School of Biological and Chemical Sciences

Guidelines for Postgraduate Research students

This Document describes the framework for all MSc and PhDs in the school, and it is based on the College of Science and Engineering guidelines. All MSc research and PhD programmes in the College must comply with this framework.

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1. Introduction

This document contains guidelines for the Postgraduate Research programmes at the School of Biological and Chemical Sciences (SBCS). It is intended to be a reference for both staff and students, containing information *specific* to the College – the University Guidelines for Research Degrees (https://www.universityofgalway.ie/media/graduatestudies/files/university_guidelines_for_research_degree_programmes.pdf contains information and regulations relevant to all research graduate students at the University of Galway.

The goal of postgraduate education is to cultivate the research mindset, to nurture flexibility of thought, creativity and intellectual autonomy through an original research project. It is the practice of research that creates this mindset.

The core component of the structured PhD programme is the advancement of knowledge through original research. The PhD graduate skills statement of the IUA enumerates the desired learning outcomes and skills that PhD students should develop during their studies (https://www.iua.ie/wp-content/uploads/2021/07/IUA-PhD-Graduate-Skills-Statement-2021-final.pdf).

These guidelines are intended for both "unstructured" and "structured" postgraduate programmes in the SBCS. Structured PhDs include at least 30 credits of taught modules/training, and correspond to a large majority of PhD students in the College. The purpose of structuring doctoral education is to create a supportive environment. It is recognised that doctoral education is an individual journey. The structured PhD is also designed to meet the needs of an employment market that is wider than academia.

The structured PhD is a formalized, integrated programme of research, education, training, personal and professional development activities. It enables the development of discipline-specific knowledge, research skills and generic/transferable skills. It has declared outcomes for all education and training components.

2. MSc and PhD Supervision

2.1   The supervisor

Supervision is by a primary supervisor who is responsible for providing guidance on the research carried out by the student and manages the student's training. The supervisor, in consultation with the GRC and Head of School, is responsible for identifying a replacement supervisor should the need arise. Academics should not take on sole supervisory roles when they are within five years of retirement.

Newly appointed academics should avail of training in postgraduate supervision as soon as possible after appointment. Suitable training is organized on an annual basis by the Dean of Graduate Studies. There are also workshops available from the IUA (Irish Universities Association). Details of both are available here: https://www.universityofgalway.ie/graduate-studies/staff/researchsupervision/.

The Supervisor(s) should meet with the student on a regular basis, ideally weekly in the early stages of the research project, although the supervisor(s) should be available to respond to any queries from the student, either by email or in person. At an early stage, the Research question should be defined, goals identified, and overall timeline agreed. It is good practice for meetings to have an Agenda (Sample Agenda in Appendix 1).

In addition, the student should record the main points agreed at meetings with the supervisor and send them by email to the supervisor.

Correspondence between supervisors and students should always adhere to the University of Galway Guidelines on email etiquette (available at https://www.universityofgalway.ie/goodemail/)

2.2 The postgraduate student

You are the main person in the Postgraduate Programme and the programme is designed to help you in the successful completion of a postgraduate degree. The postgraduate research student is responsible for carrying out postgraduate research which is quite different from an undergraduate degree. A major difference is that you will often be expected to work on your own and take the responsibility for your work. To ensure success in achieving a postgraduate degree, you will need to be highly motivated, a team player and invest time in your research degree, to achieve the goals of your research. Days off should be discussed with your supervisor.

The postgraduate student is responsible for:
- Communicating regularly with your supervisor (i.e. report progress, barriers to progress and problems) and any other persons as appropriate. If you have a problem or wish to discuss an issue, do not wait until your supervisor sees you, but actively seek out your supervisor to arrange a meeting at a mutually convenient time. As a rough guideline, you should see your supervisor at least once per week, albeit for a short discussion.
- Carrying out any appraisal of safety issues in your experimental work, in consultation with your supervisor.
- Maintaining a record of your research using a lab-book or its electronic equivalent. The responsibility for backing up data lies entirely with you and it is essential that your results, if stored in electronic form, are backed up regularly.
- Submitting GS030 form or Annual Student Report to GRC every year
- All data (electronic and paper copies, as well as lab books) need to be handed over to the supervisor at the end of the graduate programme.
- Writing articles for peer-reviewed journals in your research field. The number of articles depends on the subject area and nature of your research, but a reasonable goal is a minimum of 1 peer reviewed paper accepted as a first author in a journal with an impact factor of at least 1.
- Submitting your thesis in a timely manner. Your goal should be to complete your PhD research in four years and one year for an MSc by research.
- Defending your thesis in a viva through an oral presentation of your research work and the answers to the questions of at least two independent examiners.

3. The Graduate Research Committee

3.1 GRC Membership

The GRC should be made up of three (or more) members of academic staff (it is allowed to include staff from other Universities). The GRC members are appointed by the HoS, in consultation with the supervisor, to ensure a proper workload of the academic staff. The GRC must have a Chair, who is responsible for submitting the GS-50 form and other correspondence on behalf of the committee, as well as organizing follow-up GRC meetings if necessary. As well as the Chair, the GRC should also have two more members, one of whom is familiar with the research area, and the other acting as a mentor to support and advise the student (the student is free to approach any member of the GRC for help or advice). Ideally, the Chair of the

GRC committee should become the Chair at the PhD viva, and one of the GRC members should become the internal examiner. This should help the students along their journey on the postgraduate programme.

3.2   GRC Procedures

The GRC formally monitors student progress through an annual review process in line with national and international best practice. In accordance with the University Guidelines, the GRC will meet each PhD student annually, usually in April-May.

The Student and Supervisors submit reports (GS-30 and GS-40, respectively) to the GRC prior to these meetings. Following the meeting, the chair of the GRC submits a GS-50 to the College, indicating whether the student should a) continue b) continue with further review c) transfer to another programme of d) Leave the Research Degree programme.

It should be normal practice for the student to make a short presentation (approx. 7-8 minutes) to the GRC, outlining progress since the last meeting and plans for the coming year, following the template provided by the programme chair. This presentation may be held in public, as recommended in the University Guidelines (Section 5.8.3).

The GRC meeting is confidential, and the student should feel free to discuss their relationship with their supervisor or any issues affecting progress.

The GRC chair or the committee should have a short meeting with the supervisor after meeting the student. The chair should note any substantive points e.g. by email to the Supervisor, or in the Section "Comments on the above recommendation" of the GS-50 form.

The student should receive feedback from the GRC, preferably in person, preferably shortly after the GRC meeting. The student and supervisors should receive copies of the GS-50. The student may receive a copy of the GS-40, at the discretion of the Supervisor.

In the case that progress is not as expected, the GRC may request a plan from the student and supervisor to address the situation, and will organize follow-up meetings, as required. The first follow-up meeting should be held no later than three months after the initial GRC meeting.

In exceptional cases, a student may wish to change Supervisor. It is then the responsibility of the GRC to try to understand and resolve the issues that have arisen, including meeting the supervisor and the student individually. If the issues cannot be resolved, then the GRC should try to identify an alternative supervisor. The Head of School should be informed of any such change in supervisor. If the new supervisor is based in a different School, then the Head of that School should also be informed and agree to such a change. The College should be informed so that the registration status of the student reflects the change of school.

All PhD students are required to submit a written Mini-Viva Report to their GRC within 2 years of registration. Individual schools may decide on when the mini-viva is held within the first two years (the mini-viva will replace one of the annual GRC meetings). The Mini-Viva Report typically comprises 5,000 words, plus Appendices, and describes the work completed to date and a detailed PhD research proposal.

This is complemented at the GRC meeting by the student making a detailed presentation. The oral presentation will be followed by a Mini-Viva Examination, during which the GRC members will query and offer constructive critiques on various aspects of the students preliminary research and their PhD research proposal. The maximum duration of the Mini-Viva Examination, including the student's presentation, should be 30 minutes.

The purpose of this oral Mini-Viva Examination is to confirm that the student:

      (i) understands the research problem

      (ii) is aware of the associated literature

      (iii) has demonstrated capability to conduct independent research

      (iv) has a realistic research plan and schedule

      (v) remains capable of completing the PhD

The submission of the Mini-Viva Report and the subsequent Mini-Viva will be held no later than 2 years after the date of initial registration. Appendix 2 contains a brief description of some of the components that normally constitute a Mini-Viva Report, and should be regarded as guidelines only.

4. Starting the PhD

4.1   Orientation and Induction

Students must attend

1. the Orientation session organised by the Graduate Studies Office,
2. the College of Science and Engineering Induction and
3. any local induction sessions organised by Centres/Schools/disciplines/supervisors.

4.2   Virtual Learning Environment 1GST1

All students will be registered for the VLE module 1GST1 Graduate Studies Training, where general information on Graduate Studies at the University of Galway is provided (https://universityofgalway.instructure.com/).

4.3   Scholarship registration

All students who can avail of a scholarship from the research group should fill in the relevant details on the portal, in consultation with their supervisor. (https://www.universityofgalway.ie/research-accounting/scholarships/scholarshipapplication/).

5. The Structured PhD

5.1   Personal Development Plan

Each Structured PhD student should agree a Personal Development Plan (PDP) with their Supervisors. This will help the students to identify which modules and other training resources they should avail of during their PhD and help to plan how to develop their skills. The first PDP should be agreed with the Supervisor as soon as possible after registering and submitted to the School administrator.

The PDP should be renewed annually and presented to the GRC for review. Workshops and other resources on the PDP process are available from the Researcher Development Centre. A guide to Personal Development Planning, and a PDP template are provided in Appendix 3.

PhD students who have two or more years of their PhD completed at the time of implementing these guidelines (October 2022) may choose to not develop a PDP.

5.2 Module Selection

The structured PhD is normally a four-year programme. New entrants typically register for the modules in September or January of each year. Students select modules to the value of 30 ECTS in consultation with their supervisor and GRC. These modules will be a combination of:

- discipline-specific modules (directly relevant to the student's research) and
- generic/transferable skills modules (to equip students for employment outside academia).

Each student must complete 30 ECTS over the four years. In exceptional circumstances, students may be allowed to take modules in year 4, subject to the agreement of the student's GRC. The University Marks and Standards for Structured PhD programmes can be found at https://wwww.nuigalway.ie/media/registry/exams/QA236-Marks-and-Standards-for-Postgraduate-Taught-Masters-Programmes-June-2021.pdf Successful completion and examination of the research is the basis for the award of the degree.

Information on Graduate Studies modules (GS***) is available at https://www.universityofgalway.ie/graduate-studies/currentstudents/gsmodules/ . Click on module code (e.g. GS505) to access complete module description.

In the case of Supervisor-owned modules, the Supervisor is responsible for i) Indicating whether the student has passed or failed the module in the GS-40 form and ii) submitting evidence of the achievement of Learning Outcomes to the School administrator/ College office.

5.3 Registration Instructions

First please see **registration guides** at: https://www.universityofgalway.ie/registration/how-to-register/newstudentpostgrad/ on *how to register and how to select your modules*

The programme code for structured full time first year of the Structured PhD in the College of Science and Engineering is either **1SPS1** or **1SPE1**.

Students must register on line for their selected modules. Full Time students must register for a total of 90 ECTS, to be made up of: Research thesis module, taught modules, usually 5 ECTS each **and** Research Component (RM***). The Credits corresponding to the Research is automatically calculated to give a total of 90 credits per year.

SAMPLE OF COMPLETE RECORD: 1SPS1 Structured PhD (Science) Full Time

Code	Description	Status	ECTS Value	
Z0650	Zoology	Registered	0	
RM075	*Research*	Registered	75	
GS505	*Graduate Research Skil*	Registered	5	
GS506	*Teaching and Learning*	Registered	5	
PH502	*Scientific Program Concepts*	Registered	5	
Total Credits			*90 ECTS*	

Each year students must register for the modules that they intend to complete in that academic year only. It is the student's responsibility to ensure that they are correctly registered. Students should check their registration status online and contact reghelp@universityofgalway.ie if their record is not correct.

5.3.1   Structured PhD in Chemistry (1SPS1)

Students participating in the structured PhD programme in Chemistry will take two core modules in Teaching and Learning (GS506) and Core Skills for Chemistry Research (CH506) as outlined below. They should register for GS506 only once (preferably for third year) and should preferably take CH506 in their first year. Students are free to choose four elective modules, based on generic / transferrable skills or in discipline-specific courses in consultation with their supervisor. Students should <u>only</u> register on the year when they expect to complete the modules.

A summary of the modules for the structured PhD in Chemistry is given as follows and we highly recommend to select the two following modules:

- GS526 Oral/Poster communication, 5 ECTS in years 1-3 of your PhD
- GS515 Research Paper Publication, 5 ECTS

	ECTS	Code	Responsible
Core Modules			
Teaching and Learning	5	GS506	CELT
Core Skills for Chemistry Research	5	CH506	Pau Farras
Elective Modules in Chemistry			
Carbohydrate Chemistry	5	CH503	Paul Murphy
Combustion Chemistry and Kinetics	5	CH507	Henry Curran
Computational Approaches for Drug Discovery and Biomolecular Structure	5	CH5106	David Cheung
Elective GS modules			
https://www.universityofgalway.ie/graduate-studies/currentstudents/gsmodules/gsmodules/			

5.4   Research Integrity Training

"Research Integrity relates to the performance of research … to the highest standards of professionalism and rigour, and to the accuracy and trustworthiness of the research record in publications and elsewhere" (https://library.nuigalway.ie/openscholarship/researchintegrity/). It is expected that all Research students and staff undertake basic training in Research Integrity – this is provided online and free of charge. Research Integrity is mandatory for any postgraduate researcher, in addition to the online material, attend an interactive workshop and complete a Research Student Supervisor Agreement (details at https://www.universityofgalway.ie/researchcommunityportal/researchintegrity/).

5.5   Sustainability Training

The University of Galway has committed to embedding the UN Sustainable Development Goals (SDGs) into all areas of activity, including education and research. Supervisors and students should identify the SDGs with which the research project is aligned. Sustainable practices should be used in Research activities. For these reasons, postgraduate students are encouraged to consider relevant postgraduate modules in sustainability; there are several available, such as BI5108 Green Labs Principles and Practice, BSS2103 Introduction to Sustainability I, PAB5128 Data Analysis for Sustainability Research, etc.

6. Master by Research

For the Research Master, the student will only perform research work in the laboratory and the thesis will be assessed by both external and internal examiners.

A maximum of two years is expected for a MSc by research. A thesis for a Research Masters (as opposed to a Taught Masters with a Research component) can be returned at any time during the Academic year bearing in mind the following process:

1) Soft-bound copy is submitted to SID/Exams (now submitted online).
2) Internal and External Examiners are uploaded onto the GS online system and exams dispatch the soft-bound copy to the examiner (please note it the examiner details have not been uploaded when the student submits their soft-bound this can cause delays)
3) The external examiner returns a report (there is no deadline for the return of this report)
4) The report is submitted to the next available Standing Committee Meeting (this is controlled by GS)
5) Once approved at Standing and the Exams Office confirm that all necessary corrections are made the student is advised to submit the hardbound copy of their thesis and they are then added to the next conferring list.

Considering the above, the followings are some relevant dates:

Standing Committee Meeting usually start 15th Oct (items for the agenda for this meeting usually have to be submitted 10 days in advance) Deadline for submission of hardbound is two weeks after in order to Confer at the Winter conferrings in December. If a student doesn't make the dates for the conferring they will still be issued with and award letter and will be scheduled for the next conferring in June. Please refer to section 8.3 of the university guidelines.

For transfer between Research Master and PhD Degree (Section 5.8.4): Based on the Yearly Progress Report (see Section 5.8.3 above), your GRC may recommend to the College that you transfer from a research

Master's Degree to a PhD. A recommendation from the GRC is required before the College can consider a transfer application by any student.

7. PhD Timeline

The PhD degree should take no longer than four years to complete. This is the time from first Registration to submission of the final, Hardbound Thesis following successful defense of the thesis in the viva examination. In cases where the work continues after four years, the GRC should meet the student more frequently in order to guide the student to completion (as per the University Guidelines, QA245, section 5.8.3). The following is a summary of what progress should be made on a yearly basis. It is intended as a guideline, and there may be variations e.g. if the student is carrying on work that is already in progress in the research group then it may take less time to start experimental work.

Year 1

Research topic selected

Modules selected for first year

Background Literature review

Planning, Experimental design and setup

Preparation for Data Analysis (e.g. familiarization with software tools)

Modules corresponding to 10-15 credits accumulated by end of year (Structured PhD)

Year 2

Experimental work in progress

Data analysis commenced

Preliminary results

Mini-viva complete

20-30 credits accumulated by end of year (Structured PhD)

Year 3

Experimental work

Data analysis

Publication (conference/Journal)

Thesis outline to GRC

Year 4

Finalise Data Analysis

Chapter drafts to supervisor

External and Internal Examiners identified

Submission of Softbound thesis

Publication

Viva examination

8. Thesis Submission

The student should firstly send the thesis to a member of the GRC, who will check that the thesis satisfies the required standard of structure, quality of figures etc. and will submit the thesis to plagiarism detection software. The student can proceed to submit the thesis once the GRC member, primary supervisor and student have signed off on the EOG-020 form.

9. Article-Based Thesis

The PhD thesis may be in monograph form or based on published articles. In the case of the latter, the University regulations specify that as well as the articles, the thesis "should contain a short introductory chapter, explanation of the research question, relevant literature and methodology and a concluding chapter. The student's contribution to each article must be made explicit".

A minimum of three original, peer reviewed, published research papers in international journals of appropriate professional standing for the area of research is required. The candidate must be primary (first) author on at least two of these. The student and supervisor has to make a case to the GS committee of the College for an article-based thesis based on two articles.

In line with University guidelines, only articles which are based on research that has been undertaken by the student while registered for the PhD are admissible. In addition, the PhD candidate should be the primary author and be responsible for the major research contribution of the work. Joint publications may be included but the candidate must make explicit their contribution relative to that of any co-authors.

Articles that are accepted for publication are counted towards the minimum provided suitable evidence of acceptance is provided. As conference papers may be included in the thesis to show the progression of the research contribution, but do not count to the minimum of *three* unless the conference had a competitive peer-review process.

Papers that are submitted, but not yet published may be included in the thesis, but do not count to the minimum of three.

Patent specifications that have been approved by the Technology Transfer Office for filing may also be included, but do not count to the minimum of three.

Where such supplemental papers contribute to the natural flow of the contribution they may be included in the body of the main thesis; otherwise it is recommended they are included as an appendix.

10. Viva Examination

If the student wishes to make a Presentation of the thesis material in public, they may do so by obtaining prior agreement of the Internal and External examiners. The Viva examination will be held *in camera*.

11.   Problem Resolution

When issues arise which significantly impact the research work, they should be addressed as early as possible, preferably in an informal way. The student should, in the first instance, search for solutions locally i.e. discuss with Supervisor, followed by GRC, followed by Head of School and/or Vice-Dean of Graduate Studies of the College.

If necessary, the Vice-Dean of Graduate studies can decide to escalate the matter to the Dean of the College and/or the Dean of Graduate Studies. The student may, of course, contact whomsoever they feel can help, but the above is the recommended order of action. The student should also be aware of the availability of representatives from the SU, College administrators, Student counselling and other services. Finally, the student has the right to make a formal complaint to the Dean of Students, following the University procedure (https://www.universityofgalway.ie/media/studentservices/files/QA611-NUI-Galway-Student-Complaints-Procedure-1910.pdf).

Appendix 1 Agenda Supervisor-Phd Student meetings

Sample Agenda Supervisor-PhD student meeting -- after "Supervising PhD Students: A practical guide and Toolkit" by Hugh Kearns and John Finn, Thinkwell, 1017

1. What I've done since the last meeting
2. Questions, issues
3. Feedback from Supervisor
4. Plan on what to do before next meeting
5. The Next Thing
6. The next meeting

Appendix 2 –Mini-Viva Report Guidelines

The following contains a brief description of some of the components that normally constitute a Mini-Viva Report, and should be regarded as guidelines only.

The Mini-Viva Report should comprise approximately 5,000 words (plus figures, with extra information included in Appendices.

Where a student has submitted papers for peer-review (either to journals or conferences), or an Invention Disclosure Form, which cover much of the detail required for the Mini-Viva Report, the student may include the papers/Invention Disclosure Form in the Report, and write a shortened Synthesis Report of approximately 1,000 words, introducing the research papers and describing the main research proposal.

A detailed Powerpoint/other presentation should then be made to the GRC meeting, which will cover and expand on the main points made in the written report. This will then be followed by a thorough oral examination of the student by the GRC. The maximum duration of the Mini-Viva Examination, including the student's presentation, should be 30 minutes.

Title: Should be exact, concise and clear to attract the intended readers. It should identify the general area of research and contain no secondary details.

Abstract: This is a short summary of research. It should briefly:
> (i) state the research problem and objectives
> (ii) describe the methodology and techniques used in the solution
> (iii) outline the main findings, emphasising the contribution
> (iv) present the main conclusions

An abstract should:
- be limited in length (normally 100-200 words)
- be self-contained (since it may be used for databases and summaries)
- not include unnecessary detail (the place for this is elsewhere)
- be drawn completely from the report

A person reading the abstract should be able to quickly identify the area of research covered by the report and decide whether the work is relevant to their own research/problem.

Introduction: This introduces the research by briefly:
> (i) Giving the context of the research problem (background)
> (ii) Establishing the relevance of the research (rationale) by:
>> - reviewing relevant previous research (literature review)
>> - emphasising the importance of the research area
>> - specifying the potential benefits of the research
> (iii) Defining the research problem (problem statement) by one or more of the following:
>> - highlighting a gap in the research area
>> - posing a new research problem whose solution is unknown
>> - continuing, by generalising, relaxing assumptions, or furthering, previously developed

research
- proposing alternative, perhaps simpler, solutions to current research problems

(iv) Proposing a solution by:
- outlining the steps taken to develop the solution (objectives)
- setting out clearly the assumptions used to obtain the solution
- outlining the aspects of the research area that will not be covered (scope)
- presenting the research methodology
- announcing the main results and contribution
- outlining the structure of the report

A person reading the introduction should be able to situate the research problem, be convinced of its importance, be aware of the problem statement - including any assumptions - and the techniques used in the solution, and should understand the contribution of the report.

Literature Review: This is an evaluation of relevant and significant existing research. It shows the relationships between different work and how it relates to the research problem at hand. It may include a few key publications and survey papers and should:

- demonstrate the importance of the author's research area
- place the author's research in the context of other ongoing research
- emphasise the author's contribution by highlight the shortcomings, unrealistic assumptions or other limitations of existing research
- be organised by ideas and not by authors or publication dates

Sources may include journal articles, books, conference proceedings, corporate reports, internal reports, correspondence, theses, Internet, CD-ROM, newspapers and magazines. Library staff can help you find the relevant material. They are experts in how to do a literature search.

Current Research: This forms the bulk of the report and carries out in detail points 3 and 4 mentioned in the introduction. It should include initial research directions and findings, simulation and experimental results and evaluation of existing techniques. The main purpose is to convince the examiner that the student is capable of doing original and significant research work at PhD level.

Research Plan: GRC members understand that the bulk of the student's research contribution occurs in the latter stages of a PhD programme. This section of the report should include a clear statement of the task that remains and give target dates by which specific milestones will be achieved.

Conclusions: This section should include
- Short and concise statements about the main findings of the research (conclusions)
- A summary of the specific contributions of the report, including any shortcomings, work which remains to be completed or issues which remain unresolved (contribution)

References: These are closely tied to the literature review and must all be referred to in the report. They are normally organised alphabetically by author surname, or, less frequently, by order of citation in the report.

Library staff can show you how to cite your references.

<u>Appendices:</u> These include any necessary material that may impede the smooth presentation of the report. Examples include computer codes, large tables or figures, tedious or lengthy mathematical proofs, etc.

Appendix 3 Guide to Personal Development Planning for Research Students

University of Galway Researcher Development Centre

This guide will help you to self-evaluate your skills, abilities and competencies and to write a Personal Development Plan (PDP). Your PDP will include concrete actions to promote your professional development, through training and other development activities. Writing a PDP will help you to make the most of your time as a PhD student and avail of a range of training and resources available to you in NUI Galway. Having a PDP can also help you to plan more productive meetings with your supervisor and GRC.

SKILLS & KNOWLEDGE SELF-ASSESSMENT

In the table below we refer to the [PhD Graduate Skills as outlined by the IUA](#):[1]

The table below will help you to self-assess your skills, abilities and competencies and to identify your strengths, weaknesses and areas in need of development. We recommend that you discuss this exercise with

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[1] To provide a more comprehensive guide we also used some elements of 2019 version of the Graduate Skills Statement.

your supervisor. Start by evaluating your current skills, abilities and competencies in each of the areas listed in column one. Follow these steps:

1) Rate your current level for each skill/ability/competency from 1 to 5, where: 5 = highly proficient, 4 = proficient, 3 = adequate, 2 = you have some knowledge/experience and 1 = you have no knowledge/experience. Write down your current level in column 2.

2) After you have assessed your current level, identify which skills/abilities/competencies are important for the completion of your PhD and for your professional development. Note that not all skills/abilities/competencies will be equally important for all PhD researchers, depending on your discipline, project and career aspirations. Are you sufficiently proficient in all areas that are important to you and your project? Fill out the third column (Action/Training Needed) to indicate where you need to work on a specific skill/ability/competency.

3) If an action/training is required, in what semester(s) in your PhD should such action/training take place (e.g. year 1, semester 2 etc.)? Fill out column 4 accordingly.

	Current Level	Action/Training Needed? (Y/N)	When (year/semester)
Exhibit knowledge of advances and developments in your fie			
Demonstrate knowledge of research in related fields disciplines			
Comprehend and effectively employ appropriate research methodologies			
Critically analyse and synthesise new and complex inform from diverse sources, applying innovative scientific literacy s			
Demonstrate excellence in data management planning			
Formulate and apply solutions to research problems and effect interpret research results			
Demonstrate, where appropriate, a knowledge of health and safety procedures and their application in the res environment			
Have a broad awareness and knowledge of key relevant funding sources and grant application procedures			
Implement strategies to ensure effective project and management, constantly monitoring timelines, deliverables adapting flexibly in order to maintain progress			
Knowledge of intellectual property and know-how			
Using social media, mobile applications and other online platf to assist in the collating, coding, and analysis of data for research			
Career management	**Current Level**	**Action/Training Needed? (Y/N)**	**By when (year/semester)**

	Current Level	Action/Training Needed? (Y/N)	By when (year/semester)
Demonstrate an awareness of transferable skills and their applicability to both academic and non-academic positions and how they are applied in different circumstances			
Take ownership of their own career management, forming credible career plans			
Initiate and sustain networks and relationships that may encourage opportunities for employment			
Present themselves and their skills, attributes, experiences and qualifications, through effective job applications, CVs and interviews			
Understand the broadest possible range of their employment opportunities			
Ethics and social understanding	**Current Level**	**Action/Training Needed? (Y/N)**	**By when (year/semester)**
Understand, and apply in your research, principles of ethical conduct of research, including avoidance of plagiarism, allocation of credit and authorship and definitions of research misconduct			
Understand the relevance of research in society and the pote impact of research on individuals, groups and society v applicable			
Understand and apply the relevant guidelines for the et conduct of research involving people, human tissue and anim			
Demonstrate advanced understanding of principles of res integrity, and the ability to apply those principles and carr research in a manner that allows universities and wider socie have confidence and trust in the methods used and the finding conclusions that result from that research			

Demonstrate an understanding and appreciation of Scholarship principles			
Demonstrate awareness of issues of equality and diversity and role and value in research activities			
Communication skills	**Current Level**	**Action/Training Needed? (Y/N)**	**By when (year/semester)**
Demonstrate effective writing and publishing skills thr submission of peer-reviewed articles, reviews and conference proceedings			
Effectively use and decide on appropriate forms and levels of communication for the benefit of public engagement			
Communicate and explain research to diverse audiences, including both specialist and non-specialist			
Effectively support the learning of other students when invol teaching and demonstrating			
Effectively use social media to enhance accessibility of res activities			
Personal effectiveness transferrable skills	**Current Level**	**Action/Training Needed? (Y/N)**	**By when (year/semester)**
Demonstrate strong critical thinking, with skills in identif analysing, evaluating, and making inferences from argu proffered and evidence produced to support those arguments			
Work in an independent and self-directed manner, sho initiative to accomplish clearly defined goals, monit timelines, deliverables, managing stakeholders, mitigating ris overcoming setbacks			
Demonstrate excellent data management skills, informe legislative requirements (e.g., GDPR, 2018) and frameworks,			

as FAIR (Findable, Accessible, Interoperable, Reusable) Princ			
Understand key rhetorical skills, including how to persuade of a viewpoint's merits, demonstrating and communic credible suggestions to achieve one's aims			
Understand the importance of initiating new projects, proact reacting to newly identified needs or aiming to resolve pers problems			
Demonstrate effective budgeting and financial management s managing budgets to support attainment of objectives and plar and monitoring future income and expenditure			
Demonstrate the ability to identify and appropriately manage both within their research and in their other professional activ			
Reflect on experiences in a critical manner and act on such cycle of self-improvement			
Team-working and leadership	**Current Level**	**Action/Training Needed? (Y/N)**	**By when (year/semester)**
Demonstrate the ability to develop and maintain effe relationships with colleagues and work in a collabor environment			
Demonstrate awareness of their own working style and th others, and how they interact			
Understand leadership in team environments, recognising strengths of team members and how to work effectively to acl mutual goals			
Ability to oversee, coach and motivate team-members, foster co-operative and solution-driven working environment			
Ability to understand feedback of different kinds, t suggestions on board when appropriate			

Ability to network effectively within and beyond the organisation, nationally and internationally, and across discipline and sector boundaries			
Demonstrate intercultural awareness, with the capacity to interact between numerous cultural frames of reference			
Entrepreneurship & innovation	**Current Level**	**Action/Training Needed? (Y/N)**	**By when (year/semester)**
Understand the role of innovation and creativity in research			
Demonstrate an awareness and understanding of Intellectual property issues, appreciate and, where appropriate, contribute to knowledge exchange			
Appreciate the skills required for the development of entrepreneurial enterprises in the public and private sectors			
Understand different cultural environments, including the business world, and the contribution that knowledge transfer can make to society			

CREATING AND REVIEWING YOUR PDP

In the table above, you reflected on your skills/abilities/competencies, and identified where an action/training is needed. Now select the skills where you indicated that an action/training is needed for the current academic year. Include these skills/abilities/competencies in the PDP template below, and fill out the rest of the table by indicating what action/training you will take to improve each skill/ability/competency, and schedule when such action/training will take place.

If possible, you and your supervisor should discuss and keep reviewing your PDP. It may be useful to ask your supervisor for a specific meeting to start discussing your PDP, and to schedule follow-on meetings to review (agree the frequency of these PDP meetings with your supervisor). You should fill out the form below in advance of the meetings. Make sure to review both the skills/abilities table above and your PDP template at each PDP meeting. This will help you to structure discussions, track your progress and make sure you avail of all the training you need during the course of your PhD.

Personal Development Plan (PDP) for [YEAR]

Name of Research Student:

Name of Supervisor:

PDP Meeting's Date:

Skill/Ability/Competency need of development	What action/s are require develop it? If training is needed, ide suitable course/source and to register	When will this action/traini completed?