# COURSE DESCRIPTION CARD - SYLLABUS

Course name
Master's thesis preparation [S2Inf1E>PMGR]

## Course

Field of study
Computing

Year/Semester
2/3

Area of study (specialization)
Cybersecurity

Profile of study
general academic

Level of study
second-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
60

## Number of credit points

15,00

## Coordinators

dr hab. inż. Marek Wojciechowski prof. PP
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## Lecturers

## Prerequisites

Students starting this course should have basic knowledge related to the selected topic of the Master"s thesis in computer science. They should have essential competencies acquired during the earlier years of studies, which allow them to realize the Master"s thesis. When it comes to social competencies, the students must present honesty, responsibility, perseverance, cognitive curiosity, creativity, personal culture, and respect for other people.

## Course objective

The main goal is for students to carry out specific scientific research or a complex project in computer science and prepare a Master"s thesis.

## Course-related learning outcomes

Knowledge:
1. has advanced and in-depth knowledge of widely understood information systems, theoretical foundations of their construction and methods, tools and programming environments used to implement them [k2st_w1]
2. has a structured and theoretically founded general knowledge related to key issues in the field of

computer science [k2st_w2]
3. has advanced detailed knowledge regarding selected it issues related to the realized master"s thesis [k2st_w3]
4. has knowledge about development trends and the most important cutting edge achievements in computer science and other selected and related scientific disciplines [k2st_w4]
5. has advanced and detailed knowledge of the processes occurring in the life cycle of hardware or software information systems regarding selected it issues related to the realized master"s thesis [k2st_w5]
6. knows advanced methods, techniques and tools used to solve complex engineering tasks and conduct research in a selected area of computer science related to the realized master"s thesis [k2st_w6]

Skills:
1. is able to obtain information from literature, databases and other sources (both in polish and english), integrate them, interpret and critically evaluate them, draw conclusions and formulate and fully justify opinions [k2st_u1]
2. is able to use information and communication techniques used in the master"s thesis [k2st_u2]
3. is able to plan and carry out experiments, including computer measurements and simulations, interpret the obtained results and draw conclusions and formulate and verify hypotheses related to the realized master"s thesis [k2st_u3]
4. can use analytical, simulation and experimental methods to formulate and solve engineering problems and simple research problems [k2st_u4]
5. can - when formulating and solving tasks related to the realized master"s thesis - integrate knowledge from different areas of computer science [k2st_u5]
6. is able to assess the suitability and the possibility of using new achievements (methods and tools) and new it products [k2st_u6]
7. can carry out a critical analysis of existing technical solutions and propose their improvements (streamlines) [k2st_u8]
8. is able to assess the usefulness of methods and tools for solving tasks related to the realized master"s thesis, consisting in the construction or evaluation of an it system or its components, including the limitations of these methods and tools [k2st_u9]
9. is able - using among others conceptually new methods - to solve complex it tasks, including atypical tasks and tasks containing a research component [k2st_u10]
10. is able - in accordance with a given specification, taking into account non-technical aspects - to design a complex device, it system or process and implement this project - at least in part - using appropriate methods, techniques and tools, including adapting to this purpose existing tools or developing new ones [k2st_u11]
11. is able to prepare and present a scientific study in polish and english, presenting the results of scientific research or oral presentation on specific issues in the field of computer science [k2st_u13]
12. can determine the directions of further learning and implement the process of self-education, including other people [k2st_u16]

Social competences:
1. understands that in the field of it the knowledge and skills quickly become obsolete [k2st_k1]
2. understands the importance of using the latest knowledge in the field of computer science in solving research and practical problems [k2st_k2]
3. understands the importance of popularization activities concerning the latest achievements in the field of computer science [k2st_k3]
4. is aware of the need to develop professional achievements and comply with the rules of professional ethics [k2st_k4]

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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Summative assessment:
Verifying the assumed learning outcomes is carried out by:
- continuous assessment, through the students" report on the progress of work related to the implementation of the Master"s thesis ;
- assessment of the increase in the ability to use the learned principles and methods;
- evaluation of reports prepared on selected issues carried out under the project; this assessment may

also include the ability to work in a team if the work is carried out as a team;
- assessment of the project results: does the product meet the requirements? does the product have a friendly interface? what is the quality of documentation and timely execution of individual tasks?

## Programme content

The subject of the Master"s thesis is most often the implementation of a research or project-implementation project defined by the thesis supervisor. The project is carried out under the supervision of a supervisor who can be additionally aided by another supportive supervisor. This task may include designing and implementing a system in the field of computing based on the indicated technologies or solution (including implementation and tests) of a research problem.
A well-run project should be based on a recognized project implementation methodology, and the progress of implementation should be shown with appropriate indicators, models, and effects. The project"s final outcome is a report (publication) on the implementation of scientific research, a working prototype, or fully functional software, ready for implementation. An additional project"s outcome may be its technical and operational documentation.

## Course topics

Depending on the chosen research topic.

## Teaching methods

Consultations on the implemented projects, workshops, discussions on the presented projects.

## Bibliography

Basic:
Individually selected, depending on the selected research topic.

Additional:
Individually selected, depending on the selected research topic.

## Breakdown of average student's workload

| | Hours | ECTS |
|---|---|---|
| Total workload | 375 | 15,00 |
| Classes requiring direct contact with the teacher | 60 | 2,50 |
| Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation) | 315 | 12,50 |