

# GULF INSTITUTE



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# Vehicle Control Systems

## INTRODUCTION

- This Vehicle Control Systems training course is set to deliver newest guiding principles of road vehicles design regarding safety, quality improvement, ecology and application in urban road and road transport sector, its future concepts due to constant industry improvement following rapid road traffic and transport user requests, as well to present and show the principles of operations of these systems. Witnessing that technology is evolving at a high rate and many systems that were a major discovery until yesterday are being replaced by even greater discovery today.
- This is also happening with the Vehicle Design, Safety and Control Systems which are constantly improving based on a wide variety of information about road traffic and transport, traffic user learning and behavior and vehicles technology standards and are set to improve traffic management and increase vehicles productivity.

This training course will highlight:

- Principles of vehicles
- Vehicles safety technology
- Intelligent vehicle systems
- Future vehicles concepts
- Vehicle - Road - Driver correlation

## OBJECTIVES

At the end of this training course, the participant should be able to:

- Identify the aspects of road vehicles design vs. legal and technical limits
- Learning how to distinct role of certain subsystems on a vehicle itself
- Understand vehicle architecture based on modern safety systems
- Understand the Driver - Road - Vehicle correlation
- Prepare for future concepts of road vehicles

## TRAINING METHODOLOGY

- This training course will have subjects presented and covered by the trainer utilising a variety of proven adult learning teaching and facilitation techniques, focused on examples and best practices from the industry. This will include active participation, in class practice cases, followed by quiz, active group sessions, video materials and other activities.

## ORGANISATIONAL IMPACT

- The organization will benefit from learning and recognizing the guiding principles of road vehicle design in urban road and road transport sector application, its future concepts due to constant industry improvement following rapid road traffic and transport user requests vs. safety, product values and ecological restraints and demands.
- This will guide and manage to cut costs and improve their organizations workflow through the proper application of Vehicle Control Systems as well as acquire structured and effective method to implement vehicle - road - driver systems and solutions.

The employees will gain better knowledge and understanding of vehicle - road - driver systems, which reflects in:

- Foreseeing design and safety trends in the automotive industry
- Learning roles of certain subsystems on a vehicle itself
- Correlation between vehicle architecture, safety and driver behavior
- Improving safety impact in daily life
- Preparing for the future concepts of vehicles

## PERSONAL IMPACT

In attending this training course, the participants will enhance their understanding and knowledge of vehicle systems, by:

- Identifying the aspects of road vehicles design
- Learning how to distinct role of certain subsystems on a vehicle itself
- Understanding vehicle architecture based on safety systems
- Understanding the Driver - Road - Vehicle correlation
- Preparing and understanding trends for the future concepts of vehicles

## WHO SHOULD ATTEND?

- This Vehicle Control Systems training course is designed for the people involved in vehicle operations in traffic and transport, mechanical and electrical vehicles design, traffic and vehicle planning experts, as well as delegates involved into management, analytics, optimization, project management and traffic and transport optimization.

This is suitable to a wide range of professionals but will greatly benefit:

- Mechatronic Engineers
- Traffic Planning Experts
- Researchers and Consultants
- Traffic & Transport Engineers
- Professionals in Urban Planning
- Vehicle Design Project Managers
- Mechanical and Electrical Vehicles Designers
- Engineers involved in Traffic and Transport Urban Design
- Researchers and Practitioners in Traffic and Transport Engineering

## Course Outline

### Introduction to Vehicle Design

- Vehicle Design History
- Vehicle Design Principles
- Vehicle vs. Application: Passenger and Commercial Vehicles
- Vehicle-Road Correlation
- Legal and Technical Guidelines

### Vehicle Operation Aspects

- Legal Conditions
- Safety Aspects
- Vehicle Technology Principles
- Vehicle - Road - Driver Correlation
- Basic Control Systems

### Vehicle Systems with Active Safety

- Safety Belts & SRS Airbag
- ABS, ASR, ESP Systems
- EBL / EBS (Electronic Brake System)
- LDWS (Lane Departure Warning System)
- AEBS inclusive FCW (Advanced Emergency Braking System inclusive Frontal Collision Warning)
- VECU Interaction

## Vehicle Systems with Passive Safety

- Video Technology Assistance
- Parking Assistance
- TMS and TPMS (Tyre Monitoring System and Tyre Pressure Monitoring System)
- Hill Start Aid
- Eco Roll and Predictive Driving
- Cruise Control / Adaptive Cruise Control
- Bluetooth / Navigation / Touchscreen vs. Safety

## Future Principles of Vehicle Design and Application

- Autonomous Driving
- Road, Water or Air?
- Eco Fuels, VECTO Tool
- Eco Twin / Platooning
- Alternative Driveline: Where to?
- Ecology vs. Modernization

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