COURSE DESCRIPTION CARD - SYLLABUS

Course name
Diploma thesis preparation [S1Inf1>PDYPL]

Course

Field of study
Computing

Year/Semester
4/7

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
0

Laboratory classes
0

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

10,00

Coordinators

dr hab. inż. Marek Wojciechowski prof. PP
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Lecturers

Prerequisites

A student starting this subject should have the basic knowledge, skills and competencies acquired in earlier years of study, enabling him to carry out a team engineering project. In addition, in terms of social competence, the student must present such attitudes as honesty, responsibility, perseverance, cognitive curiosity, creativity, personal culture, respect for other people.

Course objective

The purpose of the diploma process is to deepen the theoretical knowledge related to the selected topic of the work, to acquire the ability to solve practical engineering problems, including team implementation of the application that is the subject of the work. The main goal is for students to implement a complex information technology project based on the selected project implementation methodology in accordance with the principles of software engineering and to prepare an engineering thesis. The course also aims to prepare students for independent and team project work.

Course-related learning outcomes

Knowledge:
- has a structured and theoretically supported knowledge in the field of issues which are the subject of

the diploma thesis in engineering (K1st_W4)
- has knowledge of development trends and the most significant new developments in computer science and in selected related scientific disciplines related to the diploma thesis (K1st_W5)
- has basic knowledge about the life cycle of information systems (including: stages of designing such systems in accordance with the principles of software engineering) implemented in the diploma thesis (K1st_W6)
- knows typical engineering technologies in the scope of the subject of the diploma thesis being prepared (K1st_W7)
- has knowledge of ethical principles related to the realization of the diploma thesis (K1st_W8)
- has basic knowledge on patents, copyright law and General Data Protection Regulation (GDPR) (K1st_W11)

Skills:
- is able to search for useful sources of information (including English-language sources), as well as methods and techniques necessary for the realization of an engineering diploma thesis and use them properly, integrate them, interpret and critically evaluate them and draw conclusions (K1st_U1)
- he/she is able to use information and communication techniques, which are applied at different stages of realization of engineering diploma thesis (K1st_U2)
- is able to properly plan and carry out experiments related to the realization of the diploma work, including measurements and computer simulations, interpret the obtained results and correctly draw conclusions from them (K1st_U3)
- is able to use analytical, simulation and experimental methods for formulating and solving computer tasks related to the realization of the diploma thesis (K1st_U4)
- is able to perceive their economic aspects when formulating and solving IT tasks within the framework of the diploma thesis (K1st_U5)
- understands the need for professional behavior and adherence to the principles of ethics, including integrity, in the implementation of the thesis (K1st_U5)
- is able to critically analyze the functioning of information systems and other IT technical solutions that are the subject of the diploma thesis and evaluate these solutions (K1st_U9)
- is able to evaluate the architecture of the software being prepared as part of the diploma thesis from the point of view of non-functional requirements (K1st_U9)
- is able to systematically carry out functional tests (K1st_U9)
- is able to develop a model of a fragment of reality (e.g. in UML language), formulate a functional specification in the form of use cases, non-functional requirements and implement a device or an information system, selecting a programming language appropriate to the task and using appropriate methods, techniques and tools (K1st_U10)
- for the purpose of the diploma thesis, has the ability to formulate algorithms and their implementation using appropriate tools (K1st_U11)
- has the ability to create technical documents - project documentation, using appropriate technical means (K1st_U16)
- is able to divide the tasks with the people co-creating the diploma team and appropriately assign roles during the implementation of the diploma project, and is able to appropriately determine priorities for the implementation of the task defined by himself or others (K1st_U18)

Social competences:
- understands that in computer science, knowledge and skills become obsolete very quickly (K1st_K1)
- is aware of the importance of knowledge in solving engineering problems (K1st_K2)
- is able to think and act in an entrepreneurial manner, including finding commercial applications for the software developed in the thesis (K1st_K3)
- correctly identifies and resolves dilemmas related to the implementation of the diploma thesis in engineering (K1st_K5)

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The learning outcomes outlined above are verified as follows:
- continuous evaluation, by means of the students' report on the progress of work related to the implementation of the thesis,
- evaluation of the increment of skills in the use of learned principles and methods,
- evaluation of reports prepared on selected issues implemented as part of the engineering thesis

project,
- evaluation of teamwork skills,
- evaluation of project results: does the product meet the requirements? Does the product have a user-friendly interface?
- evaluation of the quality of documentation and timeliness of completion of individual tasks.
The thesis supervisor issues a general evaluation of the thesis and individual evaluations of team members, justifying any discrepancies between the general evaluation and individual evaluations, as well as between individual evaluations awarded to individual team members. On the basis of both evaluations, the supervisor issues a final individual grade for each team member. The reviewer evaluates the overall project, i.e. assigns an equal (common) grade for each team member.

Programme content

The subject of an engineering thesis is usually the implementation of a project - a task defined by the thesis supervisor or an IT company cooperating with the university. This task can be the design, implementation and deployment of an IT system based on the indicated technologies or the solution (with implementation and testing) of a research problem.
A well-run project should be based on a well-recognized IT project implementation methodology (e.g. SCRUM), and the progress of implementation made visible with appropriate indicators, models, deliverables. The end result of the project is working prototype or fully functional software, ready for implementation. In addition, the attachment of the project is its technical and user documentation, which is a component of the written engineering thesis.

Teaching methods

- consultations in the scope of the projects carried out with the supervisor
- workshops - discussions within the team implementing the work

Bibliography

Basic:
depending on the research area

Additional:
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Breakdown of average student's workload

	Hours	ECTS
Total workload	250	10,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	220	9,00