

ual:

APPROVED

MRes Creative Computing

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| Awarding Body | University of the Arts London |
| College | UAL Institute for Creative Computing |
| School | University of the Arts London |
| Programme | Institute of Creative Computing (ICC) |
| Course AOS Code | CCIMRCOMF01 |
| FHEQ Level | Level 7 Masters |
| Course Credits | 180 |
| Mode | Full Time |
| Duration of Course | 1 year |
| Valid From | September 1st 2021 |
| QAA Subject Benchmark | Art and Design |
| Collaboration | N/A |
| UAL Subject Classification | Creative computing |
| JACS Code | None |
| UCAS Code | N/A |
| PSRB | N/A |
| Work placement offered | N/A |
| Course Entry Requirements | An applicant will normally be considered for admission if they have achieved an educational level equivalent to an honours degree in either the broad fields of: |

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| | <ul style="list-style-type: none"> • computer science, • science and technology studies, • data science, • computing, • a joint computer sciences and arts/humanities degree, or a closely related subject. <p>Or, from a creative discipline with substantial computational practice such as:</p> <ul style="list-style-type: none"> • Interaction Design • Interactive Media Design • Web Design / Development • Games Design / Development • Communication Design • Digital Design • Product Design <p>Educational level may be demonstrated by: Honours degree (named above); Possession of equivalent qualifications in a design-related or creative discipline; Prior experiential learning, the outcome of which can be demonstrated to be equivalent to formal qualifications otherwise required. Your experience is assessed as a learning process and tutors will evaluate that experience for currency, validity, quality and sufficiency; Or a combination of formal qualifications and experiential learning which, taken together, can be demonstrated to be equivalent to formal qualifications otherwise required.</p> <p>Applicants without the required qualifications, but with professional experience may be eligible to gain credit for previous learning and experience through the AP(E)L system.</p> <p>Language requirements: IELTS level 7.0 or above, with at least 6.0 in reading, writing, listening and speaking (please check our main English Language requirements webpage)</p> |
| Selection Criteria | <p>Sufficient prior knowledge and experience of and/or potential in a specialist subject area to be able to successfully complete the programme of study and have an academic or professional background in a relevant subject.</p> |

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| | <p>To show a willingness to work as a team player, good language skills in reading, writing and speaking, the ability to work independently and be self-motivated.</p> <p>Critical knowledge of and enthusiasm for the subject area and capacity for diverse research-led study at the intersection of computing and practice-based research.</p> <p>We welcome non-standard applications from diverse applicants and subject fields and applications that make a strong case for how the course could be applied to the ambitions of the applicant in the pursuit of innovative approaches to research using computing, will be prioritised.</p> |
| <p>Scheduled Learning and Teaching</p> | <p>During your course you will engage with learning and teaching that includes both online and face-to-face modes. The advertised scheduled activity for the course will be delivered through a combination of live, synchronous and asynchronous on-line learning. Scheduled learning and teaching activity may include lectures, seminars, studio and workshop briefings, tutorials, external visits and project briefings.</p> |

Awards and Percentage of Scheduled Learning

Year 1

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|---|----------------|
| Percentage of Scheduled Learning | 17 |
| Awards | Credits |
| Postgraduate Certificate (Exit Only) | 60 |
| Master of Research | 180 |

Course Aims and Outcomes

The Aims and Outcomes of this Course are as follows:

| Aim/Outcome | Description |
|--------------------|--|
| Aim | To enable you to articulate and deploy a rigorous and innovative approach to the interdisciplinary field of creative computing research. |
| Aim | To equip you with advanced computational approaches to novel research questions. |
| Aim | To equip you with an advanced and applied knowledge of research methods as relevant for creative computing and technology research. |
| Aim | To ensure you have advanced awareness of research ethics and the ethics of computation in advanced research practice. |
| Aim | To prepare you for further advanced research in academic or industry contexts. |
| Outcome | Define advanced research questions within the field of creative computing |
| Outcome | Undertake advanced interdisciplinary research across computing, design and arts contexts |
| Outcome | Use advanced methodologies in research design and practice |
| Outcome | Develop and use experimental software for advanced creative computing research |
| Outcome | Apply an advanced ethical framework for research involving people and technology |
| Outcome | Present credible interdisciplinary research findings drawn from experimental data |

| Distinctive Features | |
|-----------------------------|--|
| 1 | Access to world-class creative computing researchers: students will see how innovate creative computing research is conducted and how experienced researchers develop innovative approaches to problem formation and interdisciplinary methods. |
| 2 | Access to bespoke software tools for creative computing research: students will benefit from both early stage custom computing research technology and established research-oriented code developed by CCI researchers. |
| 3 | Machine Learning and creative AI research focus: students will benefit from work within the Institute research theme of Creativity Machine Learning and AI and will be exposed to experimental computational approaches to research in this field. |
| 4 | CCI PhD and partners student research community: The course engages with creative computing researchers from across London's university sector including our formal research collaboration agreement with Goldsmiths UoL. This means students have access to cross institutional seminars and workshops over the course of their studies with a cross institutional groups of research students. |
| 5 | CCI technology partners: The CCI has relationships and undertakes collaborative doctoral awards with various innovative teams at large technology corporations including the likes of Google, Microsoft. |

Course Detail

The post-graduate masters by research **MRes Creative Computing** will give you a material understanding of computational technologies in the context of creative computing research. You will also be introduced to innovative research methods, the knowledge domain of creative computing and research design in an interdisciplinary context. The course specifically supports progression to MPhil/PhD both within the Institute and elsewhere and is a good fit for someone looking to develop a research career (in academia or industry) and who wants to know how research is done in the interdisciplinary domain of creative computing.

As an MRes student you will engage with the following core Institute researchers themes; **Creativity, Machine Learning and AI**, This platform explores how a foundational technology of the 21st century can be used in creative ways and examines how people will act with such technologies in deploying their personal and collective creativity; **Human Computer Interaction**, This platform explores how we behave with emerging technologies and what they will mean for products, services and culture; **Platforms, Big Data and Digital Citizenship**: This platform explores how the huge amount of data aggregated to the key platforms of our time can be understood, explored and contribute to a public discourse of a globalised and networked society.

As a student at the UAL Creative Computing Institute you will study in a specialist and research rich environment. The Institute provides dedicated technical resources and access to an Institute wide lecture programme and further opportunities to engage with Institute researchers and practitioners through additional events, seminars and workshops. By studying at the UAL Creative Computing Institute, you will join at network of creative researchers excited by the potential of computational technologies.

Course Units

Methods 1: Creative Computing Research Methods (20 Credits)

This class introduces interdisciplinary methods for creative computing research. Qualitative and quantitative methods are introduced including methods from the fields of computer science and participatory design.

Methods 2: Domain Knowledge and Creative Computing (20 Credits)

This seminar class introduces the key domains of knowledge at play in creative computing research. Students develop a literature review based on concepts developed in this class.

Creative Coding for Research (20 credits)

This practical class develops key coding skills to support creative computing research and contains applied project work. Students will be introduced to key tools and frameworks with which to undertake computing research.

Methods 3: Computational Research Ethics (20 Credits)

This seminar class introduces the key research methods for creative computing specifically including defined approaches to working with people and technology. Students will also be introduced to applied ethical frameworks for undertaking creative computing research and will develop a method statement and ethical evaluation for a proposed research project.

Research Design and Experimental Data in Creative Computing (20 credits)

This practical class introduces student to innovative approaches to generating research data developed by institute researchers. It will practically explore machine learning approaches, creative AI and machine learning in the context of creative computing research. The unit will also specifically explore research design with experimental data and tools.

Research Project (80 credits)

Students will undertake self-directed research project which will be submitted as a draft academic paper, a formal PhD proposal or a creative presentation of research with an accompanying thesis.

Learning and Teaching Methods

To enable students to demonstrate achievement against the unit learning outcomes, learning and teaching methods will include:

- Lectures and seminars
- Studio/lab-based practice & masterclasses
- Project work
- Technical Tuition
- Collaborative problem-solving & group work
- Independent Study

Assessment Methods

The assessment strategy for the MRes has been designed in accordance with the QAA expectations of research masters as outlined in section 6 above. It is a strategy that develops threshold research competency in creative computing. Assessment methods include:

- Project portfolio comprising
 - Technical prototypes
 - Presentations
- Essays and reports
- Exams

Reference Points

QAA guidance has been consulted and the course fully adheres to the [Revised UK Quality Code for HE](#) expectations for standards and quality. And specifically the **uk quality code, advice and guidance: research degrees here**: <https://www.qaa.ac.uk/quality-code/advice-and-guidance/research-degrees#>

Course Diagram

| | Term 1 | | | | | | | | | | Term 2 | | | | | Term 3 | | | | | | | | | | UAL Summer Period | | | | | | |
|----------|--|---|---|---|---|---|---|---|---|----|--------|----|----|----|----|-------------------------------------|---|----|----|----|----|----|----|----|----|-------------------|----|----|---|----|---------|-------|
| Week | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 - 43 | 44-45 |
| 45 Weeks | Methods 1: Creative Computing Research Methods 20 credits | | | | | | | | | | S | | | | | CCI MSc to MRes - Progression Point | Methods 3: Computational Research Ethics 20 credits | | | | | | | | | | S | | Research Project Cont. 60/80 credits | S | | |
| | Methods 2: Domain Knowledge and Creative Computing 20 credits | | | | | | | | | | S | | | | | | Research Design and Experimental Data in Creative Computing 20 credits | | | | | | | | | | S | | | | | |
| | Creative Coding for Research 20 credits | | | | | | | | | | S | | | | | | Research Project 20/80 credits | | | | | | | | | | F | | | | | |

S = Summative Assessment. Indicative summative assessment weeks are noted in the course diagram. For exact dates please refer to your timetable.

IU000137 : Methods 1: Creative Computing Research Methods

(Mandatory)

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| Unit Code | IU000137 |
| Unit Title | Methods 1: Creative Computing Research Methods |
| FHEQ Level | Level 7 |
| Effective From | September 1st 2020 |
| Duration | 1 |
| Credits | 20 |
| Programme | Institute of Creative Computing (I001) (S) |
| Unit Introduction | <p>This unit introduces interdisciplinary methods for creative computing research. Qualitative and quantitative methods are introduced including methods from the fields of computer science and participatory design.</p> <p>These methods ensure that students are able to develop coherent academic research proposals and explore how other researchers have successfully deployed them. The specific focus on methods from the fields of computer science and participatory design recognises the fact that creative computing research projects often involves the study of how people interact with computing products and services.</p> <p>This unit is key to establishing discipline specific postgraduate research skills and is informed by the expertise and research approaches of institute researchers.</p> |
| Indicative Content | <ul style="list-style-type: none">• Introduction to relevant research methods• Evaluating creative computing research• Evaluating participatory design approaches |
| Learning & Teaching Methods | <ul style="list-style-type: none">• Seminars• Workshops |

- Presentations

Learning Outcomes

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| LO1 | Demonstrate a critical awareness of creative computing research methods (Knowledge) |
| LO2 | Identify and critically discuss the limits of computational methods (Process, Realisation) |
| LO3 | Demonstrate a critical awareness of participatory approaches (Enquiry, Process) |

Unit Assessment Summary

Holistic – This unit is assessed holistically (100% of the unit). Assessment will be against the specified marking criteria.

Holistic

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| Assessment Type | Critical/ Analytical Report |
| % of total | 100 |
| Hand-in Week | Refer to Assignment Brief |
| Briefing | Refer to Assignment Brief |
| Feedback | Refer to Assignment Brief |
| Assessment Description | An academic report of at least 1500 words as directed by the unit brief. |

Scheduled Learning and Teaching

Details of the total scheduled learning and teaching activity for each unit, can be found on your student portal on SITS, the UAL student records system. Click on the “scheduled learning and teaching” tab at the top of the home screen when you have logged in using your UAL details.

Reading List

Essential Reading

Hennink, M., Hutter, I. and Bailey, A. (2020) *Qualitative Research Methods*. SAGE.

Lazar, J., Feng, J.H. and Hochheiser, H. (2017) *Research Methods in Human-Computer Interaction*. Morgan Kaufmann.

Further Reading

Hassani, H. (2017) 'Research Methods in Computer Science: The Challenges and Issues', arXiv:1703.04080 [cs] Available at: <http://arxiv.org/abs/1703.04080> (Accessed: 7 February 2020).

Rich, P.J. and Hodges, C.B. (2017). *Emerging Research, Practice, and Policy on Computational Thinking*. Springer.

Smith, R.C., Bossen, C. and Kanstrup, A.M. (2017) 'Participatory design in an era of participation', *CoDesign*, 13(2), pp. 65–69.

IU000138 : Methods 2: Domain Knowledge and Creative Computing

(Mandatory)

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| Unit Code | IU000138 |
| Unit Title | Methods 2: Domain Knowledge and Creative Computing |
| FHEQ Level | Level 7 |
| Effective From | September 1st 2020 |
| Duration | 1 |
| Credits | 20 |
| Programme | Institute of Creative Computing (I001) (S) |
| Unit Introduction | <p>Creative computing research often relies on knowledge drawn from across the arts and humanities, social sciences, engineering and the physical sciences. Given this potential complexity it is important for researchers in this field to engage with key ideas from these domains as they pertain to creative computing research.</p> <p>This seminar class introduces important work from these key domains of knowledge and students will develop a literature review based on concepts explored in this class. The interplay of the social, technical, cognitive and physiological in the context of computing will be explicitly explored in order to fully contextualise the subject.</p> <p>Using the work in these seminars student will define an area of interest and produce a literature review linking work in different domains.</p> |
| Indicative Content | <ul style="list-style-type: none">• Introduction to interdisciplinary thinking• Social, technical, cognitive perspective• Conducting a literature review |
| Learning & Teaching Methods | <ul style="list-style-type: none">• Seminars• Presentations |

Learning Outcomes

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|-----|---|
| LO1 | Demonstrate a critical awareness of interdisciplinary research (Knowledge) |
| LO2 | Discuss advanced computational perspectives for interdisciplinary research (Enquiry, Realisation) |
| LO3 | Conduct a literature review in a postgraduate research context (Communication) |

Unit Assessment Summary

Holistic – This unit is assessed holistically (100% of the unit). Assessment will be against the specified marking criteria.

Holistic

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|-------------------------------|---------------------------------------|
| Assessment Type | Literature Review |
| % of total | 100 |
| Hand-in Week | Refer to Assignment Brief |
| Briefing | Refer to Assignment Brief |
| Feedback | Refer to Assignment Brief |
| Assessment Description | Literature Review at least 2500 words |

Scheduled Learning and Teaching

Details of the total scheduled learning and teaching activity for each unit, can be found on your student portal on SITS, the UAL student records system. Click on the “scheduled learning and teaching” tab at the top of the home screen when you have logged in using your UAL details.

Reading List

Essential Reading

Hart, C. (2018) Doing a Literature Review: Releasing the Research Imagination. SAGE.

Koskinen, I., Zimmerman, J., Binder, T., Redstrom, J. and Wensveen, S. (2011) Design Research Through Practice: From the Lab, Field, and Showroom. Morgan Kaufmann.

Lazar, J., Feng, J.H. and Hochheiser, H. (2017) Research Methods in Human-Computer Interaction. Morgan Kaufmann.

Further Reading

Chen, S.-H. (2018) Big Data in Computational Social Science and Humanities. Springer.

Cioffi-Revilla, C. (2017) Introduction to Computational Social Science: Principles and Applications. Springer.

Farrell, S. and Lewandowsky, S. (2018) Computational Modeling of Cognition and Behavior. Cambridge University Press.

Kurosu, M. (2013) Human-Computer Interaction: Interaction Modalities and Techniques: 15th International Conference, HCI International 2013, Las Vegas, NV, USA, July 21-26, 2013, Proceedings. Springer.

Robson, C. (2011) Real World Research 3e. John Wiley & Sons.

IU000139 : Creative Coding for Research (Mandatory)

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|---------------------------|--|
| Unit Code | IU000139 |
| Unit Title | Creative Coding for Research |
| FHEQ Level | Level 7 |
| Effective From | September 1st 2020 |
| Duration | 1 |
| Credits | 20 |
| Programme | Institute of Creative Computing (I001) (S) |
| Unit Introduction | <p>This practical class develops key coding skills to support creative computing research and contains applied project work. Students will be introduced to key tools and frameworks with which to undertake computing research. Students will also be introduced to the ethical implications of computational research tools.</p> <p>Using languages such as python, C++, JavaScript and associated frameworks, you will re-examine programming fundamentals such as object-oriented programming, fundamental logical structures and data structures, heaps, stacks, L-systems and recursion through implementing and experimenting with visual algorithms. The class will also introduce version control, programming for basic data visualisation and exploration, the formatting of data for export to research tools (e.g., using CSV, JSON), and tools for the creation of basic graphical user interfaces (using language-specific libraries and programming paradigms).</p> <p>This unit has the explicit aim of ensuring you develop an advanced foundation to tackle the rest of the course and orient your coding skills towards creative computing research.</p> |
| Indicative Content | <ul style="list-style-type: none">• Introduction to coding for research• Introduction to tool and frameworks |

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| | <ul style="list-style-type: none"> • Skills acquisition • Practical coding project • Introduction to computational ethics |
| Learning & Teaching Methods | <ul style="list-style-type: none"> • Workshops • Presentations |

| Learning Outcomes | |
|--------------------------|---|
| LO1 | Demonstrate an advanced awareness of coding for research (Process) |
| LO2 | Identify relevant tools and frameworks for specific research enquiry at and advanced level and their ethical context (Enquiry, Process) |
| LO3 | Structure computational research data (Process) |

| Unit Assessment Summary |
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| <p>Element – The assessment for this unit is weighted. In element-based assessment, you must achieve at least an E grade in each element, and an aggregate grade of at least D- in the overall unit. Failure (F, or F-), or non-submission in any element defaults to Fail for the unit. Assessment will be against the specified marking criteria.</p> |

| Elemental | |
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| Assessment Type | Timed Examination |
| % of total | 50 |
| Hand-in Week | Refer to Assignment Brief |
| Briefing | Refer to Assignment Brief |
| Feedback | Refer to Assignment Brief |
| Assessment Description | An exam as directed by the unit brief. |
| Elemental | |
| Assessment Type | Presentation |
| % of total | 50 |
| Hand-in Week | Refer to Assignment Brief |

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| Briefing | Refer to Assignment Brief |
| Feedback | Refer to Assignment Brief |
| Assessment Description | A project presentation as directed by the unit brief. |

Scheduled Learning and Teaching

Details of the total scheduled learning and teaching activity for each unit, can be found on your student portal on SITS, the UAL student records system. Click on the “scheduled learning and teaching” tab at the top of the home screen when you have logged in using your UAL details.

Reading List

Essential Reading

The Missing Semester of Your CS Education

<https://missing.csail.mit.edu/>

Using Python for Research

<https://online-learning.harvard.edu/course/using-python-research>

Introduction to C++ and openFrameworks

<http://bit.ly/2uv5n3K>

Plattner, H., Meinel, C. and Leifer, L. (2017) *Design Thinking Research: Making Distinctions: Collaboration versus Cooperation*. Springer.

Further Reading

Stroustrup, B. (2014). Programming: Principles and Practice Using C++. Addison Wesley.

Gamma, E., & Helm, R., & Johnson R., & Vlissides, J. (2015) Design patterns : elements of reusable object-oriented software. Pearson Education India.

<https://stackoverflow.com/>

<https://github.com/jesyspa/linear-cpp>

<http://bit.ly/39wnhC2>

<https://msdn.microsoft.com/en-us/library/3bstk3k5.aspx>

<http://www.cplusplus.com>

https://www.tutorialspoint.com/cplusplus/cpp_references.htm

<https://en.cppreference.com>

<https://openframeworks.cc/>

<https://openframeworks.cc/ofBook/chapters/foreword.html>

<http://bit.ly/3buqq6Z>

<http://bit.ly/2uv5n3K>

IU000140 : Methods 3: Computational Research Ethics (Mandatory)

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| Unit Code | IU000140 |
| Unit Title | Methods 3: Computational Research Ethics |
| FHEQ Level | Level 7 |
| Effective From | September 1st 2020 |
| Duration | 1 |
| Credits | 20 |
| Programme | Institute of Creative Computing (I001) (S) |
| Unit Introduction | <p>This seminar class introduces key research methods for creative computing specifically including defined approaches to working with people and technology.</p> <p>Students will be introduced to applied ethical frameworks for undertaking creative computing research and will develop a method statement and ethical evaluation for a proposed research project.</p> <p>This unit also explores the ethical issues raised by computationally intelligent systems by both current and future technologies. It also explores the personal ethics frameworks that software developers need to develop to make informed choices about the scope and use of their work.</p> |
| Indicative Content | <ul style="list-style-type: none"> • Introduction to research ethics • Research ethics practice and process at UAL • Creative Computing research methods • Ethics for research participants • Ethics for computationally intelligent systems |
| Learning & Teaching Methods | Seminars |

Learning Outcomes

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| LO1 | Demonstrate an awareness of research ethics (Knowledge) |
| LO2 | Prepare a method statement (Knowledge) |
| LO3 | Discuss approaches to creative computing research (Communication) |

Unit Assessment Summary

Holistic – This unit is assessed holistically (100% of the unit). Assessment will be against the specified marking criteria.

Holistic

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| Assessment Type | Artefact |
| % of total | 100 |
| Hand-in Week | Refer to Assignment Brief |
| Briefing | Refer to Assignment Brief |
| Feedback | Refer to Assignment Brief |
| Assessment Description | Academic report, Ethical evaluation of at least 1500 words |

Scheduled Learning and Teaching

Details of the total scheduled learning and teaching activity for each unit, can be found on your student portal on SITS, the UAL student records system. Click on the “scheduled learning and teaching” tab at the top of the home screen when you have logged in using your UAL details.

Reading List

Essential Reading

Jones, J. and Hirsu, L. (2019) Rhetorical Machines: Writing, Code, and Computational Ethics. University of Alabama Press.

Robson, C. (2011) Real World Research 3e. John Wiley & Sons.

<https://www.arts.ac.uk/research/research-standards-and-ethics>

Further Reading

Bateman, J., Wildfeuer, J. and Hiippala, T.
(2017) Multimodality: Foundations, Research and Analysis – A Problem-Oriented Introduction. Walter de Gruyter GmbH & Co KG.

Himma, K.E. and Tavani, H.T. (2008) The Handbook of Information and Computer Ethics. John Wiley & Sons.

Plattner, H., Meinel, C. and Leifer, L. (2017) Design Thinking Research: Making Distinctions: Collaboration versus Cooperation. Springer.

Silva, E.A., Healey, P., Harris, N. and Broeck, P.V. den
(2014) The Routledge Handbook of Planning Research Methods. Routledge.

Taylor, G.R. (2005) Integrating Quantitative and Qualitative Methods in Research. University Press of America.

Wiles, R. (2012) What are Qualitative Research Ethics? A&C Blac

IU000141 : Research Design and Experimental Data in Creative Computing

(Mandatory)

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| Unit Code | IU000141 |
| Unit Title | Research Design and Experimental Data in Creative Computing |
| FHEQ Level | Level 7 |
| Effective From | September 1st 2020 |
| Duration | 1 |
| Credits | 20 |
| Programme | Institute of Creative Computing (I001) (S) |
| Unit Introduction | <p>This practical class introduces students to innovative approaches to designing, executing, and analysing research experiments in creative computing. Students will explore how appropriate qualitative and quantitative research methods covered in “Methods 1: Creative Computing Research Methods” can be employed alongside technology for data capture (e.g., sensors, computer vision, interaction logging, crowdsourcing) and analysis (e.g., machine learning algorithms, data visualisation frameworks, qualitative coding tools) to enable exploration of meaningful research questions in creative computing.</p> <p>Students will gain familiarity with relevant research design approaches in computer science and human-computer interaction, while also exploring techniques designed to address the particular challenges of creative computing research (e.g., entailing considerations of subjective and embodied experience, human perception of complex multimodal phenomena, evaluating a tool’s support of users’ creative practices as opposed to employing conventional usability metrics focused on accuracy and efficiency, evaluation of creative technology designed to support learning or accessibility, etc.).</p> |

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| | <p>Students will learn about existing technologies—both user-facing software and programming APIs—for supporting such research, and they will gain hands-on experience building their own software and/or hardware for capturing and analysing research data. Class content will be informed by research tools and methods developed and used by institute researchers.</p> <p>Students will develop a research design proposal for their self-directed research project and produce an experimental project example that demonstrates bespoke technical approaches to creative computing research.</p> |
| Indicative Content | <ul style="list-style-type: none"> • Established and novel computational research approaches for creative computing • Design, implementation, and use of research infrastructure • Managing and analysing research data • Experimental computing project • Research proposal production |
| Learning & Teaching Methods | <ul style="list-style-type: none"> • Workshops • Seminars |

| Learning Outcomes | |
|--------------------------|--|
| LO1 | Demonstrate an advanced awareness of established and novel computational research design (Knowledge) |
| LO2 | Use advanced tools for creative computing data capture and analysis (Realisation) |
| LO3 | Produce an advanced research design proposal (Communication) |

| Unit Assessment Summary |
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| <p>Element – The assessment for this unit is weighted. In element-based assessment, you must achieve at least an E grade in each element, and an aggregate grade of at least D- in the overall unit. Failure (F, or F-), or non-submission in any element defaults to Fail for the unit. Assessment will be against the specified marking criteria.</p> |

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| Elemental |
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| Assessment Type | Proposal |
| % of total | 50 |
| Hand-in Week | Refer to Assignment Brief |
| Briefing | Refer to Assignment Brief |
| Feedback | Refer to Assignment Brief |
| Assessment Description | A research design proposal as directed by the unit brief. |
| Elemental | |
| Assessment Type | Other |
| % of total | 50 |
| Hand-in Week | Refer to Assignment Brief |
| Briefing | Refer to Assignment Brief |
| Feedback | Refer to Assignment Brief |
| Assessment Description | An experimental project as directed by the unit brief. |

Scheduled Learning and Teaching

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|---------------------|---|
| Reading List | Essential Reading |
| | <p>Mccarty, W. and Deegan, M. (2016) <i>Collaborative Research in the Digital Humanities</i>. Routledge.</p> <p>Lazar, J., Feng, J.H. and Hochheiser, H. (2017) <i>Research Methods in Human-Computer Interaction</i>. Morgan Kaufmann.</p> |

Leavy, P. (2017) *Research Design: Quantitative, Qualitative, Mixed Methods, Arts-Based, and Community-Based Participatory Research Approaches*. Guilford Publications.

Further Reading

Bazeley, P. and K. Jackson, eds. (2013) *Qualitative Data Analysis with NVivo*. SAGE publications limited.

Cherry, E., and Latulipe, C. (2014) "Quantifying the creativity support of digital tools through the creativity support index." *ACM Transactions on Computer-Human Interaction (TOCHI)* 21(4): 1–25.

Dale, K. (2016) *Data Visualization with Python and JavaScript*. O'Reily.

Gardiner, E. and Musto, R.G. (2015) *The Digital Humanities: A Primer for Students and Scholars*. Cambridge University Press.

Kara, H. (2015) *Creative Research Methods in the Social Sciences: A Practical Guide*. Policy Press.

Klemmer, S.R., Hartmann, B., Takayama, L. (2006) "How bodies matter: Five themes for interaction design." *Proceedings of the 6th Conference on Designing Interactive Systems*.

Pallant, J. (2020) *SPSS Survival Manual: A Step by Step Guide to Data Analysis Using IBM SPSS*. Open University Press.

Plattner, H., Meinel, C. and Leifer, L. (2017) *Design Thinking Research: Making Distinctions: Collaboration versus Cooperation*. Springer.

Silva, E.A., Healey, P., Harris, N. and Broeck, P.V. den (2014) *The Routledge Handbook of Planning Research Methods*. Routledge.

Soegaard, M. and R.F. Dam. (2013) *The Encyclopedia of Human-Computer Interaction*. 2nd Edition.

IU000142 : Research Project

(Mandatory)

| | |
|---------------------------|---|
| Unit Code | IU000142 |
| Unit Title | Research Project |
| FHEQ Level | Level 7 |
| Effective From | September 1st 2020 |
| Duration | 2 |
| Credits | 80 |
| Programme | Institute of Creative Computing (ICC) |
| Unit Introduction | <p>Students will undertake self-directed research project which will be submitted as a draft academic paper, a formal PhD proposal or a creative presentation of research with an accompanying thesis.</p> <p>This MRes final thesis project allows students to engage in the exploration of a self-directed, research project as guided through academic supervision and expertise. Students will work towards the creation of a substantial piece of academic writing that details their specific practical and/or creative engagement relevant to creative computing research. Projects might include the development and presentation of fully functioning creative software, such as websites, interactive systems, mixed reality experiences, algorithms for carrying out audio and visual signal processing, and any relevant area of creative computing research work.</p> <p>Students will submit a draft academic paper and a creative presentation of research, alongside any software and/or creative outcomes developed as part of their research. A mixture of practical, applied and creative approaches to exploring research questions will be formally welcomed and encouraged.</p> |
| Indicative Content | |

| | |
|---|--|
| | <p>Students carry out a self-directed research project to demonstrate the ability to apply knowledge and skills attained through their engagement with the programme. Students must identify, critically define, and appropriately interrogate known real-world research questions and problems in creative computing contexts.</p> <p>Students will undertake a recognised path to delivering research as follows:</p> <ul style="list-style-type: none"> • Identify current and relevant research questions and/or problems • Appropriately contextualise research using evidence from existing academic research and industry outcomes • Select and define appropriate qualitative and quantitative methods for interrogating their questions • Conduct an appropriate ethical review of their research plan in line with relevant ethics policies and requirements • Carry out experimental research, including through practical development of software and/or creative outputs • Present results appropriately, including through the use of software (including bespoke software), survey analysis, raw data, graphs, visualisations, tables and charts where relevant and informative. • Critically evaluate their findings through appropriately detailed interrogation and analysis based on experimental and/or historical evidence. • Present a report with appropriate formatting and complete referencing in line with that required for academic publication (for example by the ACM). • Present their work to an audience of peers |
| <p>Learning & Teaching Methods</p> | <ul style="list-style-type: none"> • Tutorials • Seminars |

| | |
|--|-----------------|
| | • Presentations |
|--|-----------------|

| Learning Outcomes | |
|-------------------|--|
| LO1 | Conduct self-directed research in creative computing using advanced computational techniques and processes (Realisation) |
| LO2 | Author credible research text for research audiences at the level of postgraduate research and beyond (Communication) |
| LO3 | Demonstrate a robust approach to research methods, design and ethics in creative computing. (Process) |

| Unit Assessment Summary |
|--|
| Element – The assessment for this unit is weighted. In element-based assessment, you must achieve at least an E grade in each element, and an aggregate grade of at least D- in the overall unit. Failure (F, or F-), or non-submission in any element defaults to Fail for the unit. Assessment will be against the specified marking criteria. |

| Elemental | |
|-------------------------------|---|
| Assessment Type | Thesis |
| % of total | 60 |
| Hand-in Week | Refer to Assignment Brief |
| Briefing | Refer to Assignment Brief |
| Feedback | Refer to Assignment Brief |
| Assessment Description | A Thesis of at least 5000 words as directed by the unit brief. |
| Elemental | |
| Assessment Type | Other |
| % of total | 20 |
| Hand-in Week | Refer to Assignment Brief |
| Briefing | Refer to Assignment Brief |
| Feedback | Refer to Assignment Brief |

| | |
|-------------------------------|---|
| Assessment Description | PhD proposal and/or draft academic paper of at least 2000 words as directed by the unit brief. |
| Elemental | |
| Assessment Type | Presentation |
| % of total | 20 |
| Hand-in Week | Refer to Assignment Brief |
| Briefing | Refer to Assignment Brief |
| Feedback | Refer to Assignment Brief |
| Assessment Description | A Project Presentation as directed by the unit brief. |

Scheduled Learning and Teaching

Details of the total scheduled learning and teaching activity for each unit, can be found on your student portal on SITS, the UAL student records system.

Click on the “scheduled learning and teaching” tab at the top of the home screen when you have logged in using your UAL details.

| | |
|---------------------|--|
| Reading List | <p>Essential Reading</p> <p>Bødker, S., Hornbaek, K., Oulasvirta, A., and Reeves, S. (2016) “Nine questions for HCI researchers in the making.” <i>Interactions</i> 23(4): 58-61.</p> <p>Becker, L. (2014) <i>Presenting Your Research: Conferences, Symposiums, Poster Presentations and Beyond</i>. SAGE.</p> <p>Collins, H. (2010) <i>Creative Research: The Theory and Practice of Research for the Creative Industries</i>. AVA Publishing.</p> <p>Kirchherr, J. (2018) <i>The Lean PhD</i>. Macmillan International</p> |
|---------------------|--|

Higher Education.

Ko, A.J. and Fincher, S. (2019) "A study design design process." In S.A. Fincher & A.V. Robins (eds.), *The Cambridge Handbook of Computing Education Research*. Cambridge University Press.

Murray, R. (2013) *Writing for Academic Journals*. McGraw-Hill Education (UK).

Further Reading

Bateman, J., Wildfeuer, J. and Hiippala, T. (2017) *Multimodality: Foundations, Research and Analysis – A Problem-Oriented Introduction*. Walter de Gruyter GmbH & Co KG.

Bazeley, P. and K. Jackson, eds. (2013) *Qualitative Data Analysis with NVivo*. SAGE publications limited.

Gardiner, E. and Musto, R.G. (2015) *The Digital Humanities: A Primer for Students and Scholars*. Cambridge University Press.

Greenberg, S., and B. Buxton. (2008) "Usability evaluation considered harmful (some of the time)." *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '08)*. 111–120.

Himma, K.E. and Tavani, H.T. (2008) *The Handbook of Information and Computer Ethics*. John Wiley & Sons.

Jones, J. and Hirsu, L. (2019) *Rhetorical Machines: Writing, Code,*

and Computational Ethics. University of Alabama Press.

Kara, H. (2015) *Creative Research Methods in the Social Sciences: A Practical Guide*. Policy Press.

Pallant, J. (2020) *SPSS Survival Manual: A Step by Step Guide to Data Analysis Using IBM SPSS*. Open University Press.

Plattner, H., Meinel, C. and Leifer, L. (2017) *Design Thinking Research: Making Distinctions: Collaboration versus Cooperation*. Springer.

Robson, C. (2011) *Real World Research 3e*. John Wiley & Sons.

Silva, E.A., Healey, P., Harris, N. and Broeck, P.V. den (2014) *The Routledge Handbook of Planning Research Methods*. Routledge.

Taylor, G.R. (2005) *Integrating Quantitative and Qualitative Methods in Research*. University Press of America.

Wiles, R. (2012) *What are Qualitative Research Ethics?* A&C Black

Wobbrock, J.O. (2012) Seven research contributions in HCI. <https://faculty.washington.edu/wobbrock/pubs/Wobbrock-2012.pdf>

The University will use all reasonable endeavours to provide the Course and the services described in this Output. There may be occasions whereby the University needs to add, remove or alter content in relation to your Course as may be appropriate for example the latest requirements of a commissioning or accrediting body, or in response to student feedback, or to comply with applicable law or due to circumstances beyond its control. The University aim to inform you of any changes as soon as is reasonably practicable