



<b>Systematic Literature Reviews in Software Engineering in Practice</b>	Carrera: Doctorado en Ciencias Informáticas Docentes a Cargo: Dr. Damiano Distante Duración: 40 hs Créditos: - <b>Idioma:</b> Inglés
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## Objectives

This course aims to teach students a methodology for conducting Systematic Literature Reviews (SLRs) in the field of Software Engineering and, more generally, in the area of Computer Science, based on the guidelines proposed by Kitchenham and Charters [1] and the work contributed by other authors who have built upon the foundational work of Kitchenham, including that of Petersen et al. [2] and Wohlin [3].

By adopting an interactive approach that combines lectures with practical exercises, the course will provide students with a common background covering the entire SLR process and promoting high standards in planning, conducting, and reporting an SLR.

The specific objectives of the course are:

- Know the significance of conducting SLRs.
- Evaluate if an SLR study is needed or not in the research field of interest.
- Know the most used methodology for conducting SLRs in SE.
- Know the main steps for conducting an SLR.
- Know the main activities at every step of SLR with their outputs.
- Be able to conduct an SLR using a well-known and well-established methodology.
- Be able to identify gaps and/or opportunities for future research in the field of interest.

- Be able to write an SLR paper.

## Teaching Methodology

The course will follow an interactive approach by combining lectures and project tasks in a PhD-class format, encouraging the active participation of students by leveraging their research interests and knowledge.

Students will work in groups to apply the thought methodology to conduct an SLR on the research topic of their choice. In this context, lectures will constitute 40% of the course time, while project tasks will make up 60% of the total time.

The course duration is four weeks. It includes one weekly synchronous meeting/lecture, reading/project assignments and discussion of results for a total duration of 40 hours.

## Teaching Staff

The instructor for this course is Prof. Damiano Distanto, Associate Professor of Computer Science at the University of Rome UnitelmaSapienza (Italy) ([www.unitelmasapienza.it](http://www.unitelmasapienza.it)) and Coordinator of the Intelligent Information Mining (IIM) research group ([iim.di.uniroma1.it](http://iim.di.uniroma1.it)).

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## Course Pre-requisites

Since most of the material available on the topic is in English and lectures will be in English, it is required that attendees read and speak English fluently. No other pre-requisites apply.

## Course Program

Unit 1 - Introduction to Systematic Literature Review



- Types of SLRs
- Needs for an SLR
- Overall SLR process and steps
- Unit 2 - Planning the Review (Protocol definition)
  - Goal and research questions definition
  - PICOC and search string definition
  - Search string verification
  - Digital libraries selection
  - Inclusion and exclusion criteria
  - Quality assessment criteria
  - Data extraction form
  - Tool support
  - Project assignment and group discussion
- Unit 3 – Conducting the review (Protocol execution)
  - Digital libraries querying
  - Inclusion and exclusion criteria application
  - Snowballing
  - Quality assessment
  - Data extraction
  - Data analysis
  - Research questions answering
  - Project assignment and group discussion
- Unit 4 – Documenting the review (Paper writing)
  - Dissemination strategy definition
  - Structuring an SLR paper
  - Results discussion
  - Threats to validity
  - Conclusions
  - Group discussion



## **Bibliography and References**

- [1] KITCHENHAM B., CHARTERS S., Guidelines for Performing Systematic Literature Reviews in Software Engineering, Version 2.3, EBSE Technical Report EBSE-2007-01, 2007.
- [2] PETERSEN K., VAKKALANKA S., KUZNIARZ L., Guidelines for conducting systematic mapping studies in software engineering: An update, Information and Software Technology, Volume 64, p. 1-18, 2015.
- [3] WOHLIN C., Guidelines for snowballing in systematic literature studies and a replication in software engineering, in Proceedings of the 18th International Conference on Evaluation and Assessment in Software Engineering, p. 38, London, UK, 2014.
- [4] CARRERA-RIVERA A., OCHOA W., LARRINAGA F., LASA G., How to conduct a systematic literature review: A quick guide for computer science research, MethodsX, Volume 9, 101895, 2022.