CS261-15 Software Engineering

20/21

Department
Computer Science
Level
Undergraduate Level 2
Module leader
Jackie Pinks
Credit value
15
Module duration
10 weeks
Assessment
Multiple
Study location
University of Warwick main campus, Coventry

Description

Introductory description

The aim of the module is to provide students with a theoretical understanding and practical experience of current best practice in software engineering.
This module is only available to students in the second year of their degree and is not available as an unusual option to students in other years of study.

Module aims

The aim of the module is to provide students with a theoretical understanding and practical experience of current best practice in software engineering. The module concentrates on the application of software engineering principles to the development of a significant software system, with an emphasis on design quality, technical evaluation, team working and project management.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Topic areas addressed are software development processes, feasibility and requirements analysis, modelling and design, implementation and design patterns, testing and analysis, maintenance and evolution. Each area will be covered from a theoretical and practical perspective,

with a particular emphasis on concepts such as:

- Object oriented modelling and design: objects, classes, inheritance, polymorphism, aggregation, abstract classes.
- Formal notations for expressing issues relating to the analysis, design and implementation of systems, including classes, objects, sequences, packages, collaborations, activities, system states and components.
- Classical software engineering principles, including software processes, waterfall model, software life cycles, cost-estimation, safety critical systems, software testing and maintenance.
- Human computer interaction: human information processing models and memory, learning and skill acquisition; interaction styles; the graphical user interface; task analysis and user centred design; evaluation techniques.
- Techniques relating to the elicitation of requirements, including issues in process engineering, user-centred design and customer management.
- Architectural design and implementation technology selection, including the application of design patterns and frameworks for system design.
- Levels of system and performance testing, including unit, integration, system and user / acceptance testing.
- Software process issues relating system documentation, evolution and maintenance.

Learning outcomes

By the end of the module, students should be able to:

- - Understand the importance of the stages in the software life cycle, including a range of software development development methodologies.
- - Design object oriented software using with the aid of a formal system modelling notation.
- - Understand the principles of graphical user interface design.
- - Understand the principles of user-centred design.
- - Critically evaluate their experience of practical software development with regard to project management, software processes and technical accomplishment.
- - Understand, though experience, the practical challenges associated with the development of a significant software system, including a graphical user interface.
- - Understand, though experience, the practical challenges associated with working as a member of a software development team.

Indicative reading list

Please see Talis Aspire link for most up to date list.

View reading list on Talis Aspire

Subject specific skills

Understand the importance of the stages in the software life cycle, including a range of software development methodologies.
Design object oriented software using with the aid of a formal system modelling notation

Understand the principles of graphical user interface design
Understand the principles of user-centred design
Critically evaluate their experience of practical software development with regard to project management, software processes and technical accomplishment
Understand, though experience, the practical challenges associated with the development of a significant software system, including a graphical user interface
Understand, though experience, the practical challenges associated with working as a member of a software development team.

Transferable skills

Communication skills (written and verbal)
Presentation skills
Team work
Team based coding
Problem analysis
Critical evaluation skills

Study

Study time

Type	Required
Lectures	15 sessions of 1 hour (10%)
Seminars	5 sessions of 1 hour (3%)
Private study	130 hours (87%)
Total	150 hours

Private study description

Independent study includes both revision of the material and the group project. The project has a number of factors, including a variety of reports and software tasks. Engaging with these tasks, and revising the expected approaches and techniques of these tasks, help to reinforce the material from the lectures. The remaining time should be spent on revision and performing the background reading.

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Students can register for this module without taking any assessment.

Assessment group C1

	Weighting	Study time
Group software development project	50%	
Online Examination	50%	
~Platforms - AEP		

- Answerbook Pink (12 page)

Assessment group R

	Weighting	Study time
Online Examination - Resit	100%	
CS261 resit exam		
~Platforms - AEP		

- Online examination: No Answerbook required

Feedback on assessment

E-mail and real-time feedback.

Past exam papers for CS261

Availability

Courses

This module is Core for:

- UCSA-G500 Undergraduate Computer Science
  - Year 2 of G500 Computer Science
  - Year 2 of G500 Computer Science
- UCSA-G503 Undergraduate Computer Science MEng
  - Year 2 of G500 Computer Science

    - Year 2 of G503 Computer Science MEng
    - Year 2 of G503 Computer Science MEng
- Year 2 of UCSA-I1N1 Undergraduate Computer Science with Business Studies
- Year 2 of UCSA-G406 Undergraduate Computer Systems Engineering
- Year 2 of UCSA-G408 Undergraduate Computer Systems Engineering
- USTA-G302 Undergraduate Data Science
    - Year 2 of G302 Data Science
    - Year 2 of G302 Data Science
- Year 2 of USTA-G304 Undergraduate Data Science (MSci)

This module is Option list B for:

- UCSA-G4G1 Undergraduate Discrete Mathematics
    - Year 2 of G4G1 Discrete Mathematics
    - Year 2 of G4G1 Discrete Mathematics
- Year 2 of UCSA-G4G3 Undergraduate Discrete Mathematics