MEC-NI LabVIEW Academy

Mahendra Engineering College jointly with National Instruments (India) has set up MEC-NI LabVIEW Academy for Mahendra Educational Institutions.

This Academy is an initiative of NI under their Planet NI (Nurturing Innovation) framework which strives to increase the employability of Indian engineering graduates by creating 'Centre of Excellence' in Engineering Colleges and Universities which will provide cost effective access to world class latest technology through classroom teaching-learning.

The LabVIEW Academy is an acclaimed ISO 9001:2008 and ISO 29990:2010 certified training centre to provide hands on training in LabVIEW for engineering students, faculty and industrial personnel in south India.

The Academy also provides facilities for students to carry out their under graduate and post graduate projects. The Academy is actively involved in conducting short-term training courses for faculty and students from various engineering colleges. The centre has highly skilled Faculty/Engineers duly trained by National Instruments, India and certified by National Instruments, **US** under **'Train the Trainer'** program to conduct the classes under these training programs at the centre.

Achievement:

AIM

1. To provide experiential education to students
2. To rapidly develop prototypes using Test, Measurement, and Control
3. To generate internship and recruitment opportunities based on LabVIEW
4. To hands-on with live Industrial problems
5. To Train with Professional Educators
6. To Train the students to carry out projects
7. To Carry out Research Projects
8. To Conduct short-term courses for
    i. Students
    ii. Industrial participants
    iii. National Instruments sponsored Participants

Application Areas

- Automotive
- Bio-medical Engineering
- Robotics
- Civil & Structural Engineering
- Metallurgy
- Mechanical & Production Engineering

- Mechanical &Automation, Mechatronics
- Power Electronics
- Process Control Design
- Remote Sensing
- Telecommunications
- Industrial Automation
- Image Processing
- Aerospace
- Military

Welcome To NI

Company Overview

Instruments transforms the way engineers and scientists around the world design, prototype, and deploy systems for test, control, and embedded design applications. Using NI open graphical programming software and modular hardware, customers at more than 30,000 companies annually simplify development, increase productivity, and dramatically reduce time to market. From testing next-generation gaming systems to creating breakthrough medical devices, NI customers continuously develop innovative technologies that impact millions of people

National Instruments India was set up in 1998 to propagate the revolutionary Virtual Instrumentation technology in the country. Our consistent double digit growth and increased investments by NI in India is a testament to the success we have enjoyed in the adoption of Virtual Instrumentation technology in India. We understand the nuances and issues that Indian engineers and scientists face and have introduced various India - specific initiatives, to enrich the lives of Indian engineers.

National Instruments believes in constant innovation and invests 16% of its annual revenue in Research & Development. National Instruments India has a Research and Development wing in Bangalore which helps customers across the globe. NI India R&D has received more than 7 patents for innovations in the fields of Motion Control algorithms, RF and software development

National Instruments Global

National Instruments is transforming the way engineers and scientists design, prototype and deploy systems for measurement, automation and embedded applications. NI empowers customers with off-the-shelf software such as NI LabVIEW and modular cost-effective hardware, and sells to a broad base of more than 30,000 different companies worldwide, with its largest customer representing approximately 4 percent of revenue in 2010 and no one industry representing more than 15 percent of revenue. Headquartered in Austin, Texas, NI has approximately 5,500 employees and direct operations in more than 40 countries.

website : www.ni.com

Projects @ LabVIEW Academy : Completed Projects

SYNTHETIC FUEL FROM WASTE PLASTIC MATERIALS USING LabVIEW

Plastics are constantly an immense threat and a growing peril to the environment, since it retains specific distinctive chemical properties, but still there have not been any conclusive steps taken to cease the existing landfills of plastics. Attributable to the substantial production of plastics every year, there are loads of landfills with plastic trashes. In view of the fact that plastics stem from petroleum (crude oil), it is doable to extract the synthetic fuel from plastics by befitting techniques. Numerous technologies are being developed to make use of plastics for obtaining the synthetic fuel. Various thermo chemical processes are existing to obtain fuel grade hydrocarbons from the waste plastic materials. Pyrolysis is the fitting process for the extraction of fuel grade hydrocarbons from the barren plastics. It is necessary to reuse the scarce resources wherein, it is paramount to reuse the petroleum products. The extraction of fuel from plastics amends the depleting petroleum resources and withal aids humanity to maintain the ecological balance.

ADVANCED FIRE FIGHTING VEHICLE USING LabVIEW

An advanced vehicle which can be used as a fire fighting vehicle during fire in the buildings like hotels, schools, offices, forest, etc., is proposed here in this work. This vehicle is fully controlled under LabVIEW platform. This advanced vehicle allows us to control a fire by using three different fire fighters to put off any type of fire, since three different storage tanks for fire fighters are provided. The main motive of this work is to reduce man power and controlling fire in short duration since mixture of firefighting solutions in single hose is available, which is controlled using LabVIEW. The water pressure can be controlled by increasing and decreasing the speed of motor with the help of ultrasonic sensor placed in the

vehicle. This vehicle consist of DC motors for moving the vehicle, pumps for flow control , and various sensors are used to measure temperature, motion detector, distance of fire, and pressure. In this work, NI MyDAQ is used for interfacing LabVIEW tool and hardware.

ELECTRO MAGNETIC LAUNCHER USING LABVIEW

The sensor less coil of single stage can be used to accelerate a bullet at hyper velocity. In this paper ferromagnetic bullet at high velocity is designed in such a way that the physical laws of coil gun are predicted. In the magnetic field, electromagnetic oscillating system is driven by LabVIEW and Arduino. To enable the system to perform in optimized manner, the driving circuit is implemented in the coil so that the velocity of the bullet current driven by the driver circuit has high current in the system. The projectile is accelerated by Electro Magnetic Launching (EML) system. It is not designed for really shooting applications and the projectile velocity is relatively operated at low speed when accelerating the bullet.

POWER QUALITY MONITORING AND FAULT DETECTION SYSTEM FOR SMART GRID USING LABVIEW

Design and implementation of Smart Grid with power quality measurement and monitoring using LabVIEW is designed. Various renewable sources like thermal, solar and wind are integrated in this Smart Grid. The extent of variation of the voltage, current and frequency on the smart grid is monitored here in this work. Power quality is ideally creates a perfect power supply that is always available, has a pure noise free sinusoidal waveform and always within voltage and frequency tolerances. The best way to detect and diagnose the problems in electrical power system is called Power quality monitoring. Fault of the system is controlled and managed automatically using Lab VIEW platform.

SPEED CONTROL OF SINGLE PHASE INDUCTION MOTOR BY PWM TECHNIQUE USING LABVIEW

This proposed system is to control the speed of single phase induction motor by PWM technique. This technique has high efficiency to drive an induction motor using pulse width modulation technique (PWM) and is designed for minimal cost. The circuit is controlled by using LabVIEW Software with Arduino (Atmel controller. The reason of using LabVIEW domain is of its strong interface, simplicity of its Graphical Programming Code combined with built in tools designed especially for testing, measuring and controlling. With PWM technique it is competent of supplying high frequency to run the induction motor at accurate speed. Through DAQ the signal is acquired and the system is controlled.

SMART HOVERBOARD USING LabVIEW

It is proposed to design a self-balancing hoverboard that can be controlled using Lab VIEW and PC's keyboard navigational keys. This system will contain a two DC motor with chargeable Lithium Ion battery. Wireless communication is established using Zigbee-C2500. According to the key pressed in the keyboard the signal is send to the receiver end of the Zigbee device and moves to the Motor. The robot can be controlled wirelessly with the help of PC's keyboard navigation keys interaction.

PV Grid based Inverter by PMSM Drive using LABVIEW

Three-phase transformer inverter is commonly used in photovoltaic (PV) grid-connected systems due to its high efficiency and low cost. There is no galvanic connection. In these conditions, common mode leakage. Currents can appear through the capacitance between the PV array and the ground. In order to create a galvanic isolation between the input and the output include a transformer that reduces the whole system performances in terms of efficiency, weight, size and cost. On the contrary, transformer less inverters absent of any isolation and are characterized by little size, lower cost and higher efficiency (more t h a n 2 % h i g h e r). The s h o r t a g e o f transformers leads to leakage currents that can be harmful to the human body, as well as for the whole conversion system integrity. Triggering pulses are given using Pulse Modulation (PWM) technique through Data Acquisition (DAQ). In order to reduce the ground leakage current and improve the efficiency of the converter system, transformer less PV inverters by using of unipolar PWM control is proposed. In this paper, a three-phase grid based inverter that operates the super junction Metal Oxide Semiconductor Field- Effect Transistor (MOSFET) to accomplish high efficiency for photovoltaic applications is introduced. Also three phase transformer less inverter with Permanent Magnet Synchronous Motor (PMSM) under LabVIEW platform is developed.

LabVIEW based Retina disorder diagnosis using EEG

Electroencephalography (EEG) is an electrophysiological monitoring method to record electrical activity of the brain. It is a medical diagnosis technique that measures the electrical brain activity and resting potential of the retina. It measures voltage fluctuations resulting from ionic current within the neurons of the brain. Electrical activity of the brain is obtained using small, flat metal discs (electrodes) attached to the scalp. Brain cells communicate via electrical impulses and are active all the time, even during asleep and is recorded as wavy lines on an EEG recording. Amidst analyzing the brain disorder, in this work, defects in the eye also possible to analyze since it is well known fact that optic nerves are connected with occipital lobe. Hence it is possible to detect both brain and eye disorder using one measurement EEG. Under the LabVIEW platform, the signals obtained through the electrodes are thoroughly analyzed using NI-DAQ data acquisition board. The user interface is managed by the specialized module LabVIEW FPGA.

FACILITIES:

Data Acquisition Lab

The MEC-NI data Acquisition Lab introduces students to state-of-art Data Acquisition techniques & the concept of virtual instrumentation – the powerful combination of flexible software & modular hardware which helps to integrate theoretical concepts with real-world applications. One can acquire data from any sensors like Thermocouples, RTDs, Accelerometer, Strain Gauges, etc; analyze data using NI LabVIEW graphical programming software; and present it using PC based presentation techniques like PDF/excel reports, web publication etc.

Compact DAQ

DAQ 6009

Compact RIO

Compact RIO

Mechatronics-Sensors Lab

The QNET Mechatronic Sensors (MECHKIT) Trainer is ideally suited to teach and demonstrate the fundamentals of interfacing with mechatronic sensors. Developed exclusively for NI ELVIS platform and LabVIEW™ software, the system introduces students to a wide variety of sensors commonly used today, including pressure, flex, infrared, visible light, magnetism and temperature sensors; and techniques and limitations of their practical applications. Students learn the fundamentals of interfacing with mechatronic sensors, including how to:

- Collect data from sensors
- Calibrate sensors
- Use sensors to identify natural frequency of material

QNET MECHKIT Trainer consists of 14 different types of sensors:

- Strain gage

- Piezo electric sensor
- Pressure
- Potentiometer
- Thermistor
- Sonar sensor
- Infrared sensor
- Magnetic field transducer
- Optical position sensor
- Rotary potentiometer
- Encoder
- Push button
- Optical switch
- Light emitting diodes

Measurement and Instrumentation Lab

The NI Instrumentation Lab provides a hands-on design and prototyping platform that integrates the 12 most commonly used instruments – including oscilloscope, digital multimeter, function generator, bode analyzer, and more – into a compact form factor ideal for the lab or classroom. It connects to your PC through USB connection, providing quick and easy acquisition and display of measurements. Based on NI LabVIEW graphical system design software, NI ELVIS offers the flexibility of virtual instrumentation and the ability of customizing your application. NI ELVIS is also an integral part of the NI electronics education platform, combining simulation of circuits and measurements from NI ELVIS instruments inside the NI Multisim capture and simulation environment. Designed with education in mind, NI ELVIS is a comprehensive tool for teaching everything from circuit design, instrumentation, controls, telecommunications, and embedded/MCU theory.

It aims to teach the elementary circuits and core concepts of computer-based instrumentation and analysis of elementary circuits. The students can also use the Lab for their design projects.

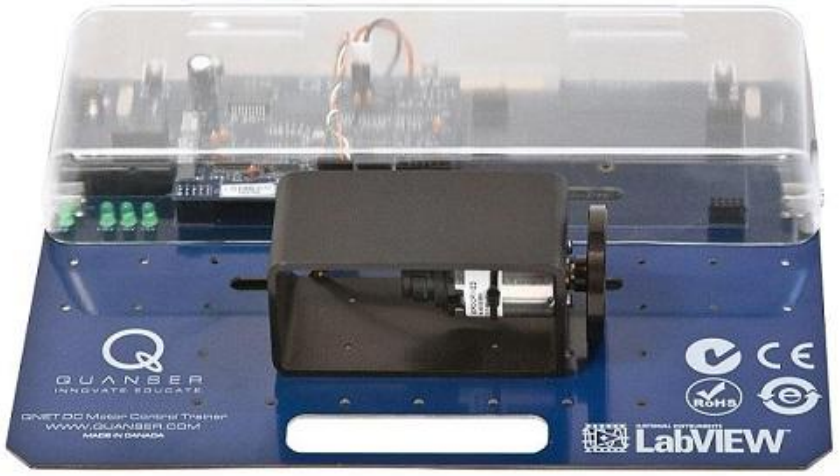
DC Motor Trainer Lab

The QET DC Motor Control Trainer provides an ideal way to demonstrate the fundamentals of motor control, parameters tuning and haptics. This affordable standalone trainer is exceptionally versatile and can be controlled via embedded or computer control. Students learn how to:

- Obtain the system model analytically and experimentally
- Design a PI-based speed controller to specifications
- Design a feedback system to control position and speed of the servomotor
- Design a robust PI

The system can be used to teach:

1. **Microcontroller Control** – using the QET DC Motor Control Trainer in conjunction with a Quanser QIC Processor Core and the QICii software. The QICii (i.e. QIC interactive interface) consists of pre-packaged ready-to-use experiments in modeling, speed control, robustness, position control, and haptic explorations.
2. **Analog Feedback Control** - this can be done using the Quanser Analog Plant Simulator (APS) or any other analog computer including OP-AMP circuits implemented on breadboards. A breadboard is available on the QET DC Motor Control Trainer for students to implement their own analog controllers. In this case, the digital measurement from the encoder cannot be used
3. **PC-based Control** - using a PC with real-time control capabilities and a data acquisition (DAQ) board



Embedded System Connectivity with LabVIEW Lab

The lab use across multiple courses ranging from introductory circuit design to embedded programming to senior design projects. Best suited for lab-based courses requiring students to prototype a stand-alone electronic circuit or interface control logic to a processor. The wide selection of microcontroller options allow you to teach either 8,16, or 32-bit architectures. Complimentary CodeWarrior™ IDE development tools supports Assembly, C, and C++ programming plus complete real-time debugging. a comprehensive collection of add-on tools that teaches embedded systems using FPGAs, DSPs, microprocessor units (MPUs). The lab empowers engineering students from all disciplines to build embedded systems, whether it is next generation solar car or for autonomous vehicles. With easy-to-use graphical environment of LabVIEW, students can develop complex algorithms. Without spending lot of time on compiling code and other implementation details, data from various sensors and contextual information can be collected and compiled.

The Lab kit also includes Freescale CodeWarrior software that can be used to program the MCUs. In addition, because the board is built for NI ELVIS, educators can use the 12 integrated instruments to test the different parameters, such as operating voltage, and measure the variables; thus, providing the complete design, prototype, and deploy experience they would have in the industry.

The plug-in board includes an integrated HCS12(x)/HCS08 USB Pod. The Freescale modules that educators can plug into this board include MCUs from the family of HCS08, HCS12/HCS12x/DSP, ColdFire processors, and RF transceivers.

Typical Course Usage

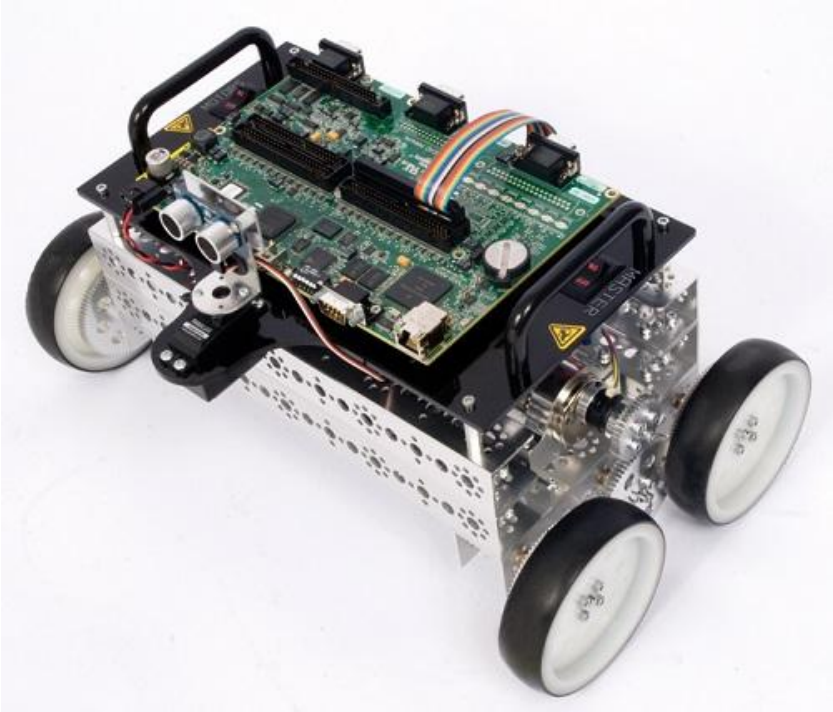
- LabVIEW integration with embedded system
- Circuit and Logic Design
- Embedded Systems / Intro to Micros

- Capstone / Senior Project

SB RIO robotic Lab

Robotics and automation are becoming an essential component of engineering and scientific systems and consequently they are very important topics for study by engineering and science students. Furthermore, robotics is built on fundamentals like transducer characterization, motor control, data acquisition, mechanics of drive trains, network communication, computer vision, pattern recognition, kinematics, path planning, and others that are also fundamental to other fields, manufacturing, for instance. Learning these fundamentals can be challenging and fun by doing experiments with a capable mobile robot. The National Instruments (NI) LabVIEW Robotics Kit and LabVIEW provide an active-learning supplement to traditional robotics textbooks and curriculum by providing multiple capabilities in a compact and expandable kit.

Sb RIO robotic kit is small, deployable device that feature a real-time processor, reconfigurable FPGA, and I/O interfaces. Each device is shipped with a complete software stack including I/O drivers, middleware, and support for NI LabVIEW application software. One can customize the devices, which are designed for high-volume and OEM applications that require high performance and reliability, to meet the specific needs of your application helps students to learn to operate robot with the software platform of LABVIEW. The robot can be controlled using controls on LabVIEW front panel and coding can be done in block diagram for various operation



Innovation Lab

Innovation Lab concept evolved to benefit the students for their experimental and research exposure. The Lab offers a flexible laboratory for the students which can be access from every place. One can get issued data acquisition devices such as My DAQ and My RIO to use at their own places.

PROPOSED TECHNOLOGIES:

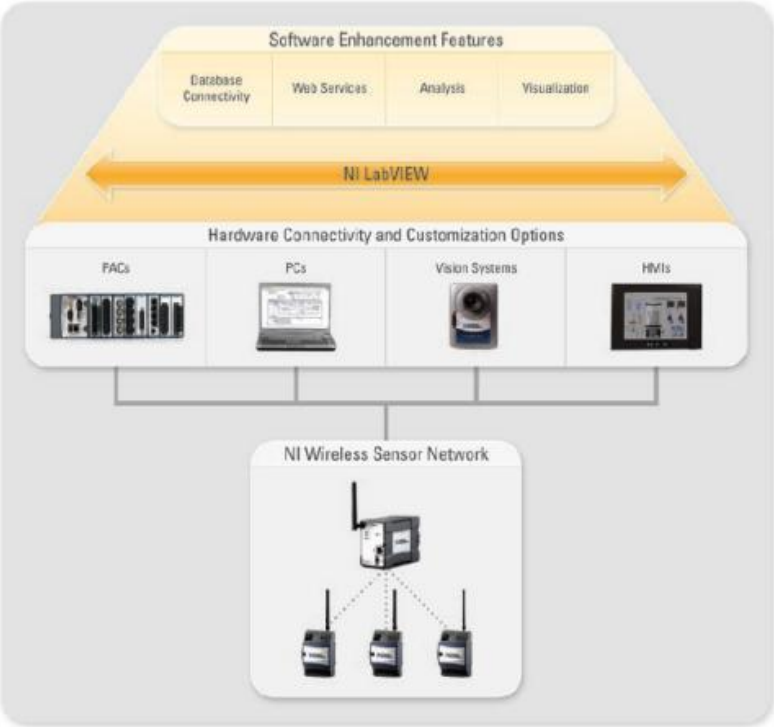
Wireless Sensor Networking

Under the Wireless sensor network (WSN) technology, Trainee will enhance their concepts in the field of wireless communication. Wireless sensor networks are ideally suited for long-term remote monitoring applications that focus on subjects such as the environment, water quality, structural health, energy quality and consumption, transportation, and machine condition. WSN measurement nodes can withstand outdoor and industrial environments and reliably monitor assets or surroundings to provide enhanced visibility into the overall health of your systems or processes.

The WSN platform can function as a simple, stand-alone wireless monitoring system, or be combined with other hardware components to achieve a complete wired and wireless measurement and control system. Through LabVIEW, trainees can combine NI wireless sensor network devices with other NI platforms to customize and enhance measurement capabilities. Trainee can complement own NI WSN with embedded NI CompactRIO systems, vision systems, or even human machine interfaces (HMIs) to create a fully integrated solution that meets the unique needs of your application.

Description:

Wireless sensor network (WSN) platform delivers low-power measurement nodes that offer industrial certifications, reliable networking, and optional weatherproof outdoor enclosures for long-term, remote monitoring applications. The measurement nodes have direct sensor connectivity and a 2.4 GHz radio to wirelessly transmit data to a WSN gateway. Each measurement node offers four analog input channels and two to four digital I/O channels that you can configure for input, sinking output, or sourcing output. With graphical NI LabVIEW software, one can easily configure their network, collect measurement data, trigger alarms through SMS or e-mail, and even view monitoring data within a Web browser.



RIO Technology

NI RIO technology helps trainee to design data acquisition, communication, and control hardware with the same ease of use and flexibility of NI LabVIEW graphical programming. Using RIO technology, one can rapidly create custom hardware circuitry with high-performance I/O and unprecedented flexibility in system timing control.

RIO technology, found throughout the NI platform, includes NI PCI and PXI R Series DAQ devices, the compact vision system, and CompactRIO. Use the R Series DAQ devices for custom data acquisition or real-time I/O applications. Develop custom FPGA logic on the compact vision system to add triggering, pulse-width modulation signals, or custom communications protocols to machine vision application. For maximum flexibility in embedded measurement and control applications, use the CompactRIO family, which provides the benefit of modular FPGA-timed I/O with built-in signal conditioning and direct signal connectivity.

Description:

CompactRIO is a real-time embedded industrial controller and acquisition system. The CompactRIO system's rugged hardware architecture includes I/O modules, a reconfigurable FPGA chassis, and an embedded controller. Additionally, CompactRIO is programmed with NI LabVIEW graphical programming tools and can be used in a variety of embedded control and monitoring applications.

The cRIO are commonly used as headless systems (without a user interface) which are designed to run in a confined space, under harsh conditions. A cRIO can also be connected to a host PC which can be used for supervisory purposes and for displaying logged data. There is also the

option of using a third-party module such as the MH-LCD-216 or an external LCD in order to add a user interface. Newer, high-performance cRIOs also have built-in VGA graphics which can be connected to a monitor for observing operation. Due to these factors, cRIOs are ideal for defense and mining applications, but they can be used in many other industrial applications as well.

Image Processing Technology

The Image Processing Lab, comprising of NI LabVIEW graphical programming software and NI IMAQ Vision Module, provides mathematical algorithms for 2D signal and image processing. The Lab also adds value to the Digital Image Processing course with easy visualization. You can teach practical image processing applications by connecting the 2D signal and image processing algorithms to real world image signals. By using the set of cameras, lens, light sources and imaging algorithms provided in the Lab, it is also possible to teach the physics of imaging and factors affecting quality of images acquired.

The ease of programming using NI LabVIEW and the many image processing functions incorporated into the NI IMAQ Vision Module enables the implementation of simple and efficient digital image processing algorithms.

Image Processing Lab, comprising of NI LabVIEW graphical Programming software and Gig-E board for image acquisition, provides mathematical algorithms for 2D Image processing and helps student understand the concepts of image processing to develop smart applications.

PXI Platform

PCI eXtensions for Instrumentation (PXI) is one of several modular electronic instrumentation platforms in current use. These platforms are used as a basis for building electronic test equipment, automation systems, modular laboratory instruments in science, and the like. PXI is based on industry-standard computer buses and permits flexibility in building equipment.

Using PXI Platforms high-performance and low-cost deployment platform for applications such as manufacturing test, military and aerospace, machine monitoring, automotive, and industrial test. It is a rugged PC-based platform for measurement and automation systems. PXI combines PCI electrical-bus features with the modular, Eurocard packaging of CompactPCI and then adds specialized synchronization buses and key software features

FPGA Platform

FPGA technology and the NI LabVIEW FPGA Module can perform accurate, high-speed FPGA-based processing on images acquired from Camera Link cameras.

The LabVIEW FPGA Module helps to implement complex FPGA programming without using low-level languages such as VHDL, which drastically reduces development time and eliminates the need for custom hardware designs.

The board can also be used with NI Educational Laboratory Virtual Instrumentation Suite (NI ELVIS) II/II+ integration, thus providing educators and students with a complete instrumentation suite to build test benches with real-world signals.

LabVIEW FPGA gives developers the ability to more efficiently and effectively design complex systems by providing a highly integrated development environment, a large ecosystem of IP libraries, a high-fidelity simulator, and debugging features. Using FPGA Platform student can do more with their application

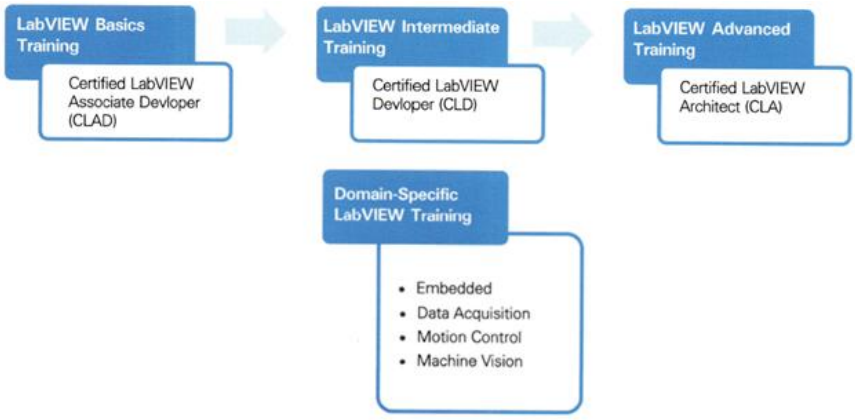
- Graphical System Design
- IP Libraries and HDL Code Reuse
- Rapid Algorithm Development

Programs

The academy offers below listed courses to B. E/M.E students of all disciplines. To make the certifications and trainings at par with NI International standards, the training contents and course material will be kept same as used by MEC NI-LabVIEW Academy Community globally. This training will provide hands on experience with latest state of art equipments pertaining to the field and current industry practices. This training will improve professional skills of an engineer which in-turn prepare future engineers to meet industry expectations.

Following training programs are being organized by MEC-NI LabVIEW Academy in regular/ evening/ weekend batches during every semester and also in vacation period:

- LabVIEW CORE I&II
- LabVIEW CORE III & Connectivity



LabVIEW CORE I&II

Duration:
Academic: 40 Hrs (24Hrs Theory + 16 Hrs Practical)
Corporate : 40 Hrs (24Hrs Theory + 16 Hrs Practical)

Goals:

This course is drafted for fresher's B.E to enhance their understanding in Virtual Instrumentation technology. Training program provides the state-of-the-art way to effectively learn basic and advanced engineering concepts using a graphical programming platform. During the program trainees will work on variety of applications in the domain of test, measurement, process control and automation, monitoring and simulation.

Trainees will go through hands-on experiment on various data acquisition card to validate the concept they learnt during the training

Course Content:

- Setting Up Hardware
- Navigating LabVIEW
- Troubleshooting And Debugging fills
- Implementing AVI
- Relating Data
- Managing Resources
- Developing Modular Application
- Common Design Techniques And Patterns
- Using variables
- Apply common design patterns that use notifiers, queues, and events
- Use event programming effectively
- Programmatically control user interface objects
- Evaluate binary file I/O format and use them in applications
- Modify existing code for improved usability
- Prepare, build, and deploy stand-alone applications

Prerequisites- B.E

Trainee Eligibility

- **Student:** B.E (All Branches)
- **Working Professionals:** B.E

Training Outcomes -

After attending this course, student will he able to:

- Learn how to develop basic applications in the LabVIEW graphical programming environment

- Create applications using a state machine design pattern
- Read and write data to file
- Recommended preparation for Certified LabVIEW Associate Developer exam,
- Apply common design patterns that use notifiers, queues, and events
- Use event programming effectively
- Programmatically control user interface objects
- Evaluate binary file I/O format and use them in applications
- Modify existing code for improved usability
- Prepare, build, and deploy stand-alone applications

LabVIEW-Intermediate

LabVIEW CORE III & Connectivity

Duration:
Academic: 40 Hrs (24Hrs Theory + 16 Hrs Practical)
Corporate : 40 Hrs (24Hrs Theory + 16 Hrs Practical)

Goals:
This advance course is drafted for B.E and CLAD (Certified LabV1EW (Associate Developer) certified candidates to increase their proficiency by exposing t he be , st developing, for designing , develop. documenting, and testing LabVIEW applications. It also helps the trainee to learn how to follow an agile approach to develop, test, and deploy your design to reduce time to completion and improve application modularity.

During the program trainees will also learn, how to increase application functionality and reduce development time by using technologies such as DLLs. ActiveX, and the Internet to take advantage of the capabilities of other applications through numerous project work.

Course Content:

- Developing Successful Applications
- Organizing the Project
- t Creating an Application Architecture
- Customizing the User Interface
- Managing and Logging Errors
- Creating Modular Code
- Calling Shared Libraries in LabVIEW
- Using VI Server Using ActiveX and .NET Objects in LabVIEW
- Connecting to Databases
- Broadcasting Data and Serving Data to a Client
- Using LabVIEW Web Services

Prerequisites- B. Tech, LabVIEW CORE 1&II, CLAD Certification

Trainee Eligibility

- **Student:** B.E (All Branches)
- **Working Professionals:** B.E

Training Outcomes -

After attending this course, student will he able to:

- To develop an application in an agile manner with improved file organization methods to resolve file conflicts.
- To use the Queued Message Handler project template to develop a multi loop application.
- To use notifiers for one-to-many communication between parallel loops
- To handle errors locally or globally depending on the severity of the error.
- To develop, integrate , and test scalable, readable, and maintainable code modules
- Identify the components, benefits, and use cases of different network communication options
- Design applications using different networking technologies and architectures locations using VI Server
- Programmatically control LabVIEW VIs and app
- Share data between LabVIEW and other applications over a network
- Create and deploy Web services using LabVIEW
- Use the LabVIEW Database Connectivity Toolkit, ActiveX and .NET, DLLs and UDP and TCP/IP to communicate with databases

Joint certification with National Instruments:

After the successful completion of the course and qualitative test the academy will award joint certification by MEC and NI to trainees. To make the certifications and trainings at par with NI International standards, the training contents and course material will be kept same as used by NI LabVIEW Academy Community globally. It is relevant that for promoting applied research in this field, adequate knowledge base along with practical exposure is essential for cross disciplinary technologies.

International Certification

CLAD(Certified LabVIEW Associate Developer)

The NI Certified LabVIEW Associate Developer is the first step in the three-part NI LabVIEW certification process. It indicates a broad working knowledge of the LabVIEW environment, a basic understanding of coding and documentation best practices, and the ability to read and interpret existing code. You can use this certification to assess and validate an individual's LabVIEW development skills for the purpose of project staffing or career advancement.

Certification Exam Details

- Prerequisite: LabVIEW Core I&II
- Format: Multiple choice
- Duration: One hour
- Location: MEC-NI LabVIEW Academy

CLD(Certified LabVIEW Developer)

The Certified LabVIEW Developer is the 2nd step in the three-part NI LabVIEW certification process. Which indicates the ability to design and develop functional programs while minimizing

development time and ensuring maintainability through proper documentation and style. You can use this certification for assessment and validation of an individual's LabVIEW development skills for the purpose of project staffing or career advancement.

Certification Exam Details

- Prerequisite: Certified LabVIEW Associate Developer
- Format: Application development
- Duration: 4 hours

CLAD Certified Candidates

MEC NI LabVIEW Academy appreciates the efforts and enthusiasm of the faculties and students who have achieved the International Certification of CLAD (Certified LabVIEW Associate Developer) in the field of Virtual Instrumentation.

Congratulation to you all

S.No	Student Name	Father Name	College Name
1	Arunkumar	Arasappan	Mahendra Engineering College
2	Manojkumar	Arjunan	Mahendra Engineering College
3	Satheshkumar	Arumugam	Mahendra Engineering College
4	Senthil	Arumugam	Mahendra Engineering College

5	Muthukumar	Arunachalam	Mahendra Engineering College
6	Sudhan	Backiasamy	Mahendra Engineering College
7	Rajan	Balakrishnan Swarnambal	Mahendra Engineering College
8	Mohankumar	Balaraman	Mahendra Engineering College
9	Praveenkumar	Baskaran	Mahendra Engineering College
10	Subapriya	Bharathi	Mahendra Engineering College
11	Aravinth Bhoopathi	Bhoopathi	Mahendra Engineering College
12	Anjalikumari	Birendraprasad	Mahendra Engineering College
13	Rahul Kishore Raj	Braj Kishore Sajjan	Mahendra Engineering College
14	Saichithraa	Chakkaravathi	Mahendra Engineering College
15	Indhumathi	Chandrasekaran	Mahendra Engineering College
16	Kiruthika	Chandrasekaran	Mahendra Engineering College
17	Indhu	Chinnathambi	Mahendra Engineering College
18	Satheesh	Chinnusamy Sadaiyappan	Mahendra Engineering College
19	Saranya	Chittybabu	Mahendra Engineering College
20	Nandhakumar	Devendran	Mahendra Engineering College
21	Sakthivel	Dharman	Mahendra Engineering College
22	Varsyni	Durairaj	Mahendra Institute Of Technology
23	Nandhini	Duraisamy	Mahendra Engineering College
24	Sathya	Elangovan	Mahendra Engineering College
25	Balaji	Elumalai	Mahendra Engineering College
26	Hemandhraj	Elumalai	Mahendra Engineering College
27	Ranjith	Ganesan	Mahendra Engineering College

28	Vigneshwar	Gnanasekaran	Mahendra Engineering College
29	Balaji	Gopalakrishnan	Mahendra Engineering College
30	Vishal Gupta	Gopi Chandra Gupta	Mahendra Engineering College
31	Jayapriya	Govindaraj	Mahendra Engineering College
32	Archanaa	Govindarajan	Mahendra Engineering College
33	Yuvarenuga	Gunasekaran	Mahendra Engineering College
34	Aswin Adit	James Inbaraj	Mahendra Engineering College
35	Santhosh Kumar	Jayapal Rajaganesh	Mahendra Engineering College
36	Jenifer	Jayaraj	Mahendra Engineering College
37	Jayaprakash	Jayaraman	Mahendra Engineering College
38	Mercy Catherene	Jennifer Sampath Kumar	Mahendra Engineering College
39	Salmaan	Kamalbasha	Mahendra Institute Of Technology
40	Akshara	Kanagaraj	Mahendra Engineering College
41	Vasuki	Kandasamy	Mahendra Institute Of Technology
42	Abirami	Kandhasamy	Mahendra Engineering College
43	Chandru	Kandhasamy	Mahendra Engineering College
44	Aadhithyan	Kannan	Mahendra Engineering College
45	Deepthi	Kannan	Mahendra Engineering College
46	Pavithran	Kannan	Mahendra Engineering College
47	Sundarrajan	Kannan	Mahendra Engineering College
48	Gowsihaperumal	Kasivisvanathan	Mahendra Engineering College
49	Jeevasree	Kathiresan	Mahendra Engineering College
50	Krishnaraj	Kesavan	Mahendra Engineering College

51	Deril Raj	Kirubakaran	Mahendra Institute Of Technology
52	Kowsalya	Krishnamoorthy	Mahendra Engineering College
53	Sivashankaran	Krishnamoorthy	Mahendra Engineering College
54	Manikandan	Kumanan	Mahendra Engineering College
55	Ajith Kumar	Kumar	Mahendra Engineering College
56	Aparna	Kumar	Mahendra Engineering College
57	Iswarya	Kumar	Mahendra Engineering College
58	Karthik	Kumar	Mahendra Engineering College
59	Lokeshkumar	Kumaresan	Mahendra Engineering College
60	Vigneshwaran	Magendran	Mahendra Engineering College
61	Pradeepan	Mahadevan	Mahendra Engineering College
62	Kalaiselvi	Manickkam	Mahendra Engineering College
63	Manikandan	Marithasan	Mahendra Engineering College
64	Krishnamoorthi	Mathesh	Mahendra Engineering College
65	Mohsina Aafia	Mohamed Irshat	Mahendra Engineering College
66	Arun	Mohan	Mahendra Engineering College
67	Devendra Nivetha	Mohanraju	Mahendra Engineering College
68	Somasundaram	Mummoorthy	Mahendra Engineering College
69	Vinoth	Muniappa	Mahendra Engineering College
70	Swetha	Munisamy	Mahendra Engineering College
71	Vengatesan	Murugammal Rangasamy	Mahendra Engineering College
72	Naveen	Murugan	Mahendra Engineering College
73	Ramya	Murugan	Mahendra Engineering College

74	Vigneshwaran	Murugan	Mahendra Engineering College
75	Vikraman	Murugan	Mahendra Engineering College
76	Dhivya	Murugavel	Mahendra Engineering College
77	Selladurai	Nallasamy	Mahendra Engineering College
78	Deepanraj	Natarajan	Mahendra Engineering College
79	Kaviya	Natarajan	Mahendra Engineering College
80	Sathishkumar	Natarajan	Mahendra Institute Of Technology
81	Jeevitha	Natesan	Mahendra Engineering College
82	Sri Harsha	Nettem	Mahendra Engineering College
83	Raghib Iqbal	Noorul Hoda	Mahendra Engineering College
84	Gaurav Kumar	Oumkar Prasad	Mahendra Engineering College
85	Monika	Padmanaban	Mahendra Engineering College
86	Saranya	Palaniappan	Mahendra Engineering College
87	Aravindh	Palanisamy	Mahendra Engineering College
88	Gomathi	Palanisamy	Mahendra Engineering College
89	Prakash	Palanisamy	Mahendra Engineering College
90	Sanju Kumar	Palanisamy	Mahendra Engineering College
91	Shalini	Palanisamy	Mahendra Engineering College
92	Karunya	Palanivelu	Mahendra Engineering College
93	Priyadharshini	Pandiyan	Mahendra Engineering College
94	Arunkumar	Paramasivam	Mahendra Institute Of Technology
95	Sathishkumar	Parameshwaran	Mahendra Engineering College
96	Balaji	Periyasamy	Mahendra Engineering College

97	Dhanu	Periyasamy	Mahendra Engineering College
98	Ashokkumar	Perumal	Mahendra Engineering College
99	Maniselvan	Perumal	Mahendra Engineering College
100	Sasikumar	Perumal	Mahendra Engineering College
101	Sasi Rekha	Peter	Mahendra Engineering College
102	David Kirubakaran	Philip	Mahendra Engineering College
103	Saraswathi	Ponnusamy	Mahendra Institute Of Technology
104	Sangeeth Kumar	Pounsamy	Mahendra Engineering College
105	Ajith Kumar	Prem Kumar	Mahendra Engineering College
106	Safiullah	Rahamathulla	Mahendra Engineering College
107	Sudhandirapooja	Raja	Mahendra Engineering College
108	Saranya	Rajavel	Mahendra Engineering College
109	Bharathi	Rajavelu	Mahendra Engineering College
110	Thirumurugan	Raji	Mahendra Engineering College
111	Mythili	Rajkumar	Mahendra Engineering College
112	Dharmaseelan	Ramachandran	Mahendra Engineering College
113	Divya	Ramachandran	Mahendra Engineering College
114	Manikandan	Ramachandran	Mahendra Engineering College
115	Naveena	Ramadurai	Mahendra Engineering College
116	Yogeshwaran	Ramu	Mahendra Engineering College
117	Gowrisankari	Ranganathan	Mahendra Engineering College
118	Janani	Ravi	Mahendra Engineering College
119	Kishore Kumar	Ravi	Mahendra Engineering College

120	Monikchandru	Ravi	Mahendra Engineering College
121	Kousalya	Ravikumar	Mahendra Engineering College
122	Sabarinathan	Ravikumar	Mahendra Institute Of Technology
123	Shanmugavel	Sakthivelmurugan	Mahendra Engineering College
124	Naveen Kumar	Sampath	Mahendra Engineering College
125	Santhiya	Sankar	Mahendra Engineering College
126	Devipriya	Saravanan	Mahendra Engineering College
127	Jayaseelan	Sekar	Mahendra Engineering College
128	Gowri	Sekar.Andal	Mahendra Engineering College
129	Dhurga	Selladurai	Mahendra Engineering College
130	Latha	Selvam	Mahendra Engineering College
131	Sophiya	Selvam	Mahendra Engineering College
132	Balaji	Selvaraj	Mahendra Engineering College
133	Jagadeesh	Selvaraj	Mahendra Engineering College
134	Sowmya	Selvaraj	Mahendra Engineering College
135	Lavanya	Selvaraju	Mahendra Engineering College
136	Nandhakumar	Sengottuvelu	Mahendra Engineering College
137	Subha	Senthilkumar	Mahendra Institute Of Technology
138	Nandhinipriya	Shanmugam	Mahendra Engineering College
139	Deepika	Sivakumar	Mahendra Engineering College
140	Logeswari	Srinivasan	Mahendra Engineering College
141	Ramya	Subramaniyan	Mahendra Engineering College
142	Praveen	Sundhararajan	Mahendra Engineering College

143	Sudhaiva	Suresh	Mahendra Engineering College
144	Ashmitha	Syed Noorullah	Mahendra Engineering College
145	Suganthi	Thangaraju	Mahendra Engineering College
146	Nagavalli	Thangarasu	Mahendra Engineering College
147	Meena	Thangavel	Mahendra Engineering College
148	Abhinaya	Thirumalaisamy	Mahendra Engineering College
149	Priyadharsini	Thiruthani Murugan	Mahendra Engineering College
150	Nawin	Udhayakumar	Mahendra Engineering College
151	Sri Sai Kumar	Veerakumar	Mahendra Engineering College
152	Keerthana	Velu	Mahendra Engineering College
153	Soniya	Velu	Mahendra Engineering College
154	Meena	Venkatachalam	Mahendra Engineering College
155	Sivamani	Venkatesan	Mahendra Engineering College
156	Vignesh	Venkatesan	Mahendra Engineering College
157	Vinitha	Vijayakumar	Mahendra Engineering College
158	Srihari	Vijayan	Mahendra Engineering College
159	Sri Balaji	Vijayarathinam	Mahendra Engineering College
160	Subasheni	Viswanathan	Mahendra Engineering College
161	Sujithra	Viswanathan	Mahendra Engineering College

CLD Certified Candidates

MEC NI LabVIEW Academy appreciates the efforts and enthusiasm of the faculties and students who have achieved the International Certification of CLD (Certified LabVIEW Developer) in the field of Virtual Instrumentation.

Congratulation to you all

List of Students to be added

S.no	Student Name	Father Name	College Name
1	Muthukumar	Arunachalam	Mahendra Engineering College
2	Gothandaraman	Balaguru	Mahendra Engineering College
3	Indhu	Chinnathambi	Mahendra Engineering College
4	Sathya	Elangovan	Mahendra Engineering College
5	Pavithran	Kannan	Mahendra Engineering College
6	Gowsihaperumal	Kasivisvanathan	Mahendra Engineering College
7	Jeevasree	Kathiresan	Mahendra Engineering College
8	Vinoth	Muniappa	Mahendra Engineering College
9	Swetha	Munisamy	Mahendra Engineering College
10	Rajeshkumar	Murugan	Mahendra Engineering College
11	Maniselvan	Perumal	Mahendra Engineering College
12	Sasi Rekha	Peter	Mahendra Engineering College
13	Vignesh	Rajendran	Mahendra Engineering College
14	Subhash	Ravichandran	Mahendra Engineering College
15	Kalayarasan	Sivaraj	Mahendra Engineering College
16	Boopathy Raja	Subramani	Mahendra Engineering College
17	Priyadharsini	Thiruthani Murugan	Mahendra Engineering College
18	Motheesh	Velayutham	Mahendra Engineering College
19	Naveenkumar	Venkatachalam	Mahendra Engineering College
20	Sabarish	Venkatesan	Mahendra Engineering College
21	Ambikapathi	Manikandan	Mahendra Engineering College

MoU signing with National Instruments

LabVIEW Academy @ Bangalore in the year 2015

Best Performing LabVIEW Academy for year 2017 @ Bangalore