

Elements of Software Engineering and Information Systems

Introduction to Course – A.Y. 2025/2026

Prof. Ing. Lelio Campanile, PhD

Prof. Ing. Mauro Iacono, PhD

Corso di Laurea Magistrale in Data Science

Dipartimento di Matematica e Fisica

Università degli Studi della Campania Luigi Vanvitelli

A.A. 2025/2026

- **9 CFU** – 72 hours
 - 48h *Elements of Software Engineering*
 - 24h *Information Systems*
- **Instructors:**
 - Prof. Ing. Mauro Iacono, PhD
 - Prof. Ing. Lelio Campanile, PhD
- **Examination:** written/project + oral exam
- **Office hours:** by appointment via email or after lectures

Contact Information

Prof. Iacono

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Prof. Campanile

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Day	Time	Module	Instructor
Monday	15:40 – 17:20	Information Systems	Prof. Iacono
Thursday	09:00 – 10:40	Elements of SW Engineering	Prof. Campanile
Friday	14:50 – 17:20	Elements of SW Engineering	Prof. Campanile

Course Duration

- **Start:** Thursday, February 19, 2026
- **End:** Friday, May 15, 2026

Software Engineering

- Introducing software engineering, its principles and main models
- Software processes
- Requirements analysis
- System modeling (UML)
- Software development lifecycle
- Agile methodologies

Information Systems

- Presenting the main aspects of information systems
- Introducing OLAP and analytics
- Analyzing the most common IS (ERP, CRM, DSS...)
- Presenting the main topics in data warehousing and mining
- Introducing HW/SW architectures for big data

Main Textbooks

- 1 I. Sommerville, *Software Engineering*, 10th edition, Pearson
- 2 J. O'Brien, G. Marakas, *Introduction to Information Systems*, McGraw-Hill
- 3 P. Ponniah, *Data Warehousing for IT Professionals*, Wiley

Additional References

- M. Seidl, M. Scholz, C. Huemer, G. Kappel, *UML @Classroom*, Springer
- R. Kimball, M. Ross, *The Data Warehouse Toolkit*, Wiley
- E. Monk, B. Wagner, *Concepts in Enterprise Resource Planning*, 4th edition
- M. Pighin, A. Marzona, *Sistemi Informativi Aziendali*, 3rd edition, Pearson (*in Italian*)
- Materials available on www.mauroiacono.com

Course Schedule

Elements of Software Engineering – 48 hours

Course Schedule – Overview

Week	Topics	Reference	Hours
1	Introduction + SW Engineering Intro	Ch. 1	5
2	Software Processes + Agile (intro)	Ch. 2–3	5
3	Agile Development + Requirements Eng. (pt. 1)	Ch. 3–4	5
4	Requirements Eng. (pt. 2) + System Modeling	Ch. 4–5	5
5	Use Case Diagram + Class Diagram + Sequence D.	UML@CI.	5
6	<i>Easter Break – no lectures</i>	–	0
7	Activity Diagram + Preparatory Workshop	UML@CI.	4
8	★ 1st Midterm Exam + Architectural Design (pt. 1)	Ch. 1–5 + UML	4
9	Architectural Design (pt. 2) + OOP Review + Design & Impl. (pt. 1)	Ch. 6–7	5
10	Design & Implementation (pt. 2) + <i>May 1 holiday</i>	Ch. 7	2
11	Software Testing + Software Evolution	Ch. 8–9	5
12	Study day + ★ 2nd Midterm Exam	Ch. 6–9 + OOP	3
Total			48

Examination

Midterm Exams (*Prove Intercorso*)

Important Notice

Midterm exams are **reserved for regularly attending students** (*studenti frequentanti in corso*).

1st Midterm Exam – Week 8

Coverage: Lessons 1–8 (Sommerville Ch. 1–5 + UML Diagrams)

Format: Practical in-class test — Part A: Requirements Analysis + UML Modeling – Use Case, Class diagrams

2nd Midterm Exam – Week 12+

Coverage: Lessons 9–16 (Sommerville Ch. 6–9 + UML Design)

Format: Practical in-class test — Architectural Design, UML Modeling – class, sequence, activity diagrams Testing, Evolution

Written Exam (*Esame Scritto*)

Written Exam – For non-attending students or regular exam sessions

The written exam combines the content of both midterm exams into a **single written test**:

- **Coverage:** All course topics (Lessons 1–16) ▪ **Duration:** 3 hours
- Part 1 – Requirements Analysis + UML Modeling + Architectural Design + Testing + Evolution

Oral Exam – **Always Mandatory**

- The **oral exam is always mandatory**, for *all* students (both midterm and written exam paths).
- It covers the entire course syllabus.
- The final grade combines the written component and the oral exam.

Examination – Summary

Component	Content	Who
1st Midterm (Week 8)	Ch. 1–5 + UML Diagrams	Attending students only
2nd Midterm (Week 12)	Ch. 6–9 + UML Ex. pts	
Written Exam	All topics (Ch. 1–9 + UML) pts	All students
Oral Exam	Entire syllabus	All students

Attending Students Path

1st Midterm + 2nd Midterm + Oral

Regular Exam Path

Written Exam + Oral

Prof. Ing. Mauro Iacono

Professore associato in Sistemi di Elaborazione delle Informazioni

Prof. Ing. Lelio Campanile

Assistant Professor (RTDa)

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Grazie per l'attenzione