COURSE DESCRIPTION CARD - SYLLABUS

Course name
Workshop PBL 2 [S1MiKC1E>PPPBL2]

Course

Field of study
Microelectronics and Digital Communication

Year/Semester
3/6

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
English

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
0

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
45

Number of credit points

4,00

Coordinators

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Lecturers

Prerequisites

XD The student should have basic knowledge of programming, electronics, telecommunications networks and signal propagation.

Course objective

The aim is to enable students to design and create practical solutions in the field of programmable electronics and telecommunications systems. Integration of knowledge from various fields, such as computer science, telecommunications, mathematics and others should allow solving complex problems in microelectronics and telecommunications. The aim is also to develop the ability to analyze situations, identify problems, generate solutions and make decisions. The course also addresses legal, economic, and social aspects of the designed solutions, including issues related to intellectual property protection and the functioning of the ICT technology market. It also aims to foster entrepreneurial attitudes.

Course-related learning outcomes

Knowledge:
Student knows the basics of scientific work. Student has knowledge of advanced concepts and theories in the field of programmable electronics,computer networks, communication protocols, wireless technologies, network security and others. Student is able to analyze and understand complex problems in the field of ICT. Students know various tools, technologies and programming environments used in the field of electronics and telecommunications technologies, and understand how to use them effectively in solving problems. The student has structured knowledge of copyright law, intellectual property protection, and legal regulations related to ICT technologies. The student also understands the basic principles governing the telecommunications market, digital services, and the establishment and operation of business activities in this domain.

Skills:
The student is able to develop skills in designing, implementing and testing advanced solutions in the field of electronics and telecommunications technologies, taking into account various aspects such as performance, scalability and security.
The student is able to collect, analyze and interpret data related to programmable electronics and telecommunications technologies and make decisions based on these analyses
The student is able to develop skills in effective technical communication, including written and oral presentation of the results of his/her work.
The student is able to formulate and test hypotheses regarding complex engineering problems and simple research issues.
The student is able to evaluate the usefulness of various methods and tools used to solve engineering problems. Identifies the limitations of methods and tools.
The student is able to assess the cost and economic impact associated with the development and preparation of an engineering solution in the field of programmable electronics and telecommunications technologies

Social competences:
The student is able to work effectively in project teams, share knowledge and coordinate activities to achieve a common goal.
XD
The student will be able to independently manage his/her work, take initiative and make decisions in the context of a problem-solving lab.
The student understands and applies ethical principles related to work in the field of programmable electronics and telecommunications technologies, including aspects related to data security and privacy.
The student is prepared to make decisions in situations involving professional dilemmas, taking into account the public interest, and acts in an entrepreneurial manner.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The subject is taught using the PBL concept - Project/Problem Based Learning. In this context, the verification methods take into account the specificity of this process.
Problem-solving task: case studies that require cooperation in teams to analyze and solve problems. Assessment of cooperation skills, setting priorities and proposing effective solutions. Assessment of critical thinking, problem-solving skills and teamwork dynamics. Assessment of cooperation skills and effective participation in team discussions and the level of involvement in problem-solving processes. Skills are determined based on the OR report. Social competences (KS) are assessed based on the assessment of active listening skills, cooperation skills and effective participation in team discussions and the level of involvement in problem-solving processes.
A weighted average is determined: OK = 0.7 x OR + 0.3 x KS and grades are given:
5.0 for OK > 4.75;
4.5 for 4.75 > OK > 4.25;
4.0 for 4.25 > OK > 3.75;
3.5 for 3.75 > OK > 3.25;
3.0 for 3.25 > OK > 2.75;
2.0 for OK < 2.75..

Programme content

In the problem lab, students solve selected problems in the field of programmable electronics and telecommunications technologies including quantum solutions.

Course topics

The subject is conducted within the PBL concept - Project/Problem Based Learning. In connection with this, each year a large design problem is defined and - using the method of group work and workshop activities - students will be asked to implement the project. The topics of the projects are adapted to the scope typical of practical electronics and telecommunications technologies. In addition to technical
XD

Teaching methods

The project is carried out using the workshop method and in accordance with the principles of group work. Multimedia presentations will be used during the presentation, supplemented with examples and additional explanations; an academic discussion of an engineering nature will be preferred. The use of the group work method will be typical. Students therefore focus on working together on real problems in the field of programmable electronics and telecommunications technologies, on designing and implementing selected solutions, and then on presenting the prepared solution. Projects can be individual or group, and their level of advancement can be adapted to the level of advancement of students.

Bibliography

Basic:
Literature on the subject, indicated by the subject instructor and found by the student in the indicated bibliographic databases

Additional:
Dodatkowa literatura tematu, wskazana przez prowadzącego przedmiot oraz znaleziona przez studenta we wskazanych bazach bibliograficznych

Breakdown of average student's workload

	Hours	ECTS
Total workload	110	4,00
Classes requiring direct contact with the teacher	45	1,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	65	2,50