COURSE DESCRIPTION CARD - SYLLABUS

Course name
Information technology [S1Energ1>Inf]

Course

Field of study
Power Engineering

Year/Semester
1/1

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
30

Laboratory classes
15

Other (e.g. online)
0

Tutorials
0

Projects/seminars
15

Number of credit points

5,00

Coordinators

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Lecturers

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Prerequisites

The student starting this subject should have basic knowledge in mathematics, physics at PRK level 4, as well as the ability to perform tasks in a group.

Course objective

Understanding theoretical and practical issues related to the use of selected elements and information systems. Acquiring the ability to develop projects in the area of local computer networks and simple databases (relational model). Introduction to the theoretical and practical aspects of the basics of visual programming in the .NET environment (C # language in engineering issues).

Course-related learning outcomes

Knowledge:
1. has knowledge of the principles of computer components,
2. has knowledge of the principles of designing and implementing relational databases (relationship model - entity, transformation into a relational database schema, normalization),
3. has knowledge of the elements and principles of computer network design,
4. has knowledge of the basics of programming in a high level language,
5. has knowledge of the use of computers and parallel calculations in engineering practice.

Skills:
1. has the ability to design and build simple database systems,
2. has the ability to design simple computer networks,
3. has the ability to prepare a simple computer program in a high-level language.

Social competences:
1. understands the need to use modern it tools to increase the efficiency and quality of the engineer"s work,
2. is aware of the importance of modern information systems in business processes of the enterprise.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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Lecture: assessment of knowledge and skills demonstrated during the combined exam: test and problem (checking the ability to solve basic IT problems in the field of using computer equipment in the work of an engineer and designing database systems); individual elements evaluated according to the points system with different weights, 50% of the maximum number of points required to pass.
Laboratory classes: awarding practical knowledge acquired during previous and current laboratory exercises, practical checking of programming skills in C #, implementation of a simple database project. Individual elements evaluated according to the points system with different weights, 50% of the maximum number of points required to pass.
Projects: the ability to work in groups (teams) solving project problems on the basis of acquired knowledge from classes is assessed, as well as technical documentation of the computer network together with oral answer verifying knowledge and the ability to use technical language.

Programme content

Lecture: elements and basic laws of formal logic, characteristics of selected digital technology systems used in PCs, basics of construction and operation of information media, increasing security and speed of data processing (RAID technology, SATA and SAS standards), basics of relational databases (basic concepts, designing relation structures and their relationships), defining simple algorithms, programming languages, basics of parallel computer architecture, computer networks (data transmission in local networks), security issues in computer networks.
Laboratory classes: basics of programming in MS Visual C # (syntax, controls, implementation of simple algorithms), designing simple databases.
Projects: active and passive network equipment, topologies, network technologies: Ethernet, 802.11, internet (construction, IP addressing, access methods), designing LAN networks (cable, radio and hybrid).

Teaching methods

Lecture: multimedia presentation (including drawings, photos, animations, sound, movies) supplemented with examples given on the board, lecture conducted in an interactive way with the

formulation of questions for a group of students or specific students indicated, during the lecture initiating discussions, taking into account various aspects issues presented, including: economic, ecological, legal, social, etc., presenting a new topic preceded by a reminder of related content known to students in other subjects;
Laboratory classes: demonstrations, independent programming (computational) and database tasks.
Projects: analysis of various technical solutions and aspects of solved problems, including: economic, ecological, legal, social, etc., detailed review of project documentation by the project leader and discussions on comments, case study, team work.

Bibliography

Basic
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
1. Elmasri R., Navathe S. B.: Wprowadzenie do systemów baz danych, Helion, Gliwice 2005.
2. PerryS. C.: C# i .NET. Core, Helion, Gliwice 2006.
3. Dobrzycki A., Kasprzyk L., Skórcz K., Tomczewski A., Optimization of the number and the distribution of high-frequency signal sources in radio networks, Przegląd Elektrotechniczny - 2015, R. 91, nr 6, s. 92-95.

Breakdown of average student's workload

	Hours	ECTS
Total workload	125	5,00
Classes requiring direct contact with the teacher	75	3,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	50	2,00