



Academic
Staff College

Report on

**A One-week National Level Faculty Development Program (FDP) on
SDR based Communication System Design for Analog, Digital & RF**

Organized by Academic Staff College

In association with Dept. of ECE, KLEF

From 13th to 17th May 2019

A One-week national level Faculty Development Program (FDP) on “SDR based communication System Design for Analog, Digital & RF” was organized by Academic Staff College in association with Department of ECE, KLEF from **13th to 17th May 2019** for which 30 faculty and scholars across Andhra Pradesh, Telangana, Tamil Nadu had registered and participated in the program. The FDP was a jointly organized program by Academic Staff College and in association with Electronic Dept., of KL University.

The Objectives of the Workshop are:

1. Enhance your Lab VIEW/Communication System Design Suite [CSDS] skills
2. Seamlessly help you adopt NI's USRP platform for teaching and conducting labs for undergraduate and post graduate course
3. Bridge the gap between theoretical communication engineering concept and practical implementation
4. Use SDR platform for high-end physical layer IP and prototype development

Please find below the day wise agenda of the workshop.

About the FDP :

Software Defined Radio solutions can accelerate the path from first prototype to broadbase deployment of wireless systems by utilizing a flexible industry standard set of platforms well integrated with Software frameworks. USRP SDR platforms range from low cost and portable to high performance using a common set of platforms independent of software drivers for wireless research. By supporting a wide variety of development environments on an expansive portfolio of high performance RF hardware, the USRP platform is most preferred SDR platform for thousands of engineers, scientists and students worldwide for algorithm development, exploration, prototyping and developing next generation wireless technologies across a wide variety of applications.

Among other software options, engineers can program with a graphical system design approach using NI Lab VIEW software. NI and Ettus offer a complete platform with an option to reuse existing software tools for simplified programming in a unified design flow that scales from design to deployment. The Software Defined Radio based communication system design FDP provides a great opportunity to learn about the power behind the SDR platform and the communication system design software tools that are being used in the latest wireless communications teaching, laboratory and research.

The Basics of Lab VIEW/CSDS like Navigating LabVIEW/CSDS, Troubleshooting and ebugging in LabVIEW/CSDS,Implementing a VI , Developing Modular Application in LabVIEW/CSDS , Data Structures , Managing resources and Variables Are discussed on day one. In the same manner,Implementing a State machine architecture, Presentation on NI USRP 292x Architecture & USRP Device Driver programming Simple Tx/Rx using USRP on Day two. On Day 3, Introduction to modulation Toolkit and Mathscript RT module,• Hands on in modulation toolkit and Mathscript RT, Designing of a FM Demodulator using Modulation Toolkit and Mathscript RT (hands on), Source Coding and Channel Coding implementation (hands on/demo depending on time) were discussed. On Day four Implementing a m-PSK Transmitter and Receiver using USRP (hands on) Simple Spectral Monitoring (hands on) Spectrum Sensing using basic Energy Threshold al are discussed.

Dr. V. Rajesh, Principal, ASC, and Dr. B. Siva Nagaiah Vice-Principal, ASC of KLU had honored the resource person Mr Nilutpal Choudhury, Founder & CEO from AvGarde Systems Bangalore with shawls and mementos. Mr. V. Venkata Narayana Dept. ECE had coordinated the FDP.