



Aerospace Engineering

⇒ Course 01: Aerospace Engineering

Introduction

- Presentation of the Course
- Course Structure
- Introduction to Airplanes and their Main Elements

Classification of Airplanes

- General Aviation
- Commercial Aviation
- Military Aircraft

Aerodynamics

- Airplane Forces and Trajectory
- Lift and Drag: Newton's 3rd Law and Bernoulli
- 3D Wings Lift and Drag
- High Lift Devices
- Turbulence and Stall

Airplane Propulsion Engines (JETs)

- Engines Overview
- Inlets
- Compressors
- Turbines and Nozzles
- TurboJet vs. Turbofan Review

Flight Mechanics

- Gravity Center and Pressure Center: Stability
- Control Surfaces of an Aircraft and Maneuvers

Aircraft Performance

- Definition of Weights
- Range of an Aircraft as function of Weight
- Optimization of Range – Breguet Equations

⇒ Course 02: Flight Mechanics

- Intro and Theory
- Aircraft Modeling of 6 Degree of Freedom
- Aircraft Analyses
- Aircraft Flying Qualities Certification Requirements

⇒ Course 03: Engineering Calculus Made Simple (Derivatives)

- Introduction
- Functions
- Limits
- The Derivative
- Trig Identities
- The Squeeze Theorem
- The Derivative of $\sin(x)$
- The Derivative of $\cos(x)$
- Other Derivatives

⇒ Course 04: Energy Engineer Course

- History of Energy Consumption
- Non-Renewable Energy
- Basics of Sustainable Energy
- Fuel Cell
- Solar Energy
- Wind Energy
- Ocean Energy
- Geothermal Energy
- Application of Renewable Energy
- Being Environment-Friendly

⇒ Course 05: MATLAB Simulink for Electrical Power Engineering

- Applications on Matrices in MATLAB
- Power Electronics Simulations Using Simulink in MATLAB
- Solar Energy Simulation Using Simulink in MATLAB
- DC Motor Simulation Using Simulink in MATLAB
- Induction Motor Simulation Using Simulink in MATLAB
- Synchronous Generator Simulation in Simulink of MATLAB
- Power System Simulations

⇒ Course 06: Engine Lubricant System Training - Level 4

- Introduction
- Functions & Components of Lubrication System
- Basic Working of the Lubrication System
- Properties, Additives & Designations of Lube Oils
- Lab Analysis & Diagnostics of the Lubrication Oil

⇒ Course 07: Electrical Engineering DC Circuit Analysis

- Course Introduction
- Introduction to Electrical Engineering
- Circuit Analysis Introduction
- Circuit Analysis Techniques
- Ohm's Law
- Kirchhoff Current Law
- Kirchhoff Voltage Law
- Nodal Analysis
- Mesh Analysis
- Importance of Circuit Analysis

⇒ Course 08: Digital Electric Circuits & Intelligent Electrical Devices

- Introduction
- Numbering Systems
- Binary Arithmetic
- Logic Gates
- Flip-Flops
- Counters & Shift Registers
- Adders

⇒ Course 09: PAT Level 4

- Introduction to PAT
- Relevant Statutory Provisions for PAT
- Risk Assessment
- Reducing and Controlling Risks
- Electrical Units and Appliance Classification
- Initial Visual Examination
- Instruments for Testing and Equipment Inspection
- Electrical Installation Testing
- Safety Precautions in Electrical Testing
- Reporting and Record-keeping

⇒ Course 10: PUWER

- Provision and Use of Work Equipment Regulations
- Selection and Conformity of Work Equipment
- Safe Functionality of Work Equipment
- Monitoring and Evaluation of Work Equipment
- Maintenance of Work Equipment

⇒ Course 11: First Aid Training

- Introduction to Workplace First Aid
- Legal Framework for Workplace First Aid
- Incident Management at Work
- Primary Survey
- Secondary Survey
- Basic First-Aid Techniques
- Dealing with Minor Injuries at the Workplace
- Secondary Illness Loss of Responsiveness and CPR
- Secondary Illness Breathing Problems
- Aerospace: Engineering: Secondary Illnesses and Injuries
- Dealing With Fractures and Dislocations
- Call for an Emergency



Thank You