



ASU Luban Workshops Practical Training Courses 2023

Luban Workshops at Ain Shams University announces practical training courses for engineering and technology students and graduates in the fields of CNC machines operation and maintenance, Renewable Energy Installations and Operations, and Automotive Inspection and Maintenance. The courses will be held at the unique facilities of Luban Workshops at the Faculty of Engineering - Ain Shams University.



Target trainees

Students and graduates of engineering, science and technology institutions

Duration & Dates

The duration of each course is two weeks including 30 hours of practical work
28/1/2023 - 9/2/2023

Registration

For registration, please send an email to luban@eng.asu.edu.eg
Limited Seats !

Course Fees

2300 EGP/course

Offered Courses

1. CNC

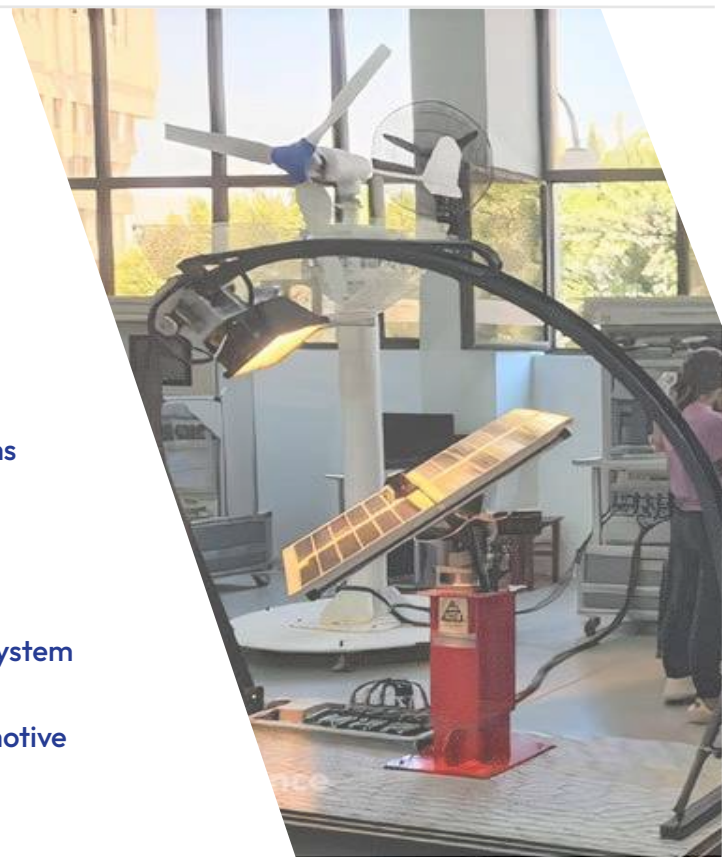
- 1.1 CNC Hardware Connections and Operation
- 1.2 CNC Maintenance (Intermediate Level)

2. Energy

- 2.1 Installation, Design, and Operation of Photovoltaic Systems
- 2.2 Photovoltaic & Wind Energy Conversion Systems

3. Automotives

- 3.1 Fault Diagnosis and Elimination of Automobile Electrical System
- 3.2 Automotive Engine Maintenance
- 3.3 Comprehensive Fault Diagnosis and Elimination for Automotive
- 3.4 Maintenance of Mechanical System in Automobile Engine





1.1 CNC Hardware Connections and Operation

Aim

This course aims at providing the trainees with the technical skills of:

1. Understanding the structure, components, and working principles of CNC machines
2. Knowing the hardware wiring and connections of various parts and components of the system
3. Operating CNC machines
4. Providing extensive hands-on exercises

Prior knowledge

None

Contents

The course covers the following contents:

- Basic CNC machine configurations, CNC hardware components
- CNC screens, their purpose, and basic screen navigation
- Memory backup and restoration/recovery
- CNC motors, sensors, servo, and spindle system hardware
- Details of system hardware and connections
- Basics of electrical circuits components and wiring diagrams, knowing electric systems of CNC milling and lathe, connecting the electric system of CNC machines
- Measuring the electric system of CNC machines
- Introduction to G-code, part program structure

Duration

Two weeks – 30 hours

Number of trainees

12 – 16



1.2 CNC Maintenance (Intermediate Level)



Aim

This course aims at providing the trainees with the technical skills of

1. Understanding how the PMC system works in CNC by explaining the Input/Output hardware
2. Performing routine maintenance and debugging of CNC failures and faults.
3. Adjusting PMC setting parameters and servo initial settings
4. Developing software to create a fully-functional ladder in CNC machines

Prior knowledge

The course trainees should have prior knowledge of CNC Hardware connections, operation, electrical circuits

Contents

The course covers the following contents:

- Replacing fuses and batteries in CNC controller system
- Setting the basic parameter of Fanuc CNC system
- Setting of Reference Points for FANUC CNC System
- I/O Link address allocation
- PMC ladder logic, diagnostic tools and hardware
- Ladder editing and development
- Troubleshooting of CNC and servo alarms and general system failures
- Fault diagnosis and troubleshooting of electric systems of the CNC machines
- Ladder logic and troubleshooting machine alarms and M-codes
- Servo maintenance configuration, adjustments, and parameter settings
- Setting of positioning parameters and servo functions

Duration

Two weeks – 30 hours

Number of trainees

12 – 16



2.1 Installation, Design, & Operation of Photovoltaic Systems

Aim

This course aims at providing the trainees with hands on experience of PV systems, components, their control.

Prior knowledge

The course trainees should have prior knowledge of electrical circuits and programming basics.

Contents

The course covers the following contents:

- Introduction to PV systems.
- IV characteristics of PV cell.
- Installation and Operation of Simulated Light Source Tracking Control System.
- Installation and Operations of Energy Conversion and Storage Control System
- Maximum power point tracking.
- Standalone PV systems components.
- Design of Standalone PV system manually.
- PV syst application.
- Installation and Operation of Grid-connected Inverting Control System

Duration

30 hours

Number of trainees

12 – 16



2.2 Photovoltaic & Wind Energy Conversion Systems



Aim

This course aims at providing the trainees with hands on experience of PV systems, components, their control.

Prior knowledge

The course trainees should have prior knowledge of electrical circuits, electric machines and programming basics.

Contents

The course covers the following contents:

- Introduction to PV and wind systems in addition to their application.
- IV characteristics of PV cell.
- Solar tracking & Maximum power point tracking.
- Standalone PV systems (Components & Design).
- Investigating switchgears and Kits components
- Electrical Machines (Types & Construction)
- Operation of energy conversion and storage system
- Speed Control methods of a Wind Turbine
- Power Generation from a wind turbine and hardware configuration

Duration

30 hours

Number of trainees

12 – 16



3.1 Fault Diagnosis and the Elimination of Automobile Electrical System

The automobile electrical system is an important part of automobile. As automobile maintenance technicians, we should pay attention to the fault diagnosis and elimination of automobile electrical system. The fault diagnosis and elimination items of automobile electrical system explain from the aspects of power supply system, start-up system, whole-car lighting system to body electrical system.

Aim

This course aims at providing the trainees with the technical skills to:

1. Be able to describe the function, working principle and structure of power supply, start-up, whole car lighting and body electrical systems.
2. Be able to carry out fault diagnosis and elimination of power supply, start-up, whole-car lighting, and body electrical systems

Prior knowledge

The course trainees should have prior knowledge of basic electric and electronic elements and Kirchhoff law.

Contents

The course covers the following contents:

1. Battery: assembly, disassembly, testing, and charging
2. Alternator: assembly, disassembly, and inspection
3. Starting system: assembly, disassembly, and inspection
4. Lighting system: assembly, disassembly, and inspection
5. Body electrical system

Duration

Two weeks – 30 hours

Number of trainees

12 – 16



3.2 Automotive Engines Maintenance

Aim

This course aims at providing the trainees with the technical skills of how to professionally assemble and disassemble the car engine supply systems such as, fuel injection, ignition, cooling, and lubrication systems. Also, providing additional skills for diagnostic the faults in these engine supply systems and how to apply their hand on maintenance.

Prior knowledge

The course trainees should have prior knowledge of internal combustion engine basics and fundamentals.

Contents

The course covers the following contents:

Maintenance of mechanical system of engine

- Maintenance of fuel supply system
- Maintenance of air supply system
- Maintenance of cooling system
- Maintenance of lubrication system

Troubleshooting of electronic control system of engine

- Troubleshooting of ignition system
- Troubleshooting of fuel system

Duration

Two weeks – 30 hours

Number of trainees

10 – 15



3.3 Comprehensive Fault Diagnosis and Elimination for Automotive

Aim

This course aims to understand all kinds of engine symptoms of engine failures such as engine failure to start and malfunction, master the engine systems involved in engine failures and understand the basic diagnostic methods and processes of engine failure to start and malfunction.

Prior knowledge

The course trainees should have prior knowledge of internal combustion engine basics and fundamentals.

Contents

The course covers the following contents:

1. Describe the engine symptoms that lead to the failure of starting and operation.
2. Explain the relevant systems involved in engine failure and malfunctioning.
3. Describe the basic diagnostic methods and processes used in engine failure of start-up and fault diagnosis.
4. Analyze and diagnose the common malfunctions that the engine can't start and badly run.

Task I Fault Diagnosis and Elimination of Engine Failure to Start

Task II Fault Diagnosis and Elimination of Engine Malfunctioning

Duration

Two weeks – 30 hours

Number of trainees

10 – 15



3.4 Maintenance of Mechanical System in Automobile Engine

Aim

This course aims to provide the trainees with the technical skills of assembling and disassembling the parts. Also, the trainee will be aware of the lifetime of all mechanical parts in engines. The trainee will know the different types of maintenance (predictive, preventive, corrective, ...).

Prior knowledge

The course trainees should have prior knowledge of engine operation

Contents

The course covers the following contents:

- Get the knowledge of the required maintenance of every mechanical part in engine.
- Find out the installation position of various components of the engine systems
- Detect and diagnose engine system by using detection and diagnosis equipment.
- Change the engine system components through referring to the maintenance manual.
- Process the ability of querying information and using maintenance manual.
- Obtain the work style of operating normally and environmental protection awareness.

Duration

Two weeks – 30 hours

Number of trainees

10 – 15