

## Course syllabus and requirements

### Fall 2023

Course title: Fundamentals of Informatics

Course code: BAI0189

Requirement: examination

Type of examination: written and oral

E-mail: [boda.istvan@drhe.hu](mailto:boda.istvan@drhe.hu)

Availability of course material: <https://bodaistvan.hu/targyak.html>

*(During the semester, the electronic course material is continuously updated depending on student feedback.)*

Website of the instructor: <https://bodaistvan.hu>

### Course topics:

1. The computer as an information processing machine (black box model, data vs. information etc.). Basic IT concepts (computer architecture, electronic implementation, hardware, software, programs and programming languages etc.).
2. Number systems, conversion rules and algorithms (through examples and computer programs). Concept and characteristics of algorithm, ways of expressing it.
3. Using a high level programming language to describe algorithms: variables, data types, operators, assignment statements; complex data types (e.g. strings, arrays). Basic program structures (sequences, selections, iterations or loops etc.).
  - *Description of the presented algorithms using short programs.*
4. Data representation, formats, operations and related algorithms (numerical, character, logical or Boolean types, etc.; addressing schemes).
5. Boolean functions, Boolean algebra. Truth tables.
6. Logic gates and circuits.
7. Principles of the von Neumann machine. Operation of the central unit (instruction set and format, instruction cycle etc.). Main hardware and software components.

### Participation in classes:

Students are responsible for monitoring their attendance and remaining aware of the number of absences they have. The maximum permitted number of absences is three weekly sessions in the semester. (cf. TVSz 8.§ 1.)

### Assigning course grades:

The course ends with a written and oral exam (colloquium). The exam topics will be structured according to the above breakdown of the course topics. In case of a non-online exam, it is necessary to solve a series of short written tasks at a sufficient level (30%) before the oral exam. In order to fulfill the requirements of the *practice*, it is necessary to solve either two tests or submit two papers at a sufficient level (30%).

**Course materials and recommended readings:**

It is recommended to study the textbooks and recommended readings listed in the course description which, together with the description of the other courses in the program, can be downloaded from the university website. It is mandatory to study and learn carefully the electronic course material available on the website of the instructor. When developing the material, I will try to take into account all student questions and suggestions received before the beginning of the examination period to help students prepare efficiently for the exams.

Nyíregyháza, 2023 September.

Dr. habil. István Boda s.k.  
college professor