Quality assessment report

BSc Computing courses at Bradford College

December 2022 – April 2023

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Contents

Summary

Each year, the Office for Students (OfS) selects a number of higher education providers for investigation based on regulatory intelligence including, but not limited to, student outcome and experience data and relevant notifications. As part of these investigations, the OfS may commission an assessment team, including external academic experts, to undertake an assessment of quality. The quality assessment focuses on areas of potential concern indicated by the data or other regulatory intelligence, or by information obtained by the assessment team as part of the assessment.

The assessment involves a visit to a provider, after which the assessment team produces a report. This report represents the conclusions of the team as a result of its consideration of information gathered during the course of the assessment to 17 April 2023. The report does not take into account matters which may have occurred subsequent to that period.

In line with the risk-based approach of the OfS, the assessment team does not undertake a comprehensive quality assessment in respect of every requirement in each condition of registration, and therefore this report should not be read as the team having undertaken such an assessment.

This report does not represent any decision of the OfS in respect of compliance with conditions of registration.

1. The OfS requires all registered higher education providers' courses to meet a minimum set of requirements or conditions that relate to quality and standards. The detailed requirements of these conditions can be found in the OfS's regulatory framework.[1] In December 2022, as a result of the OfS's general monitoring, the OfS decided to open an investigation into the quality of computing courses provided by Bradford College.

2. Bradford College offers undergraduate level computing courses at its Advanced Technology Centre, which forms part of the main college campus in central Bradford. According to data supplied by the college, in the academic year 2022-23, 72 full-time equivalent (FTE) students were enrolled on computing courses at Bradford College.

3. The OfS appointed an assessment team on 22 December 2022 that consisted of three academic expert assessors and a member of OfS staff. The team were asked to give their advice and judgements about the quality of the college's computing courses.

4. The team considered a range of information. This included:

    - information already held by the OfS, such as data relating to student outcomes
    - information submitted to the OfS by Bradford College, such as information about assessments and student achievement

[1] See OfS, 'Securing student success: Regulatory framework for higher education in England' at www.officeforstudents.org.uk/publications/regulatory-framework-for-higher-education-in-england/.

- specific courses on the college's virtual learning environment (VLE).

5. The team visited Bradford College on two occasions in March 2023 and April 2023, during which time it met with staff and students, observed teaching and had a tour of the facilities.

6. During the assessment process, the team developed lines of enquiry. These focused on areas that potentially warranted further investigation and that were within the scope of ongoing conditions of registration:

    - B1: Academic experience

    - B2: Resources, support and student engagement

    - B4: Assessment and awards.

7. The lines of enquiry were developed and updated between the first and second visit and both versions were shared with the college. This process followed the OfS's risk-based approach.

8. Through its activities, the team identified three areas of concern that may relate to Bradford College's compliance with the OfS's conditions of registration:

    - **Concern 1**: The assessment team found that the level of educational challenge and coherence in relation to depth of content of the courses considered was below what would be expected of a computer science higher education course, raising concerns that students were not required to develop relevant skills. This concern relates to condition of registration B1.

    - **Concern 2**: The assessment team found that the high volumes of non-technical assessment in modules with technical subject matter and learning outcomes and assessments weighted towards writing and referencing skills may suggest that students are not assessed effectively. Additionally, the assessment team were concerned that the use of writing-based marking criteria for more technical assessments could mean that academic regulations (marking criteria) were not designed to ensure the credibility of relevant awards because they appeared not to have been designed for the assessment of technical practical work. This concern relates to condition of registration B4.

    - **Concern 3**: The assessment team found that the standards and marking for technical assessment may suggest that students achieve higher grades than the technical skills demonstrated support, raising concerns that the relevant awards may not be credible. This concern relates to condition of registration B4.

9. The assessment team considered multiple sources of information that were relevant to condition B2: Resources, support and student engagement. The assessment team did not identify any concerns relating to this condition from reviewing this information.

Introduction and background

10. Each year, the OfS selects a number of higher education providers for investigation based on regulatory intelligence. This includes, but is not limited to, student outcome and experience data and relevant notifications. As part of these investigations, the OfS may commission an assessment team, including external academic experts, to undertake an assessment of quality. The quality assessment focuses on areas of potential concern indicated by the data or other regulatory intelligence, or by information obtained by the team as part of the assessment.

11. The assessment involves a visit to a provider, after which the assessment team produces a report. In line with the risk-based approach of the OfS, it does not undertake a comprehensive quality assessment in respect of every requirement in each condition of registration, and therefore this report should not be read as the assessment team having undertaken such an assessment.

12. This report does not represent any decision of the OfS in respect of compliance with conditions of registration.

13. The OfS appointed a team in December 2022 to assess the quality of the computing courses provided by Bradford College (i.e. those courses delivered by Bradford College, excluding transnational education and the obligations of awarding bodies for courses delivered by a delivery provider under a partnership arrangement). The assessment included matters that fall within the scope of the OfS's conditions of registration that concern quality and standards (specifically, ongoing conditions B1, B2 and B4).[2] The scope of the assessment, the information considered, and the findings of the assessment team are summarised in this report.

14. This report represents the conclusions of the team as a result of its consideration of information gathered during the course of the assessment to 17 April 2023. The report does not take into account matters that may have occurred subsequent to that period.

15. The OfS decided to open this investigation as part of its approach to general monitoring and in the context of its decision to focus on the quality of computing courses. In opening the investigation, the OfS had regard to information it held relating to Bradford College, including student outcomes data and any notifications received.

Context

16. Computing courses at Bradford College are delivered through the School of Allied Health and Computing at the Advanced Technology Centre (ATC), located at the main college campus in central Bradford. The ATC includes dedicated classrooms, student study spaces and labs for computing students. Central student services and support and library services are located in a separate building also on the main college campus.

17. Bradford College offers the following BSc (Hons) computing courses:

[2] See OfS, 'Registration with the OfS: Conditions of registration' at www.officeforstudents.org.uk/advice-and-guidance/regulation/registration-with-the-ofs-a-guide/conditions-of-registration/.

- Information Systems Management
- Information Systems Management with Foundation Year
- Networking Infrastructure and Security
- Networking Infrastructure and Security with Foundation Year
- Software Engineering
- Software Engineering with Foundation Year.

Courses with an integrated foundation year are offered full-time over four years. Those without a foundation year are offered full-time over three years or part-time over six years, with the exception of BSc (Hons) Information Systems Management which is offered part-time on an accelerated five-year route. A BSc (Hons) course in Computing Information Systems was being taught out during the 2022-23 academic year.

18. The college also offers Higher National Certificates (HNC) in Computing, Cloud Computing, Computing (Cyber Security) and Computing (Data Analytics) and Higher National Diplomas (HND) in Computing, Computing (Cyber Security) and Computing (Data Analytics). All HNCs are offered full-time over one year or part-time over two years, with HNDs offered full-time over two years or part-time over four.

19. Bradford College has a validation partnership with the University of Bolton that covers all of its BSc (Hons) computing courses. The college is responsible for the design and delivery of each course and the university carries out approval, review and validation. All students graduating from one of the college's BSc (Hons) computing courses receive a University of Bolton qualification.

20. Students can access a range of central student support services that include the MyFuture Hub careers service, the library team, technology and media team, additional learning support and a safeguarding and wellbeing team. Within the library services, students can access support, guidance and additional resources for study skills such as academic referencing. Within the School of Allied Health and Computing each student studying on a BSc (Hons) computing course is part of their own individual MS Teams chat with academic staff who teach on their relevant course. These are used for academic support purposes and can also be utilised for wider support, with central services staff included where required.

21. Within the ATC, students have access to computer labs, classrooms and open-plan study spaces. Students can also access private study spaces and a higher education student specific recreational space in separate buildings on the main college campus. The college is also working on a project that will see it develop a higher education science, technology, engineering and mathematics (STEM) centre in a five-storey converted mill building that will include six higher education digital IT labs, collaboration spaces and academic teaching spaces.

22. According to data supplied by the college, in the 2022-23 academic year there were 72 FTE students studying across six BSc (Hons) computing courses at the college. With the exception

of two part-time students studying on the BSc (Hons) Computing and Information Systems course, all other students were studying full-time on the following courses:

- Information Systems Management
- Networking Infrastructure and Security
- Networking Infrastructure and Security with Foundation Year
- Software Engineering
- Software Engineering with Foundation Year.

23. For context, OfS internal analysis[3] shows that for students studying computing degrees at Bradford College in the 2020-21 academic year, 89.4 per cent were from index of multiple deprivation (IMD) quintiles 1 and 2. Of students with known ethnicity information, Asian students comprised the largest percentage of the student population (64.7 per cent), followed by white (22.4 per cent) students. The majority of students (63.5 per cent) were aged under 21 on entry to their course, with 24.7 per cent aged 21 to 30 and 11.8 per cent aged 31 and over.

[3] Source: OfS internal analysis of the student data used to construct the published size and shape of provision dashboard from September 2022, subset to students taught at Bradford College within the computing CAH2 subject area, using the 'all students' population for academic year 2020-21.

Assessment process

Information gathering

24. The assessment team gathered a range of evidence to determine whether there were possible concerns relating to requirements as set out in conditions of registration B1, B2 and/or B4. The team gathered information through an initial request for data from the college (4 January 2023) and two site visits on 23 March 2023 and 20-21 April 2023.

25. During these site visits the assessment team undertook:

    - a range of staff interviews (with academic and central college professional service staff)
    - a range of student panel interviews (including students studying at Levels 3, 4, 5 and 6)
    - observation of teaching sessions
    - a physical facilities tour.

26. The team was also granted access to the college's VLE from 2 March 2023 to 31 May 2023. It made further requests for information and data based on discussions with staff and students during both the initial site visit and subsequent two-day site visit, as well as arising from its analysis of information already provided. The college fulfilled all requests in a timely fashion and provided the additional information and data on 2 March 2023, 17 April 2023 and 17 May 2023.

27. The assessment team first reviewed general monitoring intelligence, including student outcomes data held by the OfS, and initial data provided by the college. From this it decided to focus on all BSc courses, excluding the one course being taught out. Student outcomes data and student numbers across courses meant that this was, in the assessment team's view, in line with a risk-based approach. For example (as set out in paragraph 22) in the 2022-23 academic year there were 72 FTE students studying across six BSc (Hons) computing courses at the college. With the exception of two students studying on the course being taught out (BSc (Hons) Computing and Information Systems), all other students were studying across the remaining five courses. Given the small number of courses and lower student numbers, the assessment team judged it to be appropriate to focus on all courses that represent the significant majority of computing students. Reflecting on student outcomes data, the team noted that the completion rate for full-time first degree students in computing over four years was 72.1 per cent, which was below the B3 numerical threshold[4] of 75 per cent. Similarly, the continuation rate was 71.5 per cent, which was below the B3 numerical threshold[4] of 80 per cent and the progression rate was 52.6 per cent, which was below the B3 numerical threshold[4] of 60 percent.[5]

[4] See www.officeforstudents.org.uk/publications/setting-numerical-thresholds-for-condition-b3/.

[5] Source: OfS published continuation and completions measures within the student outcomes dashboard from September 2022, using the 'Taught' view of a provider's student population, available at www.officeforstudents.org.uk/data-and-analysis/student-outcomes-data-dashboard/. The subject area is defined by the Common Aggregation Hierarchy level 2 (CAH2). The four years were 2013-14 to 2016-17 inclusive for completion outcomes and 2016-17 to 2019-20 inclusive for continuation outcomes.

Assessment of matters relating to quality under ongoing conditions of registration B1, B2 and B4

Condition B1: Academic experience

28. The assessment team reviewed a range of evidence relevant to condition B1 (see Annex A for the full text of the condition).

29. In the assessment team's view there were concerns that may relate to compliance with some of the requirements set out in condition B1.2, as follows:

B1.2 Without prejudice to the principles and requirements provided for by any other condition of registration and the scope of B1.1, the provider must ensure that the students registered on each higher education course receive a high quality academic experience.

B1.3 For the purposes of this condition, a high quality academic experience includes but is not limited to ensuring all of the following:

b. each higher education course provides educational challenge;

c. each higher education course is coherent;

e. each higher education course, as appropriate to the subject matter of the course, requires students to develop relevant skills.

30. The assessment team also particularly noted the following definitions listed under B1.5:

b. "coherent" means a higher education course which ensures:

i. there is an appropriate balance between breadth and depth of content;

ii. subjects and skills are taught in an appropriate order and, where necessary, build on each other throughout the course; and

iii. key concepts are introduced at the appropriate point in the course content; and

c. "educational challenge" means a challenge that is no less than the minimum level of rigour and difficulty reasonably expected of the higher education course, in the context of the subject matter and level of the course; and

f. "relevant skills" means:

i. knowledge and understanding relevant to the subject matter and level of the higher education course; and

ii. other skills relevant to the subject matter and level of the higher education course including, but not limited to, cognitive skills, practical skills, transferable skills and professional competences.

31. The assessment team considered a range of information related to the academic experience of students on the computing courses at Bradford College, including programme specifications and handbooks, module specifications, a review of the VLE content, teaching observations, meetings with students and staff and a review of National Student Survey (NSS) comments from 2020, 2021 and 2022. Based on the information reviewed in the scope of this quality assessment, the assessment team did not identify any concerns in relation to the relevant courses being 'up-to-date' (B1.3.a) and 'effectively delivered' (B1.3.d).

Concern 1 (condition B1.2): Challenge of BSc (Hons) computing courses

32. In seeking to reach a view on the level of challenge of the relevant courses, the assessment team reviewed various open source reference points relevant to the expectations of curriculum and student performance in relation to technical skills in computing subjects. This included the following documentation:

- GCSE or A-level curriculum. These describe expectations for Levels 1 to 3 in the Regulated Qualifications Framework (RQF). The assessment team would expect that, in accordance with sector recognised standards,[6] the curriculum and assessment at Levels 4 and above would exceed those at Level 3. For example, the OCR A-Level Computer Science curriculum[7] expects students to understand 'Modularity, functions and procedures, parameter passing by value and by reference (2.2.1d)'.

- British Computer Society (BCS) accreditation requirements.[8] BSC accreditation is not required for a computing degree, but its requirements describe the expectations on high quality computing degrees that prepare students for professional computing careers. For example, the BCS considers it necessary that a graduate must be able to 'Analyse the extent to which a computer-based system meets the criteria defined for its current use and future development.'

The depth and sophistication of technical skills taught at each level

33. For a credible computer science degree, there are fundamental topics that should be taught at a level of depth and challenge far beyond Level 3. In the academic judgement of the assessment team, the courses assessed did not teach these topics to a level greater than Level 3. Table 1 below identifies four of these topics, providing a description of what is taught at Level 3 taken from the OCR specification for A-level in computer science H446 (2017), examples of relevant learning outcomes from relevant modules on the assessed courses at Bradford College, and examples of the type of learning outcomes that are taught within other

[6] See www.officeforstudents.org.uk/media/53821cbf-5779-4380-bf2a-aa8f5c53ecd4/sector-recognised-standards.pdf.

[7] See www.ocr.org.uk/qualifications/as-and-a-level/computer-science-h046-h446-from-2015/.

[8] See www.bcs.org/media/1209/accreditation-guidelines.pdf.

computer science courses within UK higher education. The modules taught by Bradford College, listed in Table 1 below, come from Levels 4, 5 and 6 across each of the courses assessed, demonstrating that the issue of level of educational challenge not being above that of Level 3 was identified by the assessment team at each level of each course.

Table 1: A comparison of computer science topics and curriculum

Topic	OCR specification for A-level in computer science H446 (2017)	Learning outcomes for relevant modules from the courses being assessed[9]	indicative learning outcomes for each topic within higher education
Software development lifecycles (SDLC)	Understand the waterfall lifecycle, agile methodologies, extreme programming, the spiral model, and rapid application development. The relative merits and drawbacks of different methodologies and when they might be used.	**Systems Analysis and Design:** Reviewing the object-oriented development process: lifecycle, role of UML techniques. **Requirements Engineering and Software Design:** Some research on the SDLC and business analysis lifecycle. Mobile application development – mobile development lifecycle overview. **Information Systems Security Management:** Security in the SDLC – development methodologies: agile, waterfall, DevOps, DevSecOps.	Students can describe and compare SDLC models and have experience of completing and evaluating projects in two or more lifecycle models. For example, students can describe and compare constituent elements or phases of popular SDLC models such as waterfall and agile. Students can use this understanding to consider which model is most appropriate in different circumstances. Students can apply models and reflect on how well the model applied to their project. In the assessment team's view, submissions for final year projects should show students demonstrating this learning outcome. None of the submissions for final year projects that were shared with the assessment team demonstrated attainment of this learning outcome.
Boolean logic and algebra	Define problems using Boolean logic. Manipulate Boolean expressions, including the use of Karnaugh maps to simplify Boolean expressions. Use the following rules to derive or simplify statements in Boolean algebra: De Morgan's Laws, distribution,	**Logic and Problem Solving:** Outline the principles of Boolean logic. Describe different problem-solving tools used to solve computing problems. Illustrate principles of Boolean logic to produce solutions to given computing problems.	Students should be confident in manipulating Boolean expressions and values to solve a range of complex computer science problems. Students can apply Boolean logic to fields such as set theory and matrix algebra.

[9] Module names appear in bold font.

Topic	OCR specification for A-level in computer science H446 (2017)	Learning outcomes for relevant modules from the courses being assessed[9]	indicative learning outcomes for each topic within higher education
	association, commutation, double negation. Using logic gate diagrams and truth tables.	Demonstrate how problem-solving tools can be applied to produce solutions to given computing problems. Constructing truth tables.	For example, students may be able to use the laws of Boolean algebra to simplify Boolean expressions, to thus improve the efficiency of logic systems such as programming expressions. There is a clear difference between the learning outcome and example described above and what students at Bradford College are expected to achieve with regards to Boolean logic. At Bradford College, students only need to demonstrate a theoretical understanding of Boolean logic and to illustrate this through the mechanical process of constructing a truth table, which is a process similar to basic arithmetic, and part of the AQA Computer Science GCSE curriculum. The example above in which students would use their ability to manipulate Boolean statements to improve efficiency of software programmes, requires students to select and apply from a range of techniques as appropriate for a specific situation.
Data structures	Arrays (of up to 3 dimensions), records, lists, tuples. The following structures to store data: linked-list, graph (directed and undirected), stack, queue, tree, binary search tree, hash table. How to create, traverse, add data to and remove data from the data structures mentioned above.	**Data Structures and Algorithms:** Apply concepts of abstraction in designing data structures. Interpret and implement data structures. Appraise the selection of an appropriate data structure/algorithm for a given problem.	Students can implement and evaluate data structures in a range of programming languages. Students can reason about the properties of data structures and operations carried out on them. For example, students should be able to select an appropriate data structure (e.g., binary tree, linked-list, array) for storage

Topic	OCR specification for A-level in computer science H446 (2017)	Learning outcomes for relevant modules from the courses being assessed[9]	indicative learning outcomes for each topic within higher education
			of data within a software programme, based on the expected frequency insert and search operations and the efficiency of the data structure for such operations to solve a specific problem. From the examples of coursework submissions shared with the assessment team, students implemented data structures as instructed by their teacher without the need to develop the depth of understanding required to select structures for a particular programming problem. The examples of final year projects that were shared with the assessment team did not contain the type of challenging computer science problem, such as development of an algorithm, that would require an understanding of the properties of data structures.
Algorithms	Analysis and design of algorithms for a given situation. The suitability of different algorithms for a given task and data set, in terms of execution time and space. Measures and methods to determine the efficiency of different algorithms, Big O notation (constant, linear, polynomial, exponential and logarithmic complexity). Comparison of the complexity of algorithms.	**Data Structures and Algorithms:** Appraise the selection of an appropriate data structure/algorithm for a given problem. Explain sorting and searching algorithms. **Logic and Problem Solving:** Introduction to some basic algorithms.	Students are familiar with significant algorithms in the field of computer science. Students can explain advanced concepts in relation to algorithmic complexity and the implications that it has on computation. Students can describe and apply automata theory to algorithmic complexity. They can explain and demonstrate the equivalence between machines such as Turing machines and counter machines.

Topic	OCR specification for A-level in computer science H446 (2017)	Learning outcomes for relevant modules from the courses being assessed[9]	indicative learning outcomes for each topic within higher education
	Algorithms for the main data structures, (stacks, queues, trees, linked lists, depth-first (post-order) and breadth-first traversal of trees). Standard algorithms (bubble sort, insertion sort, merge sort, quick sort, Dijkstra's shortest path algorithm, A* algorithm, binary search and linear search).		The learning outcomes for the assessed modules did not require students to analyse or implement algorithms. The examples of final year projects shared with the assessment team did not contain the type of computer science challenge that would require an understanding of the properties of algorithms, and therefore students did not demonstrate an understanding of this.

34. From teaching observations (of both a Level 3 and Level 4 module) and a review of assessments and course content across Levels 3, 4, 5 and 6, the assessment team did not identify modules in which the courses assessed taught the topics set out in Table 1 at a depth that was beyond, or in many cases approaching, that of a Level 3 (A-level) computer science course. In the academic judgement of the assessment team, core elements of a computer science curriculum were not taught at a level that was as challenging or deep as a Level 3 computer science course. Therefore, students graduating from the courses assessed were unlikely to have developed relevant knowledge of core computer science topics beyond what would be expected of a Level 3 computer science student and in line with what would be expected of a Level 6 computer science graduate, such as the examples listed in the final column of Table 1.

35. Staff acknowledged that they considered a purpose of their courses was to provide "educational opportunities for all" including students who were not confident enough to succeed at other providers. The fact that many students were the first member of their family to study for a degree was provided as an explanation for why many students lack confidence. Teachers explained that a consideration in the design of the programme was to "not put students off" by the level of challenge. When the assessment team asked staff about the low level of challenge required to successfully complete assessments, they were told that because assessments provided flexibility to students regarding how to approach them, this provided opportunities for students to challenge themselves, for example by attempting a programming exercise in a language other than the ones taught. However, in each student submission for programming exercises that were provided by the college, students opted to complete the exercises in the programming language suggested by the assignment brief and, where available, used templates provided by the teacher. It is in the assessment team's view that to achieve an appropriate level of challenge for these assignments students must, as the college suggested, have used the flexibility that they were provided to challenge themselves. However, in none of the examples provided did students choose to do this and so an appropriate baseline of educational challenge was not being required of, or experienced by, students on the assessed courses.

36. In the assessment team's view, there was a disproportionate focus on academic referencing skills in the curriculum of the courses assessed. This focus then reduced opportunities to teach topics that are more relevant or even fundamental to a computer science curriculum. Examples of this included:

    - Recruitment of staff to provide academic writing support with a focus on referencing and layout.

    - Teaching of referencing skills being given as the example of how the transition from further education to higher education is supported.

    - Research/referencing being one of seven marking criteria for all assignments across all levels of each assessed course, despite it not being one of the learning outcomes for a module, nor a skill that is especially relevant to being a computing or IT practitioner.

    - In one of the two teaching observations, for a lesson that was ostensibly about digital security practices, a significant proportion of the lesson was devoted to discussing examples of referencing in students' work.

37. The assessment team noted, during a discussion with teaching staff, that staff explained they would like to see an increase in the level of technical content and assessment in foundation year modules because, in their view, it was insufficient at its current level. In addition, during discussions with a group of six Level 6 students, where course delivery and assessments (including the final year project) were discussed, the students reported that, in their opinion, there was generally little difference in the level of challenge between the modules taught to them at Level 3 and Level 4.

The expectations on students to develop and demonstrate individual capability to apply technical skills

38. During the course of the assessment, the assessment team met with a number of final year students to discuss their final year project. These discussions revealed that, in the academic judgement of the team, the technical knowledge and achievement demonstrated were below what would be expected of a final year computer science student.

39. In addition to discussions with final year students, the assessment team also reviewed two submissions of final year projects that had been fully marked and 12 that were partially marked. Final year projects allow students to demonstrate the knowledge and skills that they have gained from Levels 3/4 to 6 of their degrees, and so in the view of the assessment team provide a basis for judging the depth of skills and knowledge that students have gained throughout their course. None of the examples provided the code that the students created. Furthermore, in the assessment team's academic judgement, none of the 14 examples demonstrated a level of technical skills and knowledge that would be expected of a computer science graduate.

40. Further review of student submissions across Levels 4 and 5 also provided examples of work that did not provide an appropriate level of educational challenge for students studying on a computer science degree. Some examples are set out below:

    - In the assessment team's academic judgement, summative work in the Level 4 Fundamentals of Programming module was very heavily scaffolded and required students to write very little code to achieve an excellent mark. This was apparent in an example of a marked student submission, where the student was awarded a very high mark. While the grade resulted from a correct application of the marking criteria, the assessment team considered that the overall challenge of the assessment was not sufficiently difficult. Students were provided with template code which they then build on for their final submission. In one such template file, the students were provided with 81 lines of code and the student's submission which gained the feedback of "very good code" was submitted with 167 lines. This meant that for a student to achieve a very good mark, only 86 additional lines were added. The expectations of undergraduates should be that they are assessed on their ability to write applications independently. A student studying at Level 4 should be able to independently write simple applications, as this is a requirement of the Level 3 curriculum. For example, the OCR A-Level Computer Science curriculum expects students to be 'Writing and following algorithms (1.2.3c)'. In the academic judgement of the assessment team, students studying at Level 4 on a computer science degree should be able to display a level of programming skill that sees them able to write an application independently and without templates.

- In reviewing two marked submissions for a Level 5 module, the assessment team noted that both submissions appeared to be similar to one another and based on a template provided by the teacher. As with the Level 4 example above, in the academic judgement of the assessment team, students studying at Level 5 on a computer science degree should be able to display a level of skill that sees them able to complete technical assessments without templates.

B1 Conclusions

41. From reviewing the evidence provided, the assessment team's view is that Bradford College has not ensured that students registered on the relevant courses received a high quality academic experience because the courses lacked educational challenge (condition B1.3.a), coherence in relation to depth of content (condition B1.3.b) and did not require students to develop relevant technical skills (condition B1.3.e). The assessment team found that:

    - Course design and assessment did not require students to develop sufficient technical knowledge of relevant skills compared with sector expectations about the relevant skills, such as knowledge and understanding relevant to the subject matter, that a graduate in computer science should have.

    - Courses and assessments were designed in a way that aimed to avoid discouraging students that the college characterised as lacking in confidence in an educational setting, resulting in a level of educational challenge and coherence in relation to depth of content below what is expected of a computer science degree.

    - The relevant skills demonstrated by students, such as knowledge and understanding relevant to the subject matter, was insufficient at each level for a computing degree. This judgement is based on the assessment team's review of students' work as well as discussions with students. This included Level 4 and 5 programming assessments for which significant amounts of the solution were provided to the students, final year projects which did not demonstrate the requisite level of technical mastery, and assessments across all modules that were weighted heavily towards writing skills.

42. It is the team's view that courses assessed did not present educational challenge or coherence with regards to the depth of technical content, that is appropriate for a Level 6 computer science degree. The expectations on students, through the content they were exposed to and the assessments they completed across all levels, rarely exceeded the educational challenge or depth of technical content of a computer science A-level. The consequences of this were apparent in discussions with some final year students and observations of their work. While students enjoyed the courses, were encouraged to engage and gain through their experience of higher education, their relevant skills, such as their technical capabilities, knowledge and understanding of a computer science curriculum were lower than the minimum level of rigour and difficulty that the team would reasonably expect of a computer science degree.

Condition B2: Resources, support and student engagement

43. The assessment team acknowledge that the provider's quality assurance processes have been robustly followed. These include programme approval, including external academic input, periodic review of programmes, consultation with industry partners, consideration of external technology certification and external examiner reports. The assessment team can see

evidence from the paperwork resulting from these quality assurance processes that some aspects of the courses have benefited. However, the conditions of registration require that the application of a provider's quality assurance processes result in a high-quality course. It is the responsibility of a provider, not only to create and apply quality assurance processes, but also to ensure that these processes and their application are sufficient to meet the conditions of registration. The assessment team also acknowledge that the provider demonstrates a strong commitment to widening participation. This is evidenced through frequent discussions of their approach to their access and participation plan. The assessment team acknowledges the college's comments on the challenges that they incur because of their commitment to this mission.

44. The assessment team reviewed a range of evidence relevant to condition B2 (see Annex A for the full text of the condition) in seeking to understand steps taken by the college to ensure that each cohort of students registered on the relevant courses was receiving 'resources and support' (B2.2.a), that these are sufficient for the purpose of ensuring a high quality academic experience for those students, and that those students succeed in and beyond higher education. In addition, the team sought to understand steps taken by the college to ensure 'effective engagement' (B2.2.b) with each cohort of students registered on the relevant courses, that these were sufficient for the purpose of ensuring a high quality academic experience for those students, and that those students succeed in and beyond higher education.

45. The initial information provided by the college, and reviewed by the assessment team, included:

    - programme handbooks for the relevant courses across Levels 3 to 6
    - information provided to students at the beginning of each academic year that sets out the college's approach to the provision of physical and digital learning resources
    - information provided to students at the beginning of each academic year that sets out the college's approach to the provision of support to students and how students may access that support.

46. Alongside the initial information provided by the college, the assessment team reviewed both quantitative and qualitative NSS information for 2019-20, 2020-21 and 2021-22, student outcomes data including measures of completion, continuation and progression, and staff data including qualification held and examples of teaching peer observation and review.

47. This initial information is relevant to whether the college has taken all reasonable steps to ensure that students on relevant courses are receiving 'resources and support', and to ensure 'effective engagement' with these students.

48. During on-site visits, the assessment team met with:

    - approximately 15 students currently studying on computing courses, across Levels 3 to 6
    - academic staff teaching on computing courses, across Levels 3 to 6

- college staff responsible for providing support to students via individual Microsoft Teams chats.

49. These meetings included discussion of topics relevant to the students receiving ‘resources and support’ and opportunities for ‘effective engagement’.

50. The assessment team requested additional information from the college as detailed in paragraphs 24 to 26 (all data noted in the bullet point list below was sourced directly from the college). This included:

    - a copy of the workload allocation model of all computing academic staff
    - information on staff qualifications, including teaching qualifications and professional certifications
    - anonymised examples of individual Microsoft Team support chats between students and academic staff.

51. The assessment team considered arrangements for student engagement relevant to condition B2.2.b, including module review processes, minutes from student liaison discussion and feedback from students during the assessment team’s visit.

52. This information is relevant to all aspects of condition B2.2.

53. In the assessment team’s view, there was evidence to demonstrate that students received appropriate resources and support, and effective engagement that were sufficient for the purpose of ensuring a high quality academic experience. Examples of this included:

    - individual Microsoft Teams chats through which students received quick responses to queries
    - availability of teaching staff within the classroom and generally in the building in which students study
    - careful timetabling to encourage student attendance and engagement
    - opportunities for students to engage in developing their courses through module review processes and discussions with course delivery teams
    - positive comments from students about the support they receive.

54. The assessment team’s investigation drew on multiple sources of information, as identified above, that are relevant to condition B2. Following a risk-based approach, it did not identify any concerns relating to condition B2 from reviewing this information.

Condition B4: Assessment and awards

55. The assessment team reviewed a range of evidence relevant to condition B4 (see the full text in Annex A) in seeking to understand whether students on the relevant courses considered

were: ‘assessed effectively’ (B4.2.a); whether each assessment was ‘valid and reliable’ (B4.2.b); whether academic regulations were ‘designed to ensure that relevant awards are credible’ (B4.2.c); and whether ‘relevant awards granted to students are credible’ (B4.2.e).

56. In the assessment team’s view there were concerns that may relate to compliance with some of the requirements set out in condition B4.2, as follows:

B4.2 Without prejudice to the principles and requirements provided for by any other condition of registration and the scope of B4.1, the provider must ensure that:

a. students are assessed effectively

b. each assessment is valid and reliable

c. academic regulations are designed to ensure that relevant awards are credible; and

e. relevant awards granted to students are credible at the point of being granted and when compared to those granted previously.

57. The assessment team also particularly noted the following definitions listed under B1.4:

b. “academic regulations” means regulations adopted by the provider, which govern its higher education courses, including but not limited to:

i. the assessment of students’ work;

ii. student discipline relating to academic matters;

iii. the requirements for relevant awards; and

iv. the method used to determine classifications, including but not limited to:

A. the requirement for an award; and

B. the algorithms used to calculate the classification of awards.

c. “assessed effectively” means assessed in a challenging and appropriately comprehensive way, by reference to the subject matter of the higher education course, and includes but is not limited to:

i. providing stretch and rigour consistent with the level of the course;

ii. testing relevant skills; and

iii. assessments being designed in a way that minimises the opportunities for academic misconduct and facilitates the detection of such misconduct where it does occur.

d. “assessment” means any component of a course used to assess student achievement towards a relevant award, including an examination and a test.

e. “credible” means in the reasonable opinion of the OfS, relevant awards reflect students’ knowledge and skills, and for this purpose the OfS may take into account factors which include, but are not limited to:

i. the number of relevant awards granted, and the classifications attached to them, and the way in which this number and/or the classifications change over time and compare with other providers;

ii. whether students are assessed effectively and whether assessments are valid and reliable;

iii. any actions the provider has taken that would result in an increased number of relevant awards, and/or changes in the classifications attached to them, whether or not the achievement of students has increased, for example, changes to assessment practices or academic regulations; and

iv. the provider’s explanation and evidence in support of the reasons for any changes in the classifications over time or differences with other providers.

g. “relevant award” means:

i. a research award;

ii. a taught award; and/or

iii. any other type of award or qualification in respect of a higher education course, including an award of credit granted in respect of a module that may form part of a larger higher education course, whether or not granted pursuant to an authorisation given by or under the Higher Education and Research Act 2017, another Act of Parliament or Royal Charter.

h. “relevant skills” means:

i. knowledge and understanding relevant to the subject matter and level of the higher education course; and

ii. other skills relevant to the subject matter and level of the higher education course including, but not limited to, cognitive skills, practical skills, transferable skills and professional competences.

i. “reliable” means that an assessment, in practice, requires students to demonstrate knowledge and skills in a manner which is consistent as between the students registered on a higher education course and over time, as appropriate in the context of developments in the content and delivery of the higher education course.

j. “research award” and “taught award” have the meanings given in section 42(3) of the Higher Education and Research Act 2017.

k. “valid” means that an assessment in fact takes place in a way that results in students demonstrating knowledge and skills in the way intended by design of the assessment.

Concern 2 (condition B4.2): Effectiveness of assessment due to high volumes of non-technical assignments

58. The assessment team considered the following evidence:

- programme documentation including programme specifications for each of the five courses considered
- module specifications, assignment descriptions and marking criteria across all levels
- 31 student coursework submissions and the associated grades and feedback from a selection of modules across Levels 4, 5 and 6
- seven meetings with students and teachers in which assessments were discussed
- QAA Subject Benchmark Statements for Computing (2022).[10] Subject Benchmark Statements are not regulatory requirements. However, lack of alignment with these sector expectations on the content and standards of curricula for computing programmes would require a rationale based on pedagogy and course quality.

59. There are two elements to concern 2:

- The assessment of students was heavily weighted towards writing and referencing skills for all modules. This choice of assessment type meant that students were not assessed effectively for technical topics as insufficient weighting was given to the assessment of relevant skills.
- The marking criteria for all assessments emphasised writing skills, reducing the need for students to demonstrate technical skills to succeed. This limited the effectiveness of assessment through a lack of testing relevant skills and providing stretch and rigour consistent with a computer science degree.

Choice of assessment types

60. The proportion of assessment that evaluated a student's writing and presentation skills for subjects in which the content required the development of technical skills meant that across the relevant courses students were not assessed effectively as assessments did not test relevant skills. In the summary below, 'technical work' means assessment in which a student was expected to demonstrate practical skills that are related to the learning outcomes for a module, such as performing functional tests on a piece of software for a module that teaches students to test software, rather than explaining what functional tests are in a written report. For example, in the Software Engineering course, the six Level 4 modules were assessed in the following ways (percentage splits taken from module handbooks):

Fundamentals of Programming (MUB40117)

- 100% technical work

Software Engineering Principles and Practice (MUB40118)

[10] See www.qaa.ac.uk/docs/qaa/sbs/sbs-computing-22.pdf?sfvrsn=ebb3dc81_2

- 25% technical work (designs only, not implementation)
- 75% written report

Introduction to Academic Studies (MUB40111)

- 0% technical work
- 75% written report
- 25% presentation

Website Design and Development (MUB40120)

- 50% technical work
- 50% written report

User Centred Design and User Experience (MUB40119)

- 0% technical work
- 75% written report
- 25% presentation

Logic and Problem Solving (MB40121)

- 50% technical work
- 50% written work

61. The aims of the programme for each of the courses assessed (as set out in each programme specification) stated that students were expected to gain practical, technical skills related to the subject area. Each course specification included the statement ‘develop a range of technical skills’ or ‘provide you with the necessary technical skills’ and all included the statement ‘enable you to design, build, and test’. The assessment team judged these aims to be appropriate for computer science degrees based on their expertise in the subject area.

62. However, 62.5 per cent of assessment for first year Software Engineering students was based on either written reports or presentations. Based on the expectations set by the programme aims described above, and the assessment team’s knowledge of computer science degrees, it is the team’s academic judgement that students were not being sufficiently assessed on technical skills.

63. The assessment team recognised the appropriateness of students on the Introduction to Academic Studies module being assessed primarily through a written report. However, since a student’s academic writing skills will have been assessed in this module, it is the view of the assessment team that it is not effective assessment to evaluate these skills in all other modules. Throughout all 45 modules, across Levels 4 to 6 of the courses being considered, the assessment team identified three in which, in their academic judgement, it may be appropriate to weight the assessment towards non-technical skills such as communication: ’IT Consultancy’, ’Professional Development’ and ’Employability Skills’. To ensure effective assessment across the courses, the other 41 modules should primarily assess technical skills. However, based on the assessment team’s review of information in the module specifications and the 31 submissions of students’ marked work and feedback, it is the assessment team’s

view that these assessments did not focus on the assessment of technical skills relevant to a computer science degree. The assessment team identified six modules out of the 45 within the relevant courses, that appeared, based on their module specifications, to have a more reasonable weighting of technical assessment. These are listed in Table 2. However, the assessment team noted that for two of these modules, students were provided with step-by-step guidance and templates. This is considered further under Concern 3 (see paragraph 80).

Table 2: Modules with a higher proportion of technical assessment

Module	Split (Report % / Practical %)	Assessment team comment
Website Design and Development (Level 4)	50 / 50	Of the practical work, only one of the three elements 'b)' requires technical / coding abilities.
Software Service Delivery (Level 4)	75 / 25	The practical component focused on describing the design as opposed to technical implementations.
Routing and Switching Environment (Level 5)	75 / 25	For the 25 per cent practical element, instructions are given to students describing how to set up the network which explains each element that needs setting up.
Automated Security Fundamentals (Level 4)	0/100	Assessments are a weekly worksheet providing prescriptive, step-by-step instructions. These also include report-writing.
Network Vulnerability Management (Level 6)	50/50	While both assessment components require written submissions, the module specification mentions "practical" in the description of each component.
Application Development (Level 5)	25/75	

64. Some practical topics were assessed from a theoretical perspective leading to assessments that asked students to demonstrate a theoretical understanding that was insufficient to apply to real world problems after graduation. Databases and cloud computing were examples of this. The consequences of this approach to assessment were evident when speaking to final year students about their final projects, which at the time they were close to completing. Students discussed, in principle, what they would like to have achieved in their project, for example cloud integration, but in practice did not know what this meant or how to achieve it.

65. In the assessment team's academic judgement, students on the relevant courses were not assessed effectively as the majority of assessments did not require students to demonstrate relevant technical skills to a level appropriate for a computer science degree and as per the course aims set out in the relevant college programme specifications. Instead, a significant number of assessments focused on academic writing skills. It is the assessment team's view that a focus on assessing academic writing skills and written understanding of technical topics instead of the assessment of the practical application of technical skills meant that students were not assessed in a challenging and appropriately comprehensive way. On the whole, assessments did not provide stretch and rigour consistent with the level of the relevant courses. Nor did they comprehensively assess the practical application of technical skills relevant to a computer science degree.

The use of writing-based marking criteria for technical assignments

66. For assessment to be effective it should provide stretch and rigour consistent with the level of the module it is assessing and test knowledge, understanding and practical skills relevant to the subject matter and level of the course. Grades and outcomes should also match a student's understanding of relevant module and course learning outcomes. The marking criteria should therefore explicitly reward the student for demonstrating skills that are relevant to the subject being assessed. In the assessment team's academic judgement, this was not the case for the marking criteria and feedback on modules across all levels of the courses assessed.

67. In discussions with college staff, it was explained to the assessment team that all assessments must be marked using rubrics supplied by the college's validating partner – the University of Bolton – that are designed for the assessment of written work. This meant that where assessments were designed to test students' practical technical skills, rather than testing writing skills, these were marked using a rubric which was not designed for the purpose of assessing practical skills. The assessment team considered that this suggested that the academic regulations (marking criteria) were not designed to ensure the credibility of relevant awards because they were not designed for the assessment of technical practical work.

68. The assessment team noted that for some assessments, the rubric that evaluated writing skills was supplemented with additional criteria more aligned to the technical skills that students should demonstrate. In the remaining assessments this was not the case. In the view of the assessment team, where the rubric was supplemented with additional criteria, this resulted in assessments with contradictory marking criteria. An example of this is in the module handbook for MUB40117 - Fundamentals of Programming, in which there is a section called "Specific Assessment Criteria" which starts "Please note that the General Assessment Criteria will also apply". This section contains grade descriptors that, in the assessment team's view, cannot be reconciled with the General Assessment Criteria, which students are told also apply to the assessment for that module. Furthermore, the need for supplementation with additional criteria supports the assessment team's view that the academic regulations in places (specifically the marking criteria) had not been designed to ensure that relevant awards were credible because they were not designed to assess technical work.

69. The use of a writing-skills rubric to mark technical assignments also limited the amount of feedback provided by staff on the technical skills demonstrated by students. For example, in Advanced Programming, feedback to students focused on the student's evaluation and description of Object Orientated principles rather than the coding that they carried out.

70. Examples in which feedback to students focused on writing skills were present in all marked student submissions across all modules that were shared with the assessment team, with the exception of 'Fundamentals of Programming' in which the feedback focused on the learning outcomes of the module. It is the view of the assessment team that the quality and relevance of feedback given to students in the examples that the assessment team saw was reduced by the frequent inclusion of feedback relating to skills that were not related to module learning outcomes. Examples include:

    a. Advanced Programming: "You need to look at the structure of your text as in places the flow is not correct. You also tend to re-use sources of research many times in the same or closely related material".

b. Application Development: "You present an analysis of current technologies using a table and then expand on each technology, a bit more on trends would have been nice. Please talk to me about how you use citations as they need work."

c. Data Structures and Algorithms: “Your description and analysis of the sorting and searching algorithms is fairly detailed and has analysis of the time complexity of each algorithm. A good range of varied references used."

d. Final Year Project: "Your citations could benefit from using ‘Online’ to denote that they are an online source or if a journal article, as your reference list states, then quote the page numbers the citation refers to."

Concern 3 (condition B4.2): effectiveness and reliability of assessment and credibility of relevant awards due to low standards in marking criteria and leniency of marking

71. For relevant awards to be credible, the assessments that lead to the awards granted should be effective, with outcomes awarded that reflect students’ skills and knowledge in relation to the intended outcomes of the higher education course on which students are registered. From reviewing the evidence and applying expertise of computer science in higher education, there were three areas related to concern 3 that were identified by the assessment team:

- Marking of assignments done in a way such that students were awarded grades for which their work did not meet expectations for that level of study, as set out in sector-recognised standards.[11]

- Students received significant direct support in completing assessments, through supervision, peer support and templates, limiting the independent skills and knowledge required to complete the assessment.

- Resit assessments did not holistically test the learning outcomes for a module, meaning that students received grades that did not match their attainment of module learning outcomes.

Leniency of marking

72. The assessment team observed marking criteria at each level of the relevant courses that did not ensure the effectiveness of the assessment by holding students to standards that the assessment team considered appropriate for a computer science degree. For example, in the assessment for Advanced Programming, a Level 6 module, the requirements for a first-class grade were for the code to be ‘very well commented’ and ‘fulfil most of the requirements’. In the assessment team’s view, these requirements were not in line with the sector-recognised standards[12] which set out that students achieving a first-class outcome would be expected to demonstrate the following in practical work:

[11] See www.officeforstudents.org.uk/media/53821cbf-5779-4380-bf2a-aa8f5c53ecd4/sector-recognised-standards.pdf.

[12] See www.officeforstudents.org.uk/media/53821cbf-5779-4380-bf2a-aa8f5c53ecd4/sector-recognised-standards.pdf.

- an accomplished and innovative application of discipline-specific specialist skills
- autonomous completion of practical tasks and/or processes with a high degree of accuracy, coordination and proficiency
- a full range of exceptional technical skills.

73. In most examples of marked work that was shared with the assessment team, marking criteria were not strictly applied to the work being assessed and instead awarded grades were higher than would be earned through strict application of the criteria. For example, in final year projects, students were required to submit a "project proposal, with accompanying research, design and planning documentation that covers all design related aspects of a proposed project", which was then graded. In one example shared with the assessment team, this aspect was awarded a 2:1; however, there was no software design in the submission, only a network topology diagram with no explanation or justification, and a list of web services that the student intended to use without justification of their decision to use particular services. This falls well short of the grade descriptor used in the module marking rubric for that component of the project, that a student should "provide comprehensive research, planning and design of a proposed computing related project demonstrating good critical reasoning skills" and that "justified recommendations will be made as to how problems/weaknesses identified in the build may be overcome". Feedback to the student appeared to demonstrate that the marker recognised that the design was weak, however, despite comments that appeared to recognise that the work did not meet the relevant criteria, it was awarded a 2:1 by the marker.

74. In another example, a student earned a 2:2 for their design for the final year project where there was no written content related to design in the submission. In the academic judgement of the assessment team, design that does not provide an explanation or justification for design decisions falls below the standards expected of a Level 6 student and should not be awarded a second-class grade.

75. The assessment team reviewed the software created by two students for a Level 5 module submission. Both students earned a first-class outcome for the module assessment. The assessment team identified issues with these submissions that, in the team's academic judgement, mean that the students should not have been awarded first-class outcomes. For example:

- In both cases the work was based on a template provided by the teacher; therefore it did not reflect autonomous completion of a practical task. The assessment team also noted that the name of the package for one student's project could indicate that work is regularly submitted based on templates.
- In the assessment team's view, the applications submitted did not demonstrate skills to the standard or sophistication that would be expected of a Level 5 module and did not go much beyond what are taught by short, free, online tutorials. This avoids most of the challenging aspects of the type of software development that the module was designed to teach. The two pieces of work were also very similar to one another. While this was partly explained by both students being given a template on which to base their work, with the remainder of the code likely to have been created through collaboration, it was not mentioned within the marking feedback.

- Both students had taken identical code from the website stackoverflow.com, without attribution, to implement the email feature. It was unclear whether this was permitted by the college, but there was no acknowledgement of this in the feedback given to the students.

76. In the view of the assessment team, had a student independently produced work containing the scope and quality of either submission, that would not have been sufficient to earn a first-class outcome for a Level 5 computer science module, as the skills being demonstrated were below what would be expected of a Level 5 computer science student.

77. A final example is for a student's submission for a database related module. The marker's comments on component one (worth 60 per cent of the assessment) indicated that the student had attempted to normalise the database, but there were areas for improvement within the assignment, and the student only submitted two out of the three required components for this assignment. For this, the student earned a first-class grade. Normalisation of databases to third normal form is part of both the AQA and OCR A-level curriculum. Therefore, the submission did not meet the standards of a Level 3 qualification in this regard. For a Level 6 module this work ought to be unacceptable, rather than considered as part of a first-class achievement.

78. In the judgement of the assessment team, the evidence described in paragraphs 72 to 77 shows that the criteria that were set for students to earn grades were too low, and were not rigorously applied against student work. This resulted in students not being assessed effectively and called into question the credibility of relevant awards granted.

Provision of templates and support for assessment

79. For assessment to be effective it must require students to demonstrate relevant knowledge and skills and provide stretch and rigour consistent with the level that would be expected of computer science undergraduates. To be reliable, it should require students to demonstrate knowledge and skills in a way that is consistent between all students registered on the higher education courses. The provision of templates and examples, which often formed a significant proportion of a student's submission as seen by the assessment team, and the level of input students received from others while completing assessments, meant that submissions did not demonstrate sufficient stretch and rigour consistent with the relevant level of each course, nor did they demonstrate an approach that ensured consistency between students.

80. For example, for the final year projects on all assessed courses, students received templates that contained section headings and content recommendations. The college provided the assessment team with the templates that they provided to their students. An example of the type of guidance given within the template was "This is where you explain what you will be giving to the client when you have finished. To do this you may need to state some restrictions that you have to work to (constraints), or assumptions you need to make to give the project a focus. You may also need to indicate things that are not part of your project (exclusions)." In the assessment team's view, providing such detailed structure and guidance significantly simplified the assessment and the level of independent thought required of students. Another example of this was seen in the Level 4 Fundamentals of Programming module. An assignment for this module contained an exercise for calculating the cost of carpeting a room. One of the requirements was to prompt the user for the length and width and calculate the area of a room based on this. The code for this was given to the student and required just one line to be uncommented, which, in the academic judgement of the assessment team, is a trivial action for Level 4 students. In addition and, as previously set out (see paragraph 63), in two of the

four modules identified by the assessment team as having a more reasonable weighting of technical assessment (Level 4 – Automated Security Fundamentals and Level 5 - Routing and Switching Environments) students received step-by-step guidance, templates and direct individual instruction such that the assessments lacked stretch and rigour because the independent, technical skill required to complete the work was limited.

81. The assessment team noted that work that led to a student submission often took place in a classroom with close supervision of teaching staff. Following a teaching observation, a teacher was asked by the team what they would do if they saw a student making a mistake on their assessment, and they said that they would intervene to correct the mistake. Other staff provided more balanced responses to this hypothetical situation, saying they would stop short of providing an answer to a student.

82. In addition, there were also significant levels of peer support in observed classroom-based activity, including activity that led to student submissions. Generally, classroom-based peer support is a positive aspect of education. However, when this support extends to assessments that are meant to be completed by individual students, the reliability of assessment will be affected. Assessments that do not directly judge the skills and knowledge of the individual student are not a reliable form of assessment.

Reliability, validity and effectiveness of resit assessment

83. To be reliable and valid, resit assessments for students who failed first attempts should require students to demonstrate skills and knowledge in a manner that is consistent between students. Resits should take place in a way that results in students demonstrating knowledge and skills as intended by the design of the assessment. In the judgement of the assessment team, some of the resit practices that were explained to the team by college staff did not appear to be reliable, valid or effective.

84. During a meeting with college staff, a senior member of staff described different approaches to reassessment. An example given was that a teacher and a student could discuss a failed submission, and a teacher may then be convinced by this discussion that the student understood more than their original submission suggested, and therefore award a pass. The team discussed the necessity to provide evidence of student attainment that can be verified by external examiners. College staff explained that, where these meetings have taken place, notes of these resit discussions would have been taken and could be shared with the assessment team. The assessment team requested examples of these but, whilst the college did provide examples of marked resubmitted assessments with feedback, it did not provide evidence of the resit meeting as described to the assessment team. In the view of the assessment team, discussions of submissions as a form of second submission for a failed assessment, would not be a reliable, valid or effective form of reassessment, especially for technical subjects such as those required for a computer science programme.

85. Another example of reassessment described by college teaching staff was allowing students to “make good” on their failed assignment by making corrections based on their teacher’s feedback. There is a difference between a student being able to independently use their knowledge and skills to demonstrate mastery of learning outcomes, and making changes as directed by a teacher. It is the view of the assessment team that this creates a clear distinction in difficulty between an assessment and reassessment. As such it is not a reliable or effective form of assessment.

B4 Conclusions

86. From reviewing the evidence provided, the assessment team has identified the following concerns in relation to effectiveness of assessments (Condition B4.2.a), reliability and validity of assessments (Condition B4.2.b), academic regulations being designed to ensure that relevant awards are credible (Condition B4.2.c) and credibility of awards (Condition B4.2.e):

    - The assignments for technical topics were often assessed with a significant weighting towards academic writing skills and written understanding of technical topics rather than the practical application of relevant technical skills. In the example presented in this report, over 60 per cent of assessment for first year students was based on written work, not on technical skills. This resulted in students not being assessed effectively as assessments were not comprehensively assessing the practical application of relevant technical skills. Computer science is a technical, practical subject and while some writing skills are necessary to demonstrate critical thinking and reasoning, it is possible to pass the relevant courses without demonstrating significant relevant technical skill.

    - Where students were expected to demonstrate technical skills and knowledge within assessment, the low demands of the assignments, permissive grade descriptors and lenient marking and resits meant that students were awarded high grades in comparison to the skills and knowledge that they had demonstrated. Use of templates, peer support on individual assessment, and intervention during assessment and reassessment by teachers meant that significant proportions of the technical work the team observed were not independently created by the students. This resulted in assessments that were not valid or reliable as they did not require students to demonstrate knowledge and skills in a way that was consistent between students, nor did all assessments take place in a way that resulted in students demonstrating knowledge and skills in the way intended by the design of the assessment.

    - In considering the lack of effective, reliable and valid assessment, in the academic judgement of the assessment team, the relevant awards granted to students were not credible at the point of being granted. This is because they did not reflect students' knowledge and skill via the use of effective, valid and reliable assessment. Nor were academic regulations (marking criteria) designed to ensure the credibility of relevant awards because they were not designed for the assessment of technical practical work.

87. In the academic judgement of the assessment team, students on the relevant courses considered were not assessed effectively and in some instances, assessments were not valid or reliable. It was possible, and indeed in the assessment team's view, straightforward, for a student to have passed a relevant course without demonstrating a level of skill and knowledge that would be expected from a computer science graduate, therefore calling into question the credibility of the relevant awards granted to students.

Annex A: Ongoing conditions of registration

Condition B1: Academic experience

Scope

B1.1 This condition applies to the quality of higher education provided in any manner or form by, or on behalf of, a provider (including, but not limited to, circumstances where a provider is responsible only for granting awards for students registered with another provider).

Requirement

B1.2 Without prejudice to the principles and requirements provided for by any other condition of registration and the scope of B1.1, the provider must ensure that the students registered on each **higher education course** receive a high quality academic experience.

B1.3 For the purposes of this condition, a high quality academic experience includes but is not limited to ensuring all of the following:

a. each higher education course is up-to-date;

b. each higher education course provides educational challenge;

c. each higher education course is coherent;

d. each higher education course is effectively delivered; and

e. each higher education course, as appropriate to the subject matter of the course, requires students to develop relevant skills.

B1.4 Insofar as **relevant skills** includes technical proficiency in the English language, the provider is not required to comply with B1.3.e to the extent that it is able to demonstrate to the OfS, on the balance of probabilities, that its English language proficiency requirements, or failure to have English language proficiency requirements, for one or more students, are strictly necessary as a matter of law because compliance with B1.3.e in respect of that student, or those students:

i. would amount to a form of discrimination for the purposes of the Equality Act 2010; and

ii. cannot be objectively justified for the purposes of relevant provisions of that Act; and

iii. does not fall within an exception or exclusion provided for under or by virtue of that Act, including but not limited to provisions of the Act that relate to competence standards.

Definitions

B1.5 For the purposes of this condition B1:

a. "**appropriately informed**" will be assessed by reference to:

i. the time period within which any of the developments described in the definition of up-to-date have been in existence;

ii. the importance of any of the developments described in the definition of up-to-date to the subject matter of the higher education course; and

iii. the time period by which it is planned that such developments described in the definition of up-to-date will be brought into the higher education course content.

b. “coherent” means a higher education course which ensures:

i. there is an appropriate balance between breadth and depth of content;

ii. subjects and skills are taught in an appropriate order and, where necessary, build on each other throughout the course; and

iii. key concepts are introduced at the appropriate point in the course content.

c. “**educational challenge**” means a challenge that is no less than the minimum level of rigour and difficulty reasonably expected of the **higher education course**, in the context of the subject matter and level of the course.

d. “**effectively delivered**”, in relation to a **higher education course**, means the manner in which it is taught, supervised and assessed (both in person and remotely) including, but not limited to, ensuring:

i. an appropriate balance between delivery methods, for example lectures, seminars, group work or practical study, as relevant to the content of the course; and

ii. an appropriate balance between directed and independent study or research, as relevant to the level of the course.

e. “**higher education course**” is to be interpreted:

i. in accordance with the Higher Education and Research Act 2017; and

ii. so as to include, for the avoidance of doubt:

A. a course of study;

B. a programme of research;

C. any further education course that forms an integrated part of a higher education course; and

D. any module that forms part of a higher education course, whether or not that module is delivered as an integrated part of the course.

f. “relevant skills” means:

i. knowledge and understanding relevant to the subject matter and level of the **higher education course**; and

ii. other skills relevant to the subject matter and level of the **higher education course** including, but not limited to, cognitive skills, practical skills, transferable skills and professional competences.

g. “**up-to-date**” means representative of current thinking and practices in the subject matter to which the **higher education course** relates, including being **appropriately informed** by recent:

i. subject matter developments;

ii. research, industrial and professional developments; and

iii. developments in teaching and learning, including learning resources.

Condition B2: Resources, support and student engagement

Scope

B2.1 This condition applies to the quality of higher education provided in any manner or form by, or on behalf of, a provider (including, but not limited to, circumstances where a provider is responsible only for granting awards for students registered with another provider).

Requirement

B2.2 Without prejudice to the principles and requirements provided for by any other condition of registration and the scope of B2.1, the provider must take all reasonable steps to ensure:

a. each **cohort of students** registered on each **higher education course** receives **resources** and **support** which are sufficient for the purpose of ensuring:

i. a high quality academic experience for those students; and

ii. those students succeed in and beyond higher education; and

b. effective **engagement** with each **cohort of students** which is sufficient for the purpose of ensuring:

i. a high quality academic experience for those students; and

ii. those students succeed in and beyond higher education.

B2.3 For the purposes of this condition, “all reasonable steps” is to be interpreted in a manner which (without prejudice to other relevant considerations):

a. focuses and places significant weight on:

i. the particular academic needs of each **cohort of students** based on prior academic attainment and capability; and

ii. the principle that the greater the academic needs of the **cohort of students**, the number and nature of the steps needed to be taken are likely to be more significant;

b. places less weight, as compared to the factor described in B2.3a., on the provider’s financial constraints; and

c. disregards case law relating to the interpretation of contractual obligations.

Definitions

B2.4 For the purposes of this condition B2:

a. “**academic misconduct**” means any action or attempted action that may result in a student obtaining an unfair academic advantage in relation to an **assessment**, including but not limited to plagiarism, unauthorised collaboration and the possession of unauthorised materials during an **assessment**.

b. “**appropriately qualified**” means staff have and maintain:

i. expert knowledge of the subject they design and/or deliver;

ii. teaching qualifications or training, and teaching experience, appropriate for the content and level of the relevant **higher education course**; and

iii. the required knowledge and skills as to the effective delivery of their **higher education course**.

c. "**assessment**" means any component of a course used to assess student achievement towards a **relevant award**, including an examination and a test.

d. "**cohort of students**" means the group of students registered on to the **higher education course** in question and is to be interpreted by reference to the particular academic needs of those students based on prior academic attainment and capability.

e. "**engagement**" means routine provision of opportunities for students to contribute to the development of their academic experience and their **higher education course**, in a way that maintains the academic rigour of that course, including, but not limited to, through membership of the provider's committees, opportunities to provide survey responses, and participation in activities to develop the course and the way it is delivered.

f. "**higher education course**" is to be interpreted:

i. in accordance with the Higher Education and Research Act 2017; and

ii. so as to include, for the avoidance of doubt:

A. a course of study;

B. a programme of research;

C. any further education course that forms an integrated part of a higher education course; and

D. any module that forms part of a higher education course, whether or not that module is delivered as an integrated part of the course.

g. "**physical and digital learning resources**" includes, as appropriate to the content and delivery of the **higher education course**, but is not limited to:

i. physical locations, for example teaching rooms, libraries, studios and laboratories;

ii. physical and digital learning resources, for example books, computers and software;

iii. the resources needed for digital learning and teaching, for example, hardware and software, and technical infrastructure; and

iv. other specialist resources, for example specialist equipment, software and research tools.

h. "relevant award" means:

i. a research award;

ii. a taught award; and/or

iii. any other type of award or qualification in respect of a higher education course, including an award of credit granted in respect of a module that may form part of a larger higher education course,

whether or not granted pursuant to an authorisation given by or under the Higher Education and Research Act 2017, another Act of Parliament or Royal Charter.

i. "**research award**" and "**taught award**" have the meanings given in section 42(3) of the Higher Education and Research Act 2017.

j. "**resources**" includes but is not limited to:

i. the staff team that designs and delivers a **higher education course** being collectively **sufficient in number**, **appropriately qualified** and deployed effectively to deliver in practice; and

ii. **physical and digital learning resources** that are adequate and deployed effectively to meet the needs of the **cohort of students**.

k. "**sufficient in number**" will be assessed by reference to the principle that the larger the cohort size of students, the greater the number of staff and amount of staff time should be available to students, and means, in the context of the staff team:

i. there is sufficient financial resource to recruit and retain sufficient staff;

ii. the provider allocates appropriate financial resource to ensuring staff are equipped to teach courses;

iii. **higher education courses** have an adequate number of staff, and amount of staff time; and

iv. the impact on students of changes in staffing is minimal.

l. "**support**" means the effective deployment of assistance, as appropriate to the content of the **higher education course** and the **cohort of students**, including but not limited to:

i. academic support relating to the content of the **higher education course**;

ii. support needed to underpin successful physical and digital learning and teaching;

iii. support relating to understanding, avoiding and reporting **academic misconduct**; and

iv. careers support,

but for the avoidance of doubt, does not include other categories of non-academic support.

Condition B4: Assessment and awards

Scope

B4.1 This condition applies to the quality of higher education provided in any manner or form by, or on behalf of, a provider (including, but not limited to, circumstances where a provider is responsible only for granting awards for students registered with another provider).

Requirement

B4.2 Without prejudice to the principles and requirements provided for by any other condition of registration and the scope of B4.1, the provider must ensure that:

a. students are assessed effectively;

b. each assessment is valid and reliable;

c. academic regulations are designed to ensure that relevant awards are credible;

d. subject to paragraph B4.3, in respect of each **higher education course**, **academic regulations** are designed to ensure the effective assessment of technical proficiency in the English language in a manner which appropriately reflects the level and content of the applicable **higher education course**; and

e. **relevant awards** granted to students are **credible** at the point of being granted and when compared to those granted previously.

B4.3 The provider is not required to comply with B4.2d to the extent that:

a. a **higher education course** is assessing a language that is not English; or

b. the provider is able to demonstrate to the OfS, on the balance of probabilities, that its **academic regulations**, or failure to have any **academic regulations**, for assessing technical proficiency in the English language for one or more students are strictly necessary as a matter of law because compliance with B4.2d in respect of that student, or those students:

i. would amount to a form of discrimination for the purposes of the Equality Act 2010; and

ii. cannot be objectively justified for the purposes of relevant provisions of that Act; and

iii. does not fall within an exception or exclusion provided for under or by virtue of that Act, including but not limited to provisions of the Act that relate to competence standards.

Definitions

B4.4 For the purposes of this condition B4:

a. "**academic misconduct**" means any action or attempted action that may result in a student obtaining an unfair academic advantage in relation to an **assessment**, including but not limited to plagiarism, unauthorised collaboration and the possession of unauthorised materials during an **assessment**.

b. “**academic regulations**” means regulations adopted by the provider, which govern its **higher education courses**, including but not limited to:

i. the assessment of students’ work;

ii. student discipline relating to academic matters;

iii. the requirements for **relevant awards**; and

iv. the method used to determine classifications, including but not limited to:

A. the requirements for an award; and

B. the algorithms used to calculate the classification of awards.

c. “**assessed effectively**” means assessed in a challenging and appropriately comprehensive way, by reference to the subject matter of the **higher education course**, and includes but is not limited to:

i. providing stretch and rigour consistent with the level of the course;

ii. testing **relevant skills**; and

iii. **assessments** being designed in a way that minimises the opportunities for **academic misconduct** and facilitates the detection of such misconduct where it does occur.

d. “**assessment**” means any component of a course used to assess student achievement towards a **relevant award**, including an examination and a test.

e. “**credible**” means that, in the reasonable opinion of the OfS, **relevant awards** reflect students’ knowledge and skills, and for this purpose the OfS may take into account factors which include, but are not limited to:

i. the number of **relevant awards** granted, and the classifications attached to them, and the way in which this number and/or the classifications change over time and compare with other providers;

ii. whether students are **assessed effectively** and whether **assessments** are **valid** and **reliable**;

iii. any actions the provider has taken that would result in an increased number of **relevant awards**, and/or changes in the classifications attached to them, whether or not the achievement of students has increased, for example, changes to assessment practices or **academic regulations**; and

iv. the provider’s explanation and evidence in support of the reasons for any changes in the classifications over time or differences with other providers.

f. “**higher education course**” is to be interpreted:

i. in accordance with the Higher Education and Research Act 2017; and

ii. so as to include, for the avoidance of doubt:

A. a course of study;

B. a programme of research;

C. any further education course that forms an integrated part of a higher education course; and

D. any module that forms part of a higher education course, whether or not that module is delivered as an integrated part of the course.

g. “relevant award” means:

i. a research award;

ii. a taught award; and/or

iii. any other type of award or qualification in respect of a higher education course, including an award of credit granted in respect of a module that may form part of a larger higher education course, whether or not granted pursuant to an authorisation given by or under the Higher Education and Research Act 2017, another Act of Parliament or Royal Charter.

h. “relevant skills” means:

i. knowledge and understanding relevant to the subject matter and level of the **higher education course**; and

ii. other skills relevant to the subject matter and level of the **higher education course** including, but not limited to, cognitive skills, practical skills, transferable skills and professional competences.

i. “**reliable**” means that an **assessment**, in practice, requires students to demonstrate knowledge and skills in a manner which is consistent as between the students registered on a **higher education course** and over time, as appropriate in the context of developments in the content and delivery of the **higher education course**.

j. “**research award**” and “**taught award**” have the meanings given in section 42(3) of the Higher Education and Research Act 2017.

k. “**valid**” means that an **assessment** in fact takes place in a way that results in students demonstrating knowledge and skills in the way intended by design of the assessment.