COURSE DESCRIPTION CARD - SYLLABUS

Course name

Computer aided design for Electrical Power Engineering

Course

Field of study

Electrical Engineering

Year/Semester

2/3

Area of study (specialization)

-

Profile of study

general academic

Level of study

Second-cycle studies

Course offered in

polish

Form of study

part-time

Requirements

compulsory

Number of hours

Lecture

10

Laboratory classes

10

Other (e.g. online)

Tutorials

Projects/seminars

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

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Wydział Inżynierii Środowiska i Energetyki

ul. Piotrowo 3A, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

Student has a basic knowledge of electrical engineering and computer operation. The ability to effectively self-educate in a field related to the chosen field of study. He can operate a computer at a basic level. He is aware of the need to expand his competences. Understands the necessity to use computer programs at work.

Course objective

Getting to know the application of computer methods in the design of electrical power devices. Knowledge and application of computer technology in the control of devices used in the power industry. Formulating mathematical models describing the properties of energy installations and their

components. Modeling of physical phenomena occurring in high voltage systems. Solving simple optimization problems.

Course-related learning outcomes

Knowledge

1.Student has knowledge of the methodology and principles of designing modern power components.

2. Student has knowledge of decision support and design of devices in the power system.

3. Student has knowledge of the processes of modeling physical processes in computer memory.

Skills

1. Student is able to design selected elements of an electric power device. He is able to prepare the final technical documentation in European standards.

2. The student is able to apply the decision support and design tools in the elements of the power system.

3. Student is able to digitally model physical phenomena occurring in insulation systems.

Social competences

1. The student is aware of the need to use modern methods of decision support and design in order to achieve a high-quality technical solution.

2. The student understands the need to obtain economic and social acceptability for the selected technical solution.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture

- assessment of knowledge and skills demonstrated on the final, written or oral test,

Laboratory classes

- continuous assessment during each class (rewarding activity and quality of perception).

- evaluation of laboratory projects made individually by each student.

Programme content

Lecture

Principles of controlling the operation of electric power devices with the use of microcontrollers. Principles of building control systems based on microcontrollers along with their programming. Presentation of the method of preparing the technical documentation for the completed project.

Laboratory classes

Designing simple systems using microcontrollers to control energy devices and programming these systems.

Teaching methods

Lecture

Lecture with multimedia presentation supplemented with examples given on the blackboard.

Laboratory classes

Laboratory exercises performed with the help of engineering programs.

Bibliography

Basic

[1] Banzi M.,Wprowadzenie do Arduino, APN Promise, 2016

[2] Smythe Richard J., Arduino w nauce: gromadzenie, wyświetlanie i przetwarzanie danych z czujników, APN Promise, Warszawa, 2022

[3] Smythe R. J., Arduino w nauce. Gromadzenie, wyświetlanie i przetwarzanie danych z czujników, Promise, 2022

Additional

[1] Klosow A., Gorgoń M., Stanowisko dydaktyczne z wykorzystaniem platformy Arduino: projekty w zakresie robotyki, Collegium Witelona Uczelnia Państwowa, Legnica, 2022

[2] Klosow A., Lasowy E., Stanowisko dydaktyczne z wykorzystaniem platformy Arduino: projekty w zakresie telemetrii, Collegium Witelona Uczelnia Państwowa, Legnica, 2022

[3] Moranda H., Gielniak J., Kownacki I., Assessment of Concentration of Mineral Oil in Synthetic Ester Based on the Density of the Mixture and the Capacitance of the Capacitor Immersed in It, Energies, 14 (1839), 2021, 1-12

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	20	1,0
Student's own work (literature studies, preparation for laboratory classes, preparation for tests)[1]	30	1,0

[1] delete or add other activities as appropriate