



Programme Validation Report

Postgraduate Certificate in Science in Applied Machine Learning

<i>Version of Report</i>	<i>Author</i>	<i>Date</i>
1.0	Dr Gráinne Hurley	23/10/2023
		Click or tap to enter a date.
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<i>Approval</i>	<i>Date</i>
Programme Proposal approved by Faculty Board	28/09/2023
Programme Proposal approved by University Programmes Board	10/10/2023
Programme approved by Faculty Board	Click or tap to enter a date.
Programme approved by University Programmes Board	Click or tap to enter a date.

Section A - Programme Details

Title	Postgraduate Certificate in Applied Machine Learning
NFQ Level	9
ECTS Credits	30
Mode of delivery	Part-time <input checked="" type="checkbox"/> Full-time <input type="checkbox"/>
Duration	Part-time: 2 years & 11 months Full-time:
Mode of provision	Face-to-Face <input checked="" type="checkbox"/> Blended <input type="checkbox"/> Online <input type="checkbox"/>
Classification of award	
Discipline	Computer Science
Programmes Board	Faculty of Computing
Schools involved in delivery	Computer Science
Delivery location	City Campus, Grangegorman
Collaborative Partner (where applicable)	
Date of Commencement	January 2024

Section B - Awards

Award Title	Postgraduate Certificate
NFQ Level	9
Award Class	Special Purpose
ECTS Credits	30
Classification of award	70% Distinction 60% - 69% Merit, Grade One 50% - 59% Merit, Grade Two 40% - 49% Pass
Award (1) Title	
Exit/Embedded	Exit <input type="checkbox"/> Embedded <input type="checkbox"/>
NFQ Level	Select Level
Award Class	Choose an item.
ECTS Credits	
Classification of award	
Exit Award (2)	
Exit/Embedded	Exit <input type="checkbox"/> Embedded <input type="checkbox"/>
NFQ Level	Select Level
Award Class	Choose an item.
ECTS Credits	
Classification of award	

Section C - Programme Derogations (if required)

<i>Derogations from Assessment Regulations/Marks and Standards already approved by University Programmes Board</i>	
Date of University Programmes Board Approval	Click or tap to enter a date.

Section D Validation Process

Please tick the process that was followed:

Validation Panel <input checked="" type="checkbox"/>	AQEC Meeting <input type="checkbox"/>	AQEC Sub-Group <input type="checkbox"/>
Date: 23 October 2023	Date:	Date:

Panel Members

Name	Role	Affiliation
Dr Ciarán O'Leary (Chair)	Chair	Head of Learning Development
Mr Mark Ennis	External Panel Member	Chief Technical Officer, Prepay Power
Dr Geraldine Gray	Internal Panel Member	Head of Informatics, School of Informatics and Cybersecurity
Dr James Doody	Internal Panel Member	Lecturer, School of Enterprise Computing and Digital Transformation
Dr Gráinne Hurley	Internal Panel Member	Quality Assurance Office, Academic Affairs

Section E - Programme Evaluation

Governance & Management		
<i>Is the programme designed in accordance with the University's Strategic Plan, Educational Model and Quality Framework?</i>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>This new postgraduate certificate aligns with the university's strategic plan, <i>Strategic Intent 2030</i>, that is committed to supporting technological and innovative advances; fostering relationships with industry to support and create opportunities for lifelong learning and encouraging excellence and creating pathways for all, in this case offering full-time working professionals the opportunity to upskill in order to adapt to a rapidly changing technological world. Correspondingly, it also supports the University Education Model's intention to provide 'a dynamic new model of education producing the most sought after digitally literate graduates, transforming the learning opportunities and experience for all with the largest number of diverse learners at our university'. In addition, this new programme embraces the principles underpinning the university's Academic Quality Framework, including taking a student-centred approach and being innovative, agile and responsive to the needs of external stakeholders and different cohorts of students</p>		
<i>Will the proposed strategies for programme management and quality assurance ensure that the programme is well managed and continuously enhanced and is in accordance with the University's Quality Framework?</i>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Comment:		

Awards Standards		
<i>Are the programme aims and learning outcomes clearly written using appropriate terminology? (See TU Dublin Guidelines)</i>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<p>Comment: The programme learning outcomes, aims and objectives need to be rewritten to accurately reflect the focus and level of the programme and to ensure consistency across the Programme & Module Catalogue (Akari) and the Student Handbook (please see the condition no.1 below).</p>		
<i>Are the programme aims and learning outcomes aligned to the proposed level of the award on the NFQ in accordance with applicable Award Standards?</i>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Comment: All of the modules offered, apart from the new project module, are a subset of the existing MSc in Computing (Data Science) TU059/Level 9. The panel has identified some areas in which these modules could be updated and enhanced.</p>		
<i>Will the curricula, teaching, learning and assessment methods enable students to reach the appropriate standard to qualify for the award(s)?</i>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Comment: The programme team provided a clear description of how the programme will be delivered, during the panel visit. Some additions and edits are required in the documentation to reflect the very good practice described by team members. The panel made some recommendations in relation to the teaching, learning and assessment of some of the modules, in particular the proposed project module.</p>		

<i>Was the programme development appropriately informed by internal and external stakeholder input (including industry/practice, professional/regulatory bodies, and community organisations)?</i>	Yes ✓	No ✓
<p>Comment:</p> <p>This programme was developed in direct response to industry (in particular, Workday) demands to upskill its workforce in the information and data processing sectors to enable them to adapt to a rapidly changing digital environment through the acquirement of more formal education in the field of advanced machine learning technologies. The School met on a weekly basis with Workday and also consulted with other external industry partners and internal stakeholders. The School has designed the programme in the knowledge and expectation that it may be offered more broadly in future, and it is the view of the panel – informed by the external panel member’s contributions – that the programme would attract strong interest from professionals in the sector.</p>		
<i>Has the programme been benchmarked against similar programmes nationally and internationally?</i>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<p>Comment:</p> <p>The programme is a special purpose award leading to a Postgraduate Certificate targeted to a specific industry need. The panel is satisfied that it aligns with similar programmes.</p>		
<i>Did the programme development take account of relevant external discipline benchmarks and Professional Statutory and Regulatory Body requirements?</i>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<p>Comment:</p> <p>There is no Professional Body, Statutory or Regulatory involvement in this programme.</p>		

Programme Design		
<i>Is the programme design informed by current development in the discipline and associated subject areas, having taken into consideration current trends, stakeholder feedback and market analysis?</i>	Yes ✓	No <input type="checkbox"/>
<p>Comment:</p> <p>Current trends and stakeholder feedback (internal and external), particularly from industry partners in the information and data processing sectors, instigated the development of this programme, based on the strong demand from senior leadership and practitioners to upskill in the computer and data science arenas, while obtaining a formal qualification in the process.</p>		
<i>Will there be opportunities for students to input into curriculum design decisions in the future?</i>	Yes ✓	No <input type="checkbox"/>
<p>Comment:</p> <p>The TU Dublin Quality Assurance & Enhancement policies and procedures for all TU Dublin programmes include both a student feedback mechanism for individual modules and a requirement for student representation at all boards and committees governing the programme. Supports are also made available to both staff and students regarding ways in which the Student Voice can be used at all stages of programme design. https://www.tudublin.ie/explore/about-the-university/academic-affairs/our-student-voice/.</p>		
<i>Is there a mechanism to ensure the input of external stakeholders in the ongoing development of the programme?</i>	Yes ✓	No <input type="checkbox"/>
<p>Comment:</p> <p>The School has forged strong and impressive university-industry relationships and regularly consults with various external stakeholders while being actively responsive to their various demands.</p>		
<i>Is the programme curriculum well-structured with a logical progression of learning and development across the modules and stages?</i>	Yes ✓	No <input type="checkbox"/>
<p>Comment:</p>		

<p>The choice of modules balances the need for fundamental machine learning theory and applied practice using state-of-the-art technologies and real-world use cases. The panel has asked to school to make more visible in the programme documentation the applied nature of the programme. While this was evident from the discussion that took place during the panel meeting, it was not as evident in the documentation.</p>		
<p><i>Are there appropriate opportunities for students to undertake work-based learning, through work placements or work-based projects or assignments?</i></p>	<p>Yes <input checked="" type="checkbox"/></p>	<p>No <input type="checkbox"/></p>
<p>Comment: A fundamental component of this new programme is the development of a new module, Applied Machine Learning Project, which enables the student to apply learning to real-world datasets and problems which is considered to be mutually beneficial to the student and their employer.</p>		
<p><i>If applicable, have the relevant Blended Learning Checklists (i.e., Learning Experience Context & Programme Context) been fully completed and submitted to the Panel?</i></p>	<p>Yes <input type="checkbox"/></p>	<p>No <input type="checkbox"/></p>
<p>Comment: The School was provided with the checklist for the quality assurance of HyFlex programmes in advance of the validation. The panel is satisfied that all aspects of that guidance document informed the programme development.</p>		
<p><i>Is the required programme and module information provided in the correct format?</i></p>	<p>Yes <input checked="" type="checkbox"/></p>	<p>No <input type="checkbox"/></p>
<p>Comment: Some corrections and edits are required in the programme documentation, but the format used is correct.</p>		

Learning, Teaching & Assessment		
<p><i>Is there an effective student-centred teaching and learning strategy that aligns with the University's strategies and Education Model?</i></p>	<p>Yes <input checked="" type="checkbox"/></p>	<p>No <input type="checkbox"/></p>
<p>Comment: The postgraduate certificate has been developed in direct response to the demands of full-time working professionals employed in the computer science and data science sectors who wish to upskill and gain a formal qualification in machine learning theory and practice but are unable to commit the necessary time and/or expense to undertake a full-time master's degree. The creation of the new project module enables students to apply learning to real-world datasets and problems.</p>		
<p><i>Does the assessment strategy provide an appropriate mix of assessment types that will enable students to demonstrate that they have met the module and programme learning outcomes?</i></p>	<p>Yes <input checked="" type="checkbox"/></p>	<p>No <input type="checkbox"/></p>
<p>Comment: The programme documentation currently lists some examinations on a selection of the modules. Given the nature of the programme, it is the expectation of the school that students will not undertake examinations but will complete all of their assessment as practical exercises. There is a requirement for the programme documentation to be updated to describe the forms of assessment intended to be used.</p>		

<i>Do the learning outcomes and assessment strategy ensure that academic integrity can be maintained and attempted breaches of academic integrity are minimised/easily detected?</i>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Comment: The School recognises the importance of the safety of their assessment procedures and has put in place a School-wide strategy to support this objective.</p>		
<i>Is there a comprehensive mapping of assessment methods and module learning outcomes and between module learning outcomes and programme learning outcomes?</i>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<p>Comment: Module learning outcomes should be updated to reflect the depth of learning and the focus of the curriculum (see recommendation no. 2 below). The panel advised that programme learning outcomes should be mapped to modules and module learning outcomes to help identify and eliminate any discernible gaps between the two (see condition no. 1 below).</p>		
<i>Are there opportunities in all modules to provide students with timely and constructive feedback on their learning and development?</i>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Comment: Feedback will be provided on all coursework.</p>		
<i>Do the teaching and assessment methods consider the diversity of the student cohort?</i>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Comment: In order to facilitate the full-time working professionals, the programme will comprise 4 hours classroom-based teaching per week. Students will be assessed through continuous assessment components (100%) throughout each semester and will include engaging theory and practice-based learning. Individual or group submissions may require accompanying presentations or other oral defenses at the lecturer's discretion. The creation of the new project module, 'Deep Learning Applied Machine Learning' enables students to focus their capstone work on a specific dataset which the panel recommends should be related to their employment.</p>		

Student Supports & Learning Environment		
<i>Are there sufficient and appropriate resources (e.g., human, financial and physical) to support the proposed programme aims and objectives, to deliver the programme as specified?</i>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Comment:</p>		
<i>Are there sufficient staff that are appropriately qualified and capable to support the programme delivery, from both context and pedagogy perspectives?</i>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Comment:</p>		
<i>Are there appropriate arrangements in place to support the student experience and to monitor student performance?</i>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Comment: For all learners, all materials and correspondence with students will be delivered via the official VLE, Brightspace. Outside of class, students may contact the course coordinator, the year mentor and individual lecturers via email or via Microsoft Teams. All staff also have on-campus contact office hours if a student prefers to meet face-to-face. Further information about student supports and resources is also outlined in the 'My life at TU Dublin' section of the student handbooks, (see Section 4).</p>		

<i>Are the access, transfer and progression arrangements clearly defined and appropriate, and aligned to TU Dublin policy/strategy in this regard?</i>	Yes ✓	No <input type="checkbox"/>
Comment:		
<i>Do the student supports and learning environment cater for equality, diversity and inclusivity of students?</i>	Yes ✓	No <input type="checkbox"/>
Comment: TU Dublin is committed to actively fostering an inclusive, diverse, safe and respectful institutional culture. This commitment is embedded in TU Dublin Strategic Intent 2030 , which is informed by Sustainable Development Goal 4 - 'ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.'		
<i>Is the relevant programme information clearly communicated to the students to ensure they are informed, guided and cared for?</i>	Yes ✓	No <input type="checkbox"/>
Comment: The Student Handbook contains all of the necessary information.		
<i>Has the Checklist for First Year Student Success (where applicable) been fully completed and submitted to the Panel?</i>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Comment: This is a postgraduate Special Purpose Award programme.		

Collaborative Provision (if applicable)		
<i>Are the roles and responsibilities of each partner clearly defined?</i>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Comment:		
<i>In the case of Joint or Multiple Awards, has due diligence on capacity of partner institution meeting the QA-QE requirements for the programme been undertaken?</i>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Comment:		

Section F - Overall Recommendation

1.	Recommend approval of programme as submitted, without amendment	<input type="checkbox"/>
2.	Recommend approval of programme, subject to minor amendments/editorial changes to be completed as soon as possible and with recommendations for consideration. Note: recommendations are attached where it is considered that the programme would benefit from particular changes, or from a review of certain aspects of the programme over a period of time, with changes made if required. While recommendations are advisory in nature, there is an expectation that all recommendations are responded to appropriately and acted upon as appropriate.	<input type="checkbox"/>
3.	Recommend approval of programme subject to the fulfilment of conditions. Recommendations for consideration may also be attached. Note: conditions are attached where it is agreed that changes must be made to the programme / programme documentation prior to the commencement of the	<input checked="" type="checkbox"/>

	<p>programme. Conditions must be set where issues are identified that relate directly to academic standards or to University regulations or procedures. It should be clear what is required in order to meet the conditions.</p> <p>A new programme cannot go forward to Faculty Board for consideration/approval unless a response to the Validation Report is submitted with revised programme documentation and the Academic Quality Enhancement Committee is satisfied that all conditions are met.</p>	
4.	Do not recommend approval of programme.	<input type="checkbox"/>

Areas for commendation

1.	Extensive and impressive engagement with industry.
2.	Strong demonstration of agility and responsiveness to industry requirements.
3.	A proven demand in industry for this innovative, exciting and timely programme, according to external stakeholders and the external industry panel member.
4.	Commitment to the professional development of potential graduates of this programme.
5.	Great consideration given to accommodate the needs of the working professional wishing to upskill and undertake formal study.

Conditions of Approval

1.	<p>The programme learning outcomes, aims and objectives need to be rewritten to accurately reflect the focus and level of the programme; to avoid duplication and ensure consistency across Akari and the Student Handbook. The programme learning outcomes should be mapped to modules and module learning outcomes to help identify and eliminate any gaps between them.</p> <p>Response:</p> <p>The programme level and module level learning outcomes have been reviewed and mapped resulting in the removal of superfluous, duplicate and inappropriate outcomes. The language has been cleaned up to reflect a level 9 programme.</p> <p>A detailed mapping of programme to module outcomes has been undertaken and provided in a separate accompanying document for review. This resulted in the streamlining of both programme and module outcomes and has ensured that every module outcome maps to a programme outcome and vice versa.</p> <p>The student handbook has been updated to reflect the corrected programme learning outcomes and operational specific language has been removed to reflect the generic nature of the programme aims and target cohort.</p>
2.	<p>The entry requirements need to be consistent across Akari and the Student Handbook.</p> <p>Response:</p> <p>The student handbook language regarding this has now been made identical to that in the programme document.</p>

3.	<p>The Learning and Teaching methods should make it clear that the modules can be delivered as classroom based in addition to other modes.</p> <p>Response:</p> <p>The originally submitted module descriptors were shared with other programmes with different T&L methods so the newer cloned versions of these documents have been amended to reflect specific TU5353 T&L methods for all modules.</p>
4.	<p>The module descriptors should describe the assessment strategies accurately. In three modules, examination is erroneously listed as an assessment. Consideration should be given to the appropriateness of the weighting assigned to Multiple Choice Questions as an assessment method at Level 9.</p>
	<p>Response:</p> <p>The originally submitted module descriptors were shared with other programmes with different assessment methods so the newer cloned versions of these documents have been amended to reflect specific TU5353 assessment methods for all modules</p> <p>As suggested, the MCQ assessments have been removed in favour of project and practical based assessments.</p>
5.	<p>It appears that there is a misalignment between what is happening in practice and what is described in the module descriptors in Akari (e.g., the use of literature). Therefore, the module descriptors and module learning outcomes should be updated to give a better reflection of the depth of topics covered and the focus of the curriculum. In addition, Indicative syllabi are quite broad and could be further refined.</p> <p>This feedback has been noted by the team, but it is believed that appropriate emphasis on the discipline literature will be supportable, albeit that this programme has a more practice-based emphasis compared the its sister MSc programme. This issue will be monitored by the programme team as the first cohorts are moving through.</p>

Recommendations

1.	<p>Reconsider how the project is positioned as a capstone. In the absence of upgrading the project to 10 ECTS credits, give due consideration to how a single project could be implemented by the student across all their modules with the capstone being added in the final project module.</p>
	<p>Response:</p> <p>The programme team have considered this feedback carefully and will consider introducing elements of the project preparation from semester 2 of year 1 in the Machine Learning module to be continued in semester 1 of year in Deep Learning. As the programme is being offered for the first time, the team will assess the experiences of the students in the machine learning modules to inform how the project module should be run in semester 3.</p>

Other matters to be brought to the attention of Faculty Board and/or University Programmes Board

Section G - Approvals

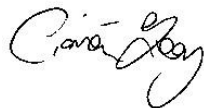
Validation Report

This report has been agreed by the Validation Panel and is signed on their behalf by the chairperson.

Chairperson:

Ciarán O'Leary

Signed:

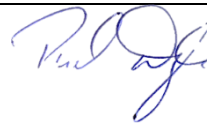


Date: 27/10/2023

School Response

The response to the conditions and recommendations has been agreed by the School and is signed by the Head of School.

Head of School: Dr Paul Doyle



Signed:

Date: Click or tap to enter a date.

30-11-2023

Faculty Board

The report and response have been approved by Faculty Board

Vice-Dean for Education: Dean

Signed:

Date: Click or tap to enter a date.

University Programmes Board (Programmes of 30 ECTS or great)

The report and response have been approved by the University Programmes Board

Registrar:

Signed:

Date: Click or tap to enter a date.