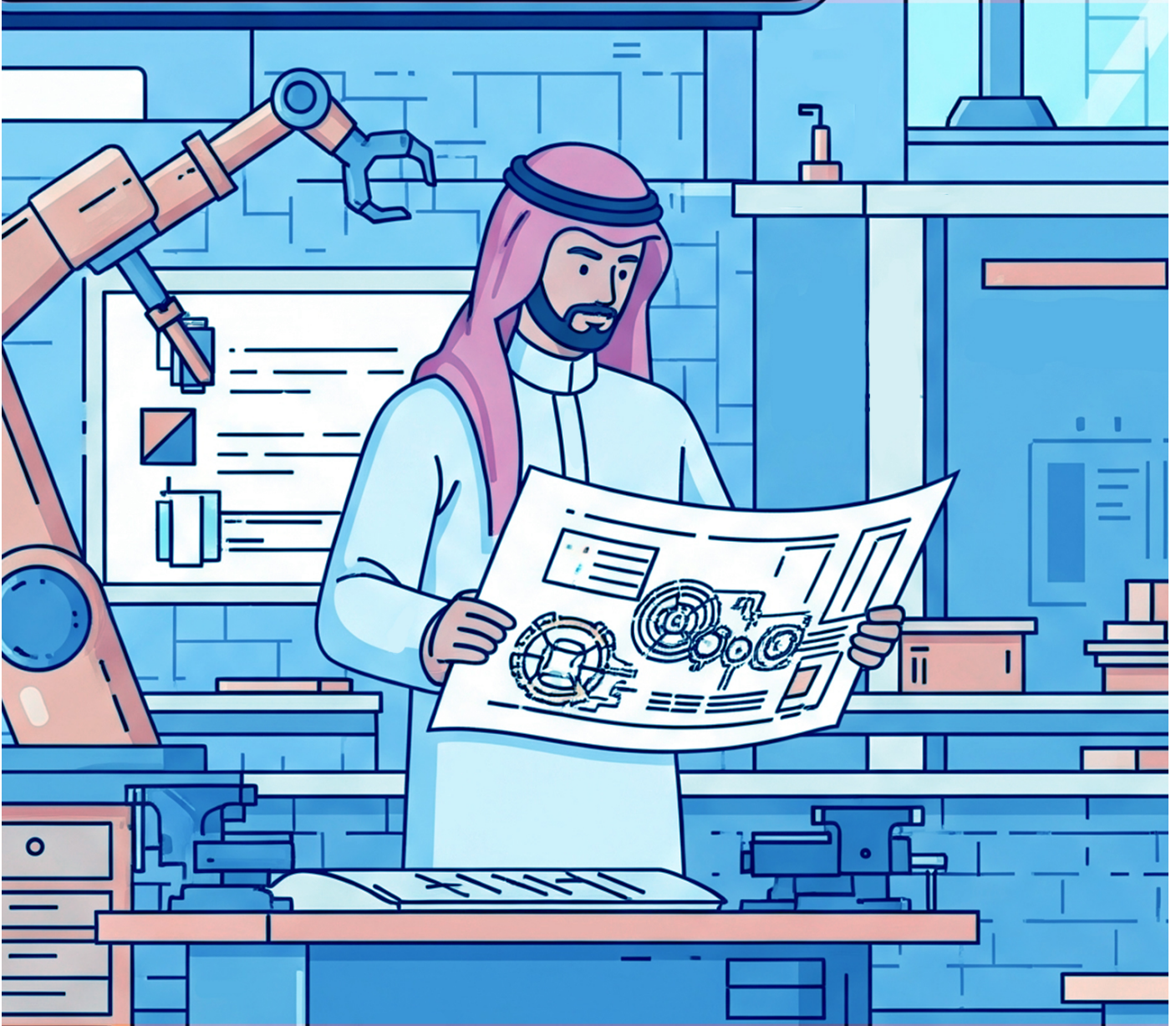




Mechanical Engineering

Autonomous Vehicles and Intelligent Transportation Systems

Course Introduction

Autonomous vehicles and intelligent transportation systems (ITS) are revolutionizing the way we approach transportation. These technologies aim to improve safety, reduce congestion, and enhance mobility for everyone. Autonomous vehicles (AVs) use sensors, AI, and real-time data to navigate without human input, while ITS incorporates smart infrastructure to manage traffic flow and provide information to drivers and vehicles. Both innovations are vital for creating efficient, safe, and sustainable transportation systems. Understanding these technologies is essential for professionals in the transportation, automotive, and engineering sectors.

This program will cover the fundamentals of autonomous vehicles and ITS, including their components, technologies, and applications. Participants will explore how AVs operate, the key challenges in their development, and how ITS enhances transportation networks. The course will also delve into the regulatory landscape, safety considerations, and the future of smart mobility.

Target Audience

This course is designed for professionals in transportation, automotive, engineering, and related fields interested in understanding autonomous vehicles and intelligent transportation systems.

Learning Objectives

- Understand the fundamental concepts of autonomous vehicles and intelligent transportation systems.
- Learn about the key technologies and components involved in AVs and ITS.
- Gain insights into the regulatory, safety, and security challenges in AV and ITS development.

- Understand the future trends in smart mobility and how AVs and ITS will shape the transportation sector.

Course Outline

• 01 DAY ONE

Introduction to Autonomous Vehicles (AVs) and Intelligent Transportation Systems (ITS)

- What are Autonomous Vehicles (AVs)?
- What are Intelligent Transportation Systems (ITS)?
- Key differences between AVs and traditional vehicles
- Evolution of AVs and ITS technologies
- Components of AVs: Sensors, AI, and control systems
- Importance of ITS in managing traffic and improving safety

Benefits of AVs and ITS for smart cities and sustainable mobility

• 02 DAY TWO

AV Technologies: Sensors, Perception, and Control Systems

- Overview of AV sensor technologies (LiDAR, radar, cameras, etc.)
- Sensor fusion and its role in AV navigation
- The perception system: How AVs "see" the environment
- Path planning and decision-making in AVs
- Control systems: Vehicle dynamics and motion control
- Challenges in AV perception and sensor accuracy
- Future advancements in AV sensor technologies

• 03 DAY THREE

Intelligent Transportation Systems: Architecture and Components

- Overview of ITS architecture and key components
- Communication protocols for ITS (V2X, DSRC, 5G)
- Traffic management systems: Dynamic traffic signals and real-time data
- Advanced traveler information systems (ATIS)
- Vehicle-to-everything (V2X) communication

- ITS integration with smart infrastructure and urban mobility
- Role of data analytics in optimizing transportation networks

• 04 DAY FOUR

Safety, Security, and Regulation in AVs and ITS

- Safety challenges and risk management in AVs
- Regulatory frameworks for AVs (global and local standards)
- Cybersecurity threats in autonomous and connected systems
- Safety features in ITS (e.g., collision avoidance, emergency response)
- Ethical considerations in AV decision-making
- Insurance and liability in AVs
- The role of governments and organizations in AV and ITS regulations

• 05 DAY FIVE

The Future of AVs and ITS: Trends and Applications

- Current trends in AV development and deployment
- The role of AI and machine learning in AVs and ITS
- Smart city integration with AVs and ITS
- The impact of AVs and ITS on public transport and shared mobility
- Potential environmental benefits of AVs and ITS
- The future of autonomous and connected transportation systems

Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
April 7, 2025	April 11, 2025	5 days	5950.00 \$	switzerland - Geneva
June 22, 2025	June 26, 2025	5 days	2150.00 \$	Virtual - Online
Aug. 25, 2025	Aug. 29, 2025	5 days	4250.00 \$	UAE - Dubai
Dec. 22, 2025	Dec. 26, 2025	5 days	4250.00 \$	UAE - Abu Dhabi

