FACULTY DEVELOPMENT PROGRAMME (FDP)

ON

INTERNET OF THINGS
(30th NOV 2017 to 9th DEC 2017)

Organized by
E & ICT ACADEMY, NIT Waranagal
(Sponsored by Ministry of Electronics and Information Technology (Meity), GOI)

Preamble:

"Electronics & ICT Academy" was set up at NIT Warangal with financial assistance from MeitY, MCIT, Govt. of India (GoI). The jurisdiction of this academy covers the states of Telangana, Andhra Pradesh, Karnataka, Goa, Puducherry and Andaman & Nicobar Islands. The role of this academy is to offer faculty development programmes in standardized courses and emerging areas of Electronics and Information Communication Technologies, training & consultancy services for Industry, Curriculum development for Industry, CEP for working professionals as well as Advice and support for technical incubation and entrepreneurial activities. This faculty development programme (FDP) is devoted to addressing the need to enhance the knowledge about the latest technologies pertaining to Internet of Things and is open for Faculty members, Research Scholars as well as students of engineering, MCA and other allied degree colleges from states and UTs mentioned above.

Faculty conducting this programme:

The programme will be conducted by the faculty members from **NIT Warangal** and **National Institute of Standards & Technology USA** Industry Advisor- Senior Design Project- Department of Electrical Engineering, Santa Clara University, CA.

Major Course Contents:
Introduction to IoT Technologies
- Overview and market of IoT
- Block diagram and Schematic of IoT
- IoT Hardware Concepts
- Overview of ARM Central processor units (CPU) and Microcontroller units (MCU)
- Operating System, RTOS utilization for IoT applications
- Analog, Digital and Hybrid Sensors
- Hardware Protocols for connecting sensors to the MCU: I2C, UART and GPIO

Raspberry Pi 3 – IoT platform
IoT Sensor devices -Sensor Integration – Temperature, Humidity, Air Quality, Proximity etc.
- Embedded programming
Networking Concepts
- An overview of Wi-Fi, Bluetooth, ZigBee, GSM, GPRS and LoRa technologies
IoT Standards and Protocol
- MQTT and CoAPP,OMA, IETF, and IPSO object model, IEEE and NIST IoT framework

Overview of Cypress IoT hardware platform - CYW943907AEVAL1F kit
- Installation of Cypress tools and IDE
- Sensor Integration to the Cypress board
IoT Commercial Cloud technologies
- AWS IoT, IBM – Blue Mix
- Microsoft Azure, General Electric – Predix

Integrating Cloud platform to the constructed IoT hardware
- Installation of Cloud technologies – UBI Dots
- Demonstrate sensor readings on the cloud
- Creating Dash boards, IoT data analytics

Overview of Dew Mobility Development Kit
- Marvell MW302
- Demonstration on Environmental Monitoring

IoT applications – Use cases
- Smart City
- Smart Health
- Smart Environmental monitoring

IoT Data Structure
- Understanding the big data and its structure
- Mesh networks for sensor connectivity in cities and rural area networking
- Data Harvesting, Data Analytics
- Web and mobile application programming
- Cloud Computing *IoT Security and Privacy Application Layer Security*

Eligibility:
The programme is open to the teachers of engineering colleges, MCA colleges and other allied disciplines in Telangana, Andhra Pradesh, Karnataka, Goa, Puducherry and Andaman & Nicobar Islands. Industry personnel working in the concerned/allied discipline can also attend.

Registration Fee Particulars:

Faculty and Research Scholars from mentioned states	Rs 4000
SC/ ST Faculty from mentioned states	Rs. 2000 (SC/ST Faculty should provide a copy of caste certificate to avail the concession)
Industry Participants	Rs. 12000
Participants from other states	Rs. 12500

The participants need to send a crossed demand draft (DD) drawn in favour of "Director, NIT Warangal" and payable at SBH, NIT Warangal branch.

How to apply:
A filled in form of application in the prescribed format duly signed and sponsored by appropriate authorities (along with demand draft) should reach the coordinator by speed-post. It is also mandatory to send scanned application form and demand draft through e-mail to drrajunitw@gmail.com or raju@nitw.ac.in as selection will be intimated only through mail.

Selection Criteria:
Selection will be done based on *first-cum-first-serve basis* and the confirmed candidates will be notified immediately. The maximum number of participants will be **50 (fifty)**. Additionally 10 participants from industry are allowed to participate. The list of selected participants will be notified in the institute web site www.nitw.ac.in/eict and also will be sent to their personal *e-mail* ids. In case a candidate is not selected, the demand draft will be sent back. A test will be conducted at the end of the course. Candidates will be issued certificates on successful completion of the course along with grade. Reservations are followed for selecting candidates as per GOI norms.

Important dates:
Last date for submission of application: 29/11/2017
Selection-list intimation/display before: 29/11/2017
Duration of Program: 30th Nov – 9th Dec 2017

About the Institute:
National Institute of Technology (formerly Regional Engineering College), Warangal is the first among 17 RECs setup as joint venture of the Government of India and the state government. Over the years the college has established itself as a premier Institution imparting technical education of a very high standard leading to the B.Tech degrees in various branches of engineering and M.Tech. and Ph.D programs in various specializations.

FORMAT OF APPLICATION

Electronics and ICT Academy, NIT Warangal

Faculty Development Programme

on

INTERNET OF THINGS

(30th Nov 2017 to 9th Dec 2017)

1. Name :

2. Designation :

3. Institution :

4. E-mail :

5. Mobile No. :

6. DD No :

   Bank: Date:

7. Address for Correspondence

8. Educational Qualifications with specialization:

9. Subjects taught so far:

10. No. of refresher courses/workshops attended:

11. Experience (in years)
    Teaching :
    Research :
    Industry :

12. . Do you belong to SC/ST: YES/NO
    (If Yes, Please attach a photo copy of Caste certificate to avail concession in the registration fee)

    Declaration
    The information provided is true to the best of my knowledge. If selected, I agree to abide by the rules and regulations of the FDP and shall attend the course for the entire duration. I also undertake the responsibility to inform the Coordinator in case, I am unable to attend the course.

Place:

Date:

               Signature of the applicant

SPONSORSHIP CERTIFICATE

Dr/Mr/Ms. ....
is an employee of our Institute/Organization and is hereby sponsored to participate in the FDP on "Internet of Things" sponsored by Electronics & ICT Academy during 30th Nov-9th Dec 2017 at NIT Warangal, *Telangana State.*

Place:

Date: Signature of Head of Institution

                       (with seal)

Address for correspondence:
Post your application form with DD to

DR RAJU BHUKYA
Assistant Professor
Department of CSE
National Institute of Technology
Warangal 506004.
Telangana, India.

Mail the scanned copies of filled-in and duly signed application form with DD to drrajunitw@gmail.com, raju@nitw.ac.in
For more information visit:
http://nitw.ac.in/eict/

For any enquiry contact:
Mobile: 9700553922,
9700978003

Coordinators
Dr. Raju Bhukya
Assistant Professor
Dept. of Computer Science and Engineering
NIT Warangal

Organized by

Electronics and ICT Academy,
National Institute of Technology, Warangal

Department of Computer Science & Engineering
Faculty Development Programme (FDP) on "INTERNET OF THINGS"
(30th NOV – 9th DEC, 2017): Lecture Schedule

Day &Date	9:00 - 11:00		11:15 - 01:15		02:15 - 04:15		04:30 - 06:30
Thursday 30.11.2017	Introduction to IoT Technologies		Overview and market of IoT, Block diagram and Schematic of IoT		IoT Hardware Concepts		Overview of ARM Central processor units (CPU) and Microcontroller units (MCU)
Friday 01.12.2017	Operating System, RTOS utilization for IoT applications		Analog, Digital and Hybrid Sensors		Hardware Protocols for connecting sensors to the MCU: I2C, UART and GPIO		Raspberry Pi 3 – IoT platform
Saturday 02.12.2017	IoT Sensor devices -Sensor Integration – Temperature, Humidity, Air Quality, Proximity etc.	Tea Break	Embedded programming	Lunch	Networking concepts	Tea Break	An overview of Wi-Fi, Bluetooth, ZigBee, GSM, GPRS and LoRa technologies
Sunday 03.12.2017	IoT Standards and Protocol		MQTT and CoAPP,OMA, IETF, and IPSO object model, IEEE and NIST IoT framework		Overview of Cypress IoT hardware platform		CYW943907AEVAL1F kit
Monday 04.12.2017	Installation of Cypress tools and IDE		Sensor Integration to the Cypress board		IoT Commercial Cloud technologies		AWS IoT, IBM – Blue Mix
Tuesday 05.12.2017	Microsoft Azure, General Electric – Predix		Integrating Cloud platform to the constructed IoT hardware		Installation of Cloud technologies – UBI Dots		Demonstrate sensor readings on the cloud
Wednesday 06.12.2017	Creating Dash boards, IoT data analytics		Overview of Dew Mobility Development Kit		Marvell MW302		Demonstration on Environmental Monitoring
Thursday 07.12.2017	IoT applications & Use cases		Smart City		Smart Health		Smart Environmental monitoring
Friday 08.12.2017	IoT Data Structure		Understanding the big data and its structure		Mesh networks for sensor connectivity in cities and rural area networking		Data Harvesting, Data Analytics
Saturday 09.12.2017	Web and mobile application programming		Cloud Computing		IoT Security and Privacy		Application Layer Security