The AfDSP

Degree Accreditation Scheme:

A Guide for Applying to become an

AfDSP Accredited Partner

Oct 25

The purpose of this document is to provide guidance to those universities offering (degree) programmes with data components and want to gain accreditation from the Alliance for Data Science Professionals (AfDSP). This document will take you through the standards and what makes a degree eligible for consideration, as well as the detailed process of how to apply and complete the online application forms.

Benefits of Accreditation

The AfDSP have taken on the responsibility to develop and maintain standards in educational qualifications for those individuals who wish to follow a career data science and allied disciplines. The AfDSP accreditation scheme is set to become an important benchmark for higher education programmes as well as commercial training providers. Becoming an accredited partner will provide your institution and its students with a range of benefits. Through our accreditation scheme we will:

1. Recognise excellence: Reflecting your institutions' commitment to providing high quality learning, teaching and assessment, where approval has been granted for accreditation partners can use accredited logos on their website certificates and publicity materials.

2. Increase the marketability of your programmes in a competitive marketplace: You will receive a listing on the various AfDSP member websites, and we will also refer potential students to our list of accredited programmes.

3. Provide students with a route to Society membership: All students on an accredited programme will be eligible to progress along the professional pathway of each AfDSP member Data Science Professional to Advanced Data Science Professional status.

4. Provide your students with a competitive edge in a challenging job market: The AfDSP brand and those of its member bodies, are regarded as a mark of quality that is valued and understood by prospective students and employers.

5. Provide employees with an assurance of level technical skills and knowledge provided by a programme: Supporting your relationships with employers and helping to achieve employment for out employment outcomes for your graduates.

Standards & Eligibility

Which kind of degree programmes can be accredited?

This document is intended to be applicable to both 'cognate' degrees in the sub-disciplines of data science (e.g. Statistics, Computer Science, etc.), or data-adjacent programmes in non-cognate subject areas. This should be applicable to Bachelors (Honours) degrees as well as master's level degrees.

How do these standards relate to those for individual certification?

This document articulates with the standards document for professional certification providing a clear route to progression for graduates of accredited programmes in the workplace.

Degree accreditation standards set out the requirements for Data Science degrees to be accredited by the AfDSP in terms of learning outcomes for graduates and how they are evidenced.

These standards balance a need for employers to know what knowledge and skills they may expect of graduates from any accredited degree on the one hand, with protection for university autonomy, diversity of approach and spirit of free enquiry on the other. The standards do not prescribe specific forms or content of teaching but rather; invite degree providers to evidence how a range of learning outcomes focused on knowledge, awareness and practical applications are achieved.

The document contributes the following:

- Pedagogic advisory in effective approaches to delivering areas of training. These are suggestions rather than mandatory approaches.
- Please note that the 'Related skills' mapping in the rightmost column is for consistency with other internal versions of the documentation. The emphasis within these standards (for example, degree accreditation) may be through demonstrated behaviour, where our interpretation is at the knowledge or understanding level. It is likely that the 'Related skills' column will not be visible in the published standard.

All accredited degree programmes must demonstrate that graduates have a secure knowledge of the three subjects foundational for robust data science:

- Mathematics and Statistics
- Computing
- Ethics and Values

The precise mix of these skills will vary across degrees and can be delivered either as stand-alone modules; or as part of substantive data science modules.

Mathematics and Statistics

Graduates need a secure foundation in mathematics and statistics underlying data analysis. Degree providers should be able to demonstrate that the foundation skills and knowledge provided are sufficient, relevant and formally assessed. Knowledge of the relevant mathematics and statistics should underpin all Knowledge Areas A-E below, and although more central to; should not be restricted to Knowledge Area D.

Computing

Graduates must have knowledge of practical experience and competence in computing using data, characterised by volume, velocity, high dimensionality or other features that render conventional computing approaches inadequate. Knowledge of the relevant mathematics and statistics should underpin all Knowledge Areas A-E below and although more central to; should not be restricted to Knowledge Area B.

Ethics, professional values and responsibility

Degree providers should be able to demonstrate how the relevance and importance of ethical practice, a commitment to the public good, and awareness of professional responsibilities is built into all substantive credit-bearing modules of the degree and assessed. Although distinct modules on ethics and values are not prescribed, a good case would need to be made for their effectiveness.

It is accepted that ethical behaviour and awareness can only be fully developed in the workplace rather than in academic study alone. However, degree providers have a range of opportunities to consider, such as the use of case studies, short placements or visiting lecturers. Injunctions to 'be ethical' are *not* sufficient. Students should be able to translate ethical principles into practical behaviour and decisions. Ethics and values should underpin all subject areas A-E below, and although more central to; should not be restricted to subject area E.

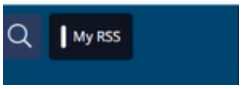
The full standards can be found in appendix 1
The Guide to Professional Membership can be found in appendix 2
The Alliance Accreditation Process can be found in appendix 3
Suggested Evidence is within Appendix 4

How to Apply:

Applicant Account Setup:

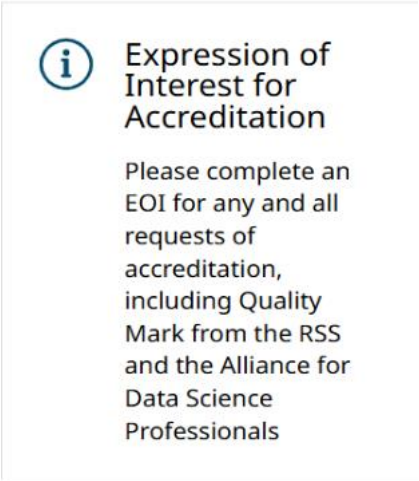
Please note the Royal Statistical Society are hosting the accreditation portal, that allows you to submit an application, on behalf of the AfDSP. Therefore, please be aware that following a conversation with the Alliance body you may have contact with, such as the BCS, IMA or ORS, you will then be guided to RSS.org.uk to submit an application.

To apply, applicants must already have or create an account on the RSS website. Please note, that this only requires a name and email address. This will provide you with access to the MyRSS section of the site without needing to sign up for any membership category to access the application system. Once logged in you can click on MyRSS as shown below to proceed.

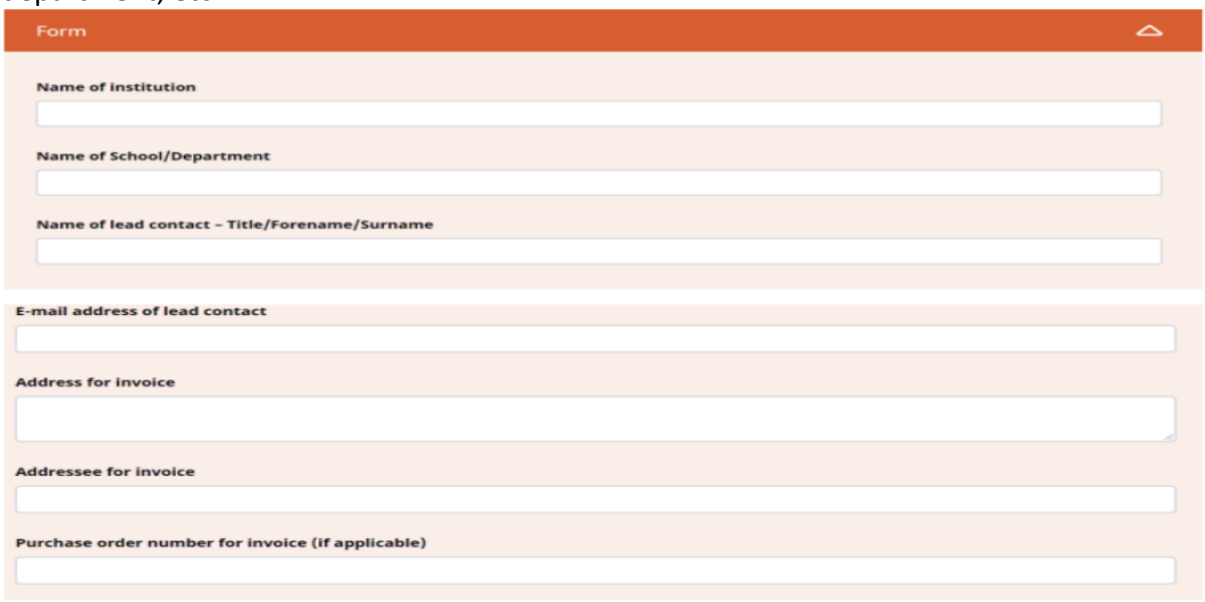


Expression of Interest Submission:

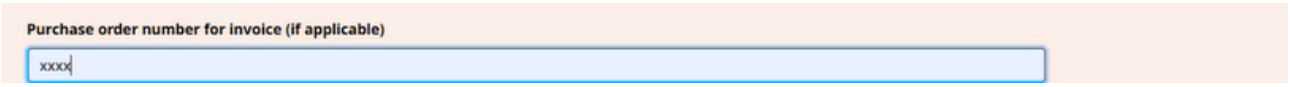
Applicants begin by submitting an expression of interest, specifying whether they are applying for the Alliance or AfDSP accreditation, and indicating their representing Alliance member and the number of courses for accreditation, which informs fee allocation and income forecasting.



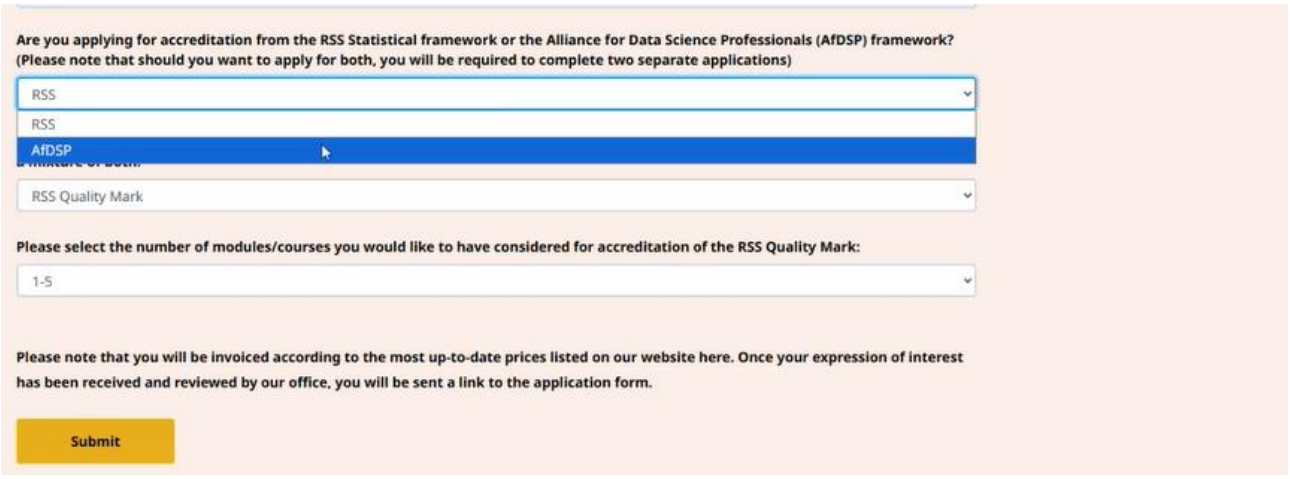
Applicants complete the form and provide the necessary information such as their Institution, department, etc.



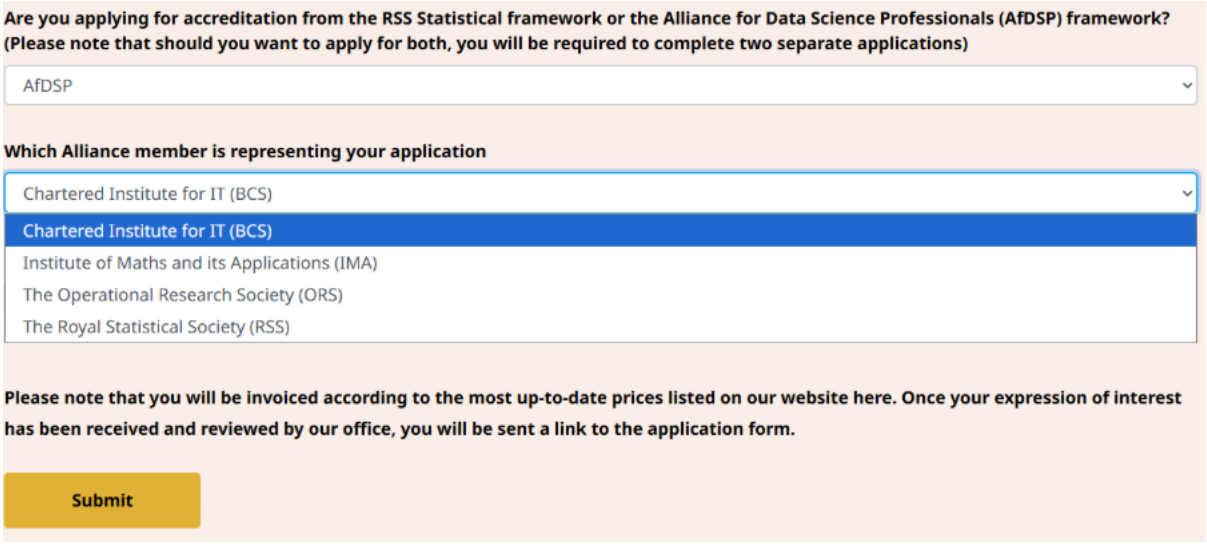
If you have a purchase order, please do provide this information. If not, you can leave this section as blank.



As you will be applying for accreditation from the Alliance for Data Science Professionals, you will need to stipulate this here.

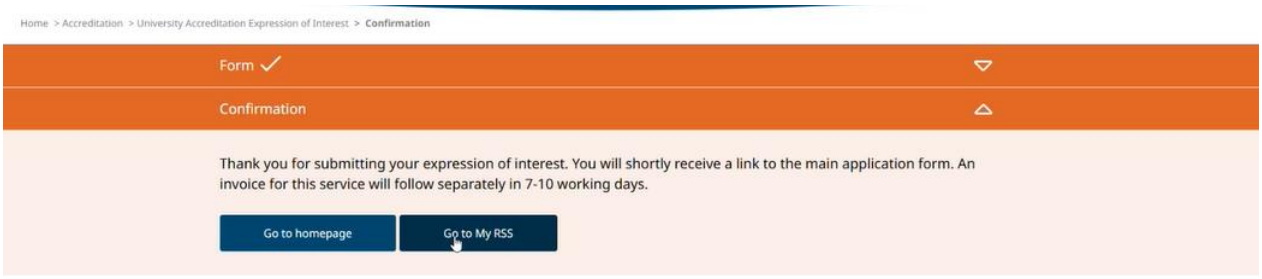


Indicate which Alliance is supporting your application. Then submit your application.



You will receive confirmation of your expression of interest.

The expression of interest form is sent to our administrators so that they are aware of your intention and can prepare the invoice once the full application is submitted.



Full Application Submission

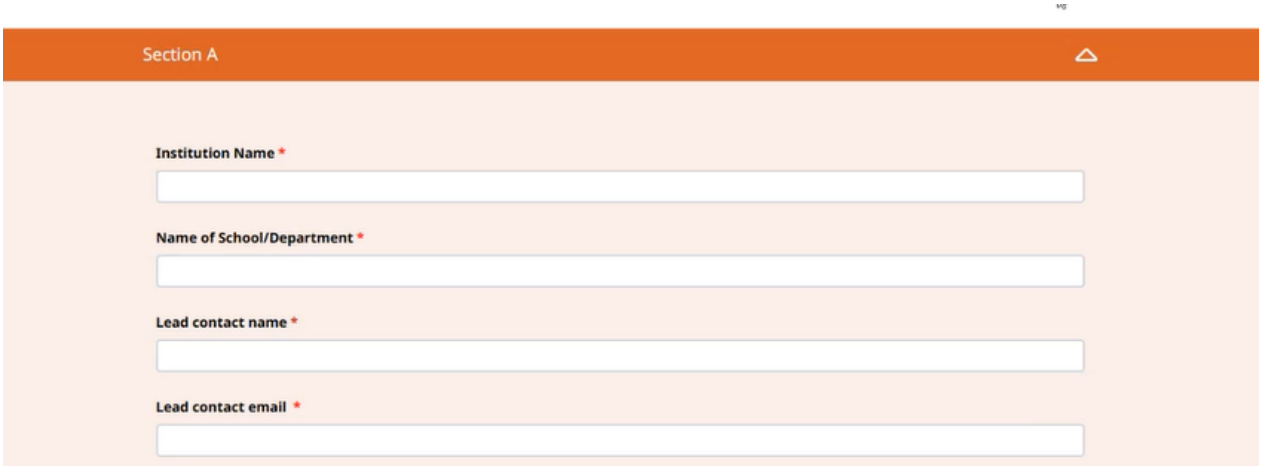
Application Form Details:

Applicants then complete a detailed form including programme titles, pass rates, quality assurance compliance, diversity initiatives, engagement with professional bodies, staff qualifications, and supporting evidence such as surveys and QAA reports.

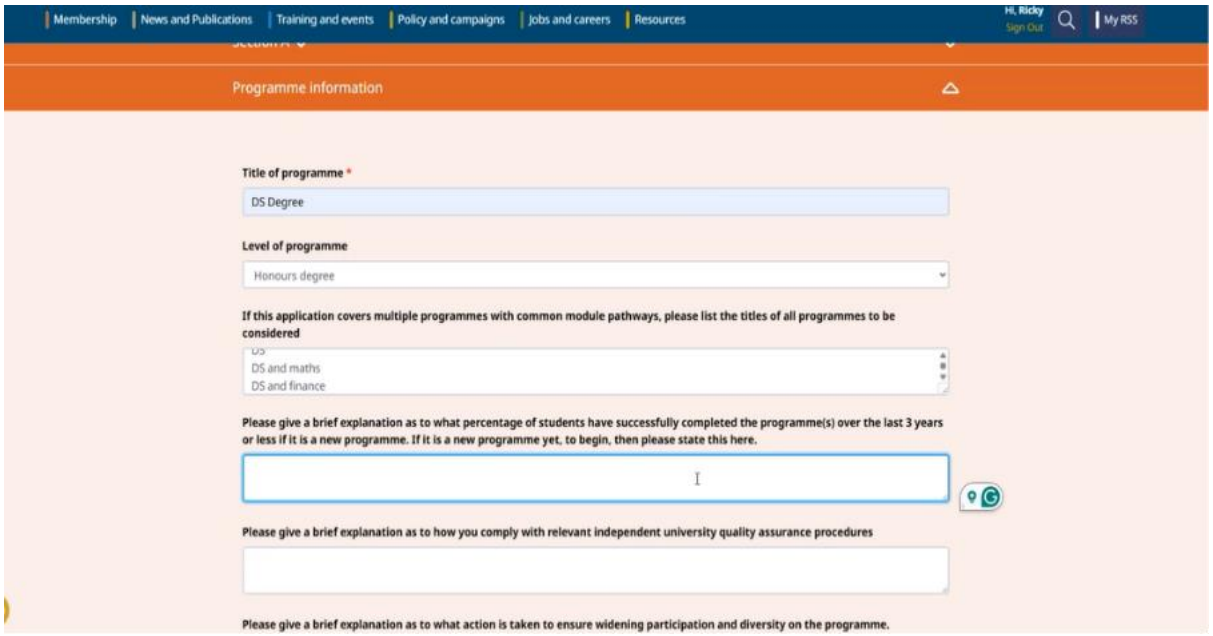
The link to the main application form will be sent to you by email and only those that submitted the EOI are able to access and complete the application.

Appendix 4 provides details of suggested evidence to submit as part of the application.

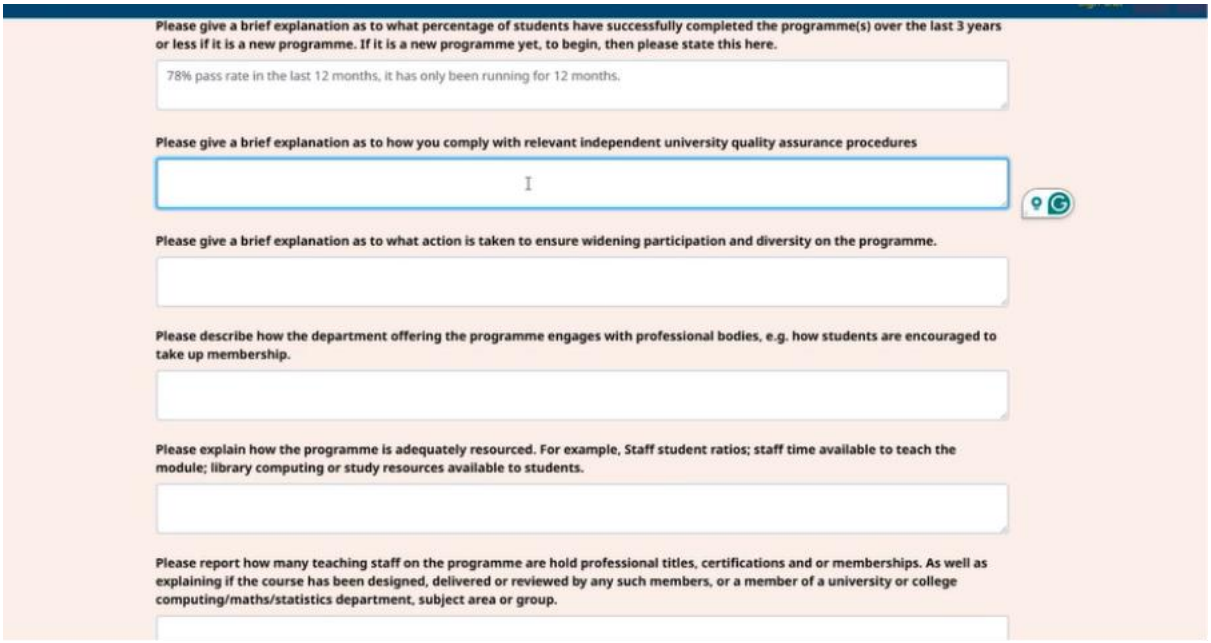
Begin by completing the Institution name, contact details, etc.



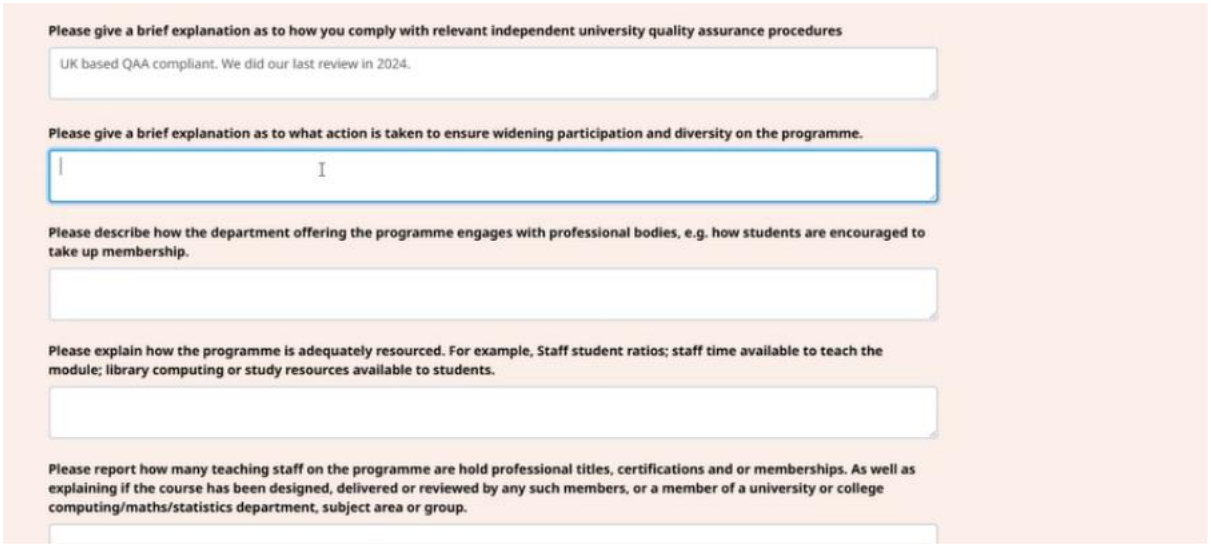
Continue to complete the course Information including Accreditation type, Title and Level of program. If this application covers multiple programmes with common module pathways, please list the titles of all programmes to be considered:



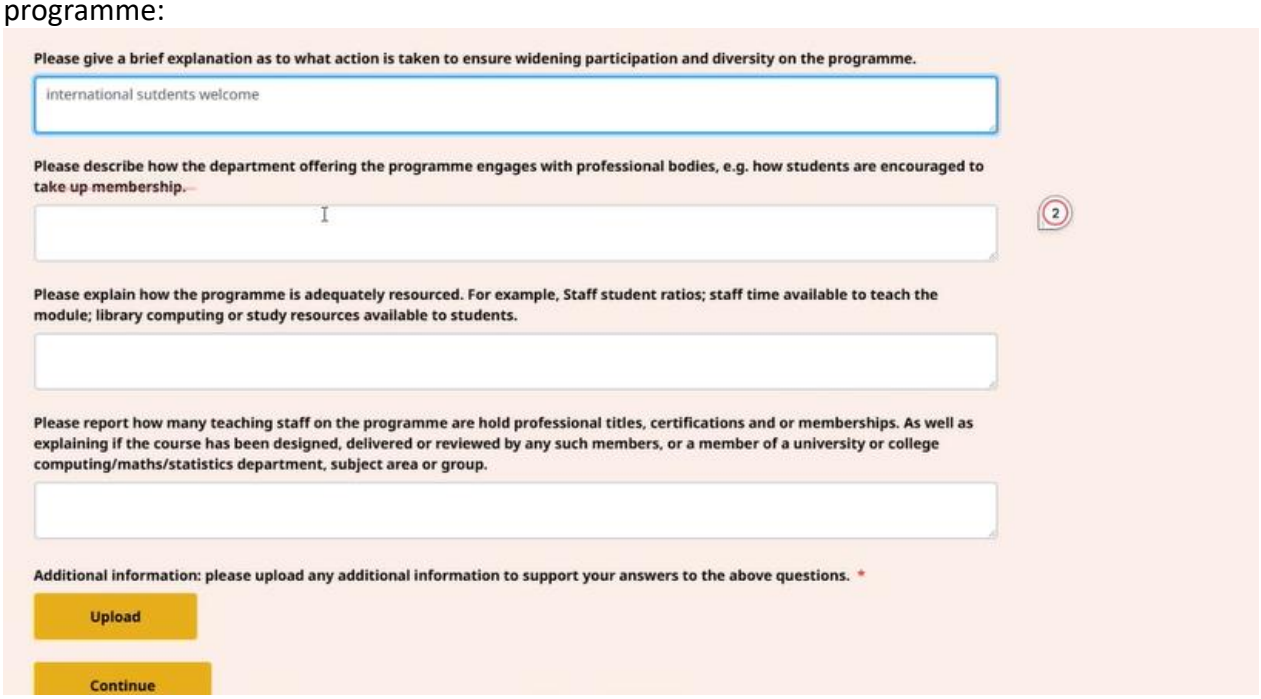
Please give a brief explanation as to what percentage of students have successfully completed the programme(s) over the last 3 years:



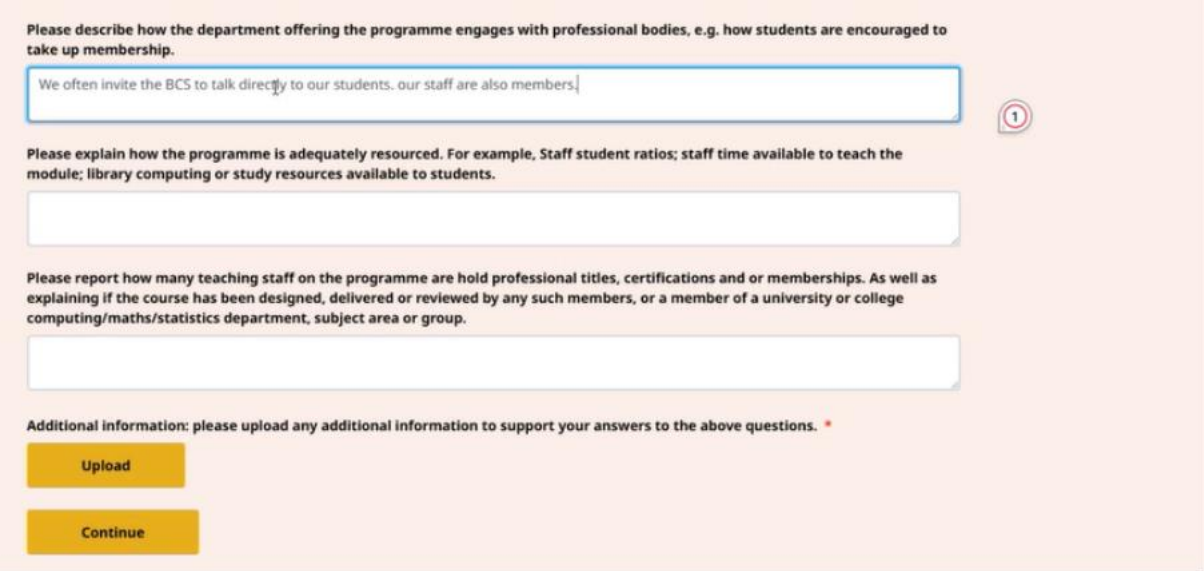
Please give a brief explanation as to how you comply with a relevant independent university quality assurance procedure:



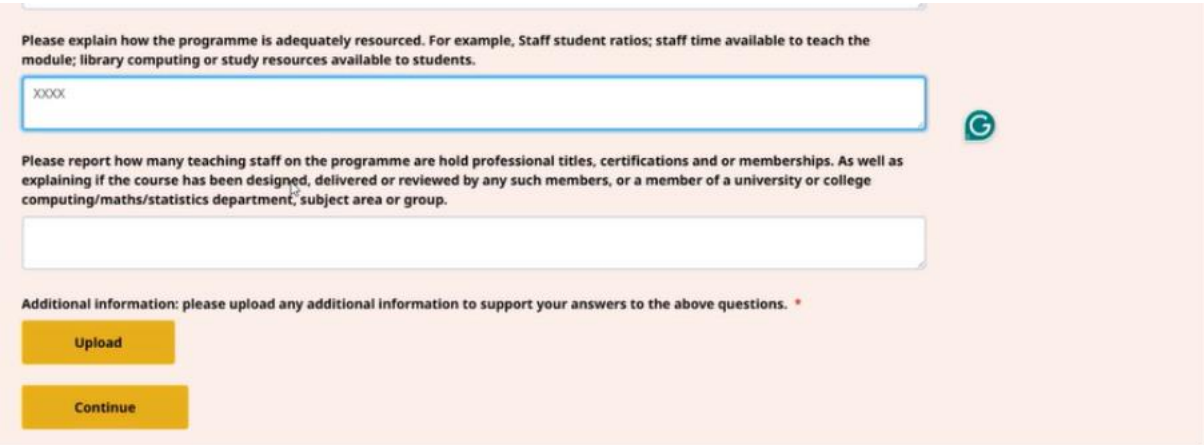
Please give a brief explanation as to what action is taken to ensure widening participation and diversity on the
programme:



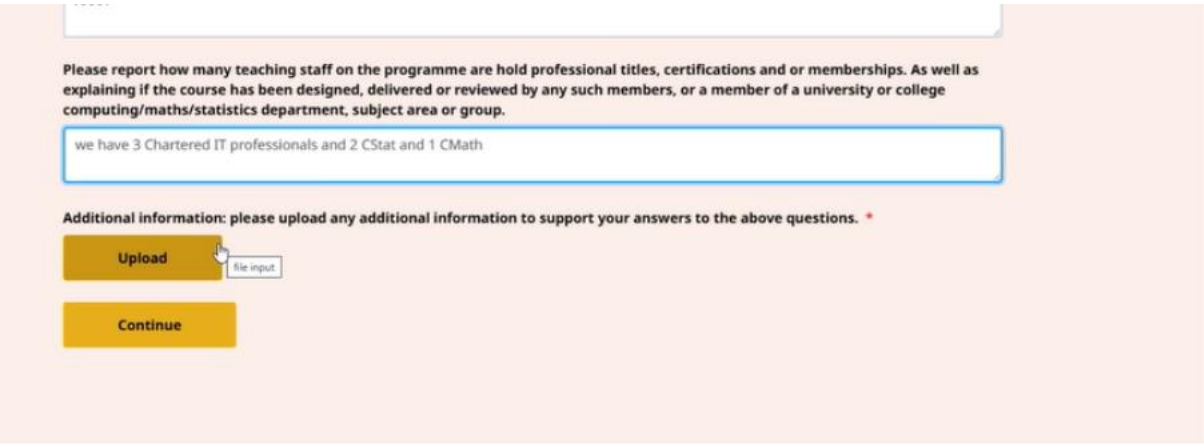
Please describe how the department offering the programme engages with AFDSP, e.g. how students are encouraged to take up e-membership:



Please explain how the programme is adequately resourced. For example, Staff student ratios; staff time available to teach the module; library computing or study resources available to students:



Please report how many teaching staff on the programme are may be professionally qualified such as holding professional titles from one or more of the AfDSP member bodies (GradStat, CStat, CMath, CITIP, FORS etc..). As well as explaining if the course has been designed, delivered or reviewed by a professional member, or a member of a university or college statistics department, subject area or group:

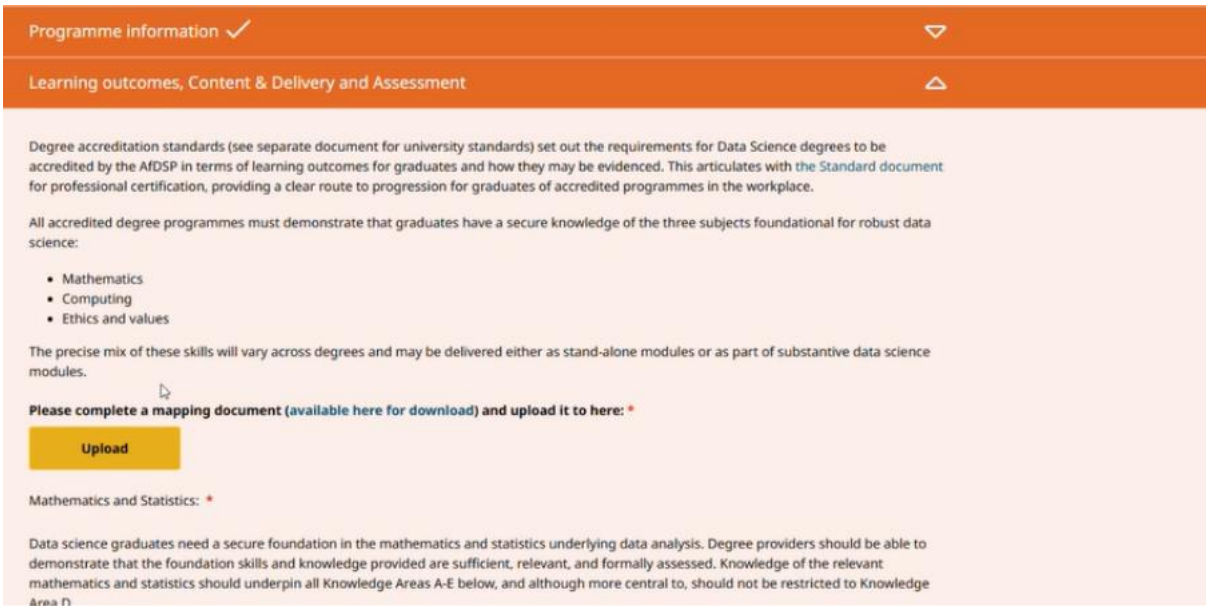


Additional information: please upload/attach any additional information to support your answers to the above questions *:

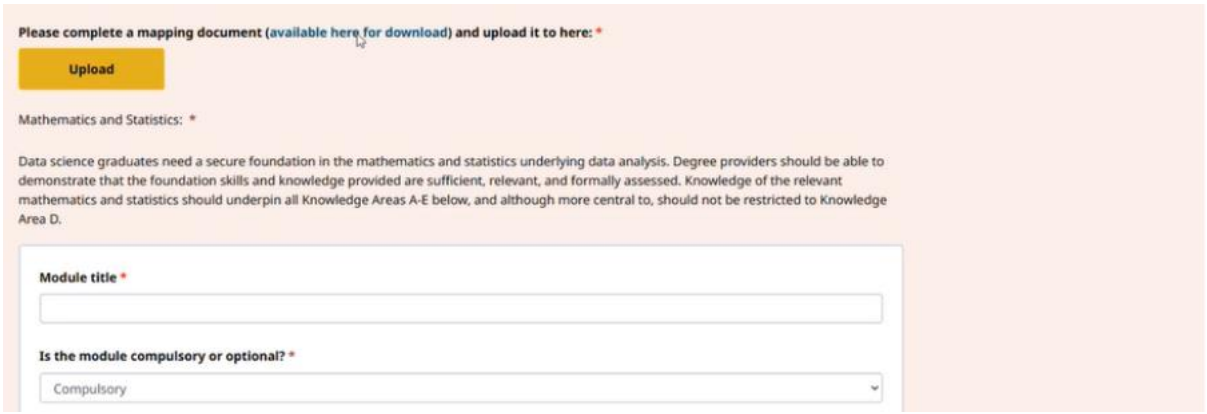
Documents can be uploaded in word, excel or pdf format.

This will complete the program information.

Learning outcomes, Content & Delivery and Assessment



You will need to download, complete and upload the Mapping document. This document is a basic spreadsheet that will allow you to easily highlight which of the modules cover which parts of the standard. It allows you to highlight modules covering multiple skill areas of the standard.

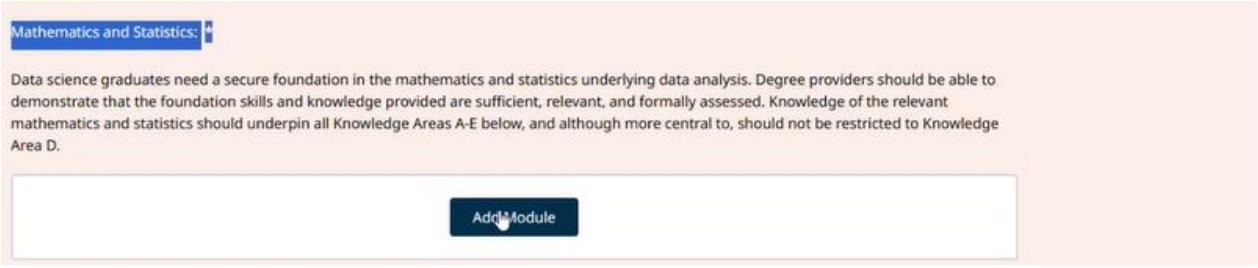


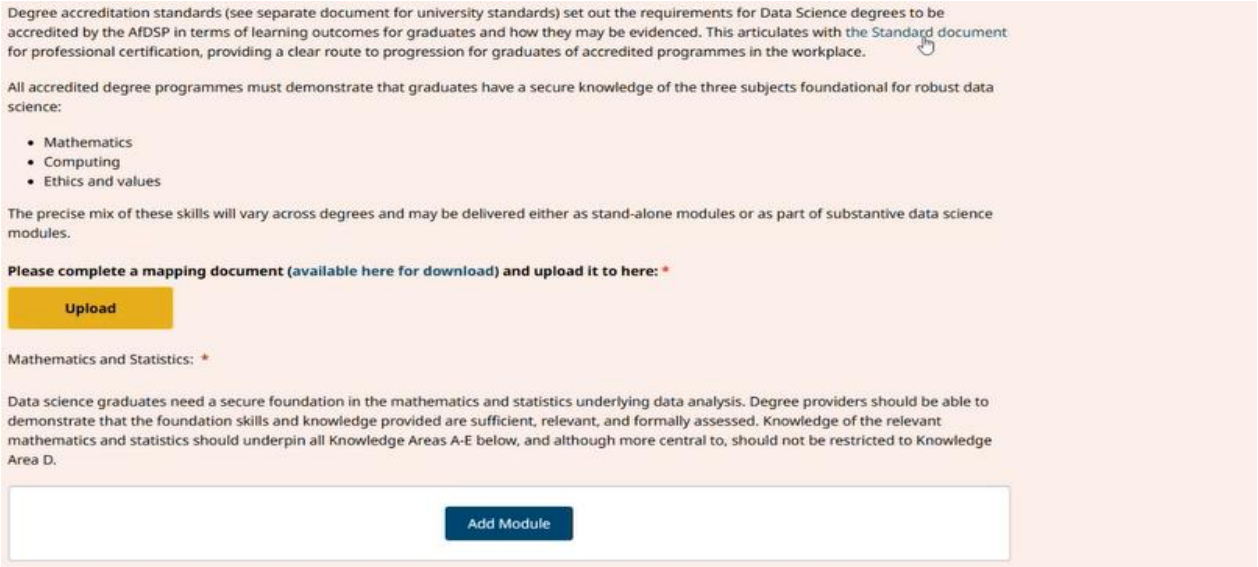
Learning Outcomes and Mapping Document: Applicants must provide a mapping document **(Excel spreadsheet)** aligning modules with learning outcomes across mathematics and statistics, computing, and ethics, and upload module descriptors and evidence to demonstrate coverage and compliance.

Modules that meet this learning outcome:

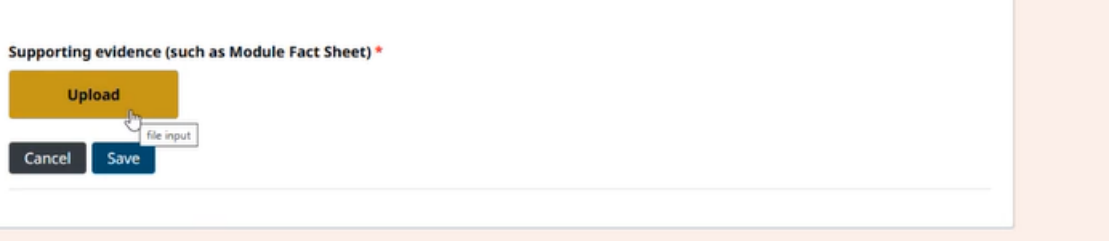
You will then need to complete the relevant information for each of the three areas, Mathematics and Statistics, Computing and Ethics. The precise mix of these skills will vary across degrees and may be delivered either as stand-alone modules or as part of substantive data science modules. You repeat the process listed below for each of the three areas on the form. Uploading multiple modules in each areas. Some module will also be listed in more than one of the three areas, which is fine.

The Standards document can be found in the section at the top of the page:
Degree accreditation standards (see separate document for university standards) set out the requirements for Data Science degrees to be accredited by the AfDSP in terms of learning outcomes for graduates and how they may be evidenced. This articulates with the Standard document for professional certification, providing a clear route to progression for graduates of accredited programmes in the workplace.





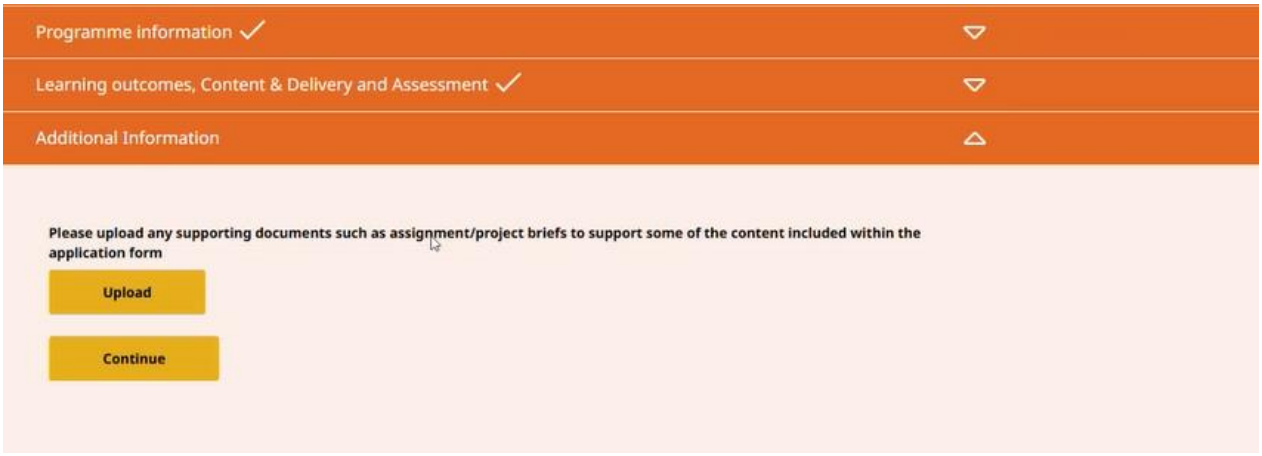
Here, you will be required to upload a Module Fact Sheet:



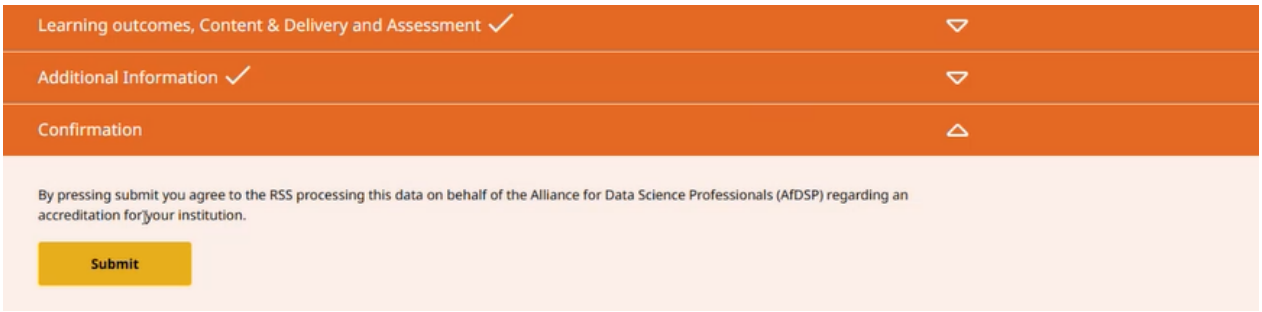
Continue to upload the relevant information for all subjects and repeat for each area and then submit this information.

If you have any additional information you can upload.

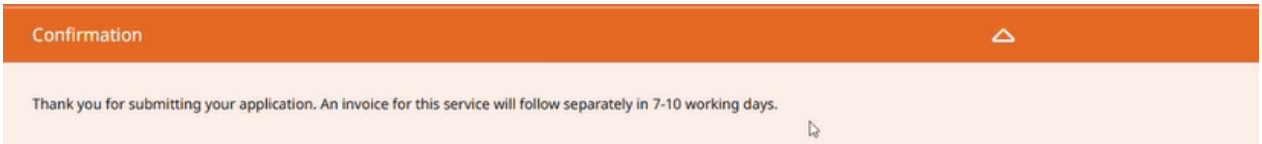
Evidence Submission Requirements: While uploading additional supporting documents is not strictly mandatory, applicants are strongly encouraged to provide evidence such as pass rates, surveys, and graduate data to support their application.



Once you sign the confirmation you can submit your completed application.



Once submitted, you will receive notification of acknowledgement.



What happens Next

Admin Review and Invoice Request: Administrators review submitted applications for completeness, verify supporting documents, and request invoices based on the number of courses listed in the final application.

Cost of Accreditation: Fee Structure and Allocation:

AfDSP Accreditation fees	**Application fee**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
1-5 courses	£2000	Free – covered by the application fee	£2000	£2000	£2000	£2000
6-10 courses	£2500		£2500	£2500	£2500	£2500
11+ courses	£3000		£3000	£3000	£3000	£3000

The application fee varies based on the number of courses (e.g., £2,000 for one to five courses), and fees are split among Alliance members according to the number of universities.

Assessment and Feedback Process: Assessors review the mapping document, module descriptors, and supporting evidence, provide comments, and may request additional information if needed; conditional approvals require explicit conditions to be documented.

Final Decision: Once all reviews are complete and any conditions are addressed, the application status is updated. You will receive notification of the final decision and receive confirmation and certificate generation.

Appendix 1:

Data Science graduates should demonstrate a breadth of knowledge, skills, and awareness across the following five areas. In addition, degrees should offer students the opportunity to study at least two of these areas in greater depth and develop greater expertise.

Knowledge Area	Learning outcomes	Evidential guidance	Related skills
A. Data Privacy and Stewardship The security and protection of data including design, creation, storage, distribution and associated risk. Including: • The Data life cycle (provenance, identification, management, analysis, exploitation, curation) • Data Stewardship and Standards. • Knowledge and understanding of information security • Protection and management of personal and sensitive data • Knowledge of the legal and regulatory environment	i. Knowledge of the FAIR Guiding Principles for scientific data management and stewardship, Awareness of the necessary steps to ensure the safe and secure management of sensitive data, models and infrastructures and an awareness of how these link to professional responsibilities. ii. Assess risks and know how to enact data protection policies and procedures. iii. Knowledge of data controls, such as encryption, (pseudo)anonymisation iv. Awareness of the benefits, drawbacks and challenges of synthetic data approaches. v. Awareness of approaches to risk management around environment and infrastructure vi. Understand the relationship between technical standards and regulation/governance, and their benefits for interoperability and knowledge sharing.	There should be evidence of engagement with domain- and/or sector-specific knowledge, and the ability to frame a technical response within these contexts. Discussions around practical controls should articulate fully with legal, regulatory and ethical considerations. The complexities of handling situations arising from the (mis)use of sensitive data should be emphasised appropriately. Case studies and visiting lectures may be appropriate.	Level 7 AI Data Specialist **S1, B3, Duty 13** DDat Data Scientist **Supporting strategic and operational decision making** Level 7 Operational Research Specialist **K18, S14** SFIA **CORE** OpenCDS **CBS07**

B. Definition, acquisition, engineering, architecture, storage and curation. The collection, secure storage manipulation and curation of data, the application of data management and analytical techniques.	**1. Data Collection and Management.** i. Critically analyse the availability of appropriate data and resources to meet project requirements. ii. Source and access data appropriate for a problem. iii. Critically evaluate and synthesise data. iv. Knowledge of data provenance processes. v. Identify data characteristics (volume, velocity and variety). vi. Identify infrastructure requirements for data storage and analysis. vii. Show familiarity or experience with tabular and non-tabular data (e.g. unstructured and streaming data). **2. Data Engineering.** i. Construct data sets, potentially drawing from multiple disparate sources using data linkage. ii. Perform data profiling and characterisation to understand the surface properties of the data. iii. Handle missing data, through principled inclusion/exclusion criteria and imputation methods. iv. Take a systematic approach to data curation and the application of data quality controls. **3. Deployment** Create an appropriate data product, e.g. Application Programming Interface (API), derivative dataset, dashboard or report.	We recognise the practical challenges in delivering curricula relating to the scalability of data science solutions. We appreciate that is it not always financially viable or practical for learners to undertake data science work 'at scale' through practical laboratories and coursework exercises. We suggest that the complexity of datasets should be broadly representative of those found in practice, and that datasets be commensurately large for the hardware available to each learner. In doing so, they should gain an appreciation and practical experience of the development process, without runtimes inhibiting their ability to make progress. Similarly, we recognise the challenge in assessing learners' work which relies on external infrastructures. In such situations, assessment which includes a 'viva' component where the learner demonstrates their running application, would be a scalable alternative.	Level 7 AI Data Specialist **K14, S17, K27** DDat Data Scientist **Sourcing, accessing and manipulating** Level 7 Operational Research Specialist **S3, K6, K24** SFIA **DATM, INAS, STPL, RLMT, KNOW, MEAS, AVMT, STMG, CPMG** OpenCDS **DSS04**

C. Problem definition and communication Demonstrate the ability to identify and clearly define a problem with others and communicate solutions to both technically qualified and lay audiences.	**1. Problem definition** i. Identify a project. ii. Determine success criteria and frame these in a wider context. iii. Identify and critically evaluate assumptions. iv. Assess risk. v. Knowledge of project delivery approaches, and the ability to identify the most appropriate method for a given project and within (industry) constraints. **2. Team and project work** i. Know how to communicate in an effective manner for diverse audiences, including those with and without technical knowledge ii. Experience in various relevant communication techniques (written, oral or visual), appropriate for the audience.	Learners should develop an understanding of the wider context within which organisations work. They should understand the contribution data science can make to their objectives, and the impact of dimensions of data maturity on organisation's ability to progress. . Effective communication, both written oral and visual. The ability to communicate technical knowledge, including both substantive results, the procedures used to create them, and the uncertainty or limitations inherent in them, and to do so in a manner appropriate to the nature of the audience.	Level 7 AI Data Specialist **S5, S8, K1** DDat Data Scientist **Supporting Strategic and operational decision making** Level 7 Operational Research Specialist **K1, K2, K3, K17, B1, B4, S1, S13, K10, K12, S9, S10** SFIA **LEDA, PEMT, ETDL, DLMG, ARCH, REQM, QUMG** OpenCDS **CBS04**

D. Problem solving, analysis, statistical modelling, visualisation. Knowledge of, and an ability to apply, a range of mathematical, statistical and computing tools and methods to define and analyse a problem and present solutions.	**1. Data preparation and feature modelling.** i. Identify appropriate solutions, including statistical and machine learning approaches and demonstrate an understanding of the assumptions, strengths and weaknesses of the selected approaches. ii. Identify and evaluate appropriate evaluation metrics, including computational performance and accuracy. iii. Critically evaluate and validate the results of modelling work to identify issues, including but not limited to, overfitting. iv. manipulate data with due regard for differences in characteristics. iv. Creation and evaluation of new data features. **2. Data Analysis and Model building.** i. Apply appropriate solutions, including statistical and machine learning approaches. Demonstrate competence in a modern programming language. ii. Use appropriate analysis platforms and tools. iii. Adopt a systematic approach to exploratory data analysis to embrace and manage ambiguity and uncertainty. iv. Critically analyse data and analytical results. v. Adopt appropriate methods to visualise data and communicate complex findings.	Learners should develop experience in undertaking data analysis, including (but not limited to) exploratory data analysis, visualisation and predictive work. Learners should appreciate what it means to identify appropriate solutions within time constraints and with limited data, taking a pragmatic stance to deliver value in a timely manner. Learning should progress from exercises where students are guided towards appropriate solutions to those in which student must themselves identify what approaches may be appropriate. Learners should be equipped to identify, and that appropriate	Level 7 AI Data Specialist **S12, B3, S10, K7, S2, K4, S1, S17, S16, K2, S13, K3, K19, S11, S18, K20, S9, S21** DDat Data Scientist **Exploring and visualising data.** Level 7 Operational Research Specialist **B8, S15, K4, K5, K6,K7, K8, K9, K13, S3, S4, S6, S7, S9** SFIA **ARCH, DTAN, DBDS, BUAN, DESN, PROG, BPTS, TEST, INAN, VISL, INCA, ICPM, DBAD** OpenCDS **DSS08, DSS04, DSS05**

E. Evaluation and Reflection This skill is about reflecting on performance and outcomes, identifying development needs and applying important principles associated with ethics and sustainability. Note: when completing your evidence for this Skill Area you can refer to evidence provided in the Skill Areas A-D, together with ensuring that ethical evaluation is reflected throughout Skill Areas A-D.	**1. Project Evaluation.** i. Ongoing monitoring of project performance and outcomes. ii. Identify and feed forward lessons learned. iii. Participate in and lead collaborative project evaluations, e.g. retrospectives. **2 Ethical behaviour.** i. Identify and manage the risks of erroneous and biased data. ii. Know what it means to act with integrity with respect to legal and regulatory requirements. iii. Understand strategies an individual can apply to help advocate for and uphold principles of ethical and safe use of data and AI technologies. iv. Know how data use procedures are used to ensure sensitive data is only used for its agreed purpose. v. Knowledge of data retention strategies and their link to legal and regulatory requirements. **3. Sustainability and Best Practices.** i. Knowledge of the principles of open science and reproducible research. ii. Competence in programmatic approaches to undertaking data science work. iii. Knowledge of, and experience in applying, the scientific method in data science work iv. Knowledge and experience of software development best practices; for example, software testing, version control, containerisation, Continuous Integration and Continuous Delivery. v. Knowledge of, and experience in using, a range of specialist libraries to support common data science tasks. iv. Awareness of, and experience in using, online sources of information to guide development of knowledge and overcome technical challenges.	It is important that learners get realistic experience of collaborative data science working, including project management, collaboration and evaluation. Learners should be able to reflect critically on their own work, and critically analyse the data and analytic results at hand. Learners should be able to demonstrate the relevance and importance of auditability, ethical practice, a commitment to the public good, and awareness of professional responsibilities. Learners should be able to translate ethical considerations into practical behaviour and decisions for a range of case studies. Reflective practice may be assessed as part of team and project working, as well as longitudinally throughout a degree programme. In doing so, learners should be taught the importance of ongoing professional development. Professional values should be embedded throughout the curriculum.	Level 7 AI Data Specialist **B3, S22, Duty 3, Duty 6, K7, S18, K6, S22, S14, K29** DDat Data Scientist **Taking an interdisciplinary focus, Adhering to the data science ethics framework, supporting strategic decision making.** Level 7 Operational Research Specialist **S10, S9,** SFIA **BPRE, INOV,** OpenCDS **DEC02**

	vii. Knowledge of the potential for automation to promote reproducible analyses. viii. An awareness of the benefits and drawbacks of low- and no-code solutions to assist the development of data products, including an appreciation of AI development. **4. Reflective Practice and Ongoing Development.** i. Learn from experience through self-assessment of one's own responses to practice situations. ii. Proactively identify one's 'blind spots' and biases, at all stage of the project lifecycle, and identify areas of learning and development. iii. Identify learning opportunities to maintain knowledge and skills in the relevant area of data science.		

Appendix 2

Appendix 3

Appendix 4:

Suggested evidence

	Criteria	Suggested Additional Evidence
Learning outcomes	The module has clear **learning outcomes** which match one or more of the main areas: • Mathematics & statistics • Computing • Ethics and values	A brief account of the skills and knowledge expected on entry to the module (if this is not in the module documents). Opportunities for study on completion of the module. Modules set at levels below NQF6 (degree) should deliver learning outcomes appropriate to their level which enable progression towards the graduate level outcomes.
Content and delivery	Module content matches the learning outcomes.	Whilst the accreditation does not specify any particular content, it does require the content to have a coherent and explicit link to the learning outcomes.
	Appropriate attention is given to the mathematical, statistical and computing foundations of practical applications, and to the practical application of theory and mathematics, as well as the communication and presentation of results. *Where relevant*, students gain experience of working with realistic, large datasets and/or solve problems relating to data in context. *Where relevant*, students use appropriate software.	Purely theoretical or mathematical modules are eligible, as long as they form part of a programme of study in which their application is taught and assessed. So too may purely practical modules (e.g. on 'statistical consulting') as long as they form part of a programme of study in which their theoretical and mathematical foundations are taught and assessed. 'Cook book' and 'Point and click' approaches or the learning of formulae outside a context of application are specifically discouraged. 'Paper and pencil' and hand calculation are perfectly acceptable pedagogy, but students should also use software as necessary.
	The fundamental importance of integrity, ethics and data security are taught.	Any modules dealing with empirical data should stress the obligation to collect, manage, analyse, report or curate data ethically.
	The delivery, learning hours and modes of study (e.g. lectures, lab work, seminars, online resources, self-study) are appropriate to the module content.	The material supplied should be detailed enough to allow assessors to judge whether the content matches the learning outcomes and are reasonably achievable given the skills and knowledge of students accepted on to the module. The format of the evidence is not important. Existing documents are preferred to any prepared specifically for accreditation.
Assessment	The assessment used allows students to demonstrate their achievement of the learning outcomes. A substantial majority of students successfully achieve these outcomes.	Examples of course assessments. Proportion of students successfully completing the course / passing the assessment. Diversity in modes of assessment are encouraged. Some modules may not be formally assessed (e.g. student placements). As long as these form part of a coherent programme of study they are eligible for the quality mark .
Review	The course has been designed, delivered or reviewed by a GradStat or CStat holder, or a member of a university or college statistics department, subject area or group.	Name(s) of those involved and meeting criteria.
	The module sits within a recognised independent quality assurance programme that reviews • Teaching quality • Student support, feedback and consultation	Statement of compliance with relevant QA procedures.

Resources	The module is adequately resourced.	Staff student ratios; staff time available to teach the module; library computing or study resources available to students.