

# A 3-Day Workshop on 8/16/32 Bit Microcontrollers

by J-Lab@GRIET  
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## GRIET

Gokaraju Rangaraju Institute of Engineering and Technology (GRIET) was established by Gokaraju Rangaraju Educational Society in 1997

with a mission to "To achieve and impart quality education with an emphasis on practical skills and social relevance". Ever since its inception, it has been striving hard to impart quality education under the leadership of Sri Gokaraju Rangaraju, an entrepreneur, a philanthropist and a humanitarian who is committed to the cause of education..

GRIET provides the state of the art infrastructure and multispecialty faculty who continuously review, revise and experiment teaching methodologies and learning resources and focus on research training and consultancy through an integrated - industry symbiosis.

## J-Lab Co-ordinators

Dr.Y J Nagendra Kumar, Professor  
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## Resource Persons

B. Shilpa, Asst Professor  
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## Microcontrollers

Microcontrollers are the workhorses of the Industry. Many peripherals are now available on-chip: UARTs, ADCs, Timers, Interrupts, support for SPI, I2C- in addition to basic digital IO functionality. This helps in interfacing Microcontrollers to sensors, actuators, displays, communication interfaces for Bluetooth, Zigbee, WiFi and in realizing a host of applications such

as in:

- Mobile phones
- Automobiles
- Washing machines
  - Cameras
- Microwave ovens
- Security alarms
- Electronic measurement systems

Learning to interface microcontrollers to different peripherals and program them to perform specific tasks are important skill sets for an electronics engineer. The Arduino IDE, popular world-wide among hobbyists and DIY enthusiasts is used in the workshop to teach and demonstrate programming of 8/16/32-bit microcontrollers

For Registrations Contact

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# Microcontrollers

Microcontrollers are at the heart of most embedded systems and applications range from simple parameter based appliance control to complex missile control. There are now microcontrollers to suit every applications. More and more peripherals – ADC, UART, Timers, Interrupts, support for I2C, SPI, CAN – are available on-chip. The workshop will introduce the participants to 8,16 and 32 bit microcontrollers with hands-on sessions on standard microcontroller and add-on boards:

- 8-bit: Arduino UNO based on ATMEGA's ATmega328
- 16-bit: TI's MSP430G2 Launchpad based on TI's MSP430G2553
- 32-bit: TI's Tiva C Launchpad based on TI's Tiva C

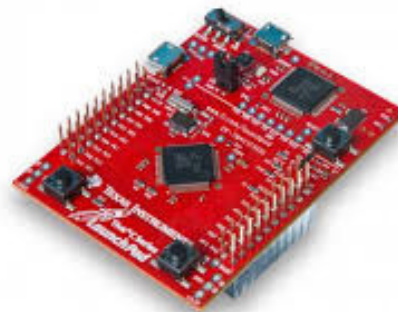
The Arduino IDE will be used for programming the UNO board. Energia, a modified version of the Arduino IDE from TI will be used to program TI's 16 and 32-bit Launchpads. The boards are all USB powered and no separate programmer is required.

## Eligibility

Students of II and III year  
from ECE/CSE/EEE/IT

Fee

Rs 600/- per participant



# DAY-1

- The Arduino IDE
- UNO introduction
- Blink program & upload
- LEDs & Switches
- Serial Communication
- LCD interface
- Appliance control
- Bluetooth interface
- AVR programming

# DAY-2

- MSP430G2 Launchpad introduction
- Energia IDE
- Programs using MSP430
- Launchpad
- Serial communication
- Sensors

# DAY-3

- Tiva C Launchpad Introduction
- Orbit Booster Pack
- RGB LED, switches
- 3-axis Accelerometer interface
- I2C Temperature sensor
- 128x32 OLED display
- Analog potentiometer
- I2C EEPROM