



الكلية التقنية الهندسية
قسم هندسة تقنيات الأجهزة الطبية



Competitive Examination Syllabus
for Master's Admission

Medical Instrumentation Technology

The following syllabus lists the proposed subject topics without detailed explanations.

1. Medical Devices

- Biomedical Sensors and Transducers
- Medical Measurement Systems
- Laboratory medical equipment
- Diagnosing medical equipment
- Therapeutic medical devices
- Electrical Safety in Medical Devices
- Calibration and Maintenance of Medical Devices

2. Signal Processing

- Signals and Systems
- Continuous-Time and Discrete-Time Signals
- Time-Domain and Frequency-Domain Analysis
- Fourier Transform
- Laplace Transform
- Z-Transform
- Sampling and Reconstruction
- Digital Filters
- Finite and Infinite Impulse Response Systems
- Convolution and Correlation



3. Image Processing

- Digital Image Representation
- Image Enhancement
- Image Restoration
- Image Filtering
- Geometric Transformations
- Image Segmentation
- Edge Detection
- Morphological Operations
- Feature Extraction
- Image Compression

4. Communications

- Analog Modulation
- Digital Modulation
- Sampling and Quantization
- Multiplexing Techniques
- Source and Channel Coding
- Wireless Communications
- Optical Communications
- Data Transmission
- Bandwidth and Spectral Efficiency

5. Electronics

- Electronic Circuit Components
- Diodes and Their Applications
- BJT Transistors
- MOSFET Transistors
- Operational Amplifiers
- Integrated Circuits
- Rectifier and Filter Circuits



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- Power Supply and Voltage Regulation Circuits
- Amplifiers
- Oscillators
- Basic Digital Circuits
- Analog-to-Digital and Digital-to-Analog Converters

6. Computer Applications and Artificial Intelligence

- Algorithms and Data Structures
- Modeling and Simulation
- Artificial Intelligence
- Machine Learning
- Artificial Neural Networks
- Deep Learning
- Medical Data Processing
- Applications of Artificial Intelligence in Biomedical Engineering