

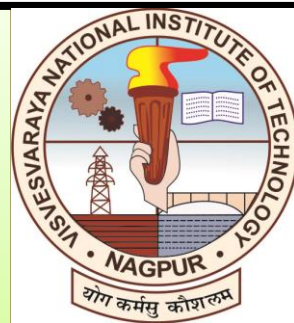
Call for Participation in five days Workshop on  
“Hands-on Training on STM 32 bit Microcontroller for  
Power Electronics Systems”

10<sup>th</sup> -14<sup>th</sup> June, 2019

Organized by

Department of Electrical Engineering

Visvesvaraya National Institute of Technology, Nagpur– 440010



### About the Workshop:

Advanced microcontrollers play very vital role to operate any automatically controlled products and devices. Control techniques of any power converter like DC-DC converters or three phase inverters are very important to have desired output. But due to complexity of control techniques, its implementation in microcontroller takes certain time. The issues with electrical engineers to operate microcontroller are the time taken by programming language and numerous microcontroller registers to be defined. Hence, it is important to learn simulation based programmable microcontroller which can give desired pulses to control a process.

This workshop focuses on MATLAB linked STM32 bit ARM Cortex microcontroller fitted in STM32F4 Discovery board. The STM32F4DISCOVERY helps to discover the STM32F4 high-performance features and to develop power electronics applications. It is based on an STM32F407VGT6 and includes an ST-LINK/V2 embedded debug tool interface, ST MEMS digital accelerometer, ST MEMS digital microphone, audio DAC with integrated class D speaker driver, LEDs, pushbuttons, LCD display and a USB OTG micro-AB connector. This makes a complete hardware platform for researchers to learn an advanced 32 bit microcontroller. The STM32F4DISCOVERY is a low-cost and easy-to-use development kit to quickly evaluate and start a development with an STM32F4 high-performance microcontroller. This Kit is compatible with Waijung Blockset and can be easily programmable by MATLAB software.

### Workshop Objectives:

- Introduce participants to operate STM 32 bit microcontroller with MATLAB Simulink software.
- Cover various multi-disciplinary aspects of electrical engineering and to generate desired pulses from microcontroller.
- Discuss the emerging trends in power electronics system and associated challenges with microcontroller.
- Focus on new technologies and solutions for modern automated controlled process using STM 32 bit microcontroller.

### Program Contents:

- Introduction to STM32F407 microcontroller, on chip peripherals and hardware mapping.
- Exploring display interfacing of STM32F407xx for power electronics system and hands on exercises.
- Implementation of control, driver and power circuit of power electronics system (1- $\emptyset$  VSI, 3-  $\emptyset$  VSI).
- Exploring ADC/DAC on STM32F407xx for power electronics system.
- Exploring PWM Capture, QEI on STM32F407xx for power electronics system.
- SPWM, SVM techniques and implementation of hardware.

### Who Should Attend?

Research scholars, graduate students, undergraduate students, engineers, trainees, Faculty members, academicians and researchers from different organizations/institutions across the country working in the field of Energy Engineering and Computational Intelligence.

### About VNIT:

Visvesvaraya National Institute of Technology, Nagpur is one of the thirty National Institutes of Technology in the country. The Govt. of India conferred on the Institute, the Deemed to be University status (under University Grants Commission Act, 1956 (3 of 1956)) with effect from 26th June 2002. Subsequently, the Central Govt. by Act of Parliament (National Institutes of Technology Act, 2007 (29 of 2007)) declared VNIT Nagpur as an Institute of National Importance along with all other NIT's. Apart from imparting professional education, the institute has been extending available expertise to various industries located in and around Nagpur.

### About Department:

The department of Electrical Engineering was established in 1960 with a UG programme in Electrical Engineering. The postgraduate programme in 'Integrated Power System' was started in 1968. Later, another postgraduate program in 'Power Electronics and Drives' was introduced. The Department is recognised as QIP Centre for M.Tech and Ph.D. programmes.

### Convener:

**Dr. M. A. Chaudhari**

Professor and Head of Electrical Engineering Department

### Workshop Coordinators:

**Prof. R.J.Satputaley**

Electrical Engineering Department, VNIT-Nagpur

**Prof. Nita R. Patne**

Electrical Engineering Department, VNIT-Nagpur

### Speakers:

Faculties from various NITs, Industry personnel and in-house faculties of VNIT, Nagpur.

### Fee Structure:

- Rs. 2500/participant in cash/DD in the favour of Director VNIT.

### Workshop Registration:

- Participants are requested to fill and send the Online-Registration form through the link provided below. Confirm your registration by paying the registration fee before 1<sup>st</sup> June, 2019.
- Registration link: <https://forms.gle/Coss8HxmPbKmSyF57>
- No TA/DA will be provided.
- Suitably furnished accommodation will be made available, if requested in advance, in the hostels/guest houses of the VNIT on payment basis as per institute norms for out stationed candidates on twin sharing basis.
- Registration will be done on First Come First served basis to a maximum of 30 seats.

### Contact Information:

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