Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
INF 690	Graduate Seminar	1	0	0	2	0	8

Prerequisites	
Admission Requirements	

Language of Instruction	English
Course Type	Compulsory
Course Level	Doctoral Degree
Objective	This course aims to equip students with the foundational skills required to conduct research projects. It focuses on developing the ability to identify and formulate research problems, critically analyze existing literature, design and execute detailed research methodologies, and communicate findings effectively in both written and oral forms. The course also examines ethical and legal issues in academic and professional practice in R&D, as well as the commercial, managerial, and legal aspects of developing new technologies.
Content	This course provides a comprehensive introduction to the development and execution of research projects in Computer Science. It begins with the formulation of a research topic/question through a systematic literature review, including reading, summarizing, and critically evaluating relevant academic work, as well as identifying key themes and research gaps. The course then covers experimental design and research methodologies, incorporating both quantitative and qualitative approaches, simulation techniques, and data collection and management practices. The students will apply the theoretical knowledge acquired to a small-scale R&D project by developing a well-structured research proposal aligned with contemporary standards in Computer Science research.
References	Walliman, N., & Walliman, N. (2010). Research Methods: The Basics: 2nd edition. Routledge. https://doi.org/10.4324/9780203836071. Dandy, GC, Walker, DJ, Daniell, TM & Warner, RF 2008, Planning and Design of Engineering Systems. Second Edition, Taylor and Francis, Abingdon, UK, ISBN 978-0-415-40552-2. Dodig-Crnkovic G., Scientific methods in computer science, Conference for the Promotion of Research in IT at New Universities and at University Colleges in Sweden, Skövde. 2002.

Theory Topics

Week	Weekly Contents
1	Foundations of Scientific Research
2	Systematic Literature Review
3	Critical Analysis and Evaluation of Research
4	Formulation of a Research Question
5	Identification of Research Gaps
6	Critical Analysis of Research Papers (Student Paper Presentations)
7	Research Methods, Techniques and Methodology in Computer Science
8	Hypothesis & Experimental Design
9	Quantitative and Qualitative Approaches
10	Analytical Techniques, Statistical Techniques and Tools for Analysing Data
11	Project Planning and Management, Risk Analysis

Week	Weekly Contents
12	Development of Technology: R&D Projects
13	Ethical and Societal Challenges, Legal and Professional Issues, Professional Conduct and Responsibility
14	Student Project Presentations