

Foundations of 6G: Setting the Stage

Duration:8 Hrs

Part 1: Introduction

1. Evolution of Wireless Connectivity

- Brief history from 1G to 5G
- Why 6G is the next step
- Overview of global initiatives in 6G research

2. Key Drivers for 6G Development

- Limitations of 5G
- Emerging technological needs
- Economic and societal demands

3. Foundational Technologies for 6G

- Terahertz communication
- AI and ML in wireless systems
- Non-terrestrial networks (satellites, UAVs)
- Sustainability considerations

Part 2: 6G Vision (3 hours)

4. The 6G Vision: Beyond Connectivity

- 6G as a convergence of communication, sensing, and intelligence
- Emphasis on human-centric and society-driven innovations
- Ultra-low latency and extreme bandwidth

5. The Role of AI and Automation

- AI-empowered 6G networks
- Predictive and self-optimizing systems
- Enabling digital twins in 6G

6. Global Standards and Initiatives

- International collaborations (ITU, 3GPP, regional alliances)
- Timelines for 6G rollout
- Potential challenges in standardization

Part 3: 6G Use Cases & Applications

7. Advanced Use Cases for 6G

- Immersive extended reality (XR) and holographic communication
- Autonomous systems (vehicles, drones, robots)
- Precision healthcare and telemedicine
- Smart cities and urban IoT

8. Emerging Applications Across Industries

- Industry 5.0 and manufacturing
- Real-time digital twins for industrial monitoring
- Enhanced global connectivity with NTN

9. The Social and Economic Impact of 6G

- Bridging the digital divide
- Sustainability and green networking
- Transforming education and remote collaboration

NOTE: This course focuses solely on theoretical and conceptual topics, with no lab sessions included.

How you'll benefit

This training will help you: • Learn the skills, technologies, and understand Cellular technology.