



Programme Title	BSc (Hons) Creative Computing
Awarding Body	Ravensbourne University London
Teaching Institution	Ravensbourne University London
Final Award	BSc (Hons) Creative Computing
Interim awards	Level 4 - Award Creative Computing Level 4 – Cert HE Creative Computing Level 5 – Dip HE Creative Computing
UCAS Code	I150
QAA Subject Benchmark	Computing (2019)
PRSB reference	N/A
Mode of study	Full Time / Part Time
Date produced/amended	February 2020
Course Leader	Ajaz Ali

Distinctiveness

Creative Computing is an emerging field which draws upon creativity, imagination, and computing. The outcome of the programme will be as versatile and varied as your interest and imagination may develop.

As a creative education university Ravensbourne wants its graduates to have all the benefits from a curriculum that keeps pace with developments in the industries they aspire to work in. Traditionally in the UK creative students and science students took different educational paths. Now they are converging and we are now training students who are agile in developing both of these conventions. It is critical for us to develop exciting hybrid or rather “Tribrid” digital programmes which encompass creativity, practical skills and computing knowledge.

Our BSc (Hons) in Creative Computing will bridge the gap between creativity and technical skills. You will have an opportunity to apply coding skills in a multitude of creative environments including 360 capture and display, augmented and virtual reality, creative use of emerging technologies such as smart dressing rooms, object recognition and automated audio descriptions of visual objects during broadcasting etc.

This is a unique course that will challenge the inquisitive minds who wish to use modern technologies in a creative environment. The disciplines will include interactive systems, web and mobile technologies, digital art and multimedia streaming and will combine the mix of computing and creative practice, skills which are much in demand by the creative and digital industries.

Starting from the basics of creative programming up to developing solutions for the real world, this course will provide an insight into emerging technologies and their potential uses in various industries such as education, engineering, digital media, creative arts, healthcare, fashion and many others.

Based on case studies, labs, workshops and state of the art tools you will learn about

computer, mobile and other emerging technologies and their potential utilisation by the industry. Upon completion, students will be able to evaluate the technologies, recognise best practices and propose and develop new solutions to a wider audience.

Students will also have the skills to join project management and creative development roles in public and private sector organisations. Students will also develop skills in research and apply those skills to a practical project in a creative area and the production of a related project report.

Ravensbourne University London

Ravensbourne University London is a leading University specialising in creative arts, design and digital media. By working closely with the UK high tech industry and research institutions, Ravensbourne has developed a unique proficiency and practical knowledge of the latest disruptive technologies in this area. Ravensbourne graduates meet the skill demands across many industry sectors including media production, broadcasting, engineering, culture, fashion and architecture, and we are proud to achieve excellent graduate employment rates.

Though relatively small, Ravensbourne is very well-known and respected by the UK's media, production and broadcasting organisations, and we are active in various relevant industry forums. We maintain a Society of Motion Picture and Television Engineers (SMPTE) Student Chapter at Ravensbourne, which gives our students valuable access to a range of technical meetings and seminars, and provides our teaching staff the opportunity to engage and collaborate with a leading global standards organisation and its respected international members.

Skillset and Mindset Manifesto

This programme aligns well with the Ravensbourne Skillset and Mindset Manifesto. Our students are at the core of this Manifesto where we are committed to thread these five Principles through everything we do:

- Cultivate / Where the individual thrives
- Collaborate / Where disciplines evolve
- Integrate / Where education engages industry
- Advocate / Where purpose meets practice
- Originate / Where creativity meets technology

Course Structure

Every unit in this course has indicative content which provides the basic outline of the course but is not limited to the content specified. Indicative content covers industry wide knowledge to ensure students understand the topic effectively and are able to work in a variety of roles and positions regardless of vendor-specific tools used over the period.

Companies operating in a range of markets and application areas will require different

focuses for some of the taught unit subject areas. This course is uniquely structured to meet this requirement. Fundamental core taught units are supplemented by specialisation subject tutorials given by experts in a particular field, while the Collaborative Learning Stream is supported by external speakers. Speakers will include experts from relevant areas in industry, Ravensbourne researchers and incubatees, and representatives from leading organisations in the field.

Potential Careers in Creative Computing:

- AR/VR Programmer
- Multimedia Programmer
- Web Designer / Developer
- UX/UI engineer
- Software Engineer
- Solutions Developer
- Mobile Application Developer
- Games Developer

QAA benchmark statement (2019)

This programme uses QAA benchmark for computing and related subjects:

“Computing is concerned with the understanding, design and exploitation of computation and computer technology - one of the most significant advances of the twentieth and twenty-first centuries. It is a discipline that:

- *Blends elegant theories (including those derived from a range of other disciplines such as Mathematics, Engineering, Psychology, Graphical Design or well-founded experimental insight) with the solution of immediate practical problems.*
- *Underpins the development of both small and large scale, secure reliable and usable systems that support organisational goals.*
- *Helps individuals in their everyday lives.*
- *Is pervasive, ubiquitous and diversely applied to a range of applications, and important components are often invisible to the naked eye.”*

The programme will meet the QAA benchmark standards in computing as follows:

6.1 Benchmark standards are defined at threshold, typical and excellent levels for bachelor's degrees:

The threshold level:

- 6.2 Set here at the bottom of the honours class the threshold level would be treated by many higher education providers as disappointing performance, given the entry qualifications of their students, and it is not the outcome expected of them.
- 6.3 On graduating with an honours degree in Computing at threshold level, students should be able to:
 - i. demonstrate a requisite understanding of the main body of knowledge for their

- programme of study
- ii. understand and apply essential concepts, principles and practices of the subject in the context of well-defined scenarios, showing judgement in the selection and application of tools and techniques
- iii. produce work involving problem identification, the analysis, design and development of a system with accompanying documentation, recognising the important relationships between these stages and showing problem solving and evaluation skills drawing on supporting evidence
- iv. produce small well-constructed programmes to solve well-specified problems
- v. demonstrate generic skills, an ability to work under guidance and as a team member.
- vi. identify appropriate practices within a professional, legal and ethical framework and
- viii. understand the need for continuing professional development.

The typical level

- 6.4 Set here at the middle of the honours class this typical level would be treated by many higher education providers as median performance across all students.
- 6.5 On graduating with an honours degree in Computing at typical level, students should be able to:
 - i. demonstrate a sound understanding of the main areas of the body of knowledge within their programme of study, with an ability to exercise critical judgement
 - ii. critically analyse and apply essential concepts, principles and practices of the subject in the context of loosely defined scenarios, showing effective judgement in the selection and use of tools and techniques
 - iii. produce work involving problem identification, the analysis, the design or the development of a system, with appropriate documentation, recognising the important relationships between these
 - iv. the work will show problem solving and evaluation skills, draw upon supporting evidence and demonstrate a good understanding of the need for a high quality solution
 - v. demonstrate generic skills with an ability to show organised work both as an individual and as a team member and with minimum guidance
 - vi. apply appropriate practices within a professional, legal and ethical framework and identify mechanisms for continuing professional development and lifelong learning.

Excellence

- 6.6 While the Subject Benchmark Standards in this section are defined for threshold and typical levels, programmes in Computing will provide opportunities for students to achieve to their potential.
- 6.7 Such students:
 - i. will be able to contribute significantly to the analysis, design or the development of systems that are complex, recognising the important relationships between these
 - ii. will be creative and innovative in their application of the principles covered in the curriculum

- iii. will be able to exercise critical evaluation and review of both their own work and the work of others.
- iv. will be able to demonstrate team leadership skills

Links to other courses

As part of gaining experience from other subject areas and interaction with students from other disciplines, students get an opportunity to study the following combined units:

Coding, Figures and Visuals

Design, Data and Insights

BA (Hons) User Experience and User Interface (UX/UI)

Programme aims

Creative Software Development: demonstrate systematic and critical understanding of key issues underlying computers, software, the Internet, human perception and creativity.

Develop and implement suitable digital artefacts using high-level programming languages or interactive design tools.

Develop and implement complex software systems that meet user requirements using high-level programming languages.

Artificial Intelligence and Machine Learning: Demonstrate the critical understanding of various models of AI/ML and how they work hand in hand to develop intelligent systems.

Emerging Technologies: Show a solid understanding of emerging digital technologies and their potential uses by the industry.

Immersive Technologies: Demonstrate sound understanding in development of Augmented and Virtual Reality solutions.

Programme Learning Outcomes

Level Four	Level Five	Level Six
<p>LO 1 Research/Inspiration</p> <p>Demonstrate your capacity for information gathering techniques using a wide range of sources, providing visual, contextual and industry case-study research as appropriate.</p> <p>Related Principle: ORIGINATE</p>	<p>LO 1 Research/Inspiration</p> <p>Analyse and interpret information gathering techniques using a wide range of sources, providing visual, contextual and industry case-study research as appropriate.</p> <p>Related Principle: ORIGINATE</p>	<p>LO 1 Research/Inspiration</p> <p>Select and evaluate information gathering techniques using a wide range of sources, providing visual, contextual and industry case-study research as appropriate.</p> <p>Related Principle: ORIGINATE</p>

LO 2 Concept/Ideation Generate first concept ideas or strategic project themes drawing upon reference to acquired research materials Related Principle: ORIGINATE	LO 2 Concept/Ideation Analyse research materials leading to the generation of the ideation and concepts that inform and lead to project development. Related Principle: ORIGINATE	LO 2 Concept/Ideation Critically appraise and evaluate appropriate research materials to generate workable concepts or strategic project themes that inform and underpin project development. Related Principle: ORIGINATE
LO 3 Development/Prototyping Demonstrate a range of tests and solutions, informed by knowledge of the principles of the creative process. Related Principle: INTEGRATE	LO 3 Development/Prototyping Analyse a range of potential pathways that result in appropriate solutions, informed by an understanding of the principles of the creative process. Related Principle: INTEGRATE	LO 3 Development/Prototyping Investigate potential pathways that result in appropriate solutions, informed by a systematic understanding of the principles of the creative process. Related Principle: INTEGRATE
LO 4 (Pre) Production Identify, select and apply an appropriate selection of processes, materials and methods that inform creative and academic practice. Related Principle: COLLABORATE	LO 4 (Pre) Production Employ relevant knowledge of production skills alongside a grasp of the creative potential of a selection of processes, materials and methods that inform creative and academic practice. Related Principle: COLLABORATE	LO 4 (Pre) Production Demonstrate systematic working knowledge, production skills, selection, application and understanding of a selection of processes, materials and methods that inform creative and academic practice. Related Principle: COLLABORATE
LO 5 Presentation /Storytelling for Influence Evidence effective communication of projects, whether in visual, oral or written form. Related Principle: ADVOCATE	LO 5 Presentation /Storytelling for Influence Select and employ effective methods of presentation and communication of projects in considering the audience/client and the purpose of the work, whether in visual, oral or written form. Related Principle: ADVOCATE	LO 5 Presentation /Storytelling for Influence Communicate projects creatively and professionally, whether in visual, oral or written form. Methods of presentation are appropriate to the audience/client and the purpose of the work. Related Principle: ADVOCATE
LO 6 Critical and creative mindsets Demonstrate enquiry into what makes good practice - both creatively and	LO 6 Critical and creative mindsets Analyse conceptions of diverse practice and use this to inform a course of action	LO 6 Critical and creative mindsets Evaluate a range of critical approaches in order to form an independent position

academically		
Related Principle: ORIGINATE LO 7 Employability	Related Principle: ORIGINATE LO 7 Employability	Related Principle: ORIGINATE LO 7 Employability
Evidence nurturing professional transferable and employability skills, including the ability to manage time and work to clear briefs and deadlines, respond to set goals, and communicate effectively.	Demonstrate professional transferable and employability skills, including the ability to manage time and work to clear briefs and deadlines, respond to set goals, and communicate effectively.	Effectively employ professional transferable and employability skills, including the ability to manage time and work to clear briefs and deadlines, respond to set goals, and communicate effectively.
Related Principle: CULTIVATE LO 8 Professional Identity	Related Principle: CULTIVATE LO 8 Professional Identity	Related Principle: CULTIVATE LO 8 Professional Identity
Evidence an emerging personal creative and professional identity	Investigate specific professional contexts to situate your own practice	Align your professional identity as a practitioner with a viable career context.
Related Principle: CULTIVATE	Related Principle: CULTIVATE	Related Principle: CULTIVATE

Learning and Teaching methods

The learning experience is an evolving journey starting in the first year at Level 4, an introductory level, progressing through the second year at Level 5, an intermediate level, and culminating in the third year at Level 6 with an advanced level of taught units and including Final Major Project.

Induction consists of introductory seminars explaining the course structure and content, technical and learning resource inductions and individual tutorials for informal initial assessment.

The University uses a spiral approach in teaching where students are introduced to new concepts in first year at level 4, more advanced knowledge is then developed on these foundations in second year at level 5 and then final year students develop further analytical skills at level 6.

Level 4 – Skills, technology and principles:

At Level 4, your objective would be to understand the fundamentals of creative computing, developing basic understanding of various theoretical and practical elements associated with modern day computing and programming for creative solutions.

You will develop practical, theoretical and technical knowledge and understanding of various elements of Creative Computing to address problems that are well defined but complex and non-routine. At this level you should be able to analyse, interpret and evaluate relevant information and ideas.

Level 5 – ideas, development and exploration.

You will consolidate your knowledge, develop new skills and experiment technically and creatively on increasingly challenging projects. Through Elective Programme you will collaborate with other

courses to broaden your experience, and with industry practitioners to better understand the uses of modern day computing techniques and practices.

At this level you should have developed an increased level of depth of knowledge and understanding of various areas of study.

Level 6 – independent professional working.

During the final year, you will consolidate your learning from Levels 4 & 5, and then focus on the analysis of emerging trends, technologies, and standards in the industry.

Investigative techniques, independent working and the application of academic and industry research form the core of Level 6 studies.

Through your Final Major Project and Dissertation and you create individual outcomes through self-initiated work and experimentation of ideas, and apply solutions that will prepare you for professional practice with confidence.

Teaching is normally undertaken by a team comprising full-time lecturers, part-time specialist tutors, industry experts and company practitioners. All tutors will have recent and relevant knowledge and experience.

Ravensbourne has adopted and developed a practice led approach to teaching and learning. This means that you are provided with opportunities to apply and practice the taught theory in real situations.

Teaching blends the following methods:

- Lectures
- Tutorials
- Seminars & Workshops
- Visits & Masterclasses
- Laboratory & Practical Sessions
- Virtual Learning Environment Study and Interaction

The practice-led, hands-on approach employed by the tutors for the core units, the support gained by additional subject specialist tutorials, and the integration of the collaborative learning stream that brings contributions from industry experts are woven into an effective and unique format in this programme.

Assessment Strategy

As you progress through your course, assessment points throughout the course enable you to practise and demonstrate the learning outcomes with confidence, and receive formative and summative feedback from tutors.

Work is usually submitted in electronic form, and graded through assessments that are defined in Project Briefs and issued at the start of a unit of study. Part of the work will be assessed through presentation of the artefact or viva voce by a panel.

Typical assessment methods used during this programme may include:

- Presentations (Individual / Group)

- Demonstration of Artefact (Individual / Group)
- Portfolio development
- Video, Audio, and captioned Media
- Software Programme
- Electronic Project
- Examination (typically online multiple choice)
- Course work

Every Taught Unit and Learning Activity has a dedicated page/section in the Virtual Learning Environment, containing all the information and documentation you require for that unit, such as Project Briefs. This includes an overview of the unit subject content and coverage, rationale of the brief, expected Learning Outcomes, assessment criteria, assessment methods, work submission deadlines, relevant reading material, tutor availability for discussion etc.

There are two types of assessment feedback, Formative and Summative:

- **Formative assessment** is provided so that you can improve on your work and achieve the project learning outcomes in an effective manner. Formative assessments are not graded but include desired performance goals. Formative assessment and feedback are made either as written or verbal feedback and takes place well before the end of the unit so you have time to integrate the feedback in your final submissions.

- **Summative assessment** is usually scheduled at the end of the unit along with a mark or grade. Summative assessment allows you to reflect upon your achievements and performance and provides guidance on how to improve on future modules. Summative assessment is generally written feedback, and will be made available to you via the Virtual Learning Environment.

BSc (Hons) Creative Computing

Order	Unit Code	Unit Title	Credits
Level 4			
1.1	CRC20102	Introduction to 3D Skills and Immersive Technologies *A	30
1.2	USE18103	Coding, Figures and Visuals	15
1.3	CRC20103	Interactive Design and Creative Coding	30
1.4	USE18106	Design, Data and Insights	30
1.5	<i>C18101</i>	<i>**Themes in Contemporary Culture</i>	15
Level 5			
2.1	ECRC20202	Creative Web Design	15
2.2	ECRC20203	Artificial Intelligence and Machine Learning	15
2.3	CLC20204	Media Streaming and Cloud	15
2.4	CRC20204	Story Telling and 360 visualisation	30
2.5	<i>CIE18200</i>	<i>* Cross Institutional Elective (Term 2)</i>	15
2.6	CRC20205	Mobile and Creative Coding	30
2.7	<i>C18201</i>	<i>**Big ideas and Philosophies</i>	15
Level 6			
3.1	CRC20302	Digital Media Production	15
3.2	CRC20303	Programming for the Industry	30
3.3	C18301	Dissertation	30
3.4	CRC20304	Final Major Project	45
			Total credits 360

*A. Students may enrol on this unit without enrolling for the whole course. successful completion of this unit will result in a completion letter confirming achievement of 30 credits at level 4. Students may enrol on this unit only to gain this certificate of competence.

* Cross departmental and Cross Institutional elective units which students will pick from different areas within the department and university.

** These are standard units across the university

Entry Requirements

Students will normally be expected to possess five GCSEs (grade C or above) or equivalent (including English and Maths) and also to hold at least one of the following or equivalent UK or international qualification:

- 2 A Levels (grades A-C) or 4 AS Levels (grades A-C)
- 2 vocational A Level (grades A-C)
- Level 3 Foundation Diploma or National Diploma
- Advanced Diploma (grades A-C)
- International Baccalaureate (28 points or above)

Where an applicant's first language is not English, proof of competence in English will be required. For undergraduate and postgraduate programmes, this will normally take the form of an approved English language test at B2 level in the Common European Framework of Reference. Any test for proficiency in English must have been achieved within 18 months preceding the date of entry. Individual programmes may have higher language requirements. Ravensbourne's international department will advise applicants on the language requirements for particular programmes.

Selection Criteria

Ravensbourne will use a number of methods to assess an applicant's suitability for their course of choice. Primarily applicants are selected on the basis of:

- An applicant's prior academic achievement/qualifications and/or previous employment/life experience;
- assessment of the applicant's ability and aptitude to succeed on the course for which s/he has applied.

Students will be selected according to the generic criteria set out below:

Personal attributes

- shows commitment, enthusiasm and interest in the subject area
- initiative and problem solving
- ability to communicate

Creative process

- can generate ideas and use external sources to develop them
- ability to research an idea and follow it through to a finished product

Study skills

- can understand and organise information clearly
- can investigate and analyse information
- shows reasoning and intellectual curiosity

Professional skills

- has shown they can initiate and deliver projects
- can work in a team and with people with different skills
- has shown confidence with IT

Career aspirations

- understands the relevance of the course to her/his career ambitions
- understands current debates within industry

Accreditation of Prior Learning

Accreditation of Prior Learning

Applications are welcomed from those who may not possess formal entry qualifications, mature students, those with work experience or with qualifications other than those listed above. Such applicants should demonstrate sufficient aptitude and potential to complete the course successfully. Applicants will be assessed at interview in accordance with Ravensbourne's Accreditation of Prior Learning Policy and Procedure.

Consideration will be given to admission with advanced standing to any candidate with verifiable evidence of prior certificated and/or experiential learning covering aspects of the course at level 4 or 5. Typical examples include:

1+2 and 2+1 Routes

Students already possessing a HNC or equivalent may be eligible for direct entry into Level 5 of the programme subject to 75% of curriculum content matching the subjects covered in Level 4 of this course.

Students already possessing a HND, Foundation Degree or equivalent may be eligible for direct entry into Level 6 of the programme subject to 75% curriculum content matching the subjects covered in Level 4 and 5 of this course.

3+1 route

Students already possessing a degree in computing or related field may apply for final year top-up (Level 6) to obtain a specialist degree in this field. This is subject to demonstration of sufficient prior knowledge or work experience to the course team.

Course Unit Mapping (Creative Computing)

Course LOs	Level 4					Level 5					Level 6				
	C R	U S	C E	U C	C 8	E R	E R	C C	C C	C C	C C	C C	C C	C C	C C
	2	1	2	1	1	C	C	2	2	2	2	2	2	3	2
	0	8	0	8	0	2	2	0	0	0	0	0	0	0	0
	1	1	1	1	1	0	0	2	2	2	1	3	3	1	3
	0	0	0	0		2	2	0	0	0		0	0		0
	2	3	3	6		0	0	4	4	5		2	3		4
						2	3								
LO1	X		X	X	X	X	X	X	X	X		X	X	X	
LO2				X	X			X	X		X	X		X	X
LO3	X	X				X		X	X	X		X	X		X
LO4	X	X	X		X	X	X	X		X					X
LO5			X	X	X			X		X	X	X	X	X	X
LO6			X			X			X	X	X		X	X	
LO7	X	X				X							X	X	
LO8												X		X	

Description of the Course

BSc (Hons) Creative Computing offers a combination of art and computing knowledge and practices. Students will be able to develop technical skills for interactive creative work such as Mobile Applications, Game Development, immersive Technologies, 360 Capture and display of video and images etc.

You will undertake a number of creative projects during this course. Most of the units are assessed through artefact and presentations of your work.

From the very beginning, students will work on programmable devices such as Raspberry Pi and Arduinos or other suitable microcontrollers, sensors, image processing tools and techniques. Students will also develop skills in programming using suitable platforms.

You will learn about a range of technologies including web and mobile application development, Immersive Technologies and latest developments in the industry by attending exhibitions, seminars and conferences.

Academic delivery plan.

	Term1	Term2	Term 3
Level 4 120 credits	Induction <i>(Inc. contribution from Theory)</i> 0 credits	<i>Themes in Contemporary Culture</i> 15 credits	
	Introduction to 3D Skills and Immersive Technologies 30 credits		Design, Data and Insights 30 Credits
	Coding, Figure and Visuals 15 credits	Interactive Design and Creative Coding 30 credits	
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Level 5 120 credits	Part 1 <i>Big Ideas and Philosophies</i> <i>(7.5 out of 15 credits)</i>		Part 2 <i>Dissertation Proposal</i> (remaining 7.5 out of 15 credits)
	Elective 1 Creative Web Design Or Artificial Intelligence and Machine Learning 15 Credits	Elective 2: <i>Cross-Institutional elective</i> 15 credits	Web Development and Creative Coding 30 credits
	Story Telling and 360 Visualisation 15 credits	Mobile and Creative Coding 30 credits	
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Level 6 120 credits	Dissertation Unit 30 credits		
	Final major Project 45 Credits (over 2 terms)		FMP presentation
		Programming for the Industry 30 Credits	Digital Media Production 15 credits