STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
Information Engineering	**1010311411010320388**

Field of study	Profile of study (general academic, practical)	Year /Semester
Power Engineering	**(brak)**	**1 / 1**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
-	**Polish**	**obligatory**

Cycle of study:	Form of study (full-time,part-time)
First-cycle studies	**full-time**

No. of hours						No. of credits
Lecture:	**30**	Classes:	**-**	Laboratory:	**15**	Project/seminars: **15**	**5**

Status of the course in the study program (Basic, major, other)	(university-wide, from another field)
(brak)	**(brak)**

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**5 100%**
Technical sciences	**5 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge of computer science.
2	**Skills**	Ability of the operating system. Ability to develop simple algorithms and cooperation in a team (group laboratory project).
3	**Social competencies**	Awareness of the importance of informatics tools in various fields of human life, the ability to expand their competencies.

Assumptions and objectives of the course:

Knowledge of both theoretical and practical issues associated with the use of selected informatics components and systems. The acquisition of skills development projects in the area of local area networks and simple databases (relational model). Familiar with the theoretical and practical aspects of visual programming basics in .NET environment (C # language in matters of engineering).

Update 2017: Security issues in computer networks.

Applied methods of teaching: lectures - multimedia presentations (including drawings, photos, animations, sound, films) supplemented by examples given on the whiteboard, interactive lecture with questions to students or specific students, lecture Initiation of discussion, consideration of various aspects of the presented issues, including: economic, ecological, legal, social, etc., presentation of a new topic preceded by a reminder of related content known to students from other subjects; laboratory - demonstration, independent execution of development tasks (computation); project - analysis of various technical solutions and aspects of solving problems, including: economic, ecological, legal, social, etc., detailed review of the project documentation by the project leader and commentary discussions, case study, teamwork.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Explain the methods used for the numbers in the following systems: binary, decimal, and hexadecimal, describe the basic elements of building a PC, change the types of and explain how they work, explain the object-oriented visual programming features object, make simple algorithms. - [K_W10 +]

2. Explain the need for a multiprocessor system, define the elements of a relational database system, describe the basic principles of construction and operation of local networks. - [K_W15 +++, K_W10 +]

Skills:

1. Design and implement a simple relational database model for applications engineering, design and prepare technical documentation of local area network. - [K_U21 +++, K_U03 ++]

2. Develop simple programs in C #, to assess the usefulness of specific informatics tools in the engineer. - [K_U09 ++, K_U02 ++]

Social competencies:

1. can justify the need for informatics tools to improve efficiency in the work of engineer, recognizes the importance of modern information systems in the enterprise business processes. - [K_K01 +, K_K05 +]

Assessment methods of study outcomes

Lecture:

?Assess the knowledge and skills listed on the written exam (semester 1 and 2) with a combined: test and problematic (check basic troubleshooting skills in the use of computer networks and computer equipment in the work of engineer and design a simple database systems).

Laboratory and project:

?Rewarding practical knowledge gained during the previous laboratory,

?Practical test programming knowledge in C# (final test),

?Favoring systematic progress in the design,

?Assessment of the form and content of the project.

Get extra points for the activity in the classroom, and in particular for:

?Ability to work within a team practice performing the task detailed in the laboratory,

?Use of elements and techniques that go beyond the material in the field of the lecture, projects and laboratory exercises.

Course description

Elements and basic laws of formal logic, selected characteristics of digital circuits used in PCs (synchronous and asynchronous systems, bus, register, ALU, CPU, RAM, cache), basic construction and operation of the (magnetic, optical, magneto-optical, electric), increasing security and speed of processing (RAID technology, standard SCSI and SAS), the basis of parallel computer architecture, computer networks (data transmission in local networks, active and passive network hardware, topologies, network technologies: Ethernet, 802.11, internet (, IP addressing, access methods), network design, LAN (wired, radio, and hybrid), database: conceptual, logical and physical modeling, relational database model (basic concepts, algebra relational, design structure relationships and their connections, the basics of SQL, MS Access), define simple algorithms, programming languages, basic programming in MS Visual C # (syntax, controls, implementation of simple algorithms).

Basic bibliography:

1. Garcia-Molina H., Ullmann J.D., WidomJ. , Systemy baz danych, Helion 2011

2. Sosinsky B. , Sieci komputerowe ? Biblia, Helion 2011

3. Lis M.: SQL. Ćwiczenia praktyczne, Helion, Gliwice 2011.

4. Boduch A.:Wstęp do programowania w języku C#, Helion, Gliwice 2006.

Additional bibliography:

1. Elmasri R., Navathe S. B.: "Wprowadzenie do systemów baz danych", Helion, Gliwice 2005.

2. Perry S. C.: C# i .NET. Core, Helion, Gliwice 2006.

Result of average student's workload

Activity	Time (working hours)
1. participation in class lectures	30
2. participation in laboratory classes	15
3. participation in project activities	15
4. participate in the consultations on the lecture	5
5. participate in the consultations on the lab	5
6. part in the consultation on the design	5
7. implementation of the project	15
8. preparation laboratory	7
9. homework preparation	5
10. prepare for the exam	15
11. assessment of laboratory	2
12. prepare for the completion of laboratory	10
13. participation in the exam	2

Student's workload		
Source of workload	**hours**	**ECTS**
Total workload	132	5
Contact hours	80	3
Practical activities	80	3