

# 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: Audio Visual Room (IT-207)

Department of Information Technology, MVSR Engineering College

(03 – 08 December, 2018)

Date	Time	Topic
Day-1 03-12-2018	08:30 AM - 09:15 AM	Registration and Reporting
	09:15 AM - 09:45 AM	Inauguration
	09:45 AM - 10:00 AM	Tea Break
	10:00 AM-01:00 PM	Theory Session on TIVA C series TM4C123GXL Launchpad <b>Objective: Learning of Arm-cortexM4F Architecture.</b> <ul style="list-style-type: none"> <li>Introduction to ARM Boards and features of ARM.</li> <li>Introduction to Tiva C Series Launchpad.</li> </ul>
	01:00 PM - 01:30 PM	Lunch Break
	01:30 PM - 05:00 PM	Hands-On Session on TIVA C series TM4C123GXL launchpad using Energia software / code composer studio 6.1. <b>Objective: Understanding the configuration of GPIO pins and power consumption reduction using hibernation in TIVA.</b> <ul style="list-style-type: none"> <li>Blinking LED with TIVA GPIO.</li> <li>Interrupt Programming with GPIO.</li> <li>Hibernation and Wakeup on an RTC Interrupt.</li> <li>Interfacing Potentiometer with TIVA GPIO.</li> </ul>
	04:00 PM - 4:15 PM	Tea Break
05:00 PM - 05:30 PM	MCQ-1	
Day-2 04-12-2018	09:30 AM - 11:00 AM	Hands-On Session on TIVA C series TM4C123GXL launchpad using Energia software / code composer studio 6.1. <b>Objective: Generating PWM waveforms and motion control.</b> <ul style="list-style-type: none"> <li>PWM Generation.</li> <li>PWM based Speed Control of DC Motor using Potentiometer.</li> </ul>
	11:00 AM - 11:15 AM	Tea Break
	11:15 PM - 01:00 PM	Session Continues
	1:00 PM - 01:30 PM	Lunch Break
	01:30 PM - 04:00 PM	Hands-On Session on TIVA C series TM4C123GXL launchpad using Energia software / code composer studio 6.1.

		<p><b>Objective: Explore of Tiva Serial communication with Laptop/PC using UART and HTTP Server configuration of Tiva-cc3100.</b></p> <ul style="list-style-type: none"> <li>• UART - ECHO!.</li> <li>• Getting Started with WLAN-Station.</li> <li>• Setting Up CC3100 as a HTTP Server.</li> </ul>
	04:00 PM - 04:15 PM	Tea Break
	04:15 PM - 05:00 PM	Session Continues
	05:00 PM - 05:30 PM	MCQ-2
<p><b>Day-3</b> <b>05-12-2018</b></p>	09:30 AM - 11:00 AM	<p>Theory Session on IoT MSP430 and Wi-Fi cc3100 boards.</p> <p><b>Objective: Understanding the Internet of Things Opportunities &amp; Challenges and controlling on board LED using smart phone.</b></p> <ul style="list-style-type: none"> <li>• TI Internet of Things Overview. <ul style="list-style-type: none"> <li>○ Application Areas for the Internet of Things.</li> <li>○ Featured IoT Products from TI.</li> <li>○ Cloud Solutions supporting TI solutions.</li> <li>○ Challenges in the Internet of Things</li> </ul> </li> <li>• Controlling on board Led using smart phone.</li> </ul>
	11:00 AM - 11:15 AM	Tea Break
	11:15 PM - 01:00 PM	Session Continues
	1:00 PM - 01:30 PM	Lunch Break
	01:30 PM - 04:00 PM	<p><b>Hands-On using Wi-Fi boards (MSP430 and CC3100) through Energia. Objective : Implementation of weather forecast, sending Email and Wi-fi chat applications using MSP and cc3100.</b></p> <ul style="list-style-type: none"> <li>○ Getting whether report of location using CC3100 and MSP430F5529 .</li> <li>○ Sending email using CC3100 .</li> <li>○ Implementing chatting application between MSP430 and smart phone using TELNET app.</li> </ul>
	04:00 PM - 04:15 PM	Tea Break
	04:15 PM - 05:00 PM	Session Continues
	05:00 PM - 05:30 PM	MCQ-3
<p><b>Day-4</b> <b>06-12-2018</b></p>	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><b>Objective: Interfacing, reading and displaying the external sensor readings.</b></p> <ul style="list-style-type: none"> <li>• Photoresistor (Light Sensor).</li> <li>• Spin the Motor (Transistor).</li> <li>• Temperature (Thermistor and Temp Sensor).</li> <li>• 7 Segment Display (Digital Display).</li> <li>• Playing Music - (Buzzer).</li> <li>• Control the Electric - (Relays).</li> <li>• Display- (4-Digital Display).</li> <li>• Potentiometer - (Rotary Angle Sensor).</li> </ul>
	11:00 AM - 11:15 AM	Tea Break
	11:15 PM - 01:00 PM	Session Continues
	1:00 PM - 01:30 PM	Lunch Break

<b>Day-4</b> <b>06-12-2018</b>	01:30 PM - 04:00 PM	<p>Hands-On Session on TIVA C series TM4C123GXL launchpad using Energia software / code composer studio 6.1.</p> <p><b>Objective: Interfacing, reading and displaying the external sensor readings.</b></p> <ul style="list-style-type: none"> <li>• Sensing the Light - (Light Sensor).</li> <li>• Hearing - (Sound Sensor).</li> <li>• Is anybody there- (PIR Sensor).</li> <li>• Taking care of your plants- (Moisture Sensor).</li> <li>• Sensing the Distance - (Ultrasonic Ranger Sensor).</li> </ul> <p>Feeling the Environments - (Temperature Humidity Sensor) .</p> <ul style="list-style-type: none"> <li>• Mqtt client .</li> <li>• Generating Moisture call using Temboo Cloud Service.</li> </ul>
	04:00 PM - 04:15 PM	Tea Break
	04:15 PM - 05:00 PM	Session Continues
	05:00 PM - 05:30 PM	MCQ-4
<b>Day-5</b> <b>08-12-2018</b>	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><b>Objective: Understanding the Ecosystem of cloud partners to enable easy integration.</b></p> <ul style="list-style-type: none"> <li>• Discussing Pubnub and Freeboard Creating account on PubNub and Freeboard .</li> <li>• Publishing Sensor Readings to PUBNUB.</li> </ul>
	11:00 AM - 11:15 AM	Tea Break
	11:15 PM - 01:00 PM	Session Continues
	1:00 PM - 01:30 PM	Lunch Break
	01:30 PM - 04:00 PM	<p>Hands-On Session on TIVA C series TM4C123GXL launchpad using Energia software / code composer studio 6.1.</p> <p><b>Objective: Understanding the concept of sensor data posting to cloud using IoT.</b></p> <ul style="list-style-type: none"> <li>• Subscribing a Sensor Readings from PUBNUB.</li> <li>• Visualization of Sensor Readings using Free-Board.</li> <li>• Controlling On board LED through BLYNK application using CC3200 launchpad using Energia.</li> </ul>
	04:00 PM - 04:15 PM	Tea Break
	04:15 PM - 05:00 PM	MCQ-5
05:00 PM - 05:30 PM	Assessment	

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