COURSE DESCRIPTION CARD - SYLLABUS

Course name
CAD in electrical power engineering [N2Elenerg1>CAD]

Course

Field of study
Electrical Power Engineering

Year/Semester
1/2

Area of study (specialization)
Smart Grids

Profile of study
general academic

Level of study
second-cycle

Course offered in
Polish

Form of study
part-time

Requirements
compulsory

Number of hours

Lecture
0

Laboratory classes
20

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

Basic knowledge of the electric circuits theory, geometry and stereometry. The ability to obtain information from the indicated sources. Spatial imagination. Awareness of responsibility for decisions made in the process of engineering calculations. Willingness to cooperate in a team.

Course objective

The aim of the course is to acquire knowledge of modern 2D and 3D computer aided design (CAD) software. Acquiring the ability to make diagrams and drawings in accordance with the rules of installation technical drawing, for design purposes with use of computer-aided design software (CAD).

Course-related learning outcomes

Knowledge:
student has knowledge related to the use of two-dimensional and three-dimensional computer aided design (cad) in the implementation of electric power projects.

Skills:
student is able to prepare graphic documentation of electric power devices and installations using the

rules of technical installation drawing and computer aided design systems (cad type).

Social competences:
student is aware that correctly designed power devices and installations are essential for the reliability and safety of the power system and its users. student is responsible for the reliability of the obtained results and their interpretation. student is able to define priorities in the implementation of tasks set by himself and others, and critically assess the results of his own work.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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Laboratory classes:
- current check and rewarding knowledge necessary for the accomplishment of the problems in the area of laboratory tasks,
- the preparation of materials for the project is evaluated,
- rewarding activities related to the implementation of laboratoy classes,
- substantive preparation for the implementation of the assigned project is evaluationed,
- implementation of the design task in the CAD system.

Programme content

Classes discussing laboratory regulations, the topics of laboratory exercises and occupational health and safety training related to the operation of laboratory stations. To complete 12 two-hour laboratory exercises related to the subject matter. Introduction to the work environment. Program interface settings. Export to a file and import of individual interface settings from a file. Displaying a drawing. Relative and absolute coordinates and advanced drawing tools. Using keyboard shortcuts. Create your own keyboard shortcuts. Creating two-dimensional geometry. Modifying 2D geometry. Object feature management. Construction techniques. Test objects and their styles. Dimensioning. Hatching - types and types of hatching. Printing of prepared diagrams. Creating blocks and dynamic blocks. The use of geometric and dimensional nodes. Creating electrical diagrams. Elements of electrical diagrams. Creating your own libraries of electrical symbols. Editing electrical diagrams. Schema reports. Creating reports and exporting reports to a file. Working with layers. Export to a file and import of created layers from a file. Working using the Cadprofi.

Course topics

Subject 1: Getting to know the program interface and adapting the interface to individual needs
Subject 2: Simple drawing tools, printing
Subject 3: Working with layers, advanced drawing tools
Subject 4: Precise drawing, dimensioning
Subject 5: Geometric nodes, dimensional nodes
Subject 6: Block counting, reports
Subject 7: Electrical installation design in AutoCAD part 1
Subject 8: Electrical installation design in AutoCAD part 2
Subject 9: Design of an advanced Rankine cycle and energy equipment in AutoCAD
Subject 10: Drawing single-line diagrams using Cadprofi
Subject 11: Creating drawings using Cadprofi
Subject 12: Summary of classes

Teaching methods

Laboratory classes:
- object-orientedpresentations supported by illustrated examples presented on the board,
- conducting classes in a computer room with the use od software to calculations and design,
- initiating teamwork.

Bibliography

Basic
1. Kurs AutoCAD 2010 VIDEO, GlobalProfit, Gluchołazy, 2009.
2. Gorzelańczyk, P. Komputerowe wspomaganie grafiki inżynierskiej, Wydawnictwo Państwowej Wyższej

Szkoły Zawodowej im. Stanisława Staszica, Piła, 2014.
3. Grodecka, M. Autodesk projekty i realizacje. T. 2, Tech Data Polska Sp. z o.o., 2011.
4. Jaskulski, A. AutoCAD 2021 PL/EN/LT. Metodyka efektywnego projektowania parametrycznego i nieparametrycznego 2D i 3D, Helion, 2020 .
5. Leach, J.A.; Lockhart, S. AutoCAD 2021 Instructor Perfect Paperback, SDC, 2020.
Additional
1. Michel, K.; Sapiński, T. Rysunek techniczny elektryczny, Wydawnictwa Naukowo-Techniczne, Warszawa, 1987.
2. Międzynarodowy słownik terminologiczny elektryki - Część 151: Urządzenia elektryczne i megnetyczne PN-IEC 60050-151, Polski Komitet Normalizacyjny, Warszawa, 2003.
3. Dombek, G.; Książkiewicz, A. Automatyka budynkowa oparta na przekaźnikach programowalnych firmy Relpol. Elektronik, 2017, nr 3, pp. 44-45.
4. Standards.
5. Internet publications.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	20	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00