
UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II
**DOTTORATO DI RICERCA / PhD PROGRAM IN
INFORMATION TECHNOLOGY AND ELECTRICAL ENGINEERING**

Course announcement

Title: **Methodologies and Tools for conducting Systematic Literature Reviews and Systematic Mapping Studies**

Lecturer: **prof. Domenico Amalfitano**

Università degli Studi di Napoli Federico II

Email: domenico.amalfitano@unina.it

Short CV: Domenico Amalfitano is a Tenured Assistant Professor at the Department of Electrical Engineering and Information Technologies at the University of Naples Federico II. His main research area is software engineering, with specific interests in software and systems architectures, software testing and automation, quality assurance, and quality assessment of software development processes.

His research activities also include the conduct of systematic literature reviews and systematic mapping studies, carried out in collaboration with both Italian and international universities. These studies have led to the publication of high-impact review articles in venues such as ACM Computing Surveys and Information and Software Technology.

Credits: **3**

Overview:

The objective of this course is to provide PhD students with a structured and rigorous approach to conducting **Systematic Literature Reviews (SLRs)** and **Systematic Mapping Studies (SMSs)**. These methodologies are widely used across disciplines to analyze existing knowledge systematically, identify research gaps, and establish a strong foundation for future investigations.

The course is designed to introduce **not only theoretical foundations but also hands-on practical techniques**, ensuring that participants can effectively apply what they learn. Throughout the sessions, students will engage in **interactive exercises, real-world case studies, and guided applications of systematic review methodologies**, using relevant tools and frameworks.

SLRs focus on synthesizing evidence to answer specific research questions, while SMSs provide a broader overview of a research field by categorizing studies and identifying trends. Mastering these processes is crucial for doctoral students across various disciplines, as it enhances their ability to synthesize complex information, construct well-supported arguments, and contribute meaningful advancements to their respective research fields.

Schedule

Lecture	Date	Time	Topics
1	28/4, 14:30-16:30	2h	Introduction to Systematic Literature Reviews and Systematic Mapping Studies
2	29/4, 14:30-16:30	2h	Planning the Study
3	05/05, 14:30-16:30	2h	Selection and Evaluation of Literature
4	06/05, 14:30-16:30	2h	Data Extraction and Synthesis
5	09/05, 14:30-16:30	2h	Analysis and Interpretation of Results
6	12/05, 14:30-16:30	2h	Writing and Publishing the Study
	14/05, 14:30-16:30	2h	Assessment and Final Presentation

Content details

Session 1: Introduction to Systematic Literature Reviews and Systematic Mapping Studies

This session introduces Systematic Literature Reviews (SLRs) and Systematic Mapping Studies (SMSs), explaining their significance in research. It distinguishes these methodologies from narrative reviews and discusses when and why conducting a systematic study is beneficial. Through real-world examples, participants will gain an understanding of best practices, and the session will also provide an overview of the most commonly used guidelines that define the review process (e.g., PRISMA, Kitchenham guidelines).

Session 2: Planning the Study

This session focuses on the importance of a well-structured study plan for both SLRs and SMSs. It covers how to formulate a strong research question and structure research objectives using established frameworks (e.g., PICO, PICOC, and SPIDER). Additionally, it addresses the design of a detailed review protocol, including preregistration, and the selection of the most relevant sources and databases. Participants will explore strategies for crafting effective search queries using keywords and Boolean operators to ensure a comprehensive collection of literature. The differences in scope and objectives between SLRs (which focus on evidence synthesis) and SMSs (which focus on categorization and classification) will be highlighted.

Session 3: Selection and Evaluation of Literature

This session guides participants through the process of selecting relevant studies after identifying potential sources. It explains how to define clear inclusion and exclusion criteria, followed by a structured approach to screening titles, abstracts, and full texts. The session also explores tools that can assist in reference management and discusses techniques for assessing the quality of selected studies. For SLRs, the focus will be on assessing methodological rigor, while for SMSs, emphasis will be placed on categorizing and mapping studies based on research themes, methodologies, and trends. Strategies to minimize bias in the selection process will also be covered.

Session 4: Data Extraction and Synthesis

This session delves into the critical aspects of extracting and synthesizing data for both systematic methodologies. Participants will learn how to extract key information from selected studies and organize it in a structured manner. For SLRs, the session introduces qualitative and quantitative synthesis techniques, including thematic analysis and coding methods. For SMSs, the focus will be on classifying studies into predefined or emerging categories, using mapping techniques to visualize the distribution of research efforts.

across different themes. Furthermore, an introduction to meta-analysis (for SLRs) and bibliometric analysis (for SMSs) will be provided.

Session 5: Analysis and Interpretation of Results

This session focuses on analyzing and interpreting extracted data systematically. Participants will explore various approaches to synthesizing findings, both narratively and visually. Bibliometric analysis, co-citation networks, and cluster analysis will be discussed to support systematic mappings, while traditional synthesis and meta-analysis techniques will be covered for systematic reviews. The session also highlights how SMSs can serve as a precursor to an SLR, helping researchers define precise research questions for further investigation. Finally, participants will learn how to connect findings to potential future research directions.

Session 6: Writing and Publishing the Study

This session concentrates on structuring and writing a high-quality systematic review or systematic mapping study. It covers best practices for presenting results clearly and rigorously while ensuring transparent reporting. Additionally, the session discusses strategies for successfully submitting reviews to conferences and journals. Participants will analyze published SLRs and SMSs to extract key lessons that can improve their writing and reporting techniques.

Assessment and Final Presentation

Participants will be required to develop a draft protocol for either a Systematic Literature Review (SLR) or a Systematic Mapping Study (SMS) within their research domain. In the final session, each student will present their protocol, explaining the background and relevance of their study, the research questions they have formulated, and the bibliographic search strategy they plan to adopt, including databases, keywords, and search queries. Additionally, students must justify their choice of methodology by explaining why either an SLR or an SMS is the most appropriate approach for their research goals. They will outline the inclusion and exclusion criteria used to refine their selection of studies and describe their planned approach for data analysis and synthesis, taking into account the differences between systematic reviews (which focus on evidence synthesis) and systematic mapping studies (which aim to categorize and map research trends).

Participants are requested to join the following MS Teams group by April 25th: [Methodologies and Tools for Conducting SLRs and SMSs | General | Microsoft Teams](#)

Lectures will take place in the Aula Seminari (1st floor, DIETI, building 3/A, Via Claudio 21, 80125 Naples). The course is conducted on-site; however, PhD students currently abroad for research purposes may request remote attendance via MS Teams.

For further information, please contact Prof. Domenico Amalfitano (DIETI, UniNA) at domenico.amalfitano@unina.it