Optional modules for Computer Science degrees

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

Computer Science - Optional modules for all MSc & MPhil - 2016/7 - October 2016

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

Computer Science - Optional modules for all MSc & MPhil - 2016/7 - October 2016

CS5010 Artificial Intelligence Principles

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	1
Planned timetable:	To be arranged.			

This module covers foundational knowledge of Artificial Intelligence (AI). The module gives an overview of AI and its philosophy. It covers fundamental principles in AI: logical reasoning, reasoning in the presence of uncertainty, and machine learning. It shows how search is used to solve a variety of problems in AI. Notions such as agency and uncertainty in AI are covered. Finally, the philosophy of AI in practice and the philosophical problems in AI are shown.

Programme module type:	Compulsory for Artificial Intelligence Postgraduate Programme. Optional for all Postgraduate Programmes in the School of Computer Science.			
Anti-requisite(s):	CS3105		**Required for:**	CS5011
Learning and teaching methods and delivery:	**Weekly contact**: Lectures, seminars, tutorials and practical classes.			
Assessment pattern:	2-hour Written Examination = 60%, Coursework = 40%			
Module Co-ordinator:	masters-coord-cs@st-andrews.ac.uk			

CS5011 Artificial Intelligence Practice

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	1
Planned timetable:	To be arranged.			

This module covers practical design and implementation of Artificial Intelligence (AI). It provides grounding in AI technique, covering techniques in the areas of AI reasoning, planning, doing, and learning. Finally, it is shown how to implement AI ideas in software and how to evaluate such implementation.

Programme module type:	Compulsory for Artificial Intelligence Postgraduate Programme. Optional for other Postgraduate Programmes.			
Co-requisite(s):	CS5001, CS5010		**Required for:**	CS5012, CS5019
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			

CS5012 Language and Computation

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	2
Planned timetable:	To be arranged.			

This module covers the major aspects of natural language processing and speech understanding, including computational syntax, computational semantics, discourse processing, machine translation and speech recognition.

Programme module type:	Either CS5012 or CS4402 is compulsory for the Artificial Intelligence Postgraduate Programme. Optional for Postgraduate Programmes in the School of Computer Science.
Learning and teaching methods and delivery:	**Weekly contact**: Lectures, seminars, tutorials and practical classes.
Assessment pattern:	2-hour Written Examination = 60%, Coursework = 40%
Module Co-ordinator:	masters-coord-cs@st-andrews.ac.uk

CS5021 Advanced Networks

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	1
Planned timetable:	To be arranged.			

This module looks forward to new concepts and topics in networking, and also reviews key abstractions including layered models, protocols and Internet architecture, and key concerns such as reliability, resource utilization and quality of service. Specific networking technologies are used to demonstrate monitoring, measurement and analysis of real traffic.

Programme module type:	Compulsory for Networks and Distributed Systems Postgraduate Programme. Optional for other Postgraduate Programmes.		
Pre-requisite(s):	-	**Anti-requisite(s):**	CS3102
Co-requisite(s):	CS5001	**Required for:**	CS5023, CS5029
Learning and teaching methods and delivery:	**Weekly contact**: Weekly lectures, seminars, tutorials and practical classes.		
Assessment pattern:	2-hour Written Examination = 40%, Coursework = 60%		
Module Co-ordinator:	masters-coord-cs@st-andrews.ac.uk		

CS5023 Mobile and Wireless Networks

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	2
Planned timetable:	To be arranged.			

This module examines how computing and communication are used to allow mobile systems to function in heterogeneous environments, with variations in available network resources and diverse/intermittent network connectivity. A key outcome of the module is for students to be able to critically assess the capabilities and constraints of mobile systems.

Programme module type:	Either CS4103 or CS5023 is compulsory for Networks and Distributed Systems Postgraduate Programmes 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 Co-ordinator:	masters-coord-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 Co-ordinator:	masters-coord-cs@st-andrews.ac.uk

CS5031 Software Engineering Practice

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	1
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	**Required for:**	CS5032, CS5033, CS5039
Learning and teaching methods and delivery:	**Weekly contact**: Weekly lectures, seminars, tutorials and practical classes.		
Assessment pattern:	Coursework = 100%		
Module Co-ordinator:	masters-coord-cs@st-andrews.ac.uk		

CS5032 Critical Systems Engineering

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	2
Planned timetable:	To be arranged.			

This module provides students with an understanding of the concepts and development techniques used for critical, socio-technical systems. On completion they will understand the notion of system dependability, the key characteristics of dependable systems, and the specialised software engineering techniques that may be used to ensure dependable system operation. Students also gain 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 Co-ordinator:	masters-coord-cs@st-andrews.ac.uk

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
Learning and teaching methods and delivery:	**Weekly contact**: Lectures, seminars, tutorials and practical classes.
Assessment pattern:	2-hour Written Examination = 60%, Coursework = 40%
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
Anti-requisite(s):	CS3106
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
Co-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

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
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

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
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

CS5052 Data-Intensive Systems

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	2
Planned timetable:	To be arranged			

The era of big data is upon us - the volume, velocity and variety of enterprise and scientific data are growing at an exponential rate and will continue to do so for the foreseeable future. This module presents the programming paradigms, algorithmic techniques and design principles for large-scale distributed systems, such as those utilised by companies such as Google, Amazon and Facebook. This module is different in scope from CS4103 (distributed systems) as it focuses primarily on building and utilising large-scale clusters.

The module will cover: distributed systems architecture, replication and fault tolerance, storage, coordination, scheduling algorithms, cluster computing, cloud computing, virtualisation, programming models (e.g., MapReduce), stream processing, decentralised systems (e.g., Chord), incentive-based systems (e.g., BitTorrent), and social computing (e.g., crowd sourcing techniques). This module will draw from the latest research in both academia and industry.

Programme module type:	Optional for Data-Intensive Analysis MSc Programme.
	Optional for Networks and Distributed Systems MSc and all other Postgraduate programmes within the School.
Pre-requisite(s):	CS5001
Learning and teaching methods and delivery:	**Weekly contact**: 3 hours of lectures (x 11 weeks), 1-hour seminar (x 4 weeks), 1-hour practical class (x 3 weeks)
Assessment pattern:	2-hour Written Examination = 60%, Coursework = 40%
Module Co-ordinator:	masters-coord-cs@st-andrews.ac.uk

ID5059 Knowledge Discovery and Data Mining

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	2
Planned timetable:	11.00 am Mon (odd weeks), Wed and Fri			

Contemporary data collection can be automated and on a massive scale e.g. credit card transaction databases. Large databases potentially carry a wealth of important information that could inform business strategy, identify criminal activities, characterise network faults etc. These large scale problems may preclude the standard carefully constructed statistical models, necessitating highly automated approaches. This module covers many of the methods found under the banner of "Datamining", building from a theoretical perspective but ultimately teaching practical application. Topics covered include: historical/philosophical perspectives, model selection algorithms and optimality measures, tree methods, bagging and boosting, neural nets, and classification in general. Practical applications build sought-after skills in programming (typically R, SAS or python).

Programme module type:	Compulsory for Applied Statistics and Datamining Postgraduate Programme. Compulsory for Data-Intensive Analysis MSc Programme. Optional for all Postgraduate Programmes.
Anti-requisite(s):	MT5759
Learning and teaching methods and delivery:	**Weekly contact**: Lectures, seminars, tutorials and practical classes.
Assessment pattern:	2-hour Written Examination = 60%, Coursework = 40%
Module Co-ordinator:	masters-coord-cs@st-andrews.ac.uk

IS5102 Database Management Systems

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	1
Planned timetable:	To be arranged.			

This module introduces the core principles and techniques required in the design and implementation of database systems. With a focus on relational database management systems, topics include database design theory; E-R modelling; data definition and manipulation languages; database security and administration. There is a significant practical element to the module, which will require students to build and manipulate a database.

Programme module type:	Optional for all Postgraduate Programmes.
Learning and teaching methods and delivery:	**Weekly contact**: Lectures, seminars, tutorials and practical classes.
Assessment pattern:	2-hour Written Examination = 40%, Coursework = 60%
Module Co-ordinator:	masters-coord-cs@st-andrews.ac.uk

IS5103 Web Technologies

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	1
Planned timetable:	To be arranged.			

This module introduces the principles and techniques involved in the design and implementation of web applications. A web application is a collection of web pages that interact with the user, with each other, and with various resources on a web server, including databases. There is a significant practical element to the module, which will require students to build and manipulate dynamic web pages.

Programme module type:	Optional for all Postgraduate Programmes.
Learning and teaching methods and delivery:	**Weekly contact**: Lectures, seminars, tutorials and practical classes.
Assessment pattern:	2-hour Written Examination = 40%, Coursework = 60%
Module Co-ordinator:	masters-coord-cs@st-andrews.ac.uk

IS5104 Information Security Management

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	2
Planned timetable:	To be arranged.			

This module reviews key theoretical and practical aspects of Information Security Management. The module content covers higher-level technical and theoretical issues as well as management issues such as organisational, planning, certification, auditing and governance. From the student's perspective the module introduces students to a topical field of business and IT concern via varied learning styles and in depth consideration of current issues, standards and scenarios. The module uses both block learning and individual self-learning.

Programme module type:	Optional for all Taught Postgraduate Programmes.
Anti-requisite(s):	CS4203
Learning and teaching methods and delivery:	**Weekly contact**: Lectures, seminars, tutorials and practical classes.
Assessment pattern:	2-hour Written Examination = 40%, Coursework = 60%
Module Co-ordinator:	masters-coord-cs@st-andrews.ac.uk

IS5105 Network Systems Management

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	1
Planned timetable:	To be arranged.			

This module looks at the history of computer networks, examines how computer networks function, and surveys emerging and future networking technologies. Networked computer systems are pervasive in every walk of life. Today's mobile phones are more powerful computing devices than the mainframes of thirty years ago. Few organizations could function without computer networks. It gives insights into computer networking from the perspectives of developers, managers and users. Students taking this module will gain a core understanding of networking principles and protocols for wired and wireless networking. They will learn about the main aspects of network systems management, including network monitoring and configuration management, network service management, and firewall management.

Programme module type:	Optional for all Postgraduate Programmes.
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

IS5106 Green Information Technology

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	2
Planned timetable:	To be arranged.			
This module introduces students to a variety of topics and technologies in the area of Green IT and Sustainable IT. Students investigate the way in which technology contributes towards global emissions as well as its potential to enable a positive sustainable future. This includes the responsibilities and actions of IT users, as well as service providers. The module covers key factors driving Green IT from a technical, political, financial, social and legal perspective, and includes the IT life cycle, approaches to product design and the provision of IT services. Students gain understanding and insight into current issues related to sustainable IT usage and future development.				
Programme module type:	Optional for all Postgraduate Programmes.			
Learning and teaching methods and delivery:	**Weekly contact**: Lectures, seminars and tutorials			
Assessment pattern:	2-hour Written Examination = 60%, Coursework = 40%			
Module Co-ordinator:	masters-coord-cs@st-andrews.ac.uk			

IS5108 Information Technology Projects

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	2
Planned timetable:	To be arranged.			
This module reinforces information technology and project management skills gained during semester 1, by means of a selection of coursework assignments posed as information technology projects. These are designed to offer increasing depth and scope for creativity as the module progresses.				
Programme module type:	Optional for all Postgraduate Programmes.			
Anti-requisite(s):	CS5003			
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			