MSME-TOOL ROOM, HYDERABAD
(CENTRAL INSTITUTE OF TOOL DESIGN)
(A Government of India Society,Ministry of MSME)
Balanagar, Hyderabad, PIN - 500037. Ph No.040-23771959
Website: www.citdindia.org

Central Institute of Tool Design

Crash Course Description (LCA)

Certificate Program on Industrial Automation by using PLC

Description: -Industrial automation by using PLC, that refers to the use of computer and machinery aided systems to operate the various industrial operations in a well-controlled manner. Industrial automation can improve the efficiency, productivity, quality, and safety of industrial processes by reducing human intervention and errors, and enabling remote monitoring and control. Industrial automation can also adapt to changing conditions and learn from data and experience. There are two major types of industrial automation systems: process plant automation and manufacturing automation. Process plant automation involves controlling and optimizing the processes that produce various products from raw materials. Manufacturing automation involves controlling and coordinating the production flow, assembly, and packaging of goods. Both types of industrial automation systems use different devices and technologies such as sensors, actuators, controllers, communication networks, software, and artificial intelligence.

Take Away :- After Completion of this course, the trainee will have hands on expertise in the following areas:

- S7-1200 PLC: Defining the functionality, interface, and performance requirement of the PLC.
- Ladder Logic: Programming the PLC by using Ladder Logic and functional Block programming languages by using Total Integrated Automation (TIA) software.
- Physical wiring: Physical wiring of the PLC as per the logic with sensors and actuators.
- Use Case Study: Integration of PLC with Conveyor system for product quality checking.

Eligibility: Pursuing/Completed Diploma (ECE/ECM/EEE) /B.Tech/BE/ME/M.tech (Electronics/ECE/EEE).

Duration:- 10 days. Every day 2 hrs. online Class.

Fees: - Rs 3000/- (GST Included)

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Crash Course Description (LCA)

Certificate Program on Quadcopter's Assembling and Testing

Description: -

- Welcome to Integration and Testing of Quadcopter Systems, the final course in the Quadcopter Design and Simulation Program. This course is focused on integrating all the quadcopter subsystems into a cohesive system-level model and conducting thorough testing to ensure optimal performance.
- Building upon the airframe and electromechanical models developed in earlier courses, you will merge these subsystems into a system-level model.
- This integration process will enable you to simulate the quadcopter's flight virtually and gain valuable insights into its behavior.
- Through the creation of interactive tests, you can observe firsthand how the quadcopter behaves under different conditions. This iterative approach will aid in refining the design and achieving optimal performance.
- Additionally, scenario-based tests will be conducted to thoroughly evaluate the quadcopter's design.
- Advances in engineering design and simulation have led to the development of concepts like virtual prototyping and digital twins, allowing engineers to test and refine their designs without needing physical prototypes.
- Simulating various scenarios will ensure that the quadcopter functions as intended in real-world situations.
- In this course project, you will combine a go-kart model with a brake subsystem to comprehensively test designs under different track conditions. This practical application will strengthen your skills in integrating subsystems and evaluating system performance.
- By the end of this course, you will learn the crucial skills of system-level integration, comprehensive testing, and organization. You'll gain the confidence to design and evaluate quadcopter systems effectively, ensuring optimal performance and functionality.
- No prior modeling experience is required. Simulink and Simscape, industry-leading block diagram environments, are used throughout the courses to teach fundamental modeling workflows.

At a glance: -

- Level: Introductory
- Language: English
- Mode of Teaching: Online & Offline
- Duration: 2 weeks
- Price: Rs: 1,180/- (GST Included)
- Class: 2 hours per day
- Eligibility: Pursuing/Completed (Diploma (Mechanical/ECE/ECM/EEE/CSE/Allied) /B.Tech/BE/ME/M.tech (Mechanical/Electronics/ECE/EEE/CSE/Allied)/BSc/MSc (Electronics/CSE/Allied))
- Batch Commencement: Every Month First and Third Wednesday

What you'll learn:-

- How to create subsystems and masks
- How to integrate designs into a system-level model
- How to test a system-level model

Ways To Take This Course:

- Log on to Citd Facebook or Citd LinkedIn or Citd Instagram
- Log on to www.citdindia.org
- On the Home page rights side down please click on Crash Courses In ESDM, LCA & Industry 4.0 Departments.
- You will find Notification and Registration Form links on the page.
- To know about Course details please click on Notification link.
- To take registration please click on Registration Form link and follow the instructions on the page.
- For this course you have to choose LCA Department.
- For Offline registration Please call to front office desk phone No: - 040-29561793 or Mobile No: +91- 9908211787 or what's app No: +91-9908211787.

Sd/-
Principal Director

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Crash Course Description (LCA)

Certificate Program on Quadcopter's Electromechanics Simulation

Description: -

- Welcome to Modeling the Quadcopter Electromechanical System, the second course in the Quadcopter Design and Simulation Program. This course introduces the electrical part of the system to model the battery and the transfer of electrical energy to power the mechanical components powering the flight of the quadcopter.
- Building upon the foundations established in the Quadcopter Flight Simulation course, this course takes you further in refining the quadcopter system model.
- You will model the quadcopter's electromechanical components, which include the battery, motor, and propeller. By simulating the behavior of these components, we will determine if they are sufficient to lift the quadcopter off the ground.
- You will construct multidomain models, which combine multiple engineering disciplines, such as mechanical, electrical, electronics and computer science.
- Prebuilt blocks containing essential physics will be introduced to simplify the modeling process. This approach provides engineers with the right level of detail to evaluate a design without spending time to derive every aspect from scratch.
- To further explore the system's behavior, you will run a parameter sweep, characterizing the performance of the electromechanical system under various conditions. This analysis will provide critical insights into optimizing the quadcopter's design.
- The course project focuses on modeling and simulating the dynamics of a hydraulic braking system. Using an incremental modeling approach, you will start with a starter model and gradually add more functionality while varying the applied brake pressure. This practical project will deepen your understanding of complex system behavior and enhance your modeling and simulation skills.
- By the end of this course, you will have acquired the knowledge and skills necessary to model and simulate the electromechanical system of the quadcopter. You will understand how to visualize the behavior of complex models through measurements and simulations, enabling you to make informed design decisions.
- No prior modeling experience is required. Simulink and Simscape, industry-leading block diagram environments, are used throughout the courses to teach fundamental modeling workflows.

At a glance:-

- Level: Introductory
- Language: English
- Mode of Teaching: Online & Offline
- Duration: 2 weeks
- Price: Rs: 1,180/- (GST Included)
- Class: 2 hours per day
- Eligibility: Pursuing/Completed (Diploma (Mechanical/ECE/ECM/EEE/CSE/Allied) /B.Tech/BE/ME/M.tech (Mechanical/Electronics/ECE/EEE/CSE/Allied)/BSc/MSc (Electronics/CSE/Allied))
- Batch Commencement: Every Month First and Third Wednesday

What you'll learn:-

- An introduction to the electrical part of the system
- Model the electromechanical components of the Quadcopter
- How to perform a parameter sweep

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Crash Course Description (LCA)

Certificate Program on Quadcopter's Flight Simulation

Description: -

- Welcome to Modeling the Quadcopter Airframe. In this course, you will gain the skills to model the mechanical subsystems, analyze flight dynamics, and refine your designs using simulations.
- This course focuses on breaking down the complex quadcopter system into smaller, more manageable subsystems. You will learn the mechanical part of the quadcopter, known as the airframe subsystem, and simulate its flight behavior. You will model free-body diagrams and mathematical equations into block diagrams through a step-by-step approach, enabling a detailed analysis of the quadcopter's flight dynamics.
- To accurately represent the physical system and model the mathematical equations involved in the quadcopter's motion, you will utilize Simulink and Simscape, powerful tools used in industry for modeling physical systems.
- To reinforce your learning, you will have to practice your skills with an additional given project on Quadcopter. This practical application will further enhance your modeling and analysis skills.
- By the end of this course, you will balance the upward thrust of the propellers against the downward force of gravity to see your quadcopter take flight.
- No prior modeling experience is required. Simulink and Simscape, industry-leading block diagram environments, are used throughout the courses to teach fundamental modeling workflows.

At a glance:-

- Level: Introductory
- Language: English
- Mode of Teaching: Online & Offline
- Duration: 2 weeks
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- Batch Commencement: Every Month First and Third Wednesday

What you'll learn:-

- How to model the mechanical component
- How to simulate and test the mechanical subsystem
- How to analyze flight dynamics
- How to refine a quadcopter simulation

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