

Electronics & ICT Academy

(Under Ministry of Electronics and Information Technology (MeitY), Govt. of India)

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Faculty Development Programme on “IOT & Embedded System Design”

Venue: IIIT Bhagalpur

Date: 27 – 31 May, 2019

Date	Time	Topic
Day-1 27-05-2019	08:45 AM - 09:30 AM	Registration and Reporting
	09:30 AM - 10:00 AM	Inauguration
	10:00 AM - 11:00 AM	Expert Lecture by Prof. Arvind Choubey (Director, IIIT Bhagalpur) on “IOT & its applications”
	11:00 AM – 11:15 AM	Tea break
	11:15 AM-01:00 PM	Theory Session on TIVA C series TM4C123GXL Launchpad Objective: Learning of Arm-cortexM4F Architecture. <ul style="list-style-type: none"> • Introduction to ARM Boards and features of ARM. • Introduction to Tiva C Series Launchpad.
	01:00 PM - 02:00 PM	Lunch Break
	02:00 PM - 04:00 PM	Hands-On Session on TIVA C series TM4C123GXL launchpad using Energia software / code composer studio 6.1. Objective: Understanding the configuration of GPIO pins and power consumption reduction using hibernation in TIVA. <ul style="list-style-type: none"> • Blinking LED with TIVA GPIO. • Interrupt Programming with GPIO. • Hibernation and Wakeup on an RTC Interrupt. • Interfacing Potentiometer with TIVA GPIO.
	04:00 PM - 04:15 PM	Tea Break
	04:15 PM – 05:00 PM	Session Continues
	05:00 PM - 05:30 PM	MCQ-1
Day-2 28-05-2019	09:30 AM - 11:00 AM	Hands-On Session on TIVA C series TM4C123GXL launchpad using Energia software / code composer studio 6.1. Objective: Generating PWM waveforms and motion control. <ul style="list-style-type: none"> • PWM Generation. • PWM based Speed Control of DC Motor using Potentiometer. • UART - ECHO!.
	11:00 AM - 11:15 AM	Tea Break
	11:15 PM - 01:00 PM	Session Continues
	01:00 PM - 02:00 PM	Lunch Break
	02:00 PM - 04:00 PM	Hands-On Session on TIVA C series TM4C123GXL launchpad using Energia software / code composer studio 6.1. Objective: Explore of Tiva Serial communication with Laptop/PC using UART.

		<ul style="list-style-type: none"> Getting Started with WLAN-Station. UART Communication Interfacing.
	04:00 PM - 04:15 PM	Tea Break
	04:15 PM - 05:00 PM	Session Continues
	05:00 PM - 05:30 PM	MCQ-2
Day-3 29-05-2019	09:30 AM - 11:00 AM	<p>Hands-On Session on TIVA C series TM4C123GXL launchpad using Energia software / code composer studio 6.1.</p> <p>Objective: Interfacing, reading and displaying the external sensor readings.</p> <ul style="list-style-type: none"> Photoresistor (Light Sensor) Spin the Motor (Transistor) Temperature (Thermistor and Temp Sensor) 7 Segment Display (Digital Display) Playing Music - (Buzzer) Control the Electric - (Relays) Display- (4-Digital Display) Potentiometer - (Rotary Angle Sensor)
	11:00 AM - 11:15 AM	Tea Break
	11:15 AM - 01:00 PM	Session Continues
	01:00 PM - 02:00 PM	Lunch Break
	02:00 PM - 04:00 PM	<p>Hands-On Session on TIVA C series TM4C123GXL launchpad using Energia software / code composer studio 6.1.</p> <p>Objective: Interfacing, reading and displaying the external sensor readings.</p> <ul style="list-style-type: none"> Sensing the Light - (Light Sensor). Hearing - (Sound Sensor). Is anybody there- (PIR Sensor). Taking care of your plants- (Moisture Sensor). Sensing the Distance - (Ultrasonic Ranger Sensor). Feeling the Environments - (Temperature Humidity Sensor).
	04:00 PM - 04:15 PM	Tea Break
	04:15 PM - 05:00 PM	Session Continues
	05:00 PM - 05:30 PM	MCQ-3
Day-4 30-05-2019	09:30 AM - 11:00 AM	<p>Theory Session on IoT MSP430 and Wi-Fi cc3100 boards.</p> <p>Objective: Understanding the Internet of Things Opportunities & Challenges and controlling on board LED using smart phone.</p> <ul style="list-style-type: none"> TI Internet of Things Overview. <ul style="list-style-type: none"> Application Areas for the Internet of Things. Featured IoT Products from TI. Cloud Solutions supporting TI solutions. Challenges in the Internet of Things Controlling on board Led using smart phone. Implementing chatting application between MSP430 and smart phone using TELNET app.
	11:00 AM - 11:15 AM	Tea Break
	11:15 AM - 01:00 PM	Session Continues
	01:00 PM - 02:00 PM	Lunch Break

	02:00 PM - 04:00 PM	<p>Hands-On using Wi-Fi boards (MSP430 and CC3100) through Energia. Objective : Implementation of weather forecast and Wi-fi chat applications using MSP and cc3100.</p> <ul style="list-style-type: none"> Getting whether report of location using CC3100 and MSP430F5529 . Generating Moisture call using Temboo Cloud Service. Controlling On board LED through BLYNK application using CC3200 launchpad using Energia.
	04:00 PM - 04:15 PM	Tea Break
	04:15 PM - 05:00 PM	Session Continues
	05:00 PM - 05:30 PM	MCQ-4
Day-5 31-05-2019	09:30 AM - 11:00 AM	<p>Hands-On Session on TIVA C series TM4C123GXL launchpad using Energia software / code composer studio 6.1. Objective: Understanding the Ecosystem of cloud partners to enable easy integration.</p> <ul style="list-style-type: none"> Discussing Pubnub and Freeboard Creating account on PubNub and Freeboard . Subscribing and Publishing Sensor Readings to PUBNUB. Visualization of Sensor Readings using free-Board.
	11:00 AM - 11:15 AM	Tea Break
	11:15 PM - 01:00 PM	Session Continues
	01:00 PM - 02:00 PM	Lunch Break
	02:00 PM - 04:00 PM	<p>Hands-On Session on TIVA C series TM4C123GXL launchpad using Energia software / code composer studio 6.1. Objective: LCD Interfacing and Communication protocol in Industrial applications.</p> <ul style="list-style-type: none"> LCD Interfacing. Theory on IO-Link for Industrial applications. Serial Peripheral Interface, I2C protocol for Industrial applications.
	04:00 PM - 04:15 PM	Tea Break
	04:15 PM - 04:30 PM	MCQ-5
	04:30 pm onwards	Valedictory and Certificate Distribution
