



# School of Computing, Engineering and Intelligent Systems

- Magee Campus

**PhD Researcher Subject Handbook  
(2019/20)**

[ulster.ac.uk](http://ulster.ac.uk)



# PhD Researcher Handbook

Intelligent Systems Research Centre

School of Computing, Engineering and Intelligent Systems



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## Introduction

Welcome to the School of Computing, Engineering, and Intelligent Systems. At the beginning of your PhD, you the PhD researcher, embark upon a very special three-year journey of discovery which will see you transform from a novice into a professional in your field of expertise.

This handbook serves as a guide to assist you along the way and is designed to answer some of the questions commonly asked by new PhD researchers. Although the PhD journey is sometimes characterised as a lonely one, it need not be as you will have ample support and guidance from your Postgraduate Tutor, Research Director, academic support staff, fellow researchers, and from your supervisors who are experts in the field relative to the topic of your research, along with other academic staff at the Intelligent Systems Research Centre.

## Structure

The **School of Computing, Engineering, and Intelligent Systems** sits within the Faculty of Computing, Engineering and the Built Environment. The **Faculty of Computing, Engineering and the Built Environment** is comprised of four schools: the School of Computing, the School of Engineering, the School of Architecture and the Built Environment, and the **School of Computing, Engineering, and Intelligent Systems**.

## School of Computing, Engineering and Intelligent Systems

Our school, the **School of Computing, Engineering, and Intelligent Systems**, is based at **Magee** and resides at the **Intelligent Systems Research Centre (ISRC)**. The **ISRC** is a research centre of excellence and draws on expertise from computing and engineering professions and interdisciplinary research teams with a focus on intelligent systems across a range of application areas to create an exciting environment for undergraduate and postgraduate students to excel in STEM subjects, Artificial Intelligence and Future and Emerging Technologies R&D.



### Northern Ireland Functional Brain Mapping Facility (NIFBM)

The ISRC houses Ireland's only Magnetoencephalography (MEG) facility, one of 10 such facilities in the UK, and one of only 170 active MEG labs worldwide. This facility is a joint investment of £5.3M from Invest Northern Ireland (INI) and Ulster University. NIFBM is equipped with the latest whole head 306 channel Elekta Neuromag MEG TRIUX system. MEG is a modern non-invasive neurophysiological technique for measuring magnetic fields generated by neuronal activities inside the brain. MEG is acquired by an array of superconducting quantum interference devices (SQUIDs) placed close to the scalp which are capable of measuring magnetic fields on the femtotesla (fT) scale. Hence the MEG is located in a magnetic shielded room (MSR) to minimise noise from the surrounding environment.

### Brain-Computer Interface (BCI) Lab

The **BCI** lab is a dedicated facility for BCI research and includes an EMF shielded and acoustic noise insulated EEG room with a 64 channel EEG system, along with multiple mobile EEG recording devices.

### Cognitive Robotics Lab

The ISRC has a large robotics laboratory that is equipped with a wide range of advanced robotics platforms, such as the PR2 robot, Shadow Dexterous Hand, 2 SUMMIT XL robots, 4 SCITOS robots, Schunk manipulator arms, and 10 Pioneer P3-DX mobile robots. The laboratory also facilitates various vision systems, permitting the capture of 2D and 3D visual data and a Vicon tracking system for sub-millimetre object tracking.

### Spatial Computing and Neurotechnology Innovation Hub (SCAN i-hub)

The **SCAN i-hub** will house multiple technologies for electrophysiological monitoring and technologies that enable spatial computing including text, voice, gesture, and augmented reality/virtual reality (AR/VR). Simulation technologies will enable exploration of physiological processes in ambulatory and virtual scenarios including walking, driving, and flying.

### High Performance Computing (HPC)

The ISRC provides staff and PhD researchers with HPC clusters for research.

### Cognitive Analytics Research Laboratory (CARL)

The **ISRC** is the centre of operations for the **Cognitive Analytics Research Laboratory (CARL)**, an Ulster University wide initiative focused on exploiting the centre's 20-year track record of research excellence into neuro-inspired cognitive analytics, machine learning and computational intelligence, to establish Northern Ireland as a world leading location for data science and analytics, to aid local and global industry exploit data which is now abundant, ubiquitous and increasingly more valuable, across diverse domains such as health, financial technology, media, civic and government, energy, and advanced manufacturing.

### Centre for Engineering and Renewable Energy

The **Centre for Engineering and Renewable Energy (CERE)** within the School provides complimentary engineering expertise in advanced manufacturing, materials sciences, and mechanical, electrical and electronic engineering.

A more detailed University structure can be found here:

<https://www.ulster.ac.uk/departments>

**Research Director:** [Prof Damien Coyle](#)

**Role:** Director of the ISRC and Professor of Neurotechnology in the School of Computing, Engineering and Intelligent Systems.

**Phone:** +44 28 7167 5170

**Email:** [dh.coyle@ulster.ac.uk](mailto:dh.coyle@ulster.ac.uk)

**Room:** MS112



**Administrative Support:** [Louise Gallagher](#)

**Role:** Louise Gallagher is the Academic Excellence Executive Assistant (Research) for the School of Computing, Engineering and Intelligent Systems at Ulster University.

**Phone:** +44 28 7167 5148

**Email:** [l.gallagher@ulster.ac.uk](mailto:l.gallagher@ulster.ac.uk)

**Room:** MS013



**Postgraduate Tutor:** [Dr Karl McCreadie](#)

**Role:** To act as a conduit between postgraduate researchers and the Research Director or School Executive on matters affecting postgraduate researchers at a subject/local level.

**Phone:** +44 28 7167 5192

**Email:** [k.mccreadie@ulster.ac.uk](mailto:k.mccreadie@ulster.ac.uk)

**Room:** MS235



## Technical Services Team

[Paddy McDonough](#): Technical Planning and Development Manager

[Neil McDonnell](#): Technical Services Engineer

[Caitriona Carr](#): Technical Services Engineer

[Chris O'Connell](#): Technical Services Engineer

[Christopher Hasson](#): Technician



## Your Space

We provide everything you need to ensure your time here is a happy and productive one. Following is list of facilities available to you during your time studying with us:

- **Desk** – where you will be expected to spend most of your time unless otherwise agreed with your supervisor. Although the ISRC office layouts were recently restructured to group PhD researchers with a common interest, there is inevitably some overlap and so you will have an opportunity to mix with your fellow researchers due to our open office layout.
- **Computer** – which will have a reasonably good spec. You may have a conversation with your supervisor about any specific requirements though please be aware that the hardware is purchased from your Research Training Grant and as such may have an impact on your potential travel options when it comes to conferences. However, you will also have access to, and be encouraged to use our High-Performance Computing Cluster (HPCC) for any compute intensive tasks as this is more likely to be upgraded over the course of your studies. The Technical Services Team can help set you up with this.
- **Printing Facilities** – black and white, colour, and A0 poster printing, along with photocopying/scanning facilities are all available in-house at the ISRC. This differs from facilities available elsewhere on campus which are managed separately by [Information Services \(ISD\)](#) and for which you will need to pay. You will inevitably read a lot literature over the coming years and this tends to mount up on researchers desks very quickly though becomes difficult to search and store. Our school is moving towards a paperless workplace and with a firm commitment to lowering our environmental impact, please only print if absolutely necessary.

- **ISRC Common Room** – for tea/coffee making facilities with access to a fridge and microwave. There is also a smaller room on the middle floor for the same. Please make use of the common room to engage with your fellow PhD researchers, academics, and other staff. Many fruitful conversations have begun here over a cuppa – just remember to bring your own supplies and to clean up after yourself!
- **The Doc** – Room MC026, a dedicated social space for the use of PhD researchers to facilitate interdisciplinary interactions and to help you engage with other researchers. These are available on every campus and you are encouraged to make use of them.

## Hours

Although your PhD studies are not the typical 9 to 5 job, you should aim to treat your studies like a job and expect to work at least 40 hours per week on research. For most, it makes sense to complete these during typical office hours. However, there may be some level of flexibility which will depend on individual circumstances and which must be discussed with your supervisor prior to adjusting your work schedule.



## Assessments

Your PhD journey will include several milestones along the way which are spaced to help encourage and motivate you whilst allowing your supervisors to gauge your progress. Although these milestones can seem daunting, just remember that many researchers have been through the process before and that your supervisors are there to guide you.

Although there are similarities between Schools within the University with regards the PhD timeline and procedures (refer to the Doctoral College website), there are also some differences. Following is both a short and long version of the procedures for each assessment specific to our School.

### Initial Assessment

#### The Short Version

**Who:** You, your supervisor, your internal examiner, and a chair.

**Why:** To ensure you're making good progress.

**What:** 4-page report and a 10-minute presentation with 15-20 minutes of questions from your internal examiner.

**Where:** Usually in the boardroom though could be elsewhere on campus.

**When:** 3-4 months after your start date if you're full time or 6-8 months if you're part time.

## Initial Assessment

### The Long Version

#### **Purpose**

After approximately 3-4 months (100 days) of full-time postgraduate study, or after 10 months in the case of part-time mode of attendance, it is expected that PhD Researchers will have developed a reasonable understanding of the area of research in which they are working and will have some initial ideas on the likely contribution to knowledge that it will make to the subject(s) concerned. The Initial Assessment seeks to ensure that this level of progress has indeed been achieved.

The dates on which the Initial Assessment are to be held will be notified to Postgraduate Researchers by the relevant School Office.

#### **Content**

The assessment process comprises both a written and an oral element and addressing these requirements should be organised in close co-operation with the project supervisors.

The PhD researcher is expected to give an oral presentation, using appropriate materials, e.g. PowerPoint presentation to an audience of PhD researchers, and/or academic staff, including the researcher's supervisor(s), and/or a formal Assessment Panel.

The presentation will normally last 10-15 minutes and will then be followed by 10 minutes of questions and answers. It should provide information on:

- Project background
- Overall aim of the research
- Objectives to be achieved within the first 10 months (full-time) or 20 months (part-time) and the activities that will be undertaken to achieve these objectives.
- Type of training and equipment required to advance the project.
- Gantt chart indicating plans over the next 9 months.

The associated written element should be presented as a concise Research Plan, which should not exceed four A4 pages in length, excluding appendices and a Gantt chart (as presented in the oral element). Please note that the internal reviewers are not required to read beyond the four-page limit.

The researcher will also be responsible for initiating this process using PhD Manager. The researcher should submit the written report on their progress (Research Plan) to the Academic Excellence Executive Assistant in the relevant School Office at **least two weeks** prior to the date of the assessment presentation. As indicated previously, the form and the written report should be discussed with the supervisors in advance of submission.

The School Office will be responsible for making the necessary arrangements for the assessment presentation and PhD Manager will circulate the written Research Plan to the Assessment Panel.

Supervisors are expected to attend their PhD researcher's presentation session.

### **Procedure**

The Assessment Panel will normally consist of:

- A Research Director or their nominee
- Nominated Academic Staff Reviewer(s)

In carrying out the assessment, the reviewers will seek to answer these core questions:

- Is the project clearly defined?
- Are the objectives realistic and achievable in the time period available?
- Will the project provide adequate research training for the researcher to at least MPhil level?
- Is the programme of work likely to provide a sufficient foundation for PhD study?
- Does the researcher show evidence of at least a basic understanding of the research topic, the nature of the approach being taken to investigate it and the relationship of the work to other research in the field?
- Are the supervisory arrangements, including meeting schedules, satisfactory?
- Is the researcher content with the research environment?

The Assessment Panel will be responsible for completing the necessary online paperwork detailing the outcome of the viva, i.e. a report on their assessment of the Research Plan, including relevant observations and/or suggestions for improvement, using PhD Manager. The Assessment Panel are empowered to recommend changes to the programme of work and the subsequent re-assessment of progress after an agreed period.

On receipt of the completed forms and Research Plan assessment report from PhD Manager, the panel will then confirm the outcome of the assessment to the researcher and supervisors.

Link to Research Studies Guide –

<https://www.ulster.ac.uk/doctoralcollege/current-phd-researchers/handbooks-and-policies/research-studies-handbook>

## Confirmation Assessment

### The Short Version

**Who:** You, your supervisor, your internal examiner, and a chair.

**Why:** To determine if there is enough work in your project to continue with your PhD.

**What:** 30-page report and 15-minute presentation with 20-25 minutes of questions from your internal examiner.

**Where:** Usually in the boardroom though could be elsewhere on campus.

**When:** Around 10 months after your start date if you're full time or around 20 months if you're part time.

## Confirmation Assessment

### The Long Version

#### **Purpose**

Within the first year of study, at approximately month 8 for full-time PhD researchers and month 20 for part-time PhD researchers (assuming there are no exceptional circumstances), PhD researchers shall apply to Senate for confirmation of their registration status. As a result of this assessment the PhD researcher will either have their PhD registration status confirmed or will be invited to transfer registration and continue studying for the degree of MPhil.

#### **Content**

The assessment comprises a written and oral element and should be organised in close cooperation with the project supervisors.

The written element comprises two components:

1. A Literature Review, including project plan, in the form of a Gantt chart, and thesis outline must be produced in font Arial 12 with 1½ spacing and a margin of 2. It should not exceed 30 A4 pages including any relevant additional information contained in appendices. Please note that the internal reviewer is not required to read beyond the 30 pages limit.

The Literature Review should:

- Identify the problem area in which the PhD researcher's research is being undertaken
- Identify the problem being addressed
- Summarise relevant work in that area
- Conclude with a summary evaluation of previous work (possibly in tabular form) showing its strengths and weaknesses. This should reveal the knowledge gap(s) that the PhD researcher's research is attempting to fill.

2. A Journal, Conference or Review Paper in scientific notation, in the style of a journal relevant to the discipline, as identified by the supervisors.

An electronic version of the written material should be emailed to Louise Gallagher, at least two weeks prior to the assessment.

The PhD researcher is expected to give an oral presentation to the Assessment Panel, using appropriate materials, e.g. PowerPoint, summarising the information contained in the written components.

The following points are suggested as guidelines (not requirements) for the presentation content:

- Title slide
- Aims of the research and planned contribution to knowledge
- Main points of the research so far, with a plan of activity for the remaining period
- Thesis outline, emphasising its logical structure and how it meets the aims of the research
- Conferences/journal publications/presentations to date or in progress
- Summary slide

The presentation should last for a maximum of 15 minutes, and is followed by 20-25 minutes for the Panel to question the PhD researcher and supervisors(s).

### **Procedure**

For each viva an Assessment Panel, comprising a reviewer (suggestions are requested from the supervisors) and a chairperson, will be appointed by the Research Director, School of Computing, Engineering and Intelligent Systems. The other individuals present at the viva will be the PhD researcher, at least one supervisor and, possibly, an adviser, if one has been appointed.

The Research Support staff, School of Computing, Engineering and Intelligent Systems, will be responsible for making the necessary arrangements for the viva, circulating the Literature Review and Paper to the Assessment Panel and forwarding the completed paperwork to the Research Office, PhD researcher and supervisors. The room and data projection equipment will be booked by the Research Support staff, School of Computing, Engineering and Intelligent Systems, but the PhD researcher and/or supervisors should arrange any other additional equipment required and check that everything in the room is satisfactory shortly before the viva.

In advance of the viva the PhD researcher will be responsible for initiating the assessment process online using PhD Manager. The PhD researcher should complete the necessary details including the requested report on progress (usually one or two A4 pages). PhD Manager will then automatically pass the form and attachments to the supervisors in advance of the viva.

The supervisors should then complete the relevant details which will then be forwarded to the assessment panel on the day of the viva.

The Assessment Panel will be responsible for completing the necessary paperwork detailing the outcome of the viva on PhD Manager.

The Assessment Panel will provide a report on the PhD researcher's progress and make recommendations concerning their advancement and suitability for confirmation of registration status. The Panel may make recommendations concerning the direction of the work and are empowered to recommend re-assessment after an agreed period, if the case for confirmation of registration status has not yet been established.

The Assessment Panel will consider the following questions:

1. Have the objectives of the first 10 (20) months period of work been achieved?
2. Is the proposed programme of work a logical extension of the completed studies?
3. Are the defined objectives likely to be achieved with the available resources?
4. Is the work likely to provide adequate research training to doctorate level for the PhD researcher?
5. Is the work sufficiently well-defined to (potentially) provide publishable work within a 12-18 (24-30) month period?
6. Can the practical studies be completed within an 18 (30) month period?
7. Does the PhD researcher show evidence of ability to critically evaluate the work and place it within the context of related studies?
8. Are the supervisors satisfied with the PhD researcher's progress to date?
9. Is the PhD researcher satisfied with the current supervisory arrangements?
10. Should the PhD researcher be permitted to confirm registration status of PhD?

## Final Assessment

### The Short Version

**Who:** You, your supervisor, your internal and external examiner, and a chair.

**Why:** To ensure sufficient progress before viva.

**What:** Submission to the PhD Festival of Research.

**Where:** Magee campus.

**When:** Around 30 months after your start date if you're full time or around 60 months if you're part time.

## Final Assessment

### The Long Version

#### **Purpose**

To help prepare for final submission and examination, your Unit of Assessment (UoA) administrators will make arrangements for a final assessment of progress within 30 months (full-time) and 60 months (part-time) of initial registration.

This takes the form of a submission to the PhD Festival of Research, which the Doctoral College runs annually, and which showcases and celebrates research excellence at Ulster.

You may be required to present either a poster or a talk which will then be assessed by an assessment panel.

The Festival of PhD Research will take place around the start of April and calls for abstracts will be circulated in February.

#### **Content**

The assessment comprises an abstract submission to the Festival of PhD Research and should be organised in close cooperation with the project supervisors.

The PhD researcher is expected to give either a poster or oral presentation during the Festival using materials appropriate to the Festival audience.

The oral presentation will last from 10-15 minutes with the opportunity for short question from the audience.

Those presenting a poster are expected to remain at their poster to discuss their research during viewing sessions and answer questions from attendees.

## **Procedure**

The Assessment Panel will normally consist of:

- The Research Director/Postgraduate Tutor or a nominee
- Nominated Academic Staff Reviewer(s) – usually the first supervisor

The PhD researcher is responsible for submitting a draft of the intended submission to project supervisors for review at least 2 weeks before the final submission date of the Festival of Research to allow time for feedback.

In advance of the assessment the PhD researcher will be responsible for initiating the process online using PhD Manager. The PhD researcher should complete the necessary details which will then automatically pass the final version of the submission to the supervisors in advance of the Festival.

The supervisors should then complete the relevant details which will be forwarded to the assessment panel on the day of the Festival.

The Assessment Panel will be responsible for completing the necessary paperwork detailing the outcome of the assessment on PhD Manager.

The Assessment Panel will provide a report which will be reviewed by the Research Director on the outcome of the assessment and make any recommendations concerning advancement and suitability for final submission.

See the [Doctoral College website](#) for more information regarding your timeline and milestones.



## Who to Contact

The [Doctoral College website](#) is your friend. If you can't find the information there or on the [Portal](#), then your next port of call will depend upon the nature of the issue. If you can't get hold of your supervisor or they can't answer your question satisfactorily, then someone here should be able to help:

- **[Academic Excellence Executive Assistant](#)** – Louise Gallagher
  - Louise helps with administration and everything from funding to travel. If Louise can't answer your question, then she'll be able to point to someone who can.
- **[Postgraduate Tutor](#)** – Karl McCreadie
  - Karl is there to assist you throughout your PhD journey and act as a go-between for you and the Doctoral College and Research Director.
- **[Technical Services Team](#)**: Paddy, Chris, Neil, Caitriona, Christy
  - Our team can answer all your technical and equipment related questions
- **[Information Services](#)**
  - For information on library, academic and administrative computing elsewhere on campus, digital communications, media-technology services and reprographic services
- **[Estate services](#)**
  - Strategic development, procurement and management of reception, security, portering, mail, car parking and cleaning services

## PhD Manager

PhD Manager is an online, web-based system that manages the administration of the PhD researcher journey from registration through to graduation and provides a single point of information for all those involved in PhD administration. Each supervisor and PhD researcher, as well as administrative staff, has a dashboard with all relevant information. Go to [phdmanager.ulster.ac.uk](http://phdmanager.ulster.ac.uk) for more information.



## Training, Talks, and Workshops

### Seminars

The school runs regular seminars on various topics of interest to both PhD researchers and staff alike. We usually hold these somewhere within the ISRC if possible, though sometimes we'll hold them elsewhere on campus giving us a much-needed excuse to leave the building and go for a walk!

There are also social events organised for PhD researchers throughout the year giving you an opportunity to meet informally and to learn more about your fellow researchers.

### Researcher Development Programme

The [Researcher Development Programme](#) (RDP) is a suite of workshops, specialist skills sessions, online courses and personal development planning activities which will provide you with opportunities to gain the experience and skills required to be a competent and professional researcher. The Researcher Development Programme (RDP) helps you progress through your research studies by identifying your existing skills and providing opportunities to further develop your skills and experience. As well as transferable skills that will make you a successful researcher, the RDP also aims to provide skills that have wider utility which will increase your employability. Although not all courses will be relevant to your studies, many of them will be and it is important that you set time aside to complete these.

As well as the RDP offered by the Doctoral College you may also get the opportunity to attend additional training relevant to your PhD. You may make a recommendation to your supervisor or they may suggest to you a relevant workshop or summer school, for example. Although this is not always necessary to complete your studies, it is recommended that you take full advantage of any opportunity presented which will only help to strengthen your position when it comes to the thesis defence.



## Scenarios

The Doctoral College website contains many [Frequently Asked Questions](#) covering topics such as administration, funding, training, ethical approval, relationships and support, and international.

Following are several common scenarios some or all of which you may come across in the course of your studies.

### Scenario 1

Issue: The computer/printer/phone isn't working.

Step 1: Check if it's plugged in 😊

Step 2: Contact a member of the Technical Services Team.

### Scenario 2

Issue: I need to order some equipment.

Step 1: Talk to your supervisor for approval.

Step 2: Fill out a prior approval form (see scenario 3)

### Scenario 3

Issue: I'm planning a study and need ethical approval

Step 1: Read Ulster's policies on Research Integrity here:

<https://www.ulster.ac.uk/research/our-research/research-integrity>

Step 2: Talk to your supervisor

#### **Scenario 4**

Issue: A want to attend a conference.

Step 1: Talk your supervisor and choose one.

Step 2: Write a good paper.

Step 3: Do a budget.

Step 4: Complete a prior approval form here:

<https://www.ulster.ac.uk/finance/staff/files/financial-accounting/Prior-Approval-Form-Students.pdf> and see here for the travel and expenses policy:

<https://www.ulster.ac.uk/finance/staff/files/financial-accounting/Travel-and-Expenses-Policy-V3.pdf>

You can apply for an advance of 75% if you find it hard to pay upfront.

Step 5: Use Key Travel to book your transport and hotel if necessary.

Step 6: Go to the conference. Keep all receipts of expenditure – finance will only accept original copies.

Step 7: When you return submit an Expenses Claim form found here:

<https://www.ulster.ac.uk/finance/staff/files/financial-accounting/uu-travel-expenses-claim-form-v4.pdf>

#### **Scenario 5**

Issue: This PhD is hard – I'm thinking of packing it in...

Step 1: Stop!

Step 2: Go chat to the Postgraduate Tutor – you're not the first one to think this! 😊

## Summary

So, to conclude, we wish you all the best on your doctoral studies and hope you find the process both challenging and rewarding. Remember that you are not alone in this journey as research is a collaborative effort. Just remember that if we knew what we were doing, it wouldn't be called research!