CS1002 Object-Oriented Programming

SCOTCAT Credits:	20	SCQF level 7	**Semester**	1
Academic year:	2021-2022			
Availability restrictions:	There are no availability restrictions on Computer Science, first-year and visiting students who meet the module pre-requisites. The module is available to other students studying in second year and above (including direct entrants to second year), but only up to a limit of 200 students in total enrolled on the module. If spaces are available at the end of the main advising period (after Wednesday in Orientation Week), a random ballot will be held for students in second year and above who have enrolled on the module. Any student who is unsuccessful in the ballot will be contacted and asked to choose an alternative module.			
Planned timetable:	Lectures: 3.00 pm Mon and Tue, exercise classes: either 9.00 am or 10.00 am Thu and Fri			
This module covers problem-solving skills, programming basics and object-oriented concepts, modelling and programming. Practical skills are reinforced through a range of exercises and assignments covering these topics.				
Pre-requisite(s):	Before taking this module you must have Mathematics (either Higher or A-Level at Grade A or better)			
Anti-requisite(s)	You cannot take this module if you take CS2101			
Learning and teaching methods of delivery:	**Weekly contact**: 4 lectures, 1 tutorial and 1 x 3-hour practical class.			
	Scheduled learning: 80 hours		**Guided independent study:** 120 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-assessment pattern:	Programming assignment = 100%			
Module teaching staff:	TBC Module coordinator(s): First Level Coordinator - Computer Science (first-coord-cs@st-andrews.ac.uk)			

CS1003 Programming with Data

SCOTCAT Credits:	20	SCQF level 7	**Semester**	2
Academic year:	2021-2022			
Planned timetable:	Lectures: 3.00 pm Mon and Tue, Exercise classes: either 9.00 am or 10.00 am Wed and Thu			
This module explores various aspects of data storage, processing and analysis. Programming skills are reinforced through a range of exercises and practicals covering various aspects of data handling. Topics include: persistent data formats; files and databases; file manipulation; binary and textual data; data processing using open source libraries; database design and use; object-relational mapping frameworks; processing and analysing data; issues of scale. Themes related to current research in the area of data science and big data are emphasised.				
Pre-requisite(s):	Before taking this module you must pass CS1002			
Anti-requisite(s)	You cannot take this module if you take CS2101			
Learning and teaching methods of delivery:	**Weekly contact**: 4 lectures, 1 tutorial and 1 x 3-hour practical class.			
	Scheduled learning: 88 hours		**Guided independent study:** 112 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-assessment pattern:	Programming assignment = 100%			
Module teaching staff:	TBC Module coordinator(s): First Level Coordinator - Computer Science (first-coord-cs@st-andrews.ac.uk)			

CS1006 Programming Projects

SCOTCAT Credits:	20	SCQF level 7	**Semester**	2
Academic year:	2021-2022			
Planned timetable:	11.00 am			
This module reinforces key Java programming skills gained in CS1002, by means of a series of coursework assignments posed as mini-projects. These are designed to offer increasing depth and scope for creativity as the module progresses.				
Pre-requisite(s):	Before taking this module you must pass CS1002			
Learning and teaching methods of delivery:	**Weekly contact**: 1h x 5 weeks lectures, 1hr x 6 weeks tutorials, 2.5hr x 11 weeks demonstration sessions			
	Scheduled learning: 83 hours		**Guided independent study:** 117 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-assessment pattern:	No Re-assessment available			
Module teaching staff:	TBC Module coordinator(s): First Level Coordinator - Computer Science (first-coord-cs@st-andrews.ac.uk)			

CS1007 Computer Systems Fundamentals

SCOTCAT Credits:	20	SCQF level 7	**Semester**	1
Academic year:	2021-2022			
Availability restrictions:	There are no availability restrictions on first-year and visiting students. The module is available to other students studying in second year and above (including direct entrants to second year), but only up to a limit of 200 students in total enrolled on the module. If spaces are available at the end of the main advising period (after Wednesday in Orientation Week), a random ballot will be held for students in second year and above who have enrolled on the module with a preference given to those on degree programmes including Computer Science. Any student who is unsuccessful in the ballot will be contacted and asked to choose an alternative module.			
Planned timetable:	To be arranged			
This module introduces students to concepts and practicalities surrounding access and use of modern computer systems via a Unix environment. It will cover both local and remote interaction with Unix systems. Students will gain proficiency with operating system tools, especially the command line interface. They will master version control systems which can be applied to both programming and document management. They will learn about key based authentication and its use in modern computer systems. They will learn how to use a number of different productivity tools, and the place of machine virtualisation in the modern ecosystem.				
Learning and teaching methods of delivery:	**Weekly contact**: 4 lectures, 1 tutorial and 1 x 3-hour practical class.			
	Scheduled learning: 79 hours		**Guided independent study:** 120 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-assessment pattern:	Coursework assignment = 100%			
Module teaching staff:	Prof Alan Dearle			

CS2001 Foundations of Computation

SCOTCAT Credits:	30	SCQF level 8	**Semester**	1
Academic year:	2021-2022			
Planned timetable:	9.00 am			
This module introduces fundamental algorithms, data structures and formal language concepts at the heart of modern software, and develops skills in programming and analysis.				
Pre-requisite(s):	Before taking this module you must pass CS1002 and pass CS1003			
Anti-requisite(s)	You cannot take this module if you take CS2101			
Learning and teaching methods of delivery:	**Weekly contact**: 2hr x 10 weeks lectures, 2hr x 10 weeks discussion, 1hr x 9 weeks tutorial			
	Scheduled learning: 110 hours		**Guided independent study:** 190 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 40%, Practical Examinations = 0%, Coursework = 60%			
	As used by St Andrews: 8-hour Take-home Examination = 40%, Coursework = 60%			
Re-assessment pattern:	8-hour Take-home Examination = 40%, Existing Coursework = 60%			
Module teaching staff:	TBC Module coordinator(s): Second Level Coordinator - Computer Science (second-coord-cs@st-andrews.ac.uk)			

CS2002 Computer Systems

SCOTCAT Credits:	30	SCQF level 8	**Semester**	2
Academic year:	2021-2022			
Planned timetable:	9.00 am			
This module develops skills in programming in C, systems programming, digital logic and low-level computer organisation.				
Pre-requisite(s):	Before taking this module you must pass CS2001 or pass CS2101			
Learning and teaching methods of delivery:	**Weekly contact**: 2hr x 11 weeks lectures, 2hr x 11 weeks discussion, 1hr x 10 weeks tutorial			
	Scheduled learning: 121 hours		**Guided independent study:** 179 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 40%, Practical Examinations = 0%, Coursework = 60%			
	As used by St Andrews: 8-hour Take-home Examination = 40%, Coursework = 60%			
Re-assessment pattern:	8-hour Take-home Examination = 40%, Existing Coursework = 60%			
Module teaching staff:	TBC Module coordinator(s): Second Level Coordinator - Computer Science (second-coord-cs@st-andrews.ac.uk)			

CS2003 The Internet and the Web: Concepts and Programming

SCOTCAT Credits:	30	SCQF level 8	**Semester**	1
Academic year:	2021-2022			
Planned timetable:	11.00 am			
This module introduces the student to the Internet and the World Wide Web from a Computer Science perspective. It consists of two complementary streams: computer networks and web-based computing. Both streams introduce key concepts, current technologies, programming abstractions and the practical aspects of developing web-based and network applications.				
Co-requisite(s):	You must also take CS2001 or take CS2101			
Learning and teaching methods of delivery:	**Weekly contact**: 2hr x 10 weeks lectures, 1hr x 10 weeks discussion, 1hr x 9 weeks tutorial, 1hr x 10 weeks exercise class			
	Scheduled learning: 110 hours		**Guided independent study:** 190 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 40%, Practical Examinations = 0%, Coursework = 60%			
	As used by St Andrews: 8-hour Take-home Examination = 40%, Coursework = 60%			
Re-assessment pattern:	8-hour Take-home Examination = 40%, Existing Coursework = 60%			

CS2006 Advanced Programming Projects

SCOTCAT Credits:	30	SCQF level 8	**Semester**	2
Academic year:	2021-2022			
Availability restrictions:	Only available to 2nd Year students.			
Planned timetable:	11.00 am			
This module introduces the functional and dynamic programming paradigms, using languages such as Haskell and Python. Understanding is reinforced through extensive practical exercises.				
Pre-requisite(s):	Before taking this module you must pass CS2001 or pass CS2101			
Learning and teaching methods of delivery:	**Weekly contact**: 4 lectures, 1 tutorial and 2 x 3-hour practical classes.			
	Scheduled learning: 121 hours		**Guided independent study:** 179 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-assessment pattern:	No Re-assessment available			
Module teaching staff:	TBC Module coordinator(s): Second Level Coordinator - Computer Science (second-coord-cs@st-andrews.ac.uk)			

CS2101 Foundations of Computation (Accelerated)

SCOTCAT Credits:	40	SCQF level 8	**Semester**	1
Academic year:	2021-2022			
Availability restrictions:	Available only to direct second year entrants.			
Planned timetable:	To be arranged.			
This module is an accelerated version of CS2001. It includes necessary background material from core first-year modules, as well as the same content as CS2001.				
Anti-requisite(s)	You cannot take this module if you take CS1002 or take CS1003 or take CS2001			
Learning and teaching methods of delivery:	**Weekly contact**: 2hr x 10 weeks lectures, 2hr x 10 weeks discussion, 3 x 1hr x 9 weeks tutorials			
	Scheduled learning: 160 hours		**Guided independent study:** 240 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 40%, Practical Examinations = 0%, Coursework = 60%			
	As used by St Andrews: 8-hour Take-home Examination = 40%, Coursework = 60%			
Re-assessment pattern:	8-hour Take-home Examination = 40%, Existing Coursework = 60%			
Module teaching staff:	TBC Module coordinator(s): Second Level Coordinator - Computer Science (second-coord-cs@st-andrews.ac.uk)			