

A woman's profile is shown in silhouette, facing right. Overlaid on her head and shoulders are various digital graphics, including world maps, bar charts, line graphs, a brain diagram, and a robotic arm. The background is a light beige color with a grid of small blue dots in the top right corner. A large teal triangle points from the left towards the center, and a yellow curved shape is on the right. Concentric circles are visible in the bottom right area.

Irish Universities Doctoral Skills Statement

THIRD EDITION (2021)

National strategies such as Project Ireland 2040,¹ and the National Skills Strategy 2025,² reflect the need for research excellence and a talented skilled population. Furthermore, these strategies, and associated investments, underline the importance attributed to interdisciplinary intersectoral and international cooperation in this area. In addition, they often highlight the importance of training excellent Doctoral candidates, equipped with the specific, generic and transferable skills necessary for a knowledge-based society. Doctoral Graduates are, first and foremost, independent researchers and leading experts in their specific areas. A doctoral postgraduate academic degree is awarded to a student based on examination of a thesis following a prolonged period of extensive and original research in their chosen field.

Irish higher education institutions (HEI's) have the crucial task of developing talented graduates in support of existing and emerging industries that are equipped with a balanced set of specific, generic and transferable skills, underpinned by the National Framework for Doctoral Education³. Greater awareness of the skills-portfolio of doctoral graduates, within and beyond academia, will encourage the harnessing of these skills across a broad range of multi-sector roles. A clear and comprehensive outline of doctoral graduate skills will also enhance Irish competitiveness and prestige at an international level, positioning Ireland at the leading edge of developments. This will also enable Ireland to benefit further from European and global opportunities, including increased engagement with EU and international research policy and funding.

This 'Irish Universities Doctoral Graduate Skills Statement' outlines the desired learning outcomes and skills that doctoral students will have acquired during their doctoral education and training.

1 | <https://www.gov.ie/en/policy/project-ireland-2040-policy/>

2 | https://www.education.ie/en/Publications/Policy-Reports/pub_national_skills_strategy_2025.pdf

3 | https://hea.ie/assets/uploads/2017/04/national_framework_for_doctoral_education_0.pdf

As a small, open and innovative European society and economy, Ireland's long-term prosperity is strongly linked to its ability to develop and foster an outstanding innovation ecosystem, underpinned by excellent research across both industry and academia, and characterized by strong inter-sectoral cooperation in well-defined priority areas.

In conjunction with other national advisory documents, such as ‘Ireland’s Framework of Good Practice for Research Degree Programmes’ published by the Quality and Qualifications Ireland⁴ this ‘Irish Universities Doctoral Graduate Skills Statement’ aims to communicate the broad range of skills that doctoral graduates possess to students, supervisors and employers across all sectors, including within academia, as well as facilitating dialogue across all those with a stake in societal success in research, development and innovation.

Given the high levels of connectivity between the many players across our national ‘innovation ecosystem’, this Statement has a particular emphasis on:

- Doctoral candidates, to help inform their doctoral education and training process and set their expectations accordingly,
- PhD supervisors, to self-assess their current mentoring practices and career-development support strategies,
- University administrators, to review existing doctoral programs, identifying opportunities for further development,
- Private and public sector representatives, to help communicate the value of doctoral graduates and the range of transferable and employment-relevant skills they possess, skills which can benefit the full range of employment sectors,
- Public policy makers, to help inform further policy development relating to investment in research and funding for doctoral education and training.

Additionally, this document aims at stimulating a dialogue among the above groups to reinforce their synergies and align their responsibilities in relation to doctoral training and funding for such.

Doctoral Candidates, Expected Outcomes

Doctoral training is about the holistic development of researchers towards professional maturity. By the end of their doctoral training PhD graduates should be able to initiate and perform knowledge-production research activities, both in academic settings and beyond academic settings in public, charitable and private sectors. As per the first Salzburg principle: *‘The core component of doctoral training is the advancement of knowledge through original research. At the same time, it is recognised that doctoral training must increasingly meet the needs of an employment market that is wider than academia’*.⁵

In conjunction with the “QQI National Framework of Qualifications PhD descriptors”⁴ this Statement also highlights the crucial importance of employment readiness. As sectors beyond HEIs will be future employers of PhD graduates, employment-readiness and inter-sectoral engagement should be ensured within PhD programmes by various means, including joint training modules, attendance at industry sponsored events, employment-based secondments and short visits.

These ambitious goals require HEIs, both individually and collectively, to develop a solid training and supervisory framework, so as to support PhD candidates towards qualification in research excellence, but within a framework of career planning. As stated in Salzburg II recommendation: ⁵ *“It is the institution’s responsibility to provide support structures for professional development. Offering training in transferable skills, including understanding the ethics of research, is central, and should be a priority for doctoral schools and programmes”*.

In general, the Doctoral experience in the HEI’s is influenced by the doctoral candidate’s educational background, degree studied, their future educational and career aspirations and the individual HEI’s regulations. It is primarily the responsibility of the doctoral candidate to control the progress and direction of their personal assigned research topic, while simultaneously developing a skills portfolio that positions them as employment ready.


Role of the HEI in Skills Development

In addition to their role in providing access to relevant research infrastructures and supports for carrying out PhD research projects successfully, HEIs should also ensure that they offer

- Structured graduate training opportunities, supporting both discipline-specific and transferable skills, such as training in personal development planning, intellectual property rights, research integrity training, thesis writing skills, demonstration skills, tutoring/supervisory skills, independent problem solving, writing of research articles, reviews, and experience in grant application writing.
- Provisions for ensuring excellent supervisory practices, such as supervisory training and mentoring structures.

4 | <https://www.qqi.ie/Publications/Publications/Ireland's%20Framework%20of%20Good%20Practice%20Research%20Degree%20Programmes.pdf>

5 | <https://eua.eu/resources/publications/615:salzburg-ii---recommendations.html>
<https://eua.eu/resources/publications/626:salzburg-2005---conclusions-and-recommendations.html>



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Role of the Supervisor in Skills Development

Supervisors act as an expert guide and professional mentor as the doctoral candidate develops their research project, ensuring access to adequate research space, equipment, consumables, etc. They also have a responsibility to foster development of transferable skills, through:

- Giving the Doctoral candidate opportunity to attend personal development courses.
- Providing regular one-on-one meetings, group meetings, opportunity to present research findings in-house or at conferences either orally or through poster presentation.
- Giving the Doctoral candidate opportunity to attend national and/or international conferences to enhance communication and presentation skills, as well as to develop networks.
- Providing effective tools for holistic development, such as a personal development plan (PDP), drafted at the beginning of the doctoral journey and periodically reviewed.
- Providing networking opportunities, both formal and informal, within and beyond the academic setting.

Role of the Doctoral Candidate in Skills Development

Doctoral candidates are expected to undertake research under the expert guidance of supervisors whilst at the same time developing the ability to work independently. In addition Doctoral candidates are expected to develop:

- Strong independent problem-solving abilities specific to their area of expertise, as well as important transferable skills such as showing perseverance and commitment when research progress is hampered.
- Professional skills in project management, financial management, teaching and mentorship, leadership and teamwork, research integrity, idea development, data protection and management, intellectual property rights, entrepreneurship, public engagement and communication of research in written or oral form.

Doctoral candidates in HEI's have the opportunity to engage in a range of other activities which can support their personal and professional development as researchers. Such activities include:

- Undertaking a secondment to private sector partner or other partner for a set period of time,
- Extension of knowledge through undertaking supplementary training in their registered HEI or another HEI,
- Dissemination of research findings through conference and seminar poster presentations, publication of peer-reviewed articles, participation in education and public engagement outreach activities,
- Teaching, demonstrating, tutoring,
- Services to the HEI such as sitting on the safety committee, student committees, graduate committee, teaching committee, student societies responsible for organising seminars series, student gatherings and outreach activities.



Doctoral Candidate skills

The HEI's have a responsibility to equip their doctoral graduates with a broad range of transferable research skills. There is a reasonable expectation that doctoral graduates should be proficient in a number of skills areas, as a result of the research, tutoring and dissemination activities carried out over the years of their PhD research and training. Other than consolidating their academic profile, being responsible for these tasks (often simultaneously) enhances doctoral candidates' transferable skills, enabling them to be career ready for a position in academia or industry. The skills identified by the Irish Universities Association as relevant to a Doctoral candidate's education are outlined below and will vary depending on the students' experiential learning, disciplinary and professional development needs.

Research skills

- Exhibit knowledge of advances and developments in their field.
- Demonstrate knowledge of research in related fields and disciplines.
- Comprehend and effectively employ appropriate research methodologies.
- Critically analyse and synthesise new and complex information from diverse sources, applying innovative scientific literacy skills.
- Demonstrate excellence in data management planning.
- Formulate and apply solutions to research problems and effectively interpret research results.
- Demonstrate, where appropriate, a knowledge of health and safety procedures and their application in the research environment.
- Have a broad awareness and knowledge of key relevant funding sources and grant application procedures.
- Implement strategies to ensure effective project and time management, constantly monitoring timelines, deliverables and adapting flexibly in order to maintain progress.
- Knowledge of intellectual property and know-how.
- E-research skills, using social media, mobile applications and other online platforms to assist in the collating, coding, and analysis of data for their research.

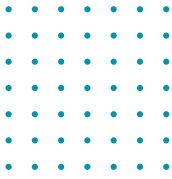
Ethics and social understanding skills

- Understand, and apply in their 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 potential impact of research on individuals, groups and society where applicable.
- Understand and apply the relevant guidelines for the ethical conduct of research involving people, human tissue and animals.
- Demonstrate advanced understanding of principles of research integrity, and the ability to apply those principles and carry out research in a manner that allows universities and wider society to have confidence and trust in the methods used and the findings and conclusions that result from that research.
- Demonstrate an understanding and appreciation of Open Scholarship principles.
- Demonstrate awareness of issues of equality and diversity and their role and value in research activities.

Personal Effectiveness Transferable Skills

- Demonstrate strong critical thinking, with skills in identifying, analysing, evaluating, and making inferences from arguments proffered and evidence produced to support those arguments.
- Work in an independent and self-directed manner, showing initiative to accomplish clearly defined goals, monitoring timelines, deliverables, managing stakeholders, mitigating risk and overcoming setbacks.
- Demonstrate excellent data management skills, informed by legislative requirements (e.g., GDPR, 2018) and frameworks, such as FAIR (Findable, Accessible, Interoperable, Reusable) Principles.⁶
- Understand key rhetorical skills, including how to persuade others of a viewpoint's merits, demonstrating and communicating credible suggestions to achieve one's aims.
- Understand the importance of initiating new projects, proactively reacting to newly identified needs or aiming to resolve persistent problems.
- Demonstrate effective budgeting and financial management skills, managing budgets to support attainment of objectives and planning and monitoring future income and expenditure.
- Demonstrate the ability to identify and appropriately manage risks, both within their research and in their other professional activities.
- Reflect on experiences in a critical manner and act on such in a cycle of self-improvement.

⁶ | Wilkinson, M. D. et al. (2016). The FAIR Guiding Principles for scientific data management and stewardship. Scientific Data, 3, 160018. doi:10.1038/sdata.2016.18



Team-working and leadership skills

- Demonstrate the ability to develop and maintain effective relationships with colleagues and work in a collaborative environment.
- Demonstrate awareness of their own working style and that of others, and how they interact.
- Understand leadership in team environments, recognising the strengths of team members and how to work effectively to achieve mutual goals.
- Ability to oversee, coach and motivate team-members, fostering a co-operative and solution-driven working environment.
- Ability to understand feedback of different kinds, taking suggestions on board when appropriate.
- Ability to network effectively within and beyond the organisation, nationally and internationally, and across discipline and sectoral boundaries.
- Demonstrate intercultural awareness, with the capacity to interact between numerous cultural frames of reference.

Communication skills

- Demonstrate effective writing and publishing skills through 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 involved in teaching and demonstrating.
- Effectively use social media to enhance accessibility of research activities.

Entrepreneurship & innovation skills

- 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.

In conclusion, within the Irish socio-economic context, there is a clear nexus between long-term social and economic sustainability and development of a pool of research talent operating at the forefront of research and innovation. According to a report published by the IDA in 2018, connected research is already emerging as a reality in Ireland, given the *‘exceptional level of cooperation between industry, academia, state agencies and regulatory authorities’*.⁷

Aimed at benchmarking expectations and stimulating inter-sectoral dialogue, this Statement from the IUA sets out skills, both research-related and transferable, that doctoral graduates from the HEI’s successfully attain and bring forward into their professional careers, contributing to Ireland’s social and economic sustainability.

Irish HEI’s are providing structured support for students, incorporating research and personal and professional skills development opportunities into doctoral programmes, empowering PhD graduates to make a significant impact in their chosen career and contributing to the development of Ireland’s ‘Knowledge Society’.

7 | <https://www.idaireland.com/doing-business-here/activities/research-development-and-innovation>



APPENDIX:
Skills statements and documents reviewed

ERA SGHRM. Using the Principles for Innovative Doctoral Training as a Tool for Guiding Reforms of Doctoral Education in Europe.
https://cdn5.euraxess.org/sites/default/files/principles_for_innovative_doctoral_training.pdf

European Innovation Scoreboard 2019.
https://interactivetool.eu/EIS/EIS_2.html

National Strategy for Higher Education to 2030.
<https://hea.ie/assets/uploads/2017/06/National-Strategy-for-Higher-Education-2030.pdf>

Project Ireland 2040 National Development Plan 2018–2027.
<https://www.gov.ie/pdf/?file=https://assets.gov.ie/19240/62af938dce404ed68380e268d7e9a5bb.pdf#page=33>

National Framework for Doctoral Education.
https://hea.ie/assets/uploads/2017/04/national_framework_for_doctoral_education_0.pdf

Irish Universities Association

48 Merrion Square, Dublin,
D02 PK02, Ireland
www.iua.ie
+353 (1) 676 4948
info@iua.ie

iua | **IRISH
UNIVERSITIES**
ASSOCIATION