Óbudai University John von Neumann Faculty of Informatics	Institute of Biomatics and Applied Artificial Intelligence

Name and code: *Basics of Information Systems, NIXBI1EBNE.* *2021/22 1. semester*	**Credits***: 4*

Lecturer: Dr. Krisztián Kósi				
Előtanulmányi feltételek: (kóddal)				
Weekly hours:	Lecture: 2	Seminar.:	Lab: 0	Consultation:
Way of assessment:	Midterm grade			

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Course description

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Goal: Presentation of the most important factors and theoretical concepts of the emergence, and development of information technology. The subject and place of information technology in the sciences. The basic concepts of information theory. The basic concepts of encoding. Interpretation of minimum redundancy codes, major coding algorithms. The dictionary-based data compression principle, the algorithms of the most commonly used code systems. The principle and significance of adaptive encoding. The principle of fault tolerance and error correction systems. The practical part will be organized as concerted lectures, in which representatives of the Faculty or industrial companies will present the actual results of a field of information technology.

Course description: Concept of informatics. Emergence, development trends. Basic concepts of informatics. Concept and amount of information. Concept of entropy. Search theory. Concept of redundancy. Encoding process. Code tree. Prefix code. Statistics-based data compression. Dictionary-based data compression. Number systems. Conversion between number systems. Numeric, alphanumeric codes. Binary representation of integer and real numbers. Basics of fault tolerant systems. Error detecting and correcting. Soft computing techniques.

Lecture schedule:	
Education week	Topic
1.	Concept of informatics. Emergence, development trends. Basic concepts of informatics.
2.	Concept and amount of information. Number systems. Conversion between number systems.
3.	Binary representation of integer and real numbers.
4.	Byte orders. Numeric, alphanumeric codes.
5	Concept of entropy. Search theory. Concept of redundancy.
6.	Encoding process. Code tree. Prefix code.
7.	Test 1.
8.	Variable code length. Statistics-based data compression I.
9.	Statistics-based data compression II.
10.	Dictionary-based data compression.
11.	Basics of fault tolerant systems. Error detecting and correcting.
12.	Test 2.
13.	Soft computing techniques.
14.	Retake test.

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Midterm requirements

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Education week	Topic
7	**Test 1.**
12	**Test 2.**
14	**Retake**

Final grade calculation methods

Signature is denied in the case if the absence is more than 30% of the lessons. Based on the average of the tests the final grade is calculated as follows:

Achieved result	Grade
89%-100%	excellent (5)
76%-88<%	good (4)
63%-75<%	average (3)
51%-62<%	satisfactory (2)
0%-50<%	failed (1)

Retake rules

14th week, Retake the worst test, If the grade is faild (1), and the signature was not deined, can be a take a signature retake exam.

References

The Moodle page of the subject.