

# BSc (Hons) Computing

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Awarding institution	Bath Spa University
Teaching institution	Bath Spa University
School	School of Design
Department	N/A
Main campus	Newton Park
Other sites of delivery	N/A
Other Schools involved in delivery	N/A
Name of award(s)	Computing
Qualification (final award)	BSc (Hons)
Intermediate awards available	CertHE, DipHE
Routes available	Single
Sandwich year	Yes
Duration of award	3 years full-time (4 years with Professional Placement Year)
Modes of delivery offered	Campus-based
Regulatory Scheme[1]	Undergraduate Academic Framework

Exemptions from regulations/framework[2]	N/A
Professional, Statutory and Regulatory Body accreditation	N/A
Date of most recent PSRB approval (month and year)	N/A
Renewal of PSRB approval due (month and year)	N/A
UCAS code	
Route code (SITS)	
Relevant QAA Subject Benchmark Statements (including date of publication)	Computing (February 2016)
Date of most recent approval	June 2019
Date specification last updated	January 2021

[1] This should also be read in conjunction with the University's Qualifications Framework

[2] See section on 'Exemptions'

## Exemptions

There are no exemptions

## Programme Overview

BSc (Hons) Computing adopts an applied approach to help you build an understanding of computing by specifying and implementing applications and experiences. A feature of the course is its attention to design, and the value of developing systems that are not only functional, but also reliable, intuitive and enjoyable to use. This thread runs through the entire course, yet is spotlighted particularly in user-focused modules such as *Experience Design* and *Human-Computer Interaction*. Another key focus is Industry-insight. Here we expose the scope and variety of the UK and international computer industry, while helping you mature the personal qualities needed to be effective in professional contexts. Industry-insight is consolidated in *Innovation Lab*, which is a simulated studio environment that supports the commercialisation of products in the computing space.

Module content targets the following themes:

- Software development
- Computational thinking
- Problem solving
- Experience design
- Communication
- Innovation
- Industry insight
- Collaboration

Themes are engaged via lab work, development challenges, co-creativity projects, client briefs and deep-dive study to gain a production-led understanding of computing. Assessment work similarly foregrounds 'learning by making', yet pays attention to the importance of contextualising work accurately, evaluating outputs critically, and communicating in ways that are meaningful to both specialist and general audiences.

BSc (Hons) Computing follows a natural trajectory that establishes core skills in year 1, expands understanding into specialist areas in year 2, and shifts focus to professional development and employability in year 3. Year 1 introduces the fundamental concepts and skills that underpin computing, including programming, system design and development, discrete mathematics and user experience. Year 2 exposes the tools and techniques used in computing disciplines to address more complex problems, while allowing you space to explore specialist topics. Year 3 engages you in longer-term development projects that aim to showcase your talents to potential future employers or clients.

## Programme Aims

1. Knowledge – to support an applied understanding of critical concepts, principles and practices within the field of computing.
2. Computation Thinking – to develop individuals that have a capacity to analyse complex problems systematically and propose solutions that rely on the application of computing.
3. Critical Thinking – to teach methods of source selection, critical analysis and evaluation that enable students to form sound judgements and make informed decisions.
4. Design – to expose strategies that underpin the creation of reliable, intuitive and enjoyable computing products and experiences.
5. Collaboration – to cultivate well-rounded, insightful individuals that possess the knowledge, experience and character to co-create effectively with a range of stakeholders.
6. Innovation – to assist students in establishing the contextual awareness, design thinking skills and idea appraisal strategies required to develop outputs that have potential sociocultural or commercial impact.
7. Employability – to embed industry-insight and professional development opportunities across all levels of study.

## Programme Intended Learning Outcomes (ILOs)

### A Subject-Specific Skills and Knowledge

	<b>Programme Intended Learning Outcomes (ILOs)</b>  <b>On Achieving Level 6</b>	<b>On Achieving Level 5</b>	<b>On Achieving Level 4</b>
A1	Systems – Evaluate critically, adapt and deploy methods of modelling, design and construction as appropriate to deliver reliable computer systems	Systems – Apply established methods of modelling, design and construction to deliver functional computer systems.	Systems – Demonstrate knowledge of established methods of computer system modelling, design and construction.
A2	Usability – Select and apply appropriate theory and processes as required to specify, critically assess and modify computing solutions to address the needs of a specific user group.	Usability – Evaluate critically and apply theory and methods within the field of human-computer interaction to propose computing solutions that account for the general needs of end users.	Usability – Demonstrate knowledge of established theory and methods of experience design and usability testing.
A3	Tools – Evaluate critically, select and deploy specialist computing tools and as required to address a complex, self-devised problem in the field of computing.	Tools – Evaluate critically and deploy established computing tools to solve practical problems in the field of computing.	Tools – Evidence a practical understanding of the core design and development tools used in the field of computing.
A4	Collaboration – Identify, evaluate critically and deploy appropriate co-working strategies to respond effectively to complex briefs that require collaborative effort.	Collaboration – Contextualise and implement solutions to briefs in partnership with peers within given parameters for co-working	Collaboration – Propose solutions to design and technical briefs in partnership with peers.
A5	Documentation – Evaluate critically, adapt and deploy appropriate forms of communication and language to meet defined objectives for a specific computing scenario.	Documentation – Review critically and apply methods of communicating information, arguments and analysis to specialist audiences within the field of computing.	Documentation – Demonstrate a practical understanding of the principle methods of recording process and output within the field of computing.
A6	Professional Development – Demonstrate a systematic understanding of the commercialisation of computing, including the factors that determine the success of a computing product in the public realm.	Professional Development – Demonstrate a critical understanding of the processes used in industry to plan, develop and maintain a computing product.	Professional Development – Demonstrate knowledge of the role of computing within wider societal and industry contexts.

## **B Cognitive and Intellectual Skills**

	<b>Programme Intended Learning Outcomes (ILOs)</b>  <b>On Achieving Level 6</b>	<b>On Achieving Level 5</b>	<b>On Achieving Level 4</b>
B1	Knowledge – Evidence a systematic understanding of established and emerging concepts within the field of computing, including the way in which such concepts have developed.	Knowledge – Evidence a critical understanding of established and emerging concepts within the field of computing.	Knowledge – Evidence knowledge of established concepts and principles within the field of computing.
B2	Computational Thinking – Evaluate critically and apply appropriate methods to deconstruct abstract problems and propose solutions that are efficient and generalisable.	Computational Thinking – Apply established frameworks for computational thinking to represent a complex problem appropriately and reduce it to a series of ordered, solvable steps	Computational Thinking – Express a defined problem as a series of small and solvable steps.
B3	Critical Thinking – Interpret and analyse systematically a range of sources as required to undertake sustained argument on complex topics within the field of computing.	Critical Thinking – Extract insights from structured and unstructured sources to establish a critical position on topics within the field of computing.	Critical Thinking – Draw on structured sources to evaluate underlying theories and concepts within the field of computing.
B4	Reflection – Identify and deploy appropriate evidence and methods of critical reflection to construct a systematic personal development strategy that extends beyond graduation.	Reflection – Apply established frameworks for critical reflection to establish short-term personal learning and development opportunities	Reflection – Evaluate the key successes and limitations of personal work and the work of others.

## **C Skills for Life and Work**

	<b>Programme Intended Learning Outcomes (ILOs)</b>  <b>On Achieving Level 6</b>	<b>On Achieving Level 5</b>	<b>On Achieving Level 4</b>
C1	Autonomous learning[3] (including time management) that shows the exercise of initiative and personal responsibility and enables decision-making in complex and unpredictable contexts.	Autonomous learning (including time management) as would be necessary for employment requiring the exercise of personal responsibility and decision-making such that significant responsibility within organisations could be assumed.	Autonomous learning (including time management) as would be necessary for employment requiring the exercise of personal responsibility.

C2	Team working skills necessary to flourish in the global workplace with an ability both to work in and lead teams effectively.	Team work as would be necessary for employment requiring the exercise of personal responsibility and decision-making for effective work with others such that significant responsibility within organisations could be assumed.	Team work as would be necessary for employment requiring the exercise of personal responsibility for effective work with others.
C3	Communication skills that ensure information, ideas, problems and solutions are communicated effectively and clearly to both specialist and non-specialist audiences.	Communication skills commensurate with the effective communication of information, arguments and analysis in a variety of forms to specialist and non-specialist audiences in which key techniques of the discipline are deployed effectively.	Communication skills that demonstrate an ability to communicate outcomes accurately and reliably and with structured and coherent arguments.
C4	IT skills and digital literacy that demonstrate core competences and are commensurate with an ability to work at the interface of creativity and new technologies.	IT skills and digital literacy that demonstrate the development of existing skills and the acquisition of new competences.	IT skills and digital literacy that provide a platform from which further training can be undertaken to enable development of new skills within a structured and managed environment.

[3] i.e. the ability to review, direct and manage one's own workload

## Programme content

This programme comprises the following modules

### Key:

Core = C

Required = R

Required\* = R\*

Optional = O

Not available for this status = N/A

If a particular status is greyed out, it is not offered for this programme.

BSc (Hons) Computing				Status			
Level	Code	Title	Credits	Single	Major	Joint	Minor
4	CPU4000-20	Mathematics for Computing	20	C			
4	CCO4000-20	CodeLab I	20	C			
4	CPU4002-20	Introduction to Computing	20	C			
4	CPU4001-20	The Computer Industry	20	C			
4	CCO4001-20	Web Development	20	C			
4	CCO4002-20	Experience Design	20	C			
5	CPU5000-20	Human-Computer Interaction	20	C			
5	CCO5000-20	CodeLab II	20	C			
5	CPU5001-20	Data Structures and Algorithms	20	C			
5	CPU5002-20	Databases	20	C			
5	CPU5003-20	Software Project Management	20	C			
5	CPU5100-20	Data Visualisation	20	O			
5	CCO5103-20	The Responsive Web	20	O			
5	PPY5100-120	Professional Placement Year	120	O			
6	CPU6000-20	Devised Project I	20	C			
6	CPU6001-20	Devised Project II	20	C			
6	CPU6002-20	Innovation Lab I	20	C			
6	CPU6003-20	Innovation Lab II	20	C			
6	CCO6002-20	Cyber Security	20	C			
6	CPU6100-20	Machine Learning	20	O			
6	CCO6101-20	Physical Computing	20	O			



## **Assessment methods**

A range of summative assessment tasks will be used to test the Intended Learning Outcomes in each module. These are indicated in the attached assessment map which shows which tasks are used in which modules.

Students will be supported in their development towards summative assessment by appropriate formative exercises.

Please note: if you choose an optional module from outside this programme, you may be required to undertake a summative assessment task that does not appear in the assessment grid here in order to pass that module.

## Work experience and placement opportunities

There are several opportunities to engage with industry across BSc (Hons) Computing. We encourage you to take advantage of:

- Summer placement schemes
- Live briefs and industry pitching opportunities within modules
- Design and technical work as part of Creative Computing commissioned projects
- Roles within university-led external projects
- Personal commissioned work with support from the Creative Computing team
- Invites to attend or participate in external networking opportunities, IT meetups and Creative Computing industry-insight events

BSc Computing can also be taken as a 'Sandwich' degree, which is studied over 4 years and includes a year long work placement in a sector of your choice. The placement year is completed between years 2 and 3 of your degree and counts for 120 Level 5 credits. During this time you will be able to utilise knowledge gained as part of your studies in a real work environment to gain 'hands on' experience. The university has a dedicated Careers & Employability team to help you find and prepare for a placement. Following your placement year, you will return to University to complete your final year of study.

Opportunities to study abroad via the Erasmus+, International Exchange and Study Abroad programmes are also available.

## Graduate Attributes

	Bath Spa Graduates...	In BSc (Hons) Computing, we enable this by...
1	Will be employable: equipped with the skills necessary to flourish in the global workplace, able to work in and lead teams	Supporting a critical understanding of the wider sociocultural and industry context of computing, and by establishing co-creation as a key course focus
2	Will be able to understand and manage complexity, diversity and change	Helping you build a rich set of transferable skills (communication, adaptability, resilience) that ensure you thrive when faced with complex challenges and unpredictable scenarios
3	Will be creative: able to innovate and to solve problems by working across disciplines as professional or artistic practitioners	Maintaining a problem-led approach to learning across all aspects of the course, and providing a dedicated forum to explore practically the collision of computing and innovation
4	Will be digitally literate: able to work at the interface of creativity and technology	Providing continual exposure to a range of industry-standard computing tools, development environments and creative-thinking strategies
5	Will be internationally networked: either by studying abroad for part of the their programme, or studying alongside students from overseas	Encouraging you to apply for Erasmus+, International Exchange and Study Abroad programmes offered by Bath Spa University
6	Will be creative thinkers, doers and makers	Engaging you in an applied course that priorities the design and development of reliable, intuitive and enjoyable computing products and experiences
7	Will be critical thinkers: able to express their ideas in written and oral form, and possessing information literacy	Emphasising ideation and critical evaluation across all development activities, and by sharing best practice for communicating context, process and output within a range of scenarios
8	Will be ethically aware: prepared for citizenship in a local, national and global context	Championing practices of digital citizenship and the safe, fair and ethical use of technology in study, work and daily life.

## Modifications

### Module-level modifications

Code	Title	Nature of modification	Date(s) of approval and approving bodies	Date modification comes into effect
CPU4 002-20	Introduction to Computing	New module	approved by Creative Industries SQMC 30th Nov 2020	2021/22
CCO4 004-20	Introduction to Computing	Deletion of module	approved by Creative Industries SQMC 30th Nov 2020	2021/22
CCO4 001-20	Web Development	Assessment change	Approved by Chair's Action at the Creative Industries School Quality and Management Committee 30/11/2020	2021/22
CPU4 000	Mathematics in Computing	Semester Change	Covid-19 related change made permanent June 2021	2021/22

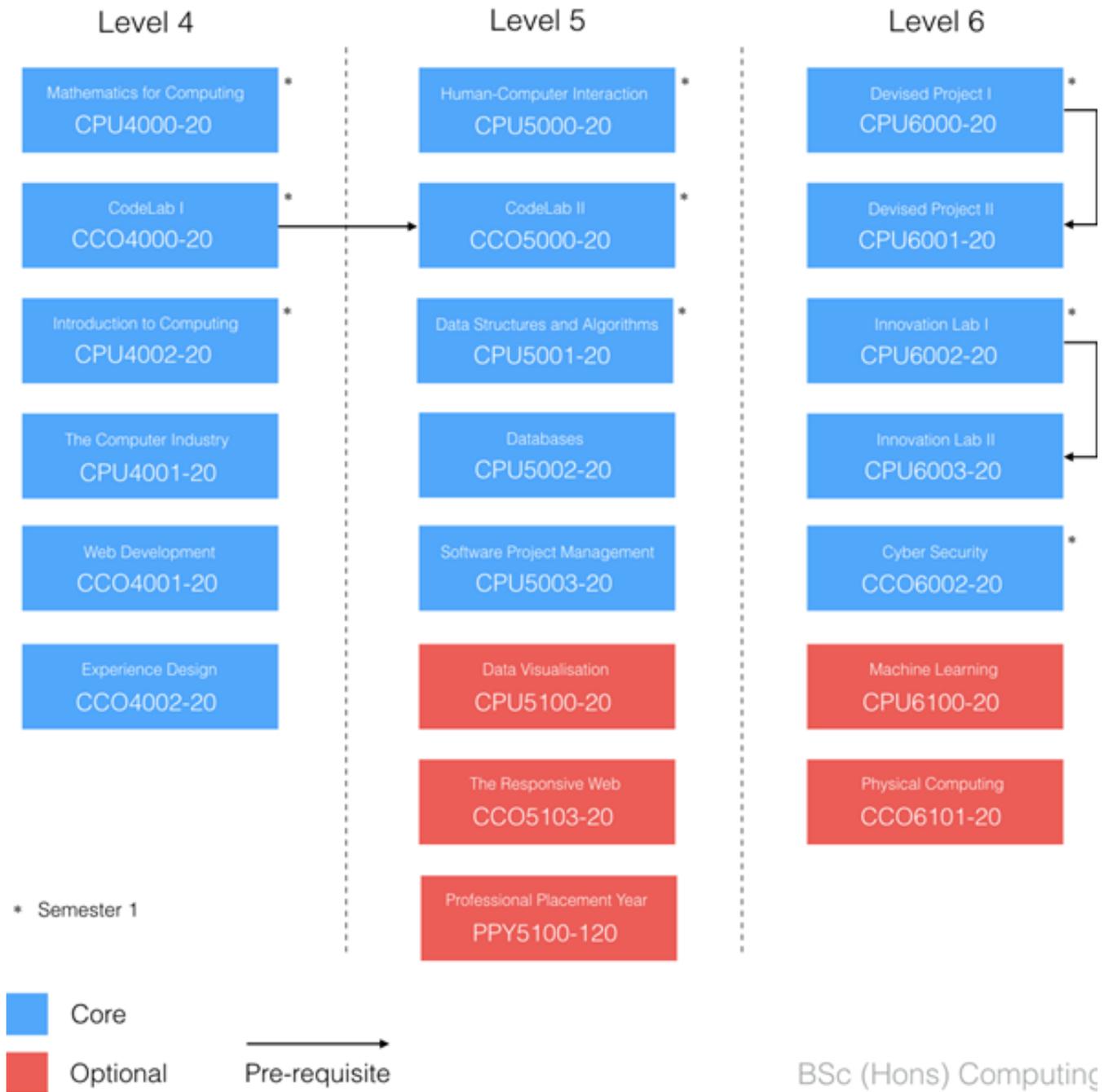
### Programme-level modifications

Nature of modification	Date(s) of approval and approving bodies	Date modification comes into effect

**Attached as appendices:**

1. Programme structure diagram
2. Map of module outcomes to level/programme outcomes
3. Assessment map
4. Module descriptors

## Appendix 1: Programme Structure Diagram – BSc (Hons) Computing



## Appendix 2: Map of Intended Learning Outcomes

Level	Module Code	Module Title	Status (C,R,R*,O)[4]	Intended Learning Outcomes														
				Subject-specific Skills and Knowledge						Cognitive and Intellectual Skills				Skills for Life and Work				
				A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	C1	C2	C3	C4	
4	CPU4000-20	Mathematics for Computing	C	x		x					x	x	x		x			
4	CCO4000-20	CodeLab I	C	x		x	x	x			x	x		x	x	x	x	x
4	CPU4002-20	Introduction to Computing	C	x					x		x		x		x		x	
4	CPU4001-20	The Computer Industry	C						x		x		x		x		x	
4	CCO4001-20	Web Development	C		x	x		x		x	x		x	x	x	x	x	x
4	CCO4002-20	Experience Design	C		x	x	x	x		x			x	x	x	x	x	x
5	CPU5000-20	Human-Computer Interaction	C	x	x	x		x		x		x		x	x	x	x	x
5	CCO5000-20	CodeLab II	C	x	x	x		x	x	x	x	x	x	x		x	x	x
5	CPU5001-20	Data Structures and Algorithms	C	x	x	x				x	x			x				
5	CPU5002-20	Databases	C	x				x		x	x			x		x	x	x
5	CPU5003-20	Software Project Management	C				x	x	x	x		x	x	x	x	x	x	x
5	CPU5100-20	Data Visualisation	O		x	x				x		x		x		x	x	x
5	CCO5103-20	The Responsive Web	O	x	x	x		x		x	x			x		x	x	x
5	PPY5100-120	Professional Placement Year	O											x	x	x	x	x
6	CPU6000-20	Devised Project I	C	x		x		x		x		x		x		x	x	x
6	CPU6001-20	Devised Project II	C	x	x	x		x			x		x	x		x	x	x
6	CPU6002-20	Innovation Lab I	C	x		x	x	x	x			x		x	x	x	x	x
6	CPU6003-20	Innovation Lab II	C	x	x	x	x	x	x		x		x	x	x	x	x	x
6	CCO6002-20	Cyber Security	C					x				x		x	x	x	x	x
6	CPU6100-20	Machine Learning	O	x		x		x		x	x			x		x	x	x

6	CCO6101-20	Physical Computing	O	x	x			x			x	x		x		x	x
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[4] C = Core; R = Required; R\* = Required\*; O = Optional

## Appendix 3: Map of Summative Assessment Tasks by Module

Level	Module Code	Module Title	Status (C,R,R*,O)[5]	Assessment method												
				Coursework						Practical				Written Examination		
				Composition	Dissertation	Essay	Journal	Portfolio	Report	Performance	Practical Project	Practical skills	Presentation	Set exercises	Written Examination	In-class test (seen)
4	CPU400 0-20	Mathematics for Computing	C										1x	1x		
4	CCO400 0-20	CodeLab I	C					1x		1x			1x			
4	CPU400 2-20	Introduction to Computing	C			1x								1x		
4	CPU400 1-20	The Computer Industry	C					1x		1x		1x				
4	CCO400 1-20	Web Development	C					1x		1x			1x			
4	CCO400 2-20	Experience Design	C				1x									
5	CPU500 0-20	Human-Computer Interaction	C					1x		1x						
5	CCO500 0-20	CodeLab II	C			1x		1x		1x						
5	CPU500 1-20	Data Structures and Algorithms	C					1x					1x			
5	CPU500 2-20	Databases	C							2x						
5	CPU500 3-20	Software Project Management	C					1x				1x				
5	CPU510 0-20	Data Visualisation	O				1x					1x				

5	CCO510 3-20	The Responsive Web	O						1x		1x				1x			
5	PPY510 0-120	Professional Placements Year	O					1x										
6	CPU600 0-20	Devised Project I	C					1x	1x									
6	CPU600 1-20	Devised Project II	C				1x					1x						
6	CPU600 2-20	Innovation Lab I	C				1x					1x						
6	CPU600 3-20	Innovation Lab II	C									1x		1x				
6	CCO600 2-20	Cyber Security	C						2x									
6	CPU610 0-20	Machine Learning	O									1x						1x
6	CCO610 1-20	Physical Computing	O									1x	1x					

[5] C = Core; R = Required; R\* = Required\*; O = Optional