

Module Title	Advanced Software Engineering	School	Mathematical & Computer Sciences				On or Off-Campus	On	
Module Co-ordinator	Monica Farrow	SCQF Level	11	Module Code	F21AS	Semester	2	Credits	15

1. Pre-requisites	Knowledge of Java programming and software engineering at undergraduate level								
2. Linked Modules (specify if synoptic)	F21SF Software Engineering Foundations								
3. Excluded Modules	None								
4. Replacement Module	Code:		5. Availability as an Elective			Yes <input type="checkbox"/>			
	Date Of Replacement:					No <input checked="" type="checkbox"/>			
6. Degrees for which this is a core module	Mandatory module for MSc Software Engineering Optional module for MSc in Distributed & Multimedia Information Systems, IT (Business), IT (Software Systems), Intelligent Web Technology, Mobile & Handheld Applications								
7. Aims									
<ul style="list-style-type: none"> ◆ To consolidate proficiency in imperative programming and software development ◆ To further develop object oriented programming and object oriented design methods ◆ To develop an understanding of window-based systems and their development ◆ To introduce concurrent programming techniques ◆ To instil understanding of the concepts and benefits of advanced software engineering methods ◆ To give further practical experience of the use of UML in software engineering ◆ To give practical experience of developing a substantial software engineering team project ◆ To enable the deployment of patterns in software engineering 									
8. Syllabus									
<p>Advanced object oriented design techniques</p> <p>Graphical user interface design and implementation: labels, buttons, text fields, sliders, panels, frames; menus & lists; file selection; state-based design.</p> <p>Thread based programming: thread creation and interaction, shared variables and synchronisation</p> <p>Methodologies in software engineering practice; Unified Modelling Language; design patterns;</p> <p>Quality assurance and risk assessment; Project planning and management in software engineering;</p> <p>Comparison of agile and plan driven approaches</p>									

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9. Learning Outcomes (HWU Core Skills: Employability and Professional Career Readiness)

Subject Mastery	<p>Understanding, Knowledge and Cognitive Skills Scholarship, Enquiry and Research (Research-Informed Learning)</p> <ul style="list-style-type: none"> ◆ Skill in the use of UML notation and translation of UML designs to working programs ◆ Critical understanding of the relationship between GUI Program design and object oriented program development ◆ Demonstration of skill in design and implementation of practical GUI based and threaded applications ◆ To demonstrate a critical understanding of modern software engineering practice and be able to evaluate the strengths and weaknesses of current software engineering methods and techniques ◆ To be able to choose appropriate metrics to measure software quality and quantity in a modern software engineering environment ◆ To be able to choose a suitable software development environment and development methodology for specific software development tasks and justify the choice
Personal Abilities	<p>Industrial, Commercial & Professional Practice Autonomy, Accountability & Working with Others Communication, Numeracy & ICT</p> <ul style="list-style-type: none"> ◆ Appreciation of use of methodology to ground system analysis, design and development ◆ Awareness of role of interface in mediating between user and system ◆ Understanding of different programming paradigms and their inter-relation ◆ Practice in working in a group, choosing a methodology, reaching a consensus, and working with others to a deadline ◆ Taking responsibility for own work, taking responsibility in the development of resources, critical reflection on development process and work undertaken by self. ◆ Effective appreciation of professional standards in modern software engineering practice. ◆ Showing initiative, creativity and team working skills in collaborative software development

10. Assessment Methods

11. Re-assessment Methods

Method	Duration of Exam (if applicable)	Weighting (%)	Synoptic modules?	Method	Duration of Exam (if applicable)
Group Coursework		80		Coursework	
Individual Coursework (reflective)		20			

12. Date and Version

Date of Proposal	30/11/20007	Date of Approval by School Committee	December 2007	Date of Implementation	15/9/2008	Version Number	1.0
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