Practical**	3 hours

ADVANCE MODULE

DAY	TOPICS	TIMING
16	Working of DTMF – Theory Mobile Controlled Applications – Theory **Project 16**: Mobile Controlled Robot	3 hours
17	Working of Relays – Theory Interfacing Relays with ATMEGA 16 – Theory **Practical 31**: ON\OFF Bulb or Fan (100 W) from Microcontroller **Project 17**: Controlling AC Appliances using Keypad **Major Project 1**: Mobile Controlled AC Devices	3 hours
18	Touch Screen Interfacing with ATMEGA 16 – Theory **Practical 32**: Displaying values of Touch Screen points on LCD **Practical 33**: Controlling Motors\LEDs using Touch Screen **Project 18**: Touch Screen Controlled Robot	3 hours
19	RF Module (Wireless Technology) Interfacing **Practical 34**: Testing RF Module using LEDs Major **Project 2**: Remote Controlled Wireless Robot	3 hours
20	USART Protocol – Theory **Practical 35:** Writing on LCD using PC/Laptop keyboard **Project 19:** PC Controlled Robot	3 hours
21	**Major Project 3**: PC Controlled Classroom via RF Module	3 hours
22	Accelerometer Interfacing with ATMEGA 16 **Practical 36:** Displaying values of coordinates in LCD **Project 20:** Wrist control robot	3 hours
23	Major Project 4: Wireless Chat Application between two Users	3 hours

DAY	TOPICS	TIMING
24	External/Internal Interrupts **Practical 37**: Displaying External interrupt on LCD/LED **Practical 38**: Displaying Internal interrupt on LCD/LED **Project 21**: Digital Clock application using Interrupts Using Internal EEPROM of Microcontroller **Practical 39**: Save and load data on internal EEPROM **Project 22**: EEPROM based Password controlled Application **Project 23**: Daily Alarm Clock	3 hours
25	Revision & Problem Solving Session	3 hours
26	**EXAM – Theory & Practical**	3 hours
27	Project Work by Students	3 hours
28	Project Work by Students	3 hours
29	Project Work by Students	3 hours
30	**REPORT SUBMISSION**	
31	**CERTIFICATE DISTRIBUTION**	

ROBOTICS KIT CONTENT

BASIC MODULE KIT CONTENT

Sr. No,	Components Name	Quantity
1	i3indya Development Board ATMEGA16	1
2	Seven Segment Display	1
3	i3indya LED Matrix Board	1
4	16 x 2 LCD	1
5	DC Motor	2
6	i3indya Dual IR Sensor Board	2
7	Temperature Sensor	1
8	i3indya 4 x 4 Keypad Matrix	1
9	RGB LED	1
10	i3indya Chasses	1

Sr. No,	Components Name	Quantity
11	Wheels	2
12	Caster Wheel	1)
13	Screw driver	1
14	Monotone Speaker	1
15	Screws Packet	1
16	Connecting cables i3indya LDR Sensor Board	1
17	Onboard IC ATMEGA16	1
18	Onboard IC L293D	1

ADVANCE MODULE KIT CONTENT

Sr. No,	Components Name	Quantity
1	i3indya DTMF Board	1
2	Touch Screen	1
3	i3indya Max232 Board	1
4	USB to Serial Converter	1
5	Onboard IC MAX232	2
6	Onboard IC MT 8870	1
7	Audio Cable	

OPTIONAL COMPONENTS

Sr. No,	Components Name	Quantity
1	i3indya RF Module with Rx and Tx Boards	
2	Accelerometer	
3	Stepper Motor	
4	Relay Board	

Why Embedded Systems & Robotics Training from i3indya Technologies?

1. **39 Practicals, 23 Minor Projects & 4 Major Projects** will be covered within 30 days of training.

2. Our syllabus is professionally designed to cover **Basic** as well as **Advance** aspects of Embedded Systems & Robotics

3. Each day of our training is well planned to provide you with **Theoretical** as well as **Practical** knowledge of the module.

4. Each day will come up with **New Practicals** & **Projects** which makes the training interesting and exciting.

5. Time to time **Practical Assignments** will be provided to the students, which will help them in doing practice at home.

6. **Revision** Time & **Query Sessions** are provided to the students which help them in clearing previous doubts.

7. **Exam** will be conducted at the end of **Basic** as well as **Advance** module to test the knowledge level of the students.

8. Time for **Project Work** will be provided to the students, in which students will develop a project of their own choice. This will encourage **Innovative Ideas** among students.

Pre-Requisites

1. Basic knowledge of C\C++ Programming.

2. Basics of Electronics.

3. Eagerness to learn new innovative things.

Recommendation

It is strongly recommended to bring your own LAPTOP during the training so that you can easily practice the exercises at home.

Who Could Attend this Training?

➢ Students from B.E/B.Tech/M.Tech/Diploma (ECE/EEE/CSE/IT/MECH) can join this training.

➢ Anyone who have interest in this field and have pre-requisite knowledge.