Pavol Jozef Šafárik University in Košice, Faculty of Medicine
Department of Medical Informatics and Simulator Medicine

CURRICULUM OF THE COURSE

Subject:	Computer Biometrics		
Prerequisites:	Medical Informatics		
Study programme:	General medicine	***Form of study:***	daily
Category:	compulsory elective	***Study period:***	3
Teaching form:	practicals	***Range:***	1 hour(s) / week
Evaluation:	examination	***Credits:***	2

Week	*Practical lesson*
1.	**Basic terms.** Introduction to the course. Meaning and the main aims of biometrics.
2.	Biometrics, biometric technologies, biometric screening, biometric system, identity management, general levels of identification.
3.	Biometric technologies principles - verification and identification. Enrolment, authentication, template.
4.	**Biometric traits.** Physical (biological) traits, behavioral traits. Properties of ideal biometric characteristics (traits).
5.	History of biometrics systems.
6.	**Performance Measures in Biometrics.** Biometrics in private and public sectors. Biometric system operation. Performance of biometric systems.
7.	**Biometric systems and requirements.** Variety of biometric applications, unique identification of persons based on unique human characteristics. Advantages and disadvantages of biometrics based authentication.
8.	Biometric systems environments, design of biometric systems. Positive and negative identification systems. *Written test.*
9.	Description of selected and commonly applied authentication methods used to identify persons, e.g. fingerprint, shape of the ear, face, voice, iris, retina, signature etc. Principles of multibiometrics.
10.	Requirements for biometric characters to maintain reliability of the biometric systems, biometric techniques properties regarding statistical reliability.
11.	**Biometric systems security and attacks.** Fake biometric, replay attack, spoofing the feature set, template attack. Data protection in information systems, rules of safe and confidential communication.
12.	Introduction into cryptography. Selected legal aspects of obtaining and processing of biometric related data.
13.	Advantages of biometrics based system utilization in identification and authentication of persons in medicine and others disciplines. *Practical test.*
14.	Possibilities of biometric signs and statistical methods utilization to solve specific task using available statistical software and interpretation of results. *Knowledge evaluation.*

Requirements to complete the course:

1. 100% and active attendance.
2. At least 60% of each test during the semester.
3. Elaboration of all assigned tasks.
4. Final exam.

Recommended literature:

1. Majerník J.: Computer Biometrics, Multimedia support in the education of clinical and health care disciplines :: Portal of PJŠU FM [online], <https://portal.lf.upjs.sk/articles.php?aid=71>. ISSN 1337-7000.
2. Ashbourn J., Practical Biometrics – From Aspiration to Implementation, second edition, Springer, ISBN 978-1-4471-6716-7, 2015.
3. Jain A.K., Ross A.A., Nandakumar K., Introduction to Biometrics, Difficult concepts, Springer, ISBN 978-0-387-77325-4, 2011.
4. Fairhurst M., Biometrics: A Very Short Introduction, Oxford University Press, ISBN 978–0–19–880910–4, 2018.
5. Notes from exercises.
6. Manuals of software products used during exercises.

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