

Advanced Software Engineering (ASE) modules for Negotiated Learning Students 2024/25

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Advanced Software Engineering (ASE) modules

We run a Taught Masters programme in Advanced Software Engineering for experienced software developers.

The ASE modules are available to NL students as well (if certain eligibility criteria are met).

For 2024/25, three ASE modules are running:

COMP40070 (Design Patterns) **Autumn 2024**

COMP40550 (Performance of Distributed Systems) **Spring 2025**

COMP47910 (Secure Software Engineering) **Summer 2025**

All are **10 credit** modules, and they run **online**.

ASE Prerequisites

ASE modules are geared at experienced software developers.

In exceptional circumstances, NL students may be able to select a number of modules from the ASE programme. Students must have a **minimum of 2 years experience in a professional software engineering environment* after their university degree** to be eligible for these modules, and must be approved by the ASE Director.

*Important: you need 2+ years of software engineering experience, not just time spent working in a software/IT company.

If you want to take an ASE module, email me your request with details of how you meet the above criteria:

Liam.Murphy@ucd.ie

ASE modules: Online Delivery

All ASE modules run online only.

The details will vary from module to module, but online delivery will usually be structured as follows:

- * The material is offered online as a number of packages.
- * Each package may comprise lecture slides, study material, a video of the lecturer presenting an overview of the material and assignment work.
- * A Teaching Assistant (or the Lecturer) will be available throughout the module to answer questions regarding assignment work, either on a group chat or email.
- * Regular online Q&A sessions are provided.

COMP40070 Design Patterns

This module examines Design Patterns in detail, their role in the software lifecycle, how and where they should be applied, and the potential benefits that accrue from their use.

On successful completion of this module, a student should be able to:

- appreciate the benefits of design patterns
- apply design patterns in their own programs
- analyse the relationships between various design patterns
- understand the application of design patterns in an industrial context
- synthesize knowledge of design patterns with their previous industrial experience

Module Coordinator: Mel Ó Cinnéide

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COMP40550 Performance of Distributed Systems

This module provides an introduction to performance engineering applied to software systems.

The topics covered include:

- basic queueing theory;
- software performance assurance;
- software and system execution models;
- performance patterns and anti-patterns;
- performance of virtual machines;
- performance testing of software systems.

Module Coordinator: Liam Murphy

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COMP47910 Secure Software Engineering

This module aims to provide knowledge and to develop skills necessary to undertake a career as a Security Engineer, Architect or Analyst.

The topics covered include:

- Identifying key security concepts (assets, requirements, vulnerabilities), threats and attacks to software systems;
- Selecting countermeasures that could be applied to mitigate vulnerabilities;
- Identifying and exploiting security vulnerabilities in software projects using security testing;
- Designing secure software and developing patches to remove vulnerabilities from existing software projects;

Module Coordinator: Liliana Pasquale

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I want to take an ASE module! What do I do?

1. Assess the prerequisites. If you don't have at least two years of software engineering experience in a company, there is little point in applying.
2. Discuss with your NL Advisor.
3. Email the NL Administrator, copying the ASE Director (Liam Murphy).
4. If you get a positive response, add this module to your Module Registration Form and send this to the NL Administrator.

Deadline to apply: The sooner the better, but no later than Sunday 08/09/2024