DOCTORAL (PHD) STUDIES

COURSE UNIT DESCRIPTION

Course unit title	Scientific areas	Faculty	Institute, department
Research Methods in Informatics and Informatics Engineering	Informatics engineering (T 007), Informatics (N 009)	Faculty of Mathematics and Informatics	Institute of Data Science and Digital Technologies, Cyber-Social Systems Engineering Group

Study method	Number of credits	Study method	Number of credits
Lectures	1,5	Consultations	1
Individual works	3	Seminars	1,5 (spring)

Summary

The course gives a holistic view of scientific research, emphasizing the peculiarities of research in informatics and informatics engineering. It systematically studies the contemporary research principles, methods and techniques. The issues of conceptualization, modeling, hypothesis formulation and verification, computer experiment and design as a research method are emphasized. The issues of methodology for data collection, analysis and evaluation, observation methodology, argumentation, scientific evidence, library research, comparative analysis, scientific ethics and scientific writing are discussed. The main directions of philosophy of science are introduced.

Main topics:
1. Scientific research
2. Analysis of phenomena in physical, social and virtual reality
3. Theoretical research methods
4. Experimental design
5. Constructive research
6. Problem solving methods
7. Information search
8. Data gathering and analysis
9. Research projects and their management
10. Scientific and technical writing
11. Writing logic

Exercises. The students will be asked:
1. to make presentations at the seminar,
2. to write a research paper,
3. to write a review of a research paper,
4. to write a project proposal.

Main literature

J. G. Brookshear (2012) Computer Science: An Overview. Addison-Wesley

N. K. Denzin, Y. S. Lincoln (Eds.) (1994). Handbook of Qualitative Research. Thou-sand Oaks, California, Sage Publications

M. Q. Patton (2002). Qualitative Evaluation and Research Methods. 3rd ed. Newbury Park, CA: SAGE Publications

W. C. Booth, G. G. Colomb, J. M. Williams, J. Bizup, W. T. FitzGerald (2016). The Craft of Research, 4th ed. The University of Chicago Press

K. Williamson, G. Johanson (Eds.) (2017) Research Methods: Information, Systems, and Contexts. 2nd ed. Elsevier

A. F. Chalmers (2005). Kas yra mokslas? Apostrofa

A. Jasmontas (2003). Pažinimo filosofijos metmenys. Versus Aureus

J. Zobel (2004). Writing for Computer Science. Springer

M. J. Katz (2009) From Research to Manuscript. A Guide to Scientific Writing. Springer
L. Rienecker, P. S. Jørgensen (2003). Kaip rašyti mokslinį darbą. Aidai
P. Machamer, M. Silberstein (Eds.) (2002) The Blackwell Guide to the Philosophy of Science. Blackwell Publishers
J. W. Creswell (2013) Research Design: Qualitative, Quantitative and Mixed Methods Approaches. 2nd ed. SAGE Publishing
D. Gray (2009) Doing Research in the Real World. 4th edition. SAGE Publishing
P. Cash, T. Stanković, M. Štorga (Eds.) (2016) Experimental Design Research: Approaches, Perspectives, Applications. Springer
T. P. Ryan (2007) Modern Experimental Design. Wiley-Interscience

Lecturer(s) (name, surname)	Science degree	Main publications
Audronė Lupeikienė	dr.	http://www.elaba.mb.vu.lt/dmsti/?aut=Audronė+Lupeikienė
Albertas Čaplinskas	dr.	http://www.elaba.mb.vu.lt/dmsti/?aut=Albertas+Čaplinskas
Saulius Gudas	dr.	http://www.elaba.mb.vu.lt/dmsti/?aut=Saulius+Gudas
Virginijus Marcinkevičius	dr.	http://www.elaba.mb.vu.lt/dmsti/?aut=Virginijus+Marcinkevičius
Igoris Belovas	dr.	http://www.elaba.mb.vu.lt/dmsti/?aut=Igoris+Belovas