Computer Science with Business Management wIE BSc (Hons) 2020-2021

Summary

UCAS code	Award	Title	Duration	Mode
GNK1	BSc	Computer Science with Business Management wIE BSc (Hons)	4 years	FT + Placement year

Schools	Computer ScienceMathematics
Faculty	Engineering and Physical Sciences
Awarding Institution	Unversity of Manchester
Programme Accreditation	BCS
Relevant QAA benchmark(s)	Computing and General Business and Management

Aims and intended learning outcomes

Graduates of the honours degree programme in Computer Science with Business and Management will have a good overall grasp of the disciplines of computer science and business management and the inter-relationships between the two subject areas. Being equipped with both business and computing skills will give them a broad problem solving ability in an organisational setting.

The programmes aim to:

1) enable graduates to exhibit a high level of practical and theoretical skills in computer science and business and management, together with a knowledge of currently available techniques and technologies.

2) explore the principles that support developments in a rapidly changing subject.

3) provide opportunities for students to understand the wide range of research challenges facing Computer Science, as well as the breadth and depth of research undertaken in this top-rated school, so they are prepared to embark on research here or elsewhere.

4) develop competent professionals able to play a leading part in many different commercial, industrial and academic activities and adapt rapidly to changing technology.

5) meet industry demand for high calibre graduates who will take a lead in continuing technological change.

6) prepare students for the social, organisational and professional context in which they will be working.

7) meet the educational requirements of the Engineering Council thus enabling graduates to progress to professional membership of the BCS and IEE and attain the highest professional status of Chartered Engineer.

8) In addition, the with Industrial Experience programme aims to: give extensive practical experience of an industrial or business environment where students are able to apply and develop their skills, both technical and personal.

Intended learning outcomes

Knowledge & understanding

A1 Know and understand the essential mathematics relevant to computer science.

A2 Understand and apply a wide range of principles and tools available to the software engineer, such as design methodologies, choice of algorithm, language, software libraries and user interface techniques

A3 Demonstrate a grasp of the principles of computer systems, including architecture, networks and communication

A4 Recognise and appreciate the professional and ethical responsibilities of the practising computer professional, including understanding the need for quality

A5 Know and understand the principles and techniques of a number of application areas informed by the research directions of the subject, such as artificial intelligence, databases and computer graphics

A6 Apply their knowledge of computing in a commercial or industrial context

A7 Show a critical understanding of the broad context within which Computer Science resides, including issues such as quality, reliability, enterprise, employment law, accounting and health and safety

A8 Have a comprehensive knowledge and critical awareness of selected specialist fields at the forefront of computer science, studied at masters level

Intellectual (thinking) skills

B1 Solve a wide range of problems related to the analysis, design and construction of computer systems.

B2 Design and implement a software or hardware system of significant size

B3 Identify a range of solutions and critically evaluate and justify proposed design solutions

B4 Solve computer science problems with pressing commercial or industrial constraints

B5 Generate an innovative design to solve a problem containing a range of commercial and industrial constraints

Practical skills

C1 Plan and undertake a major individual project

C2 Prepare and deliver coherent and structured verbal and written technical reports

C3 Give technical presentations suitable for the time, place and audience

C4 Use the scientific literature effectively and make discriminating use of Web resources

C5 Design, write and debug computer programs in appropriate languages

C6 Use appropriate computer-based design support tools

C7 Apply computer science skills in a commercial or industrial environment

C8 Demonstrate initiative taking, innovation and self-management in an industrially related group project

C9 Integrate previously acquired skills and apply them to new, demanding situations

Transferable skills

D1 Display an integrated approach to the deployment of communication skills

D2 Use IT skills and display mature computer literacy

D3 Work effectively with and for others

D4 Strike the balance between self-reliance and seeking help when necessary in new situations

D5 Display personal responsibility by working to multiple deadlines in complex activities

D6 Employ discrete and continuous mathematical skills as appropriate

D7 Demonstrate significantly enhanced group working abilities

D8 Further develop career plans and personal objectives

D9 Communicate effectively with non-specialist as well as computer scientist professionals at a range of levels

D10 Undertake a range of technical roles within a team and be able to display leadership

Teaching, learning and assessment methods

Learning and Teaching on all our programmes aims to combine an understanding of fundamental CS principles, development of strong practical skills and the group-working, learning and communication skills that are essential for any computing professional.

Course units which involve practical elements all have associated laboratory exercises, usually in timetabled sessions with staff and demonstrator support. Most labs operate a system of face-to-face marking in the lab so that students receive immediate feedback on their work. Units without labs all have regular coursework exercises to support skills development and feedback.

Most units are lecture based, with lab or coursework exercises used to reinforce and enhance knowledge and skills first encountered in lectures. The first year team project deviates significantly from this model and takes an Enquiry Based Learning approach. This unit aims to encourage students to be more actively engaged with, and responsible for, their own learning, to develop skills in problem solving, communication, independent learning, and group work, and to signal the importance we attach to independent learning. This approach is followed up in the second year with the workshop based approach used in the compulsory Software Engineering unit, which also contains a major group working component.

The choice of units offered to students on our programmes is very broad, but they also require depth in particular subject areas. This is achieved using the notion ofThemes. . A theme is a group of related second and third year course units which form a coherent whole; usually one second year and two third year units. All Computer Science with Business Management students are required to complete at least one Computer Science theme. The Programme Structure section below indicates the Themes for this group of programmes and the tables in that section show the Theme for each course unit.

All students undertake an individual 3rd year project, supervised by a member of academic task, which usually involves the development of significant software or hardware product. Assessment of this unit involves presentations of plans and results and a major written report

Assessment in almost all units is a combination of lab/coursework and examination.

Learning, Teaching and Assessment of intended learning outcomes

Knowledge and Understanding

Learning and Teaching Processes		Assessment
Lectures (A1, A2, A3, A4, A5, A6, A7)		Unseen written examinations (A1, A2, A3, A4)
Laboratory sessions (A2, A3)		Marked tutorial exercises (A1, A2, A3, A4)
Personal tutorials (A1, A2, A3, A4, A7)		Laboratory reports (A2, A3)
Problem solving classes (A1, A2, A3, A4)		Project reports (individual and group) (A3, A4, A5,A6, A7)
Problem-based learning (A2, A3, A4, A5, A6, A7)		Oral presentations (individual and group) (A3, A4, A5, A6, A7)
Projects (A3, A4, A5, A6, A7)		
Industrial seminars (A4, A5, A6, A7)		

Intellectual Skills

Learning and Teaching Processes		Assessment
Lectures (B1, B2, B4, B5)		Unseen written examinations (B1, B2, B4)
Laboratory sessions (B1, B2)		Marked tutorial exercises (B1, B2)
Personal tutorials (B1, B2, B4)		Laboratory reports (B1, B2)
Problem solving classes (B1, B2, B4)		Project reports (individual and group) (B1, B2, B3,B4, B5)
Problem-based learning (B1, B2, B4)		Oral presentations (individual and group) (B1, B2, B3, B4, B5)
Projects (B1, B2, B3, B4, B5)		

Practical Skills

Learning and Teaching Processes		Assessment
Lectures (C4, C6)		Laboratory reports (C1, C2, C3, C4, C5, C6, C7)
Laboratory sessions (C1, C2, C3, C4, C5, C6, C7)		Project reports (individual and group) (C3, C4, C5,C6)
Projects (C3, C4, C5, C6,C9)		Oral presentations (individual and group) (C6, C8,C9)
Industrial placement (C8,C9)		Industrial placement reports (C8,C9)

Transferable skills

Learning and Teaching Processes		Assessment
Lectures (D3, D4, D5, D7)		Laboratory reports (D1, D3, D5, D6)
Laboratory sessions (D1, D3, D5, D6)		Essays (D2, D3)
Personal tutorials (D1,D2, D3, D4, D7)		Project reports (individual and group) (D1, D2, D3,D4, D5, D6, D7)
Problem solving classes (D4)		Oral presentations (individual and group) (D1, D3, D6, D7, D8)
Problem-based learning (D1, D2, D3, D4, D5, D6)		Industrial placement reports (D8)
Projects (D1, D2, D3, D4, D5, D6, D7)		
Industrial placement (D8)		

Programme structure

Level 3 options

MANDATORY UNITS - 70 CREDITS
OPTIONAL UNITS - 50 CREDITS. YOU MUST CHOOSE 50 CREDITS IN TOTAL FROM THE OPTION POOLS

If you take a 20 credit whole year course unit you are not permitted to drop this unit when course unit selection reopens at the start of semester 2.

Level 3 - compulsory units

All of the units in this pool are mandatory.

Code	Title	Credits	Theme
COMP30030	Third Year Project Laboratory	30	None
BMAN30010	Management of Knowledge and Innovation	20	None
BMAN30021	Marketing	10	None
BMAN30022	Strategy	10	None

Level 3 - option pool 1

From this option pool choose a maximum of 30 credits
and a minimum of 0 credits.

Code	Title	Credits	Theme
COMP33511	User Experience	10	Interactive Systems Design
COMP36111	Algorithms and Complexity	10	Programming and Algorithms
COMP36511	Compilers	10	None
COMP37111	Advanced Computer Graphics	10	Visual Computing
COMP38411	Cryptography and System Security	10	Mobile Computing and Networks
COMP38211	Documents and Data on the Web	10	None

Level 3 - option pool 2

From this option pool choose a maximum of 30 credits
and a minimum of 0 credits.

Code	Title	Credits	Theme
COMP33712	Agile Software Engineering	10	None
COMP34412	Natural Language Systems	10	Natural Language, Representation and Reasoning
COMP35112	Chip Multiprocessors	10	Computer Architecture
COMP36212	Mathematical Systems and Computation	10	Programming and Algorithms
COMP37212	Computer Vision	10	Visual Computing
COMP32412	The Internet of Things: Architectures and Applications	10	Web and Distributed Systems

Level 3 - option pool 3

From this option pool choose a maximum of 20 credits
and a minimum of 0 credits.

Code	Title	Credits	Theme
COMP34120	AI and Games	20	Learning and Search in Artificial Intelligence

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Code	Title	C/O	A1	A2	A3	A4	A5	A6	A7	A8	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
BMAN30010	Management of Knowledge and Innovation	C																																
BMAN30021	Marketing	C																																
BMAN30022	Strategy	C																																
COMP30030	Third Year Project Laboratory	C									D	D	D			D	D	D						D	D	D	D	D	D			D	
COMP32412	The Internet of Things: Architectures and Applications	O	D	DA	D		D		D		D		DA		DA	DA								DA										
COMP33511	User Experience	O	DA	D	D		D				DA		D						D											DA				
COMP33712	Agile Software Engineering	O																																
COMP34120	AI and Games	O																																
COMP34412	Natural Language Systems	O		DA			DA				DA		DA						DA									DA						
COMP35112	Chip Multiprocessors	O		DA	DA		DA				DA		DA				DA			DA														
COMP36111	Algorithms and Complexity	O		DA							DA	DA	DA							DA									DA				
COMP36212	Mathematical Systems and Computation	O		DA							DA	DA	DA							DA									DA				
COMP36511	Compilers	O																																
COMP37111	Advanced Computer Graphics	O	DA	DA			DA				DA																							
COMP37212	Computer Vision	O	D	D			D				D																							

COMP38211	Documents and Data on the Web	O																														
COMP38411	Cryptography and System Security	O	D		D	D	D				D		D					D														

Mechanisms for programme revision

Course units are reviewed annually by the Undergraduate Committee, as part of the Annual Review process, taking into account the results and comments from Course Unit Evaluation Questionnaires. Input is also received from the Teaching Assessment Panel, which has a responsibility for monitoring teaching quality in the School.

Programmes have been reviewed regularly by groups created specifically for this purpose; the last major review resulted in a new programme portfolio design which started in the first year in 2008-9. The responsibility for leadership of programme review is now the in the hands of the Director of Teaching Strategy (currently Dr Steve Pettifer) who chairs a School Teaching Strategy Committee.