Course Outline: SENG404-26S1

Judith Fuchs and Fabiano Dalpiaz

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1 Introduction

Many software engineering problems are rooted in not understanding the needs of customers and other stakeholders, as well as a lack of attention to the software architecture as the overarching structure of software systems and the major design decisions that significantly affect the functionality and quality of software-intensive systems. The course will discuss concepts for systematically defining and managing software requirements and software architectures.

SENG404-26S1 will develop on top of SENG404-24S1, refining the course to include emerging topics such as the incorporation of AI techniques for Requirements Engineering (RE) and software architecture.

The course title, description and prerequisites (see Table 1) are the same as visible on the SENG404-24S1 course web page.

Table 1: Course Information for SENG404_26

Course title	SENG404-26S1: Software Requirements and Architecture
Description	This course explores software requirements and software architecture in the software development and software product life cycle.
Prerequisites	(1) SENG301, or (2) Subject to approval by Head of Department

2 Course Content

A tentative list of topics for the lectures and workshops for the 2026 instance of the course is as follows.

- Requirements Engineering theories and fundamentals
- The RE process
- Elicitation and interviewing
- Documenting requirements: specifications as contracts
- Documenting requirements in agile development: user stories
- Prioritization techniques
- Modelling requirements
- Management: traceability, release planning
- AI techniques to support RE: elicitation, analysis, validation
- From requirements to architectures
- Architectures and quality concerns
- Architectural design

3 Learning Outcomes

Learning outcomes for 2026 adopt the LOs from 2024 but refine them to include the AI aspect. See Table 2.

Table 2: Learning Outcomes for SENG404_26

LO	Learning Outcome	Focus
1	Evaluate the importance of and the relationship between requirements and architecture	Reqs and Arch
2	Apply appropriate techniques for effective requirements engineering and adopt good software architecture practices	Reqs and Arch
3	Use a range of specifications and modelling languages appropriately to produce requirements	Reqs
4	Apply AI techniques to support tasks in requirements engineering and software architecture	Reqs, Arch, and AI
5	Produce and communicate professional and technical content in a format appropriate for the software engineering discipline	General

4 LO mapping to graduate attribute profiles

Table 3: Mapping: LOs to Graduate Attributes

LO	WA1	WA2	WA3	WA4	WA5	WA6	WA7	WA8	WA9	WA10	WA11
1		✓					✓				✓
2	✓	✓	✓		✓	✓		✓	✓	✓	✓
3	✓		✓		✓						
4	✓	✓		✓	✓		✓				
5				✓		✓		✓	✓		

5 Assessment

Course assessment items are designed to be research and practice-based. The first assignment is practice-based. The second assignment is research-based. Assessment items also include a final exam, which will be individually graded. See Table 4.

Table 4: Assessment Items for SENG404_26

Assessment Item	**Description**
Assignment 1 (30%): Requirements specification. March 27.	Students will conduct a mini-project in which they apply requirements engineering techniques in practice. The assignment is a result of a role-playing project in which the students serve both as clients and analysts. As analysts, the students conduct elicitation interviews, create a domain model, and come up with a specification, and prioritise the requirements. Interviews would be conducted in small groups or in pairs.
Assignment 2 (30%): Research article. May 29.	Students will work on a small research project where they apply an AI technique to some requirements engineering or software architecture task. The project involves finding a task, identifying a dataset, designing, conducting, and reporting on a small experiment in a research paper format. Students will work in small groups or in pairs.
Final Exam (40%): Date to be decided.	The exam will be conducted digitally with multiple-choice and open-ended questions. The MCQs will be graded automatically, while the open-ended questions will be graded manually.