RAAK

COLLEGE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)

From

01/08/2018

Mr.B.Murugan

Senior Assistant professor/EEE

RAAK College of Engineering and Technology

Puducherry -110

To

The Principal

RAAK College of Engineering and Technology

Puducherry -110

Respected Sir,

Sub: Requisition for Approval to Conduct Skill Development program / Value added Course on **"18EE01-Embedded C for Electrical Engineering -"** — reg.

This is to bring to your kind notice that the Skill Development Team is planning to conduct a Program on "18EE01-Embedded C for Electrical Engineering" for all the second Year Electrical & Electronics Engineering students from 09-08-18 to 14-08-2018.

The main focus of this program is to provide a better exposure to our students on Embedded C for Electrical Engineering.

The syllabus and course plan structured are not listed in the Pondicherry University Curriculum and the same have been verified and approved by the Principal/HoD/Professors and Skill development team.

Hence, I kindly request you to approve event planned. The details and the necessary proofs are attached with this letter.

Thanking you,

Yours faithfully,

Mr.B.Murugan

SAP/EEE DEPT

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
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RAAKCET/PRINCIPAL/CIR/AUG2018 **02/08/2018**

CIRCULAR

This is to inform that the Skill Development Team is planning to conduct a value added course on **"18EE01-Embedded C for Electrical Engineering"** for all the Second Year Electrical & Electronics Engineering students from 09-08-2018 to 14-08-2018. Students are asked to utilize this opportunity and improve their skills.

PRINCIPAL

Circulation to:

1. All Students
2. All Faculty & Staff Members
3. All HoDs

Copy to:

1. All HoDs
2. Office

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DEPARTMENT OF ELELCTRICAL AND ELECTRONICS ENGINEERING PRESENTS

VALUE ADDED COURSE ON

EMBEDDED C FOR ELECRTICAL ENGINEERING

2018-2019

DATE: 09/08/2018 to 14/08/2018

VENUE: RAAKCET

TIME: 09 am to 04 pm

Resource Person:

Mr. P. Vignesh Jagadesan
Assistant Professor,
Christ Institute of Engg & Tech.

For Registration Contact:

Mr. Murugesan , AP/ EEE.,
9894552018.

HOD

Mr. B. Murugan

RAAK College of Engineering & Technology

PRINCIPAL

Dr. A. Sivakumar

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VALUE ADDED COURSES

2018-2019

Department of Electrical & Electronics Engineering

18EE01-Embedded C for Electrical Engineering

Duration: 36 hours

Course Objective:

- To understand what is an Embedded System and then define it
- Look at certain applications & purposes of embedded systems
- Classify embedded systems
- Look at certain applications & purposes of embedded systems

Course Outcome:

Upon successful completion of the course students able to

- They must fulfill the intended function efficiently and reliably.
- Embedded systems often operate within cost constraints, particularly in consumer products where cost directly affects market competitiveness.
- Depending on the application, embedded systems may require real-time performance or low-latency responses.

Module 1: Introduction to Embedded Computing and Arm Processors **(9 Hours)**

Complex systems and microprocessors– Embedded system design process –Design example: Model train controller- Instruction sets preliminaries - ARM Processor – CPU: programming input and output-supervisor mode, exceptions and traps – Co-processors- Memory system mechanisms – CPU performance-CPU power consumption. Study of ARM Evaluation System.

Module2: Embedded Computing Platform **(9 Hours)**

The CPU Bus-Memory devices and systems–Designing with computing platforms – consumer electronics architecture – platform-level performance analysis - Components for embedded programs- Models of programs- Assembly, linking and loading – compilation techniques Program level performance analysis – Software performance optimization – Program level energy and power analysis and optimization – Analysis and optimization of program size Program validation and testing. Interfacing ADC and DAC, Interfacing LED and PWM, Interfacing real time clock and serial port, Interfacing keyboard and LCD, Interfacing EPROM and interrupt.

Module 3: Processes and operating systems **(9 Hours)**

Introduction – Multiple tasks and multiple processes – Multirate systems- Preemptive real-time operating systems- Priority based scheduling- Interprocess communication mechanisms – Evaluating operating system

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performance- power optimization strategies for processes – Example Real time operating systems-POSIX-Windows CE. Design of Mailbox, Flashing of LEDs.

Module 4: Design methodologies **(9 Hours)**

Design methodologies- Design flows - Requirement Analysis – Specifications-System analysis and architecture design – Quality Assurance techniques- Distributed embedded systems.Introduction to Networks, Distributed Embedded Architectures, Networks for Embedded Systems, Network-Based Design, Internet-Enabled Systems, Vehicles as Networks, Sensor Networks, Design Example: Elevator Controller. Interfacing stepper motor and temperature sensor.

Module 5: Case Study **(9 Hours)**

Data compressor - Alarm Clock - Audio player - Software modem-Digital still camera -Telephone answering machine-Engine control unit – Video accelerator. Implementing zigbee protocol with ARM.

Course designed by **Approved by** **Principal**

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CO - ATTAINMENT MAPPING

Sl. No	Register Number	Student Name	CO1	CO2	CO3	CO4
1	17TE3101	GUNALAN.M	✓	✓	✓	✓

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VALUE ADDED COURSES

2018-2019

Department of Electrical & Electronics Engineering

18EE01-Embedded C for Electrical Engineering

COURSE PLAN

S.no	Date	Hours	Time	Topic	Resource person
DAY -1					
1	09.08.18	1.2	9AM -11AM	Complex systems and microprocessors	Mr.P.Vignesh jagadesan & Mr. S.Sathiyamoorthy
2		3,4	11.15AM – 1.15 PM	Embedded system design process –Design example:	Mr. S.Sathiyamoorthy
3		5.6	2 PM -4PM	Model train controller-Instruction sets preliminaries - ARM Processor	Mr.P.Vignesh jagadesan
DAY 2					
4	10.08.18	7,8	9AM -11AM	CPU: programming input and output- supervisor mode, exceptions and traps	Mr. S.Sathiyamoorthy
5		9,10,	11.15AM – 1.15 PM	Co-processors- Memory system mechanisms – CPU performance- CPU power consumption	Mr.P.Vignesh jagadesan
6		11,12	2 PM -4PM	The CPU Bus-Memory devices and systems– Designing with computing platforms	Mr. S.Sathiyamoorthy
DAY -3					
7	11.08.18	13,14	9AM -11AM	Consumer electronics architecture – platform-level performance analysis	Mr.P.Vignesh jagadesan
8		15,16	11.15AM – 1.15 PM	Components for embedded programs-Models of programs-Assembly, linking and loading	Mr. S.Sathiyamoorthy
9		17,18	2 PM -4PM	Compilation techniques Program level performance analysis – Software performance optimization	Mr.P.Vignesh jagadesan
DAY -4					

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10		19,20	9AM -11AM	Program level energy and power analysis and optimization – Analysis and optimization of program size Program validation and testing	Mr. S.Sathiyamoorthy
11	12.08.18	21,22	11.15AM – 1.15 PM	Interfacing ADC and DAC, Interfacing LED and PWM, Interfacing real time clock and serial port, Interfacing keyboard and LCD, Interfacing EPROM and interrupt.	Mr.P.Vignesh jagadesan
12		23,24	2 PM -4PM	Introduction – Multiple tasks and multiple processes – Multirate systems- Preemptive real-time operating systems	Mr. S.Sathiyamoorthy
DAY -5					
13	13.08.18	25,26	9AM -11AM	Priority based scheduling- Interprocess communication mechanisms – Evaluating operating system performance	Mr.P.Vignesh jagadesan
14		27,28	11.15AM – 1.15 PM		
15		29,30	2 PM -4PM	Power optimization strategies for processes – Example Real time operating systems- POSIX-Windows CE.	Mr. S.Sathiyamoorthy
DAY -6					
16	14.08.18	31,32	9AM -11AM	Design methodologies- Design flows - Requirement Analysis – Specifications-System analysis and architecture design – Quality Assurance techniques	Mr.P.Vignesh jagadesan
17		33,34	11.15AM – 1.15 PM	Distributed embedded systems. Introduction to Networks, Distributed Embedded Architectures, Networks for Embedded Systems	Mr.P.Vignesh jagadesan
18		35,36	2 PM -4PM	Data compressor - Alarm Clock - Audio player - Software modem-Digital still camera -Telephone	Mr. S.Sathiyamoorthy

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				answering machine- Engine control unit – Video accelerator. Implementing zigbee protocol with ARM.	

ASESSMENT EXAM WILL BE CONDUCTED AFTER ONE WEEK OF COURSE COMPLETION *

BREAK TIME: 11.00 TO 11.15 AM **LUNCH BREAK: 1.15 PM TO 2.00 PM**

COURSE DESIGNED BY

Mr.B.MURUGAN

APPROVED BY

SKILL DEVELOPMENT TEAM

PRINCIPAL

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VALUE ADDED COURSES

2018-2019

Department of Electrical & Electronics Engineering

18EE01-Embedded C for Electrical Engineering

EVENT REPORT

Name of the Course: 18EE01-Embedded C for Electrical Engineering

Name of the Instructors: Mr.P.Vignesh jagadesan & Mr. S.Sathiyamoorthy

Year/ Branch: II/EEE

Duration of Course: 36 Hours (09-08-2018 to 14-08-2018)

Assessment Date: 20.08.2018

Post Event Summary:

The course was inaugurated on 09-08-18 at 9.30 A.M. by our respectable principal and sessions were continued as per the schedule. Students were enriched their knowledge by attending the course. Finally, the course concluded by vote of thanks.

On 20.08.2018 assessment was conducted and feedbacks were collected from all the participants.

CO - Attainment:

CO1: To understand what is an Embedded System and then define it

CO2: Look at embedded systems from a historical point of view

CO3: Classify embedded systems

CO4: Look at certain applications & purposes of embedded systems

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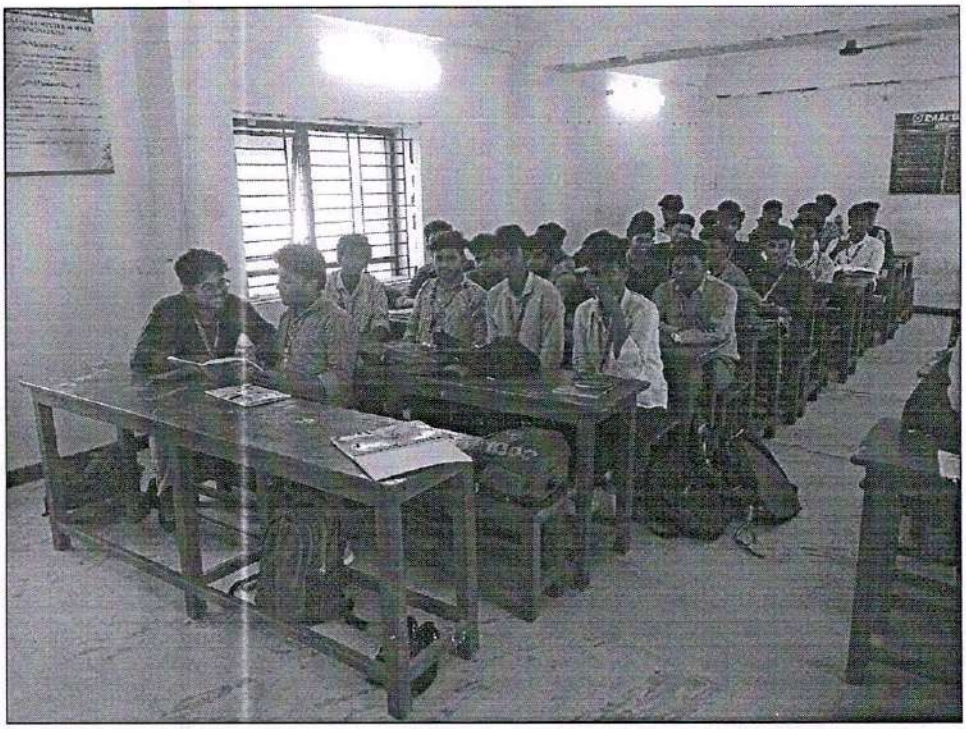
Value Added Course On Embedded C for Electrical Engineering 2018-19



Co-processors- Memory system mechanisms – CPU performance on 10.08.18

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