Masters in Human Computer Interaction

Programme Requirements

Taught Element, and PG Diploma in Human Computer Interaction:

120 credits:

- IS5101
- CS5001
- CS5040
- CS5041
- CS5042 **or** CS5044
- up to 30 credits from CS4100 - CS4450, subject to appropriate experience
- remaining credits from IS5102 - IS5150, CS5003 - CS5089, ID5059

MSc:

120 credits from Taught Element, plus CS5098 **or** CS5099, the topic being in Human Computer Interaction

MPhil:

120 credits from Taught Element of Human Computer Interaction plus a 40,000-word thesis

For all Masters degrees there are exit awards available that allow suitably-qualified candidates to receive a Postgraduate Certificate or Postgraduate Diploma.

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 Erasmus Mundus Dependable Software Systems.			
Learning and teaching methods and delivery:	**Weekly contact**: Lectures, seminars, tutorials and practical classes.			
Assessment pattern:	Coursework = 100%			
Module Co-ordinator:	masters-coord-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, Human Computer Interaction, Networks and Distributed Systems, Software Engineering and Erasmus Mundus Dependable Software Systems Postgraduate Programmes.			
Anti-requisite(s):	CS5002		**Required for:**	CS5011, CS5021, CS5031
Learning and teaching methods and delivery:	**Weekly contact**: Lectures, tutorials and practical classes.			
Assessment pattern:	Coursework = 100%			
Module Co-ordinator:	masters-coord-cs@st-andrews.ac.uk			

CS5040 Human Computer Interaction Principles and Methods

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	1
Planned timetable:	To be arranged.			
This module provides a grounded introduction to the principles of human computer interaction in the context of evaluation paradigms. Material includes: history of interfaces and interaction; the human (vision, perception, memory, hearing); the computer (from existing to next generation ubiquitous computing systems); paradigms of interaction; evaluation paradigms in HCI; guidelines and heuristics; experimental design and hypothesis testing in HCI; quantitative evaluation methods in HCI; qualitative evaluation methods in HCI.				
Programme module type:	Compulsory for MSc Human Computer Interaction Postgraduate Programme. Optional for other Postgraduate Programmes in the School of Computer Science			
Anti-requisite(s):	CS3106		**Required for:**	CS5042, CS5044
Learning and teaching methods and delivery:	**Weekly contact**: Lectures, practical classes and tutorials.			
Assessment pattern:	2-hour Written Examination = 60%, Coursework = 40%			
Module Co-ordinator:	masters-coord-cs@st-andrews.ac.uk			

CS5041 Interactive Software and Hardware				
SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	1
Availability restrictions:	The module is available to all students enrolled on the MSc Human Computer Interaction Programme. A quota for other students may be necessary due to lab equipment constraints, in which case preference will be given to other MSc students.			
Planned timetable:	To be arranged.			
This module develops prototype-building skills for a wide range of interactive technologies. Students learn how to create interactive hardware and software using technologies such as tangible programming kits, mobile devices, microprocessor kits and depth cameras. There is a strong emphasis on practical assignments.				
Programme module type:	Compulsory for MSc Human Computer Interaction Postgraduate Programme. Optional for other Postgraduate Programmes in the School of Computer Science			
Pre-requisite(s):	CS5001			
Learning and teaching methods and delivery:	**Weekly contact**: Lectures, practical classes and tutorials.			
Assessment pattern:	Coursework = 100%			
Module Co-ordinator:	masters-coord-cs@st-andrews.ac.uk			

EITHER

CS5042 User-Centred Interaction Design				
SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	2
Availability restrictions:	The module is available to all students enrolled on the MSc Human Computer Interaction Programme. A quota for other students may be necessary due to lab equipment constraints, in which case preference will be given to other MSc students.			
Planned timetable:	To be arranged.			
This module studies methodologies in interaction design that are at the core of current practice for user interface engineering and application development. Students work towards creating designs of interactive systems that are based on human, group and organisation needs rather than on technical constraints. The module does not involve a great deal of programming.				
Programme module type:	Optional for all Postgraduate Programmes in the School of Computer Science			
Learning and teaching methods and delivery:	**Weekly contact**: 2 lectures, 3 practicals and 1 tutorial.			
Assessment pattern:	Coursework = 85%, Presentation = 15%			
Module Co-ordinator:	masters-coord-cs@st-andrews.ac.uk			

OR

CS5044 Information Visualisation and Visual Analytics				
SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	2
Planned timetable:	To be arranged.			
This module provides an introduction to information visualisation and visual analytics. It focuses on the question of how to utilise visual representations to make information accessible for exploration and analysis. The module covers basic principles of visualisation design and interaction principles. It introduces a range of visualisation techniques and tools, and discusses how these can be effectively applied in various scenarios for communication, exploration and analysis, and how to evaluate information visualisations in different contexts. Skills in designing, developing, and evaluating information visualisations are reinforced through practical assignments. There are no pre-requisites for this module but students should have basic programming skills (e.g. in Java or JavaScript).				
Programme module type:	Optional for all Postgraduate Programmes in the School of Computer Science			
Learning and teaching methods and delivery:	**Weekly contact**: 3-hour lecture (x 11 weeks), 1-hour seminar (x 8 weeks)			
Assessment pattern:	2-hour Written Examination = 40%, Coursework = 60%			
Module Co-ordinator:	masters-coord-cs@st-andrews.ac.uk			

Up to two from:

CS4102 Computer Graphics				
SCOTCAT Credits:	15	SCQF Level 10	**Semester:**	2
Planned timetable:	To be arranged.			
This module covers the fundamental concepts of computer graphics, and develops the ability to apply the concepts to the generation of realistic, synthetic images of 3D objects and scenes. On completion of the module, students should be competent to undertake many tasks in computer graphics, and should have an understanding of the theory underlying many of the relevant techniques.				
Programme module type:	Optional for Postgraduate Programmes in the School of Computer Science			
Learning and teaching methods and delivery:	**Weekly contact**: 2 lectures (x 11 weeks) and fortnightly tutorial.			
Assessment pattern:	2-hour Written Examination = 60%, Coursework = 40%			
Module Co-ordinator:	hons-coord-cs@st-andrews.ac.uk			

CS4103 Distributed Systems

SCOTCAT Credits:	15	SCQF Level 10	**Semester:**	2
Planned timetable:	To be arranged.			
This module covers the fundamentals of distributed systems, with reference to system models, programming languages, algorithmic techniques, concurrency and correctness.				
Programme module type:	Either CS4103 or CS5023 is compulsory for Networks and Distributed Systems Postgraduate Programmes Optional for other Postgraduate Programmes in the School of Computer Science			
Learning and teaching methods and delivery:	**Weekly contact**: 2 lectures (x 11 weeks) and fortnightly tutorial.			
Assessment pattern:	2-hour Written Examination = 60%, Coursework = 40%			
Module Co-ordinator:	hons-coord-cs@st-andrews.ac.uk			

CS4201 Programming Language Design and Implementation

SCOTCAT Credits:	15	SCQF Level 10	**Semester:**	1
Planned timetable:	To be arranged.			
This module studies the design and implementation of programming languages. Topics include language design principles, abstract syntax, evaluation mechanisms, binding, type systems, polymorphism, data encapsulation, exceptions, formal definition of programming languages, compiling techniques, abstract machine design, run-time systems and garbage collection.				
Programme module type:	Optional for Postgraduate Programmes in the School of Computer Science			
Learning and teaching methods and delivery:	**Weekly contact**: 2 lectures (x 11 weeks) and fortnightly tutorial.			
Assessment pattern:	2-hour Written Examination = 60%, Coursework = 40%			
Module Co-ordinator:	hons-coord-cs@st-andrews.ac.uk			

CS4202 Computer Architecture

SCOTCAT Credits:	15	SCQF Level 10	**Semester:**	1
Planned timetable:	To be arranged.			
This module studies the principles and technology of modern computer architectures, with particular emphasis on performance and acceleration. Topics include the CPU, memory, interconnect architectures, performance concepts and programming models.				
Programme module type:	Optional for Postgraduate Programmes in the School of Computer Science			
Learning and teaching methods and delivery:	**Weekly contact**: 2 lectures (x 11 weeks) and fortnightly tutorial.			
Assessment pattern:	2-hour Written Examination = 60%, Coursework = 40%			
Module Co-ordinator:	hons-coord-cs@st-andrews.ac.uk			

CS4203 Computer Security

SCOTCAT Credits:	15	SCQF Level 10	**Semester:**	2
Planned timetable:	To be arranged.			
This module introduces the basic concepts of computer security and cryptography, common attacks and defences against them, and relevant legal and policy frameworks.				
Programme module type:	Optional for Postgraduate Programmes in the School of Computer Science			
Anti-requisite(s):	IS5104			
Learning and teaching methods and delivery:	**Weekly contact**: 2 lectures (x 11 weeks) and fortnightly tutorial.			
Assessment pattern:	2-hour Written Examination = 60%, Coursework = 40%			
Module Co-ordinator:	hons-coord-cs@st-andrews.ac.uk			

CS4204 Concurrency and Multi-Core Architectures

SCOTCAT Credits:	15	SCQF Level 10	**Semester:**	2
Planned timetable:	To be arranged.			
This module presents the key concepts of programming multi-core/many-core and other parallel architectures, ranging from the identification and use of parallel patterns; the use of structured parallelism to implement task and data parallelism; key implementation issues, including task identification, granularity, scheduling, threads, garbage collection, task placement, locality; performance monitoring and debugging.				
Programme module type:	Optional for Postgraduate Programmes in the School of Computer Science			
Learning and teaching methods and delivery:	**Weekly contact**: 2 lectures (x 11 weeks) and fortnightly tutorial.			
Assessment pattern:	2-hour Written Examination = 60%, Coursework = 40%			
Module Co-ordinator:	hons-coord-cs@st-andrews.ac.uk			

CS4302 Multimedia

SCOTCAT Credits:	15	SCQF Level 10	**Semester:**	1
Planned timetable:	To be arranged.			
This module introduces the concepts of analogue and digital media, and analyses techniques for encoding, manipulating, compressing, and transmitting media based on text, audio, images, and moving images, as well as their connection with human perception. Within the context of networked multimedia, it presents issues and solutions involved in transporting time-sensitive data across computer networks.				
Programme module type:	Optional for Postgraduate Programmes in the School of Computer Science.			
Learning and teaching methods and delivery:	**Weekly contact**: 2 lectures (x 11 weeks) and fortnightly tutorial.			
Assessment pattern:	2-hour Written Examination = 60%, Coursework = 40%			
Module Co-ordinator:	hons-coord-cs@st-andrews.ac.uk			

CS4303 Video Games

SCOTCAT Credits:	15	SCQF Level 10	**Semester:**	1
Planned timetable:	To be arranged.			
This module builds on the general-purpose programming abilities acquired earlier, introducing games-specific techniques and material. Computer games are now a bigger industry than films, yet they are continuing to develop. While the budget for a new game may rival that of a Hollywood blockbuster, there is also a growing demand for lower octane coffee-break games that can be accessed for short periods in a browser, and for games that can be played on-the-go with a mobile device. Games programming skills are developed through lectures and laboratories, culminating in the creation of actual games.				
Programme module type:	Optional for Postgraduate Programmes in the School of Computer Science			
Learning and teaching methods and delivery:	**Weekly contact**: 2 lectures (x 11 weeks) and fortnightly tutorial.			
Assessment pattern:	Coursework = 100%			
Module Co-ordinator:	hons-coord-cs@st-andrews.ac.uk			

CS4402 Constraint Programming

SCOTCAT Credits:	15	SCQF Level 10	**Semester:**	2
Planned timetable:	To be arranged.			
This module introduces constraint-based reasoning as a powerful mechanism for knowledge representation and inference. It provides a thorough grounding in the constraint satisfaction/constrained optimisation problem formalism, and covers both basic techniques for implementing constraint solvers and the use of advanced techniques with a modern solver.				
Programme module type:	Either CS5012 or CS4402 is compulsory for the Artificial Intelligence Postgraduate Programme. Optional for Erasmus Mundus Dependable Software Systems Postgraduate Programme and other Postgraduate Programmes in the School			
Learning and teaching methods and delivery:	**Weekly contact**: 2 lectures (x 11 weeks) and fortnightly tutorial.			
Assessment pattern:	2-hour Written Examination = 60%, Coursework = 40%			
Module Co-ordinator:	hons-coord-cs@st-andrews.ac.uk			

Compulsory module for MSc:

EITHER

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:	Optional for MSc in Advanced Computer Science, in Artificial Intelligence, in Computing & IT, in Human Computer Interaction, in Networks and Distributed Systems, Software Engineering Postgraduate Programmes.			
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 Co-ordinator:	masters-coord-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:	Optional for MSc in Advanced Computer Science, in Artificial Intelligence, in Human Computer Interaction, in Networks and Distributed Systems, and Software Engineering Postgraduate Programmes.			
Pre-requisite(s):	Admission to dissertation phase of MSc		**Anti-requisite(s):**	CS5098
Learning and teaching methods and delivery:	**Weekly contact**: Meeting with supervisor.			
Assessment pattern:	Coursework = 100%			
Module Co-ordinator:	masters-coord-cs@st-andrews.ac.uk			

Optional modules:

CS5003 Masters Programming Projects				
SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	2
Planned timetable:	Variable			
This module reinforces key programming skills gained in CS5002, by means of a series of coursework assignments posed as small programming projects. These are designed to offer increasing depth and scope for creativity as the module progresses.				
Programme module type:	Compulsory for Computing and Information Technology Postgraduate Programme. Optional for Advanced Computer Science, Artificial Intelligence, Data-Intensive Analysis, Dependable Software Information Technology, Human Computer Interaction MSc Programmes			
Pre-requisite(s):	CS5002		**Anti-requisite(s):**	IS5108
Learning and teaching methods and delivery:	**Weekly contact**: Lectures, tutorials and practical classes.			
Assessment pattern:	Coursework = 100%			
Module Co-ordinator:	masters-coord-cs@st-andrews.ac.uk			

Further optional modules are available - see the pdf online called 'PG Computer Science - optional modules 2016 - 2017.'