COURSE DESCRIPTION CARD - SYLLABUS

Course name
Pre-diploma seminar

Course

Field of study
Computing

Year/semester
1/2

Area of study (specialization)
Artificial Intelligence

Profile of study
general academic

Level of study
Second-cycle studies

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
-

Laboratory classes
-

Other (e.g. online)
-

Tutorials
-

Projects/seminars
30

Number of credit points

2

Lecturers

Responsible for the course/lecturer:
Prof. Jerzy Stefanowski
Faculty of Computing and Telecommunications
Piotrowo 2, 60-965 Poznań
tel: 61 665-2933

Responsible for the course/lecturer:

Prerequisites

Students should have knowledge concerning basic domains of computer science, in particular artificial intelligence, decision support systems, optimization, and pattern recognition and data analysis. Moreover, they should follow current trends in computer sciences and related disciplines. With respect to other competence, they should be able to apply analytical and experimental methods, carry out an experimental analysis of algorithms, analyze their results and use statistical tests. They should be good enough at reading scientific literature and looking for additional sources. Finally student should understand the needs to extend their knowledge and competences. In terms of social competencies, the student must present attitudes such as honesty, responsibility, perseverance, cognitive curiosity, creativity, personal culture, respect for other people.

Course objective

To prepare students for thesis work and an active participation in scientific projects. To provide them basic knowledge on research methods, in particular devoted to computer science. Developing their skill of looking for, reading scientific literature, making the literature summaries, and choosing appropriate research methods for a given problem.

Course-related learning outcomes

Knowledge

Students should have:

1. a well structured and theoretically founded general knowledge related to key issues in the field of computer science (K2st_W2)
2. knowledge about development trends and the most important cutting edge achievements in computer science and other selected and related scientific disciplines (K2st_W4)
3. an in-depth knowledge of the issues concerning his/her future thesis (K2st_W4)
4. knowledge about advanced methods, techniques and tools used to solve complex tasks and conduct research in a selected area of computer science, including systematic literature review (K2st_W6)
5. knowledge about ethical codes related to scientific research conducted in the field of computer science (K2st_W7)

Skills

1. is able to obtain information from literature, and other sources (both in Polish and English), integrate them, interpret and critically evaluate them, draw conclusions (K2st_U1)
2. is able to select appropriate bibiographical databases and formulate queries related to the research questions. (K2s_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 (K2st_U3)
4. can use analytical, simulation and experimental methods to formulate and solve simple research problems (K2st_U4)
5. is able to assess the suitability and the possibility of using new achievements (methods and tools) and new IT products (K2st_U6)
6. is able - using among others conceptually new methods - to solve complex tasks, including a research component (K2st_U10)
7. is able to discuss in information technology topics (K2s_U12)
8. 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)
9. can determine the directions of further learning and implement the process of self-education (K2st_U13)
10. is able to act as a reviewer and point out possible weaknesses in the Scientific Literature Review protocol (K2s_U15)
11. is able to independently acquire the knowledge needed to write a thesis. (K2st_U16)

Social competencies

1. understands that in the field of IT the knowledge and skills quickly become obsolete (K2st_K1)
2. realizes 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; realizes the consequences of plagiarism (K2st_K4)

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The course is strongly based on very interactive seminars with students. The verification procedures include: an evaluation of different tasks assigned to students, including written reports and their presentations. Moreover, it includes a continuous evaluation of students' activities during seminars, taking part in a discussion and abilities of formalizing problems and showing ways how to solve them.

Programme content

This course covers the following issues:
the basics of the general methodology of sciences (what is science, scientific type of knowledge, criteria to evaluate the scientific aspects, basic types of research procedures); The hypothetical-deduction research process and its main steps; An empirical aspects of computer science; Recommendations on how to look for and read scientific literature, and then writing their good summaries; Ethical aspects of carrying out research.

Teaching methods

Multi-media presentation, also with an illustrations and solving case studies. An interactive discussions with students. Student presentation of how they solved their assigned cases and tasks.

Bibliography

Basic

1. J. Apanowicz: Metodologiczne uwarunkowania pracy naukowej. Difin 2005

2. J. Such, M. Szcześniak: Filozofia nauki. Wyd. UAM 2002

3. M. Heller: Filozofia nauki (wprowadzenie) – różne wydania.

4. K. Wisłocki: Metodologia i redakcja prac naukowych. Wyd. PP 2013

5. J. Zieliński: Metodologia pracy naukowej. Wyd. ASPRA 201

6. 1. Guidelines for performing Systematic Literature Reviews in Software Engineering, ver. 2.3, University of Durham, UK, 2003,
https://www.elsevier.com/__data/promis_misc/525444systematicreviewsguide.pdf

Additional

1. M. Krajewski: O metodologii nauk i zasadach pisarstwa naukowego 2010.

2. Dobre rady dla piszących teksty naukowe, David Lindsay ; przeł. [z ang.].- Wrocław: Politechnika Wrocławska, 1995.

3. Jak pisać prace uniwersyteckie : poradnik dla studentów, Paul Oliver ; przekł. [z ang.]. - Kraków : Wydaw. Literackie, 1999.

4. Jak pisać teksty naukowe?, Jolanta Maćkiewicz. - [Wyd.2 poszerz., dodr.]. - Gdańsk: Uniwersytet Gdański, 2001.

Breakdown of average student's workload

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