



UNIVERSITATEA DIN ORADEA

Facultatea de Inginerie Electrică și Tehnologia Informației

**Topics for the contest
for Tenured Professor, position 5,
Department of Electronics and Telecommunications,
2023-2024 academic year**

Medical Electronics

1. Biomedical signals
2. Biomedical signals acquisition and processing.
3. Transducers and electrodes for biomedical signals acquisition.
4. Technology used for the treatment of cardiovascular system. Electrocardiography. Heart functioning.
5. Cardio activity measurement and analysis.
6. Blood pressure and oxygenation measurement principles.
7. Electroencephalography – EEG.
8. Respiratory system. Medical devices for respiratory system.
9. X – Ray principles and technology.
10. Magnetic resonance imagery - MRI.

Information Compression and Coding

1. Visual perception and digital representation.
2. Data correlation and decorrelation methods.
3. Singular value decomposition and its application to data compression.
4. Information theory, image and video quality.
5. Motion estimation.
6. Huffman coding.
7. Arithmetic coding.
8. JPEG compression.
9. Multi-level data decomposition, wavelet and JPEG 2000 image compression standard
10. MP3 audio compression.

Telecommunications Software

1. Asynchronous communications protocols, UART, SPI, I2C, applications.
2. WiFi networks (class 802.11).
3. 802.15.4 – ZigBee protocols and X – CTU interface, applications.
4. RFID and NFC technologies.
5. Classic Bluetooth and Bluetooth Low Energy.
6. Internet of Things (IoT) concept; wireless sensors with ZigBee and XBee.
7. VPN.
8. VoIP and H.323.



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9. Security in VoIP.

10. Encryption for telecommunications.

Bibliography for Tenured Professor, position 5, Department of Electronics and Telecommunications, 2023-2024 academic year

Medical Electronics

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- [4] T.D.Gligor, A.Policec, O.Bartos, V.Goian - “Aparate electronice medicale”, Editura Facla, Cluj-Napoca, 1988

Information Compression and Coding

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- [4] M. Ghanbari, Standard Codecs: Image Compression to Advanced Video Coding, Institution of Electrical Engineering, Telecommunications Series, 2003

Telecommunications Software

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[6] Recommendation ITU-T H.323, SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS Infrastructure of audiovisual services – Systems and terminal equipment for audiovisual services

[7] Himanshu, Dwivedi, “Hacking VoIP: Protocols, Attacks, and Countermeasures”, William Pollock, 2009

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