



University
of Glasgow

School of
Computing Science

Specialist Masters Programmes

MSc(CS+)

**Computing Science,
Data Science,
and
Information Security
Handbook 2019-20**

Disclaimer

Although the information contained in this document is believed to be accurate, changes in circumstances may require modifications during the year.

Revised August 2019

We offer three one-year taught Masters specialist programmes included in the generic title **MSc(CS+)**

MSc(Computing Science) MSc(Data Science) MSc(Information Security)	Designed for graduates who have good undergraduate degrees in computing, and who wish to advance their knowledge and software engineering skills.
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The official degree structure of all programmes can be found at:
<http://www.gla.ac.uk/postgraduate/taught/>

Student Support and Enquires: Monday - Friday: 09:00 – 16:30hrs
Room F161, School of Computing Science, Lilybank Gardens

Gail Reat

PGT Administrator

Face-to-face Masters queries 13:00-16:30hrs.

Outwith these hours please email Gail.Reat@Glasgow.ac.uk

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Dr Helen Purchase

MSc(CS+) Programme Director

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Office: S104, 18 Lilybank Gardens

Meetings calendar: www.dcs.gla.ac.uk/~hcp/msc/meet.html

MSc Computing Science – G511-5200

Weeks		
0	orientation	Enrolment meeting
1..6	semester 1	PROGRAMMING AND SYSTEMS DEVELOPMENT (H) COMPSCI4084 (20 credits)
7..11	semester 1	INTRODUCTION TO DATA SCIENCE AND SYSTEMS (M) COMPSCI5089 (15 credits)
1..10	semester 1	RESEARCH AND PROFESSIONAL SKILLS (M) COMPSCI5092 (10 credits)
2..11	semester 1	ENTERPRISE CYBER SECURITY (M) COMPSCI5077 (15 credits)
12..13	<i>revision and exams</i>	<i>PROGRAMMING AND SYSTEMS DEVELOPMENT INTRODUCTION TO DATA SCIENCE AND SYSTEMS RESEARCH AND PROFESSIONAL SKILLS</i>
14..16	vacation	
17..26	semester 2	6 elective courses (10 credits each)
27	semester 2	Electives coursework (if required)
28..30	vacation	
31..35	<i>revision and exams</i>	<i>ENTERPRISE CYBER SECURITY 6 elective courses</i>
36..38	vacation	
39..50	semester 3	MSC PROJECT FOR COMPUTING SCIENCE+ COMPSCI5086P (60 credits)

Note that MSc(CS) students' electives may include a maximum of one H level course.

MSc Information Security – G577-5200

Weeks		
0	orientation	Enrolment meeting
1..6	semester 1	PROGRAMMING AND SYSTEMS DEVELOPMENT (H) COMPSCI4084 (20 credits)
7..11	semester 1	INTRODUCTION TO DATA SCIENCE AND SYSTEMS (M) COMPSCI5089 (15 credits)
1..10	semester 1	RESEARCH AND PROFESSIONAL SKILLS (M) COMPSCI5092 (10 credits)
2..11	semester 1	ENTERPRISE CYBER SECURITY (M) COMPSCI5077 (15 credits)
12..13	<i>revision and exams</i>	<i>PROGRAMMING AND SYSTEMS DEVELOPMENT INTRODUCTION TO DATA SCIENCE AND SYSTEMS RESEARCH AND PROFESSIONAL SKILLS</i>
14..16	vacation	
17..26	semester 2	5 security courses 1 elective course
27	semester 2	Electives coursework (if required)
28..30	vacation	
31..35	<i>revision and exams</i>	<i>ENTERPRISE CYBER SECURITY 5 security courses 1 elective course</i>
36..38	vacation	
39..50	semester 3	MSC PROJECT FOR COMPUTING SCIENCE+ COMPSCI5086P (60 credits)

MSc Data Science – I261-5200

Weeks					
0	orientation	Enrolment meeting			
1..6	semester 1	PROGRAMMING AND SYSTEMS DEVELOPMENT (H) COMPSCI4084 (20 credits)			
7..11	semester 1	INTRODUCTION TO DATA SCIENCE AND SYSTEMS (M) COMPSCI5089 (15 credits)			
1..10	semester 1	MACHINE LEARNING FOR DATA SCIENTISTS (M) COMPSCI5090 (10 credits) RESEARCH AND PROFESSIONAL SKILLS (M) COMPSCI5092 (10 credits)			
2..11	semester 1 (choose 1)	ARTIFICIAL INTELLIGENCE (M) COMPSCI5087 (10 credits)	PROBABILITY (M) STATS5024 (10 credits)	REGRESSION MODELS (M) STATS5025 (10 credits)	STATISTICAL INFERENCE (M) STATS5028 (10 credits)
12..13	<i>revision and exams</i>	<i>MACHINE LEARNING FOR DATA SCIENTISTS</i> <i>PROGRAMMING AND SYSTEMS DEVELOPMENT</i> <i>INTRODUCTION TO DATA SCIENCE AND SYSTEMS</i> <i>RESEARCH AND PROFESSIONAL SKILLS</i> <i>PROBABILITY or REGRESSION MODELS or STATISTICAL INFERENCE</i>			
14..16	vacation				
17..26	semester 2	At least 1 Security elective course (10 credits each) At least 3 Data Science elective courses (10 credits each) Additional elective courses to make up 60 credits for Semester 2			
27	semester 2	Electives coursework (if required)			
28..30	vacation				
31..35	<i>revision and exams</i>	<i>ARTIFICIAL INTELLIGENCE</i> <i>6 elective courses</i>			
36..38	vacation				
39..50	semester 3	MSC PROJECT FOR COMPUTING SCIENCE+ COMPSCI5086P (60 credits)			

Note that MSc(DS) students do a total of 125 taught credits: 65 credits in Semester 1 and 60 credits in Semester 2. MSc(DS) students' electives may include a maximum of one H level course.

Elective courses for the CS+ Masters programmes

Sem	Code	Course	Credits	Level	CS	DS	IS	Weeks
0	COMPSCI9009	MSc CS+ Enrolment	0	0	C	C	C	0
1	COMPSCI5077	ENTERPRISE CYBER SECURITY	15	M	C	N	C	2..11
1	COMPSCI4084	PROGRAMMING AND SYSTEMS DEVELOPMENT	20	H	C	C	C	1..6
1	COMPSCI5089	INTRODUCTION TO DATA SCIENCE AND SYSTEMS	15	M	C	C	C	7..11
1	COMPSCI5092	RESEARCH AND PROFESSIONAL SKILLS	10	M	C	C	C	1..10
1	COMPSCI5090	MACHINE LEARNING FOR DATA SCIENTISTS	10	M	N	C	N	1..10
1	STATS5024	PROBABILITY	10	M	N	E	N	2..11
1	STATS5025	REGRESSION MODELS	10	M	N	E	N	2..11
1	STATS5028	STATISTICAL INFERENCE	10	M	N	E	N	2..11
1	COMPSCI5087	ARTIFICIAL INTELLIGENCE	10	M	N	E	N	2..11
2	COMPSCI5012	INTERNET TECHNOLOGY	10	M	E	E	E	17..26
2	COMPSCI5057	HUMAN COMPUTER INTERACTION DESIGN & EVAL	10	M	E	E	E	17..26
2	COMPSCI5079	CRYPTOGRAPHY AND SECURE DEVELOPMENT	10	M	E	E	C	17..26
2	COMPSCI5063	CYBER SECURITY FUNDAMENTALS	10	M	E	E	C	17..26
2	COMPSCI5080	CYBER SYSTEM FORENSICS	10	M	E	E	C	17..26
2	COMPSCI5060	HUMAN-CENTRED SECURITY	10	M	E	E	C	17..26
2	COMPSCI5068	SAFETY-CRITICAL SYSTEMS	10	M	E	E	C	17..26
2	COMPSCI4002	ADVANCED NETWORKING AND COMMUNICATIONS	10	H	E	E	E	17..26
2	COMPSCI4016	PROGRAMMING LANGUAGES	10	H	E	E	E	17..26
2	COMPSCI4076	ROBOTICS FOUNDATIONS	10	H	E	E	E	17..26
2	COMPSCI5083	ADV. SYSTEMS PROGRAMMING	10	M	E	E	E	17..26
2	COMPSCI5006	CONSTRAINT PROGRAMMING	10	M	E	E	E	17..26
2	COMPSCI5094	CONVERSATIONAL INTERFACES	10	M	E	E	E	17..26
2	COMPSCI5015	MOBILE HUMAN-COMPUTER INTERACTION	10	M	E	E	E	17..26
2	COMPSCI5093	SECURED SOFTWARE ENGINEERING	10	M	E	E	E	17..26
2	COMPSCI5088	BIG DATA	10	M	E	E	E	17..26
2	COMPSCI5085	DEEP LEARNING	10	M	E	E	E	17..26
2	COMPSCI5011	INFORMATION RETRIEVAL	10	M	E	E	E	17..26
2	COMPSCI5091	RECOMMENDER SYSTEMS	10	M	E	E	E	17..26
2	COMPSCI5096	TEXT AS DATA	10	M	E	E	E	17..26
2	COMPSCI5078	WEB SCIENCE	10	M	E	E	E	17..26
3	COMPSCI5086P	MSC PROJECT FOR CS+	60	M	C	C	C	39..50

E=elective; C=compulsory; N=not available

For those courses offered at both level H and level M, Masters students are expected to take the level M version. Masters students can take a maximum of 30 credits at level H.

Excluded combinations

Timetabling our large number of courses means that, in any given year, some pairs of courses are 'excluded combinations', since they need to be timetabled concurrently.

This is the list of excluded combination pairs for MSc(CS+) students for 2019-20, all relating to Semester 2 courses.

Advanced Networking & Communications (H)	Text as Data (M)
Advanced Systems Programming (M)	Deep Learning (M)
Big Data (M)	Human Centred Security (M)
Constraint Programming (M)	Internet Technology (M)
Constraint Programming (M)	Text as Data (M)
Conversational Interfaces (M)	Cyber Security Fundamentals (M)
Conversational Interfaces (M)	Information Retrieval (M)
Cryptography and Secure Development (M)	Recommender Systems (H)
Cryptography and Secure Development (M)	Robotics Foundations (H)
Cryptography and Secure Development (M)	Web Science (M)
Cyber Security Forensics (M)	Internet Technology (M)
Cyber System Forensics (M)	Constraint Programming (M)
Cyber System Forensics (M)	Text as Data (M)
Deep Learning (M)	HCIDE (M)
Information Retrieval (M)	Cyber Security Fundamentals (M)
Internet Technology (M)	Deep Learning
Internet Technology (M)	Mobile HCI (M)
Internet Technology (M)	Text as Data (M)
Programming Languages (H)	HCIDE (M)
Robotics Foundations (H)	Recommender Systems (H)
Web Science (M)	Recommender Systems (H)
Web Science (M)	Robotics Foundations (H)

Note that the timetable for Semester 2 may change during Semester 1. You will have a chance to reassess your Semester 2 course choices in January, and make changes if you like.

Possible Curriculum Changes

Under certain circumstances, the following programme/course changes will be permitted, with the permission of the relevant Programme Directors.

- **Changes from MSc(CS), MSc(DS), and MSc(IS) to MSc(IT), MSc(SD), or MSc(ITCS)**

Students on the Computing Science, Data Science, and Information Security Masters programmes will all study the Programming and Systems Development course from the start of week 1, Semester 1. This course is highly technical, and any MSc(CS+) students who find that they are struggling with this course in the first two weeks should consider transferring to the Software Development, Information Technology or IT Cyber Security programs at the end of week 1. All you need to do is contact Dr Helen Purchase (via email, or by making an appointment using www.dcs.gla.ac.uk/~hcp/msc/meet.html) to discuss a possible transfer.

- **Changes Between MSc(CS) and MSc(IS)**

The Computing Science and Information Security Masters programmes all have common courses in Semester 1, so students may transfer between them at the start of Semester 2: just contact Dr Helen Purchase to make this request.