

Course Outline – Information Technologies and Systems

General Information

Course title: [Information Technologies and Systems](#)

Course pre-requisite(s): Not needed.

Course Overview

The aim of the course is to teach students the basic principles and applications of modern information technologies and systems.

Learning Outcomes

As a result of mastering the subject the following will be obtained.

Students should know:

- the essence and basic principles of information technology;
- the essence and basic principles of the information system;
- stages and methodology of information system building;
- Analytical processing of data.

Must be able to:

- implementation of information processes using existing application software packages;
- Implementation of information system for any subject area;

Must be trained:

- the ability to process data and obtain information;
- computer and information management skills;
- research habits.

Course Content

The subject is taught on the following topics:

1. Introduction. Basic concepts: information, information, data, knowledge, information technology, information system (IS).
2. The stages and types of information technology development. What is information technology. Stages of development of information technologies. Technology of data processing. Management Information Technology.
3. Hardware and Software Management Information Technology. Hardware and software tools of management information technology.
4. Development stages and classification of information systems. What is an information system. Stages of development of information systems. Classification of information systems by the scale and nature of information resources.
5. Information system architecture. Local IS architecture. Network IS architecture.
6. Information systems services and applications. Information resources, products and services. Application systems of information systems.
7. Stages of life of the information system and its life cycle. Project and its management. The main stages of building the IS. Processes, structures and models of the life cycle of the IS.
8. Methodology and technology of information system construction. RAD methodology. Standards and Methods.
9. Factographic information systems and databases. Database concept. Data types and

- models. Relationship model. SQL query language. Database management. VBS for PCs.
10. Documentary Information Systems (DIS). Features and structure of DIS. Formal description of the contents of documents. Indexing. Organization of information retrieval. Information search on the Internet.
 11. Information systems security. Methods and means of information systems security, hardware and software methods. Software systems for the protection of information systems.
 12. Systems for operative data analysis. Data Warehouse (DW) Concept. Models used to establish VA. Metaveriln. Analytical processing of data in DW. Data Mining Technology.

Instructional Method

(Lecture 1) Basic concepts: information, information, data, knowledge, information technology, information systems

(Lecture 2) Data Processing Technology. Management Information Technology.

(Lecture 3) What is an information system. Stages of development of information systems. Classification of information systems by size and character of information resources.

(Lecture 4) Database concept. Data types and models. Relationship model

(Lecture 5) Summary of SQL query language capabilities. Database management. DBS for PCs. Data Mining Technology.

(Group work) Stages of development of information technologies. Technology of data processing. Stages of development of information systems. Classification of information systems by the scale and nature of information resources.

The main stages of building the IS.

Processes, structures and models of the life cycle of the IS RAD methodology.

Standards and Methods Features and structure of DIS.

Formal description of the contents of documents.

Required Course Materials

During the course MS Excell and SQL query language will be used in Database management process.

Assessment

As a result, each student will be evaluated based on independent work, in form of individual presentations related to the specific topics taught in the course. Each student will have 10-15 min to present their short research.

The topics are the following:

Students' independent work

- 1: Basic concepts of information technology
- 2: Scenarios, prospects and current state of information technology development
- 3: Hardware and software for information technology
- 4: Stages and current state of information systems development
- 5: Factual and documentary information systems
- 6: Information systems architecture
- 7: Application systems of information systems
- 8: Database systems
- 9: Information systems security
- 10: The concept of a database