AALIM MUHAMMED SALEGH COLLEGE OF ENGINEERING

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NAAC Accredited Institution
"Nizara Educational Campus", Muthapudupet, Avadi - IAF, Chennai - 600 055.
ANNA UNIVERSITY COUNSELLING CODE : 1101

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Dated on: 2/8/2020

CIRCULAR

FACULTY MEMBERS AND STUDENTS

We have planned to conduct online Value Added course in our department on the topic "EMBEDDED SYSTEM DESIGN USING RASPERRY PI" an Alumni Guest Lecture Series from 3/8/2020 to 7/8/2020 therefore I request all the Faculty members and students to attend the course and make utilization of the course for your future.

Resource Person:

Er. MUHAMMED ILYAS B.E., M.E.,
CEO, IT EXPERT TRAINING
9884648010
AMSCE ALUMNUS
CHENNAI
TAMILNADU

2/8/20

By
Prof. Dr. A.S.SALMA BANU
HoD/ECE

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EMBEDDED SYSTEM DESIGN USING RASPERRY PI

We provide professional courses from 3/8/2020 - 7/8/2020

RESOURCE PERSON:
Er. Muhammed Ilyas
CEO, Expert Training,
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as.salmabanu@aalimec.ac.in.

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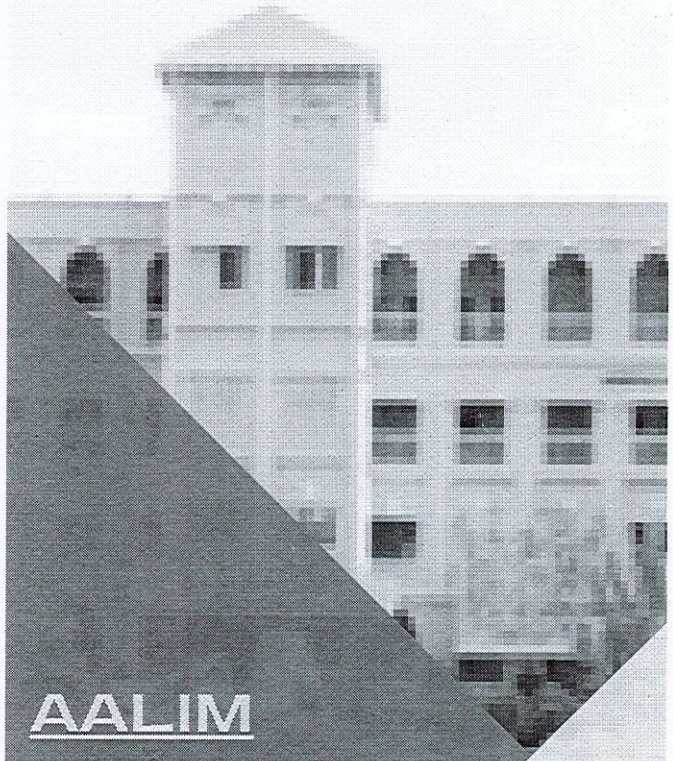

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Alhaj. S. Segu Jamaludeen
Secretary & Correspondent

Prof. Dr. S. SATHISH
PRINCIPAL

Prof. Dr. A.S.Salma Banu
Head/ ECE

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DEPARTMENT OF ELECTRONICS &COMMUNICATION ENGINEERING

VALUE-ADDED COURSE-SUMMARY REPORT

COURSE NAME: EMBEDDED SYSTEM DESIGN USING RASPERRY PI

Date: 03/08/2020 to 07/08/2020
Time: Morning Session: 9.30 am to 12.30 pm
Afternoon Session: 1.30 pm & 4:30 pm
No. of Days: 5
No. of Modules: 5
Course Hours: 30
Mode of Conduction: Online
Speaker: Er.MUHAMMED ILYAS
Attended Students: 66

Objective of the Course:

- The **"Embedded System Design Using Raspberry Pi"** course aims to provide participants with a comprehensive understanding of embedded system design using the Raspberry Pi platform. By the end of the course, participants will be proficient in setting up and configuring Raspberry Pi, interfacing with sensors and actuators, creating user interfaces, and integrating communication protocols and IoT technologies.
- The course combines theoretical knowledge with practical hands-on experience to equip participants with the skills needed to design and implement robust embedded systems.

Summary of the course:

- This course covers fundamental and advanced topics in embedded system design using Raspberry Pi. It starts with an introduction to the Raspberry Pi platform, including setup and basic GPIO programming.
- Participants will learn to interface with various sensors and actuators and create user interfaces using different display technologies.
- The course also covers essential communication protocols such as UART, SPI, and I2C, and introduces IoT integration with MQTT. Advanced topics include PWM control and optimization techniques. Each day includes practical, hands-on labs to reinforce theoretical concepts and ensure participants gain practical experience.

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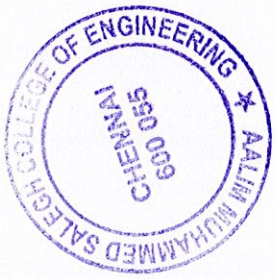
Course Outcomes:

By the end of the course, participants will be able to:

1. **Understand Raspberry Pi Hardware and Software:**
   - Identify and describe the components and features of various Raspberry Pi models.
   - Install and configure the Raspberry Pi OS and set up a development environment.
2. **Program GPIO Pins:**
   - Utilize GPIO libraries (RPi.GPIO, gpiozero) to control digital inputs and outputs.
   - Implement basic digital signal handling, including debouncing and using pull-up/pull-down resistors.
3. **Interface with Sensors and Actuators:**
   - Connect and read data from common sensors such as temperature and humidity sensors.
   - Control actuators like LEDs, motors, and relays through Python programming.
4. **Develop User Interfaces:**
   - Interface various types of displays (LCD, OLED) with Raspberry Pi.
   - Create and manage simple graphical user interfaces (GUIs) using Tkinter for displaying data and controlling GPIO.



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COLLEGE OF ENGINEERING
AVADI - IAF, MUTHAPUDUPET
CHENNAI 600 055

Place: Chennai
Date: 27 /07/2020

From,

Head of the Department
Department of ECE
Aalim Muhammed Salegh College of Engineering
Avadi IAF, Muthapudupet
Chennai - 600055

To,

The Principal
Aalim Muhammed Salegh College of Engineering
Avadi IAF, Muthapudupet
Chennai - 600055

Respected Sir,

Sub: Requisition for the approval to conduct online Value Added course in our ECE department – Reg.

We wish to conduct Value Added course in our ECE department on the topic "EMBEDDED SYSTEMS DESIGN USING RASBERRY PI" an Alumni Guest Lecture Series From 03/08/2020 to 07/08/2020.

Resource Person:
Er. MUHAMMED ILYAS B.E, M.E.,
AMSCE ALUMNUS
BATCH 2008 – 2012(ECE)
CEO, EXPERT IT TRAINING

The objective of conducting this Value Added course will give the industry focus in developing skills required by using latest technology advancement in "EMBEDDED SYSTEMS DESIGN USING RASBERRY PI". This effort will benefit our Student's community and bring core strength in engineering field.

Thank you,

Yours truly,

27/07/20

Professor Dr. A. S. SALMABANU
Head of the Department/ECE

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27.7.2020
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DEPARTMENT OF ELECTRONICS &COMMUNICATION ENGINEERING

CERTIFICATE COURSE-EMBEDDED SYSTEM DESIGN USING RASPERRY PI

Academic Year: (2020-2021)

COURSE CONTENT:

Module No.	CONTENT	DURATION(Hrs)

Module 1	**Introduction to Raspberry Pi and Setup**
	• **Introduction to Raspberry Pi:**
	  ◦ Overview of Raspberry Pi models and specifications
	  ◦ Applications and use cases in embedded systems
	• **Hardware and Software Setup:**
	  ◦ Setting up the Raspberry Pi (installation of Raspbian OS)
	  ◦ Basic hardware connections (keyboard, mouse, monitor, and power supply)
	  ◦ Configuring network settings and updating the system
	• **Basic Commands and Programming:**
	  ◦ Introduction to the Raspberry Pi terminal and command line
	  ◦ Basic Linux commands and file management
	  ◦ Introduction to Python programming on
		6

Module 2	**GPIO and Interfacing with Sensors**
	• **GPIO Basics:**
	  ◦ Understanding GPIO pins and their functions
	  ◦ Configuring GPIO pins as input or output
	  ◦ Using libraries for GPIO control (e.g., RPi.GPIO, gpiozero)
	• **Interfacing Sensors:**
	  ◦ Connecting and reading data from sensors (e.g., temperature sensors, motion sensors)
	  ◦ Using analog-to-digital converters (ADCs) if required
	  ◦ Writing Python scripts to read sensor data and process it.
		6

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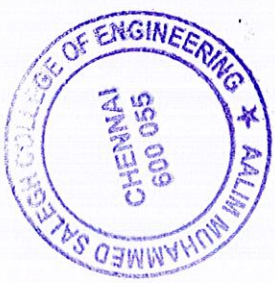
Module 3	**Display and User Interface**
	• **Display Interfaces:**
	  • Connecting and using different types of displays (e.g., LCD, OLED)
	  • Displaying text and graphics using libraries (e.g., Adafruit libraries, Pygame)
	• **Creating User Interfaces:**
	  • Introduction to GUI libraries for Python (e.g., Tkinter, PyQt)
	  • Designing simple user interfaces for controlling Raspberry Pi applications
	  • Handling user inputs and interactions.
		6

Module 4	**Communication Protocols and IoT Integration**
	• **Communication Protocols:**
	  • Overview of common protocols (I2C, SPI, UART)
	  • Implementing communication between Raspberry Pi and external devices
	• **IoT Integration:**
	  • Introduction to Internet of Things (IoT) concepts
	  • Connecting Raspberry Pi to the internet and cloud services
	  • Using MQTT for communication between devices
	  • Example applications (e.g., remote monitoring, data logging)
		6

Module 5	**Advanced Topics and Review**
	• **Advanced Topics:**
	  • Overview of additional Raspberry Pi features (e.g., camera module, GPIO expansion)
	  • Power management and designing energy-efficient systems
	• **Troubleshooting and Optimization**
	  • Common Issues and Troubleshooting Techniques
	  • Optimizing Python Code for Performance.
		6

TOTAL: 30 Hrs



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Value Added Course Tentative Time Table And Schedule

Value Added Course Name: EMBEEDED SYSTEM DESIGN USING RASBERRY PI
Date of Commencement: From 03/08/2020
Timing: Morning Session: 9.30 am to 12.30 pm
Afternoon Session: 1.30 pm & 4:30 pm
Tentative Date of Exam- 07/08/2020
Tentative Course Schedule - 03/08/2020 to 07/08/2020 (As per following)
No. Of Days: 5
Course Hours: 30
Speaker: Mr. Er.Muhammed Ilyas

1. Module -1:Introduction to Raspberry Pi & Setup– 03-08-2020 – 6 Hours
2. Module -2:GPIO & Interfacing with Sensors– 04-08-2020 – 6 Hours
3. Module -3:Display & User Interface– 05-08-2020 – 6 Hours
4. Module -4:Communication Protocols & IOT Integration– 06-08-2020 – 6 Hours
5. Module -5:Advanced Topics & Review – 07-08-2020 – 6 Hours

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Department of Electronics and Communication Engineering

VALUE ADDED COURSE _EMBEDDED SYSTEM DESIGN USING RASPERRY PI

Year : IV **Sem : VIII** **Sec : A**

S.NO	REG.NO	NAME OF THE STUDENT	3/8/20	4/8/20	5/8/20	6/8/20	7/8/20
1	110117106001	ABDUL ARSATH.S	/	/	/	/	/
2	110117106002	ABDUL MALICK	/	/	/	/	/
3	110117106004	ABDUR RAHMAN B	/	/	/	a	/
4	110117106005	ABDUR RAQUIB N	/	/	/	a	/
5	110117106006	ABUL KALAM.H.	/	a	/	/	/
6	110117106007	APARNA M	/	/	/	/	/
7	110117106008	ASHANI.R	/	/	a	/	a
8	110117106009	BHARATH.V	/	/	a	/	/
9	110117106010	DINESH.P	/	/	/	a	/
10	110117106011	FAHIMA BEGAM M	/	/	/	/	/
11	110117106012	FARIHA PARVEEN S A	/	/	a	/	/
12	110117106013	FARITHA.J	/	/	/	/	/
13	110117106014	FATHIMA R	/	/	/	/	/
14	110117106017	HASSAN FOUZAN.M.	/	/	/	/	/
15	110117106018	IRBAZ AHMED R	/	a	/	/	/
16	110117106019	JABEEN	/	/	a	/	a
17	110117106020	KARTHIKEYAN. A	/	/	/	/	/
18	110117106021	LOKESH.N	/	a	/	/	/
19	110117106022	MANOJ.L	/	/	a	/	/
20	110117106023	MD SHOAIBSHARIEF.F.	/	a	/	/	/
21	110117106024	MISBA FATHIMA.A.	/	/	/	/	/
22	110117106026	MOHAMED IMRAN.M.A	/	/	/	a	/
23	110117106027	MOHAMED ISHAK M	/	/	a	/	/
24	110117106028	MOHAMMED ISMAIL MIHAL	/	/	/	/	/
25	110117106029	MOHAMMED SAFVAN A V	/	/	/	a	/
26	110117106030	MOHAMED SALMAN.S	/	/	/	a	/
27	110117106031	MOHAMED SAMEER H	/	/	/	/	a
28	110117106032	MOHAMED SUHAIL.B	/	/	/	/	/
29	110117106033	MOHAMED UVAIZ.N	/	/	/	/	/
30	110117106301	ASHICK AHAMED.M	/	/	/	/	/
31	110117106302	MOHAMED ASARDEEN M.G	/	a	/	/	/

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Department of Electronics and Communication Engineering
VALUE ADDED COURSE _EMBEDDED SYSTEM DESIGN USING RASPERRY PI

S.NO	REG.NO	NAME OF THE STUDENT	3/8/20	4/8/20	5/8/20	6/8/20	7/8/20
1	110118106013	KREETHIKA V	/	/	/	/	/
2	110118106015	MOHAMED FARDEEN S	/	/	/	/	/
3	110118106021	MOHAMMED JUNAID A	/	/	/	a	/
4	110118106026	SATHYA PRIYA S	/	/	/	a	/
5	110118106303	FARHAN MOHAMMED B	/	a	/	/	/

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Year : IV Sem : VIII Sec : B

S.NO	REG.NO	NAME OF THE STUDENT	3/8/20	4/8/20	5/8/20	6/8/20	7/8/20
1	110117106034	MOHAMED YOUSUF.A.	✓	✓	✓	✓	✓
2	110117106036	MOHAMMED ATHEEFALI.S	✓	✓	✓	✓	✓
3	110117106037	MOHAMMED FAZIL J	✓	✓	✓	✓	✓
4	110117106038	MOHAMMED ITHNAN A U	✓	✓	✓	✓	✓
5	110117106039	MOHAMMED RAGHADAN	✓	✓	✓	✓	a
6	110117106040	MOHAMMED SIRAJUDEEN.J	✓	✓	✓	✓	a
7	110117106041	MOHAMMED SUHAIL R	✓	✓	✓	a	✓
8	110117106043	MOHAMMED WASIM M S	✓	✓	✓	✓	✓
9	110117106044	MUSTHAQ N K	✓	✓	✓	a	✓
10	110117106045	NANDHINI R	✓	✓	✓	✓	✓
11	110117106046	NOORULLAH I	✓	✓	✓	✓	✓
12	110117106047	RAGAVENDRAN.M	✓	✓	✓	✓	✓
13	110117106048	RASHEED THARIQ.M	✓	✓	✓	✓	✓
14	110117106049	RIYAZ MOHAMMED.M	✓	✓	✓	✓	✓
15	110117106050	SABIHA TABASSUM S	✓	✓	✓	a	✓
16	110117106051	SHAHID HUSSAIN.N	✓	✓	a	✓	✓
17	110117106052	SHAIF MOHAMMED ISHOQ S	✓	✓	✓	✓	✓
18	110117106053	SHAIK MUHAMMED HEDAYATHULLAH	✓	✓	✓	a	✓
19	110117106054	SHEIK MOHAMED RIYAZ S	✓	✓	✓	✓	✓
20	110117106055	SHOAIB AKTHAR SHARIFF.A.	✓	✓	✓	✓	✓
21	110117106056	SOWMYA.R.	✓	✓	a	✓	✓
22	110117106057	SUHAIL AHMAD NOOR A	✓	✓	✓	✓	✓
23	110117106058	SUMIYA BANU.A.	✓	✓	✓	✓	✓
24	110117106060	TAMEEM MUJAHID	✓	✓	✓	✓	✓
25	110117106061	TASNEEM FATHIMA.K	✓	✓	✓	a	✓
26	110117106062	THOWFIC AHAMED.M.	✓	✓	✓	✓	✓
27	110117106063	YAASMEEN I	✓	✓	✓	a	✓
28	110117106064	YOGESWARI.G	✓	✓	✓	✓	✓
29	110117106303	MUNAVAR BASHA.M	✓	✓	✓	✓	✓
30	110117106304	S.UMA DEVI	✓	✓	✓	✓	✓

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This certificate is presented to:

MOHAMED YOUSUF A

has Successfully Completed 5 days of Online Value Added Course in "EMBEDDED SYSTEM DESIGN USING RASPBERRY PI" From 03/08/2020 to 07/08/2020.We appreciate your hard work & sincerity towards your course and wish you good luck for your future endeavor.

Muhammad Ilyas

Speaker

CEO & Founder

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C-ID 2010622

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OF PARTICIPATION

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MOHAMMED ATHEEFALI S

has Successfully Completed 5 days of Online Value Added Course in "EMBEDDED SYSTEM DESIGN USING RASPBERRY PI" From 03/08/2020 to 07/08/2020.We appreciate your hard work & sincerity towards your course and wish you good luck for your future endeavor.

Speaker

CEO & Founder

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OFPARTICIPATION

This certificate is presented to:

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hasSuccessfullyCompleted5daysofOnlineValueAddedCoursein "EMBEDDEDSYSTEMDESIGNUSINGRASPBERRYPI"From03/08/2020to /08/2020.Weappreciateyourhardwork&sinceritytowardsyourcourse and wish you good luck for your future endeavor.

Muhammad Ilyas

Speaker

Rajesh Kushwaha

CEO & Founder

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MOHAMMED RAGHADAN

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Muhammad Ilyas

Speaker

Rajesh Kushwaha

CEO & Founder

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Speaker

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