Masters in Software Engineering

Programme Requirements

Software Engineering - MSc
IS5101 (15 credits) **and** CS5001 (15 credits) **and** CS5030 (15 credits) **and** CS5031 (15 credits) **and** (CS5032 (15 credits) **or** CS5033 (15 credits)) **and** Between 0 and 30 credits from Module List: CS4100 - CS4450 **and** Between 0 and 30 credits from Module List: IS5102 - IS5150 **and** Between 0 and 60 credits from Module List: CS5003 - CS5089, ID5059 **and** (CS5098 (60 credits) **or** CS5099 (60 credits)) **Further requirements** Students must select 180 credits. CS5001 is compulsory except when exempted following satisfactory performance in an assessment conducted by the school. **MPhil:** 120 credits from taught element of programme requirements (not including project/dissertation) plus a thesis of up to 40,000 words

Compulsory modules:

IS5101 Masters Core Skills				
SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	Whole Year
Planned timetable:	To be arranged.			
This module equips students with essential skills for completing an MSc in the School of Computer Science. Topics include: technical writing for Computer Science and Information Technology; use of bibliographic and referencing software; presentation skills; critical analysis of written work; generic research skills including framing research hypotheses, designing and conducting experiments, use of survey tools and gathering, analysing and presenting data; understanding basic statistics; use of project planning techniques; awareness of professional and ethical issues in research activities; carrying out a literature review; and awareness of what constitutes academic misconduct. Skills in these areas are reinforced through practical assignments.				
Programme module type:	Compulsory for all Postgraduate Programmes except European Masters in Dependable Software Systems.			
Learning and teaching methods and delivery:	**Weekly contact**: Lectures, seminars, tutorials and practical classes.			
Assessment pattern:	Coursework = 100%			
Module coordinator:	dopgt-cs@st-andrews.ac.uk			

CS5001 Object-Oriented Modelling, Design and Programming

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	1
Planned timetable:	Variable			
This module introduces and revises object-oriented modelling, design and implementation up to the level required to complete programming assignments within other MSc modules. Students complete a number of practical exercises in laboratory sessions.				
Programme module type:	Compulsory for Advanced Computer Science, Artificial Intelligence, Computer Communication Systems and Software Engineering Postgraduate Programmes, except when exempted following satisfactory performance in an assessment conducted by the school. Compulsory for European Masters in Dependable Software Systems Postgraduate Programme Either CS5001 or CS5002 is compulsory for Human Computer Interaction and Computing and Information Technology Postgraduate Programmes. Optional for Data-Intensive Analysis, Information Technology and Management and Information Technology Postgraduate Programmes.			
Anti-requisite(s):	CS5002			
Required for:	CS5011, CS5022, CS5031, CS5052			
Learning and teaching methods and delivery:	**Weekly contact**: Lectures, tutorials and practical classes.			
Assessment pattern:	Coursework = 100%			
Module coordinator:	dopgt-cs@st-andrews.ac.uk			

CS5030 Software Engineering Principles

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	1
Planned timetable:	To be arranged.			
This module examines the key concepts in small and large-scale software development. Project management is explored, along with the processes involved in developing system requirements, functionality and high-level descriptions necessary to guide the development of, and assess, a working system.				
Programme module type:	Compulsory for Software Engineering Postgraduate Programme. Optional for other Postgraduate Programmes.			
Learning and teaching methods and delivery:	**Weekly contact**: Lectures, seminars, tutorials and practical classes.			
Assessment pattern:	2-hour Written Examination = 60%, Coursework = 40%			
Module coordinator:	dopgt-cs@st-andrews.ac.uk			

CS5031 Software Engineering Practice				
SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	2
Planned timetable:	To be arranged.			
This module introduces advanced software engineering methods supporting the development of complex, composite software systems with an emphasis on software configuration management, reuse and test-driven development practices. It examines software reuse at different levels of scale, from software libraries and components to service-oriented architectures and discusses how reuse presents both challenges and opportunities for the development of quality software. A key process in today's software engineering practice is testing; the module introduces testing methods that complement the different scales of reuse-oriented development, from unit-level testing to integration testing and system-level testing. Students work on a project to design, implement and test a complex, distributed application to put the content of the lectures into practice. Reference is made to the content of the co-requisite Software Engineering Principles module where appropriate, so that students learn how the practices studied fit into a larger software engineering lifecycle.				
Programme module type:	Compulsory for Software Engineering Postgraduate Programme. Optional for other Postgraduate Programmes.			
Co-requisite(s):	CS5001, CS5030, CS5033		**Required for:**	CS5032, CS5039
Learning and teaching methods and delivery:	**Weekly contact**: Weekly lectures, seminars, tutorials and practical classes.			
Assessment pattern:	Coursework = 100%			
Module coordinator:	dopgt-cs@st-andrews.ac.uk			

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CS5032 Critical Systems Engineering				
SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	1
Planned timetable:	To be arranged.			
The aim of this module is to provide students with an understanding of the concepts and development techniques used for critical, socio-technical systems. When students have completed this module they will: understand the notion of system dependability and the key characteristics of dependable systems; understand the specialised software engineering techniques that may be used to ensure dependable system operation; have practical experience of applying some of these techniques in systems specification, design or implementation.				
Programme module type:	CS5032 or CS5033 is compulsory for Software Engineering Postgraduate Programme Optional for all other Postgraduate Programmes in the School of Computer Science			
Learning and teaching methods and delivery:	**Weekly contact**: Weekly lectures, seminars, tutorials and practical classes.			
Assessment pattern:	2-hour Written Examination = 60%, Coursework = 40%			
Module coordinator:	dopgt-cs@st-andrews.ac.uk			

OR

CS5033 Software Architecture				
SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	2
Planned timetable:	To be arranged.			
This module introduces students to the concept of software architecture, as an aid to software design, reuse and evolution. When students have completed this module, they will: have knowledge of the key elements of software architectures; recognise architectural styles of existing software systems; be able to describe the software architecture of a non-trivial system accurately; be able to construct systems that satisfy an architectural description; understand how software architecture aids design, reuse and evolution of software.				
Programme module type:	CS5032 or CS5033 is compulsory for Software Engineering Postgraduate Programme Optional for all other Postgraduate Programmes in the School of Computer Science			
Co-requisite(s):	CS5031			
Learning and teaching methods and delivery:	**Weekly contact**: Lectures, seminars, tutorials and practical classes.			
Assessment pattern:	2-hour Written Examination = 60%, Coursework = 40%			
Module coordinator:	dopgt-cs@st-andrews.ac.uk			

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CS5098 Group Project and Dissertation in Computer Science				
SCOTCAT Credits:	60	SCQF Level 11	**Semester:**	Summer
Planned timetable:	To be arranged.			
This module is a group-based MSc project on a topic in Computer Science. It results in an individual dissertation of no more than 15,000 words submitted by each student. Typically the dissertation comprises a review of related work, the extension of old or development of new ideas, software implementation and testing, analyses and evaluation. The dissertation may also include an agreed collaboratively-written group report. Each student is individually assessed, taking into account both individual and group submissions. Students are required to give a presentation of their work.				
Programme module type:	Either CS5099 or CS5098 is compulsory for the Advanced Computer Science, Artificial Intelligence, Data-Intensive Analysis, Human Computer Interaction, Computer Communication Systems and Software Engineering MSc			
Pre-requisite(s):	Admission to dissertation phase of MSc and permission of the Head of School			
Anti-requisite(s):	CS5099			
Learning and teaching methods and delivery:	**Weekly contact**: Meetings with supervisor.			
Assessment pattern:	Coursework = 100%			
Module coordinator:	dopgt-cs@st-andrews.ac.uk			

OR

CS5099 Dissertation in Computer Science				
SCOTCAT Credits:	60	SCQF Level 11	**Semester:**	Summer
Planned timetable:	To be arranged.			
This module is an individually supervised MSc project on a topic in Computer Science. It results in a dissertation of no more than 15,000 words. Typically the dissertation comprises a review of related work, the extension of old or development of new ideas, software implementation and testing, analyses and evaluation. Students are required to give a presentation of their work.				
Programme module type:	Either CS5099 or CS5098 is compulsory for the Advanced Computer Science, Artificial Intelligence, Data-Intensive Analysis, Human Computer Interaction, Computer Communication Systems and Software Engineering MSc			
Pre-requisite(s):	Admission to dissertation phase of MSc and permission of the Head of School			
Anti-requisite(s):	CS5098			
Learning and teaching methods and delivery:	**Weekly contact**: Meeting with supervisor.			
Assessment pattern:	Coursework = 100%			
Module coordinator:	dopgt-cs@st-andrews.ac.uk			

Optional modules are available - see the pdf online called Computer Science - optional modules 2017 - 2018.