Accreditation Visit Report

Higher Education Institution
University of Buckingham
School of Computing
Yeomanry House
Hunter Street
Buckingham
MK18 1EG

Visit Information	
Date of Visit	Thursday 7 February 2019
Panel Chair	Eur Ing Mr R Neil
Panel Members	Professor C Clare
	Dr M West
BCS Secretariat	Mrs K Titcombe

Head of Department	Dr Sellahewa

A1	**Panel Recommendations**

Recommendations for Accreditation at Visit			
Programme Title	**Recommended Level of Accreditation**	**Modes**	**Intakes**
Unconditional			
BSc (Hons) Computing	**Full CITP, Partial CEng**	**2FT, 3FT**	**2020 - 2024**
BSc (Hons) Computing (including integrated foundation year)	**Full CITP, Partial CEng**	**3FT**	**2020–2024 (bkdt 2017)**
BEng (Hons) Computing with Software Entrepreneurship	**Full CITP, Partial CEng**	**2FT**	**2020–2024 (bkdt 2016)**
BSc (Hons) Computing with Minor Option	**Full CITP, Partial CEng**	**2FT**	**2020-2024**
BSc (Hons) Computing with Minor Option (including integrated foundation year)	**Full CITP, Partial CEng**	**3FT**	**2020-2024 (bkdt 2017)**

Commendations

The Panel commended the School in the following areas:

- The approach to supporting the students, especially staff availability and approachability. The Panel was particularly impressed by the care taken by the School to understand students' prior achievement and facilitate entry at an appropriate point into the programme.

- The pervasive nature of the maths required to support the programmes and, in particular, the care taken to deliver customised support at an individual level.

All items are Above Threshold unless noted. Further details can be found in Appendix 3.

A2	**Development Plan**

None: All criteria judged 'Above' Threshold.

Section B - Department Overview

Name of School	Computing

This was the second visit to the University, the first full visit to the Institution took place in 2014. The University of Buckingham is the only independent University in the UK with a Royal Charter and is the pioneer of the 2-year (Hons) bachelor's degree structure. The Department, previously known as Applied Computing, became the School of Computing on 1st September 2018 and is one of nine Schools within the University.

A list of programmes put forward for accreditation is included as Appendix 1.

All items are Above Threshold unless noted

B1	**Quality Assurance**

The University of Buckingham conducts bi-annual module reviews followed by annual programme reviews. The programmes are further reviewed as part of the quinquennial reviews, the last of which was last undertaken in November 2017. Both School and University learning and teaching committees review and approve all programmes and modules prior to delivery. All examination scripts are anonymously double marked, and examination papers and selected scripts are checked by external examiners. Student feedback is gathered through: termly meetings (with the Dean or Programme Director); Student representatives, who are invited to attend the regular Departmental meetings, School Board meetings and the School's Learning and Teaching Committee (SLTC) meetings; Module and termly feedback forms (with reporting conducted via the EvaSystem); the Student and Staff Community Forum – an informal termly meeting of students and staff to give updates and provide feedback on actions taken in relation to student feedback and; through Personal Tutors who meet with Student's at least once a term.

B2	**Research/Industrial Activity Informing Programmes**

The School's main research areas include image/video processing and analysis techniques and applications; wireless mobile network technologies; and biometric-based authentications for constrained devices/environments. The School has also recently expanded its research base to include research in the area of artificial intelligence, computer vision and machine learning. In addition, the School also work with colleagues in Psychology in joint research projects in Human-Computer Interaction and with researchers from Buckingham Institute for Translational Medicine (Clore Laboratory) in bioinformatics and biomedical Image analysis. Externally, the School collaborates with the Queen Charlotte's and Chelsea Hospital, Imperial College London and KU Hospital Leuven Belgium in medical image-based classification and diagnosis, and more recently with researchers from Wellcome Trust Sanger Institute Cambridge in biological imaging for the Mouse Genetics Project. Industry formally feeds into the curriculum through the School's Industrial Advisory Board (IAB), which consists of current IT practitioners. The establishment of the IAB has led to further industrial influences including, work experience and internship opportunities, graduate employment and seminars, workshops and training sessions which have been led by practitioners and researchers in the field. In addition to industry and businesses, the School engages with local councils and non-profit organisations. These organisations have sponsored hackathons to develop prototype solutions to the real-life problems they face. Other examples of links with industry include student projects and award-winning Knowledge Transfer Partnerships.

At the visit, the Panel was reassured that both research and industrial input (Criterion 1.1) influence the programmes but would recommend that the role of the IAB is placed on a more formal footing to add value as student numbers increase.

B3	**Staffing: Academic and Support**

CITP	0	MBCS	0	FBCS	0	CEng	1	IEng	0

Academic Staff

The School has a staff student ratio of 1:9.63 based on a full-time equivalent academic staff of 8.2.

Support Staff

There are 2 full time administrative support staff which are currently shared between the School of Computing and the School of Psychology & Wellbeing. Hardware and Software support is managed centrally by IT Services.

B4	Resources Computing Facilities including Hardware and Software and Library

Computing: The ratio of students per laboratory computer is 1:0.6. The School has three dedicated computer rooms (CR4, CR8 and CR10) for teaching undergraduate and taught master programmes with a total of 44 multimedia desktop computers. In addition, a further 50+ computers are available in the University's two libraries and general-purpose computer labs. All computers run MS Windows operating systems with a wide range of software tools that are needed for teaching. The School provides all Computing students with full access to two key software platforms: 1) Microsoft Imagine Premium including Operating Systems, Visual Studio, MS Apps (Visio, Project, OneNote), and Server (SQL, SharePoint); 2) MATLAB & Simulink including 20 packages that cover a wide range of applications. The laboratories are accessible to students 24 hours a day, 7 days a week throughout the year except for the end-of-year holiday. The laboratories are supported by the University's IT Services Department. A Computing lecturer is responsible for liaison with IT Services and to provide support to students as required. The School uses the University's virtual learning environment Moodle to share teaching materials with the students and is also used for various teaching, assessment, and feedback related activities, in addition to a designated network-based file storage. A number of smart phones, 2x Microsoft HoloLens, 2x Oculus Rifts, body-worn cameras, 6x RaspberryPi including sensors, FPGA boards and 2x Kinect devices are available to facilitate teaching, individual projects, and research. Student PCs are replaced on a 4-year running cycle. Teaching rooms, computer laboratories, the library, and student accommodations have wireless networking coverage that allows students to have access to the virtual learning environment (Moodle) and other online resources.

Library: The two libraries are accessible as follows:

	Winter Term	Spring Term*	Summer Term	Autumn Term*
Monday – Thursday	08:30-24:00	08:30-24:00	08:30-24:00	08:30-24:00
Friday	08:30-21:00	08:30-21:00	08:30-21:00	08:30-21:00
Saturday	11:00-22:00	11:00-22:00	11:00-22:00	11:00-22:00
Sunday	11:00-22:00	11:00-22:00	11:00-22:00	11:00-22:00

* In the Spring and Autumn examination terms both Libraries are open 08:30 to 03:00 for the last five weeks of term.

The library is available 09:00 – 17:00 Monday – Friday during vacation. The annual spend for the School is £4,000 on books and $15,830 and £1,500 on the IEEE Electronic Library and MathSciNet journals respectively. In addition, there are 300+ journal titles available electronically via EBSCODiscovery including 4 titles from the ACM. There are short and week loan periods in place to manage books in demand.

B5	Student Experience

The Panel met with students from a range of programmes and levels who were very open, informative, and supportive of the School. The students were enthusiastic about the programmes and particularly valued the opportunities allowed for them to engage with Industry, such as through the weekly Industry Lectures and through project work.

At the visit, the Panel commended the School's approach to supporting the students, especially staff availability and approachability (Criterion 1.5). The panel was particularly impressed by the care taken to understand students' prior achievement and to facilitate entry at an appropriate point into the programme. The Panel would encourage the School to consider the way in which it will maintain these high standards as student numbers increase.

Section C - Programmes Reviewed

C1	**Programme Structure Details**

Undergraduate programmes:

The two-year undergraduate programme structure (24 months for January entry; 27 months for September entry) consists of intensive delivery over 8 academic terms (or 9 terms for September entry) without the traditional summer breaks, totalling 80 weeks (91 weeks for September entry) of teaching and examination time. The intensive teaching is supported by small group tutorials with a maximum of 8 students per tutorial.

Both the 'Study Skills for Science' and 'Professional, Ethical and Legal Issues' are modules that do not count any units of credit however, students must pass both modules. The majority of modules carry a 15-credit point weighting with the exception of the individual project which is worth 45 credits.

Programme structure details are attached as Appendix 2.

Assessment of Criteria

All items are 'Above Threshold' unless noted

C2	**Aims Content and Underpinning**

The Panel was satisfied that the aims, content and underpinning fell sufficiently within the Computing Benchmark.

At the visit, the Panel noted the use of zero-rated skills-based modules in the programme ('Study skills for science' [SUFSSFS] and 'Professional, Ethical and Legal Issues' [SUFPELI]) and, although these have an assessed element and therefore currently meet requirements, would recommend the School consider making these credit-bearing, in order to ensure continued compliance with the requirements of professional and regulatory bodies, which are likely to change in the near future in this regard.

C3	**Cognitive Outcomes**

The Panel found the cognitive outcomes to be appropriate for the level of accreditation being sought. The Panel noted good integrated coverage of Legal, Social, Ethical and Professional Issues across the curriculum which was both taught and assessed and identified within the course descriptors.

At the visit, the panel commended the School on the pervasive nature of the maths required to support the programmes ('Knowledge and understanding of mathematical and/or statistical principles'; criteria 3.1.4 and 4.1.2) and were particularly impressed by the care taken to deliver customised support at an individual level.

C4	**Practical Outcomes**

The Panel found the practical outcomes to be at the appropriate level for the accreditation sought.

C5	**Transferable Outcomes**

The Panel found the transferable outcomes to be at the appropriate level for the accreditation sought.

C6	**Project**

The School confirmed that projects cannot be passed with compensation; therefore, no condition will be added to the recommendation for accreditation.

The Panel was impressed by the mechanisms that the School had in place to ensure the suitability of students' proposed projects; in particular, the use of separate reviews and gateways to assure compliance with BCS requirements and to mirror accepted industrial practice.

C7	**Entry, Assessment and Graduation**

The normal entry requirements are:

BSc (Hons) Computing / BSc (Hons) Computing and Software Entrepreneurship: A-Level (ABB) / IB 32 or equivalent (Computing and/or Mathematics are desired, but not essential) + GCSE B in Math and English + IELTS 6.5

BSc (Hons) Computing with a Minor: A-level (ABB) or equivalent, + GCSE B in Math + IELTS 6.5.

Direct Entry: Students are accepted and can enrol directly into the second year (at most) of the 2-year degree. In most cases, Direct Entry students are likely to be exempted from the first two terms of the two-year degree (i.e. total of 90 credits). If required, a special programme is designed for the student – special programmes must be approved by the University Teaching and Learning committee.

At the visit, the Panel commended the School's approach to supporting the students and was particularly impressed by the care taken to understand student's prior achievement and facilitate entry at an appropriate point into the programme. The Panel would encourage the School to consider the way in which it will maintain these high standards as student numbers increase.

Appendix 1 **List of Programmes put forward for Accreditation**

The Panel was presented with five undergraduate programmes for consideration.							
Programme Title:		**Modes offered** (eg SW, FT, PT, DL)	**Length of programme**	**CITP** Full or Partial	**CEng** Full or Partial	**IEng** Full or Partial	**RITTech**
BSc (Hons) Computing		FT	2,3	✓F	✓P		
First Offered	2006						
Last Revision	2017						
Intakes	2020-2024						
BSc (Hons) Computing (including integrated foundation year)		FT	3	✓F	✓P		
First Offered	2006						
Last Revision	2017						
Intakes	2020-2024 (bkdt 2017)						
BEng (Hons) Computing with Software Entrepreneurship		FT	2	✓F	✓P		
First Offered	2014						
Last Revision	2017						
Intakes	2020-2024 (bkdt 2016)						
BSc (Hons) Computing with Minor Option		FT	2	✓F	✓P		
First Offered	2006						
Last Revision	2017						
Intakes	2020-2024						
BSc (Hons) Computing with Minor Option (including integrated foundation year)		FT	3	✓F	✓P		
First Offered	2006						
Last Revision	2017						
Intakes	2020-2024 (bkdt 2017)						

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Appendix 2 **Core/Optional Table:**

Key:					
List course titles and abbreviations used in the table					

Module Code	Module Name	Credits	BSc Computing	BSc Computing with Minor	BSc Computing with Software Entrepreneurship
Level 3					
FFFMAME	Mathematical Methods	20	Not offered	Not offered	Optional**
Level 4					
SUFITSS	Introduction to Statistics	15	Compulsory	Not offered	Optional**
SUFITCS	Introduction to Computer Systems	15	Compulsory	Compulsory	Compulsory
SUFPSP1	Problem Solving and Programming 1	15	Compulsory	Compulsory	Compulsory
SUFMATC	Mathematics for Computing	15	Compulsory	Not offered	Not offered
SUFITOS	Introduction to Operating Systems	15	Compulsory	Compulsory	Compulsory
Level 5					
SUFPSP2	Problem Solving and Programming 2	15	Compulsory	Compulsory	Compulsory
SUFPRDS	Principles of Database Systems	15	Compulsory	Compulsory	Compulsory
SUFOOPG	Object-Oriented Programming	15	Compulsory	Compulsory	Compulsory
SUFHCIN	Human-Computer Interaction	15	Compulsory	Not offered	Compulsory
SUFPRCN	Principles of Computer Networks	15	Compulsory	Compulsory	Compulsory
SUFMMSY	Multimedia Systems	15	Compulsory	Compulsory	Compulsory
SUFIWWW	Web Application Development	15	Compulsory	Not offered	Compulsory
Level 6					
SUFSENG	Software Engineering	15	Compulsory	Compulsory	Compulsory
SUFADIA	Algorithm Design, Implementation and Analysis	15	Compulsory	Not offered	Not offered
SUFMAPP	Mobile Application Development	15	Compulsory	Compulsory	Compulsory
SUFSWPM	Software Project Management	15	Compulsory	Compulsory	Compulsory
SUFIMGP	Image Processing	15	Compulsory	Not offered	Not offered
SUFISEC	Information Security	15	Compulsory	Compulsory	Compulsory
SUFEMBD	Embedded Systems	15	Compulsory	Not offered	Not offered
SUFCLDC	Cloud Computing	15	Compulsory	Compulsory	Compulsory
SUFTFBI	Technologies for Business Intelligence	15	Compulsory	Compulsory	Compulsory
SUFPRJT	Project	45	Compulsory	Compulsory	Compulsory
Skills-based					
SUFSSFS	Study Skills for Science	N/A	Compulsory	Compulsory	Compulsory
SUFPELI	Professional, Ethical and Legal Issues	N/A	Compulsory	Compulsory	Compulsory

** Offered only within the September intake and NOT within the January intake

Appendix 3 **BCS Accreditation**

The following criteria were judged as Above Threshold for at least one programme. Exceptions can be found within the main body of the report, i.e. where a particular programme or groups of programmes were judged as either At or Below Threshold:

	Department Overview
	Section 1 Quality Assurance & Enhancement
1.1	Programmes are influenced by research, industry and market requirements
1.2	Programmes are appropriately titled and specified using intended learning outcomes which are accessible to all stakeholders
1.3	Core modules are mapped to the BCS criteria for the specific accreditation sought
1.4	Programmes are delivered and students supported, employing appropriate resources in terms of staff, learning materials, equipment and accommodation
1.5	Support of student engagement and development takes cognisance of individual ability and evidenced prior achievement
1.6	HEI regulations governing awards, as gauged through student achievement, properly underpin the fulfilment of the requirements of the accreditation sought
1.7	Programme assessment, in terms of subject content and level, is appropriate and is overseen through relevant QAA processes
1.8	Quality assurance and enhancement processes are effective in supporting the delivery and evolution of programmes
1.9	Any off-site learning and assessment activities of a programme are handled appropriately
1.10	Employability skills are developed and students are supported
	Programme Based Issues
	Section 2 Core Requirements for Accreditation of Honours Programmes (and generalist masters programmes)
2.0	The programme contains sufficient computing content, as set out in table 1.5 of the guidelines
	Graduates have been assessed on the following abilities:
	Computing-related cognitive abilities
2.1.1	Knowledge and understanding of essential facts, concepts, principles and theories relating to computing and computer applications
2.1.2	The use of such knowledge and understanding in the modelling and design of computer-based systems
2.1.3	Recognise and analyse criteria and specifications appropriate to specific problems and plan strategies for their solution
2.1.4	Analyse the extent to which a computer based-system meets the criteria defined for its current use and future development
2.1.5	Deploy appropriate theory, practices and tools for the specification, design, implementation and evaluation of computer-based systems
2.1.6	Recognise the legal, social, ethical and professional issues involved in the exploitation of computer technology
2.1.7	Knowledge and understanding of the commercial and economic context
2.1.8	Knowledge and understanding of the management techniques which may be used to achieve objectives within a computing context
2.1.9	Knowledge and understanding of information security issues
	Computing-related practical abilities
2.2.1	Specify, design or construct computer-based systems
2.2.2	Evaluate systems in terms of general quality attributes and possible trade-offs presented within the given problem
2.2.3	Recognise any risks or safety aspects that may be involved in the operation of computing and information systems within a given context
2.2.4	Deploy effectively the tools used for the construction and documentation of computer applications
	Transferable skills
2.3.1	An ability to work as a member of a development team
2.3.2	Development of transferable skills that will be of value in a wide range of situations
	Section 3 Additional Requirements for CITP
	Computing-related cognitive abilities
3.1.1	Knowledge and understanding of the methods and issues involved in deploying systems to meet business goals
3.1.2	Knowledge and understanding of methods, techniques and tools for information modelling, management and security
3.1.3	Knowledge and understanding of systems architecture and related technologies for developing information systems
3.1.4	Knowledge and understanding of mathematical and/or statistical principles appropriate to the nature of the programme
	Computing-related practical abilities
3.2.1	Use appropriate theoretical and practical processes to specify and deploy, verify and maintain information systems
3.2.2	Define a problem, research its background, understand the social context, identify constraints, understand customer and user needs, identify and manage cost drivers, ensure fitness for purpose and manage the design process and evaluate outcomes
3.2.3	Apply the principles, methods and tools of systems design to develop information systems that meet business needs
	Section 4 Additional requirements for CEng
	Computing-related cognitive abilities
4.1.1	Knowledge and/or understanding of the use of appropriate engineering principles
4.1.2	Knowledge and understanding of mathematical and statistical principles necessary to underpin their programme of study
4.1.3	Knowledge and understanding of the principles of computational modelling
	Computing-related practical abilities
4.2.1	Use appropriate theoretical and practical processes to specify, design, implement, verify and maintain computer-based systems
4.2.2	Define a problem, research its background, understand the social context, identify constraints, understand customer and user needs, identify and manage cost drivers, ensure fitness for purpose and manage the design process and evaluate outcomes
4.2.3	Apply the principles of appropriate supporting engineering and scientific disciplines
	Section 10 Project Requirements
10.1.1	Students must be provided with written guidance on all aspects of the project
10.1.2	The project report must meet the requirements set out in section 2.5 of the guidelines
10.1.3	The individual project within an **undergraduate honours** or **integrated masters** degree should be a piece of work of at least 30 credit points at level 6.
10.1.4	All projects should reflect the title and the aims and learning outcomes which characterise the programme
10.1.5	A project undertaken at masters level should reflect the ethos of advanced study and scholarship appropriate to a masters degree
10.1.6	The project must be passed without compensation
10.1.7	In the event of this major activity being undertaken as a group enterprise, there is a requirement that the assessment is such that the individual contribution of each student is measured against the learning outcomes

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Any Multiple site/Franchise Arrangements   No

Direct Entrants   Yes – refer to section C7.

Date Report Considered at AAC**:** 19/03/2019
Minute Number: AAC/2019/024 5.2

Next Visit Due   **Academic Year:** 2024

90 Day Response Required: No

Action Plan Required: No

Confirmation of Initial Required: No

Extension of Programmes Required: No

Change of Titles
List of Programme Titles

Date Submitted to AAC:

Outcome:

Dialogue with Education Team following visit which may affect future accreditation including changes at University level

Date Received: