Introduction to Electrical, Electronics and Communication Engineering

1. General Introduction to Electrical and Electronics Engineering

- History and evolution
- Application domains and perspectives

2. Basics of Electricity

- Fundamental laws (Ohm, Kirchhoff)
- Resistive circuits and network analysis
- Passive components: resistors, capacitors, inductors

3. Electrical Circuits and Systems

- Direct current and alternating current
- Power, energy, and efficiency
- Transformers and basic electrical machines

4. Fundamentals of Electronics

- Semiconductors and diodes
- Transistors: BJT and MOSFET
- Amplifiers and oscillators

5. Digital Electronics and Logic

- Number systems and Boolean logic
- Logic gates and combinational circuits
- Sequential circuits and registers

6. Communication Engineering: Basics of Telecommunications

- Introduction to signals and spectrum
- Analog and digital modulation
- Signal transmission and reception

7. Modern Communication Systems

- Wired and wireless communication networks
- Introduction to microwaves and antennas
- Basics of optical and satellite communication

8. Applications and Current Trends

- Automation and embedded systems
- Internet of Things (IoT)
- Artificial intelligence and telecommunications

9. Laboratories and Practical Work

- Electrical measurements and use of instruments
- Basic electronics experiments
- Practical projects in communication

10. Conclusion and Future Perspectives