

## Programme specification

*(Notes on how to complete this template are provide in Annexe 3)*

### 1. Overview/ factual information

<b>Programme/award title(s)</b>	Foundation Degree in Software and Cloud Development with Data Analysis
<b>Teaching Institution</b>	Belfast Metropolitan College
<b>Awarding Institution</b>	The Open University (OU)
<b>Date of first OU validation</b>	2018
<b>Date of latest OU (re)validation</b>	Nov 2022
<b>Next revalidation</b>	2028
<b>Credit points for the award</b>	240
<b>UCAS Code</b>	N/A
<b>HECoS Code</b>	100376
<b>LDCS Code (FE Colleges)</b>	N/A
<b>Programme start date and cycle of starts if appropriate.</b>	September 2023
<b>Underpinning QAA subject benchmark(s)</b>	<ul style="list-style-type: none"> <li>• QAA Computing – March 2022</li> <li>• CSE C2017 - CyberSecurity</li> <li>• IT 2017 – Information Technology</li> </ul>
<b>Other external and internal reference points used to inform programme outcomes. For apprenticeships, the standard or framework against which it will be delivered.</b>	N/A
<b>Professional/statutory recognition</b>	N/A
<b>For apprenticeships fully or partially integrated Assessment.</b>	N/A
<b>Mode(s) of Study (PT, FT, DL, Mix of DL &amp; Face-to-Face) Apprenticeship</b>	FT and PT
<b>Duration of the programme for each mode of study</b>	FT (2 year) and PT (2 ½ years)
<b>Dual accreditation (if applicable)</b>	N/A
<b>Date of Production/Revision of this specification</b>	16/01/2023

**Please note: This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided.**

**More detailed information on the learning outcomes, content, and teaching, learning and assessment methods of each module can be found in student module guide(s) and the students handbook.**

**The accuracy of the information contained in this document is reviewed by the University and may be verified by the Quality Assurance Agency for Higher Education.**

#### Educational aims and objectives

Since this Foundation Degree was validated there have been over 465 full time enrolments, not including the ever growing higher level apprenticeship programmes linked to this foundation degree. The Level 6 BSc (Hons) Top Up in Software, Cloud and Application Development validated in 2021 allows for excellent progression routes for successfully completing students. 47% of graduated students have already articulated to the Level 6 Top Up. Other articulation routes are:-

- Students are able to enrol on an Open University Top Up Degree IT offered through the Open University and complete four Level 6 modules.
- Students are able to enrol on year 3 IT programme at Napier University or Ravensbourne University

Other possible articulation routes are: -

- Students can apply for Level 6 courses at the other two local Universities (Ulster University or Queens University) but will only gain entry onto to year 1 or year 2 (under consideration with distinctions in all Level 4 and Level 5 modules).
- Other UK Universities that the college is currently exploring articulation agreements with.

There are two proposed modes of delivery full-time and part-time.

### **Modes of Delivery/Student Pathways**

- Full-time
  - 2 year, 2 semester each year full time pathway is aimed at students who will attend the programme on a full time basis. Full time students are timetabled for 16 hours each week for 32 weeks each year of the programme. This mode will not have optional pathways in the second year;

**Full Time****Year 1 Semester 1**

Mathematics for Computing  
(L4 20 credits)

Programming & Scripting  
(L4 20 credits)

Cloud and Cyber Security Fundamentals  
(L4 20 Credits)

**Year 1 Semester 2**

System Design and Cloud Development  
(L4 20 Credits)

Machine Learning  
(L4 20 Credits)

Database Design and Development  
(L4 20 Credits)

**Year 2 Semester 1**

Advanced Programming and Web Development  
(L5 20 Credits)

Secure Programming and Testing  
(L5 20 Credits)

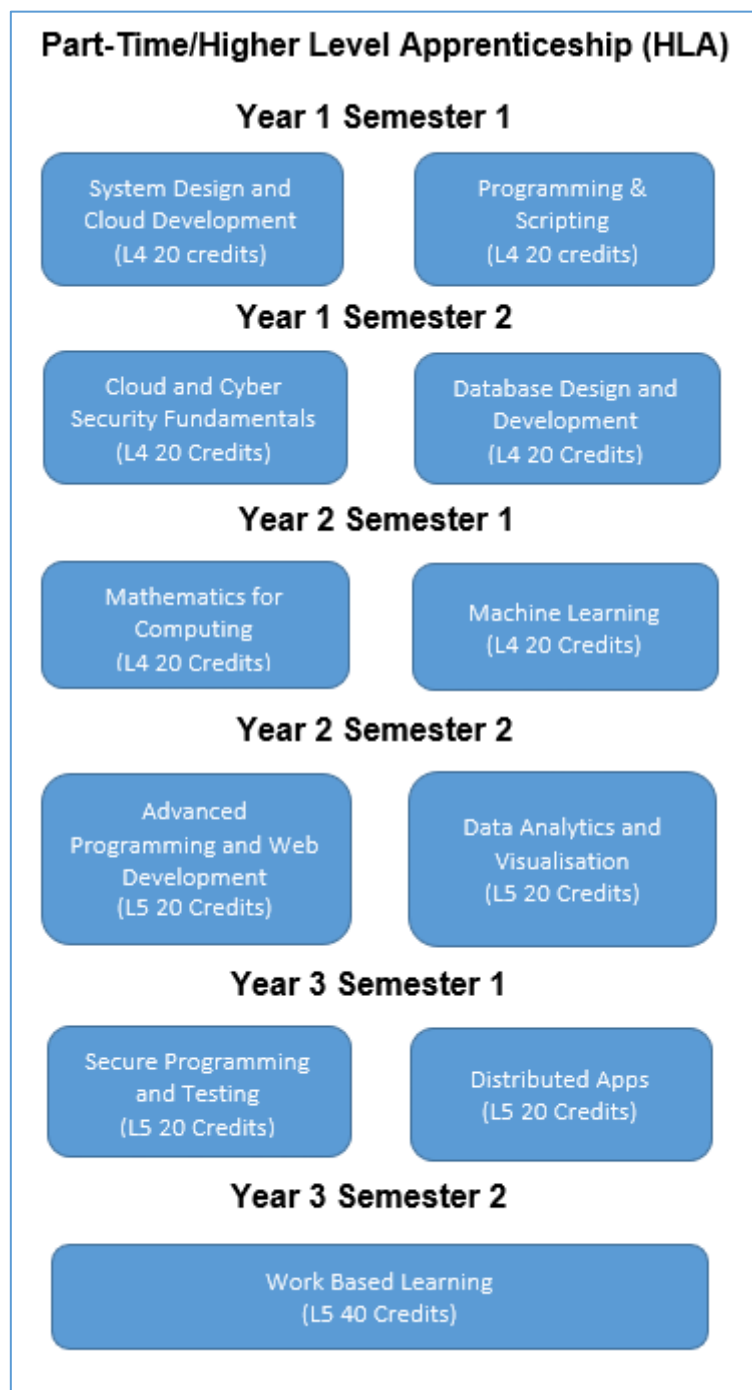
Data Analytics and Visualisation  
(L5 20 Credits)

Distributed Apps  
(L5 20 Credits)

**Year 2 Semester 2**

Work Based Learning  
(L5 40 Credits)

- Part Time (for Higher Level Apprentices)
  - 2 ½ year, 2 semester each year part time pathway for a Higher Level Apprenticeship programme. This delivery mode will be for apprentices attending the college 1 day per week over the duration of the programme. They will be employed in an apprenticeship Software/Cloud Development or Data Analysis role.



#### 2.4 List of all exit awards

- Certificate in Higher Education in Software and Cloud Development with Data Analysis
- Foundation Degree in Software and Cloud Development with Data Analysis

### 3. Programme structure and learning outcomes

*(The structure for any part-time delivery should be presented separately in this section.)*

<b>Programme Structure - LEVEL 4</b>					
<b>Compulsory modules</b>	<b>Credit points</b>	<b>Optional modules</b>	<b>Credit points</b>	<b>Is module compensatable?</b>	<b>Semester runs in</b>
Systems Design and Cloud Development	20			Yes	2
Programming and Scripting	20			Yes	1
Database Design and Development	20			Yes	2
Mathematics for Computing	20			Yes	1
Cloud and Cyber Security Fundamentals	20			Yes	1
Machine Learning	20			Yes	2

Intended learning outcomes at Level 4 are listed below:

<b>3A. Knowledge and understanding</b>	
<b>Learning outcomes:</b>	<b>Learning and teaching strategy/ assessment methods</b>
<p><b>A1:</b> Knowledge and understanding: demonstrate knowledge and understanding of essential facts, concepts, principles and theories relating to Computing and computer applications as appropriate to the programme of study.</p> <p><b>A2:</b> Become familiar with the theory and practice of a range of development environments and software technologies.</p> <p><b>A3:</b> Methods and tools: explain appropriate theory, practices and tools for the specification, design, implementation and evaluation of computer based systems.</p> <p><b>A4:</b> Demonstrate an understanding of the key professional, legal, moral and ethical issues involved in application development.</p> <p><b>A5:</b> Demonstrate through written and practical exercises a knowledge of current developments in a selection of software development technologies and applications.</p> <p><b>A6:</b> Investigate a software engineering approach to the design and deployment of secure application solutions.</p>	<ul style="list-style-type: none"> <li>• Teaching and Learning Methods: Lectures, tutor directed tutorials, practical sessions, student led seminars and use of the College's Virtual Learning Environment.</li> <li>• Assessment Methods: Coursework related to assignments, case studies and projects, written unseen examinations, open book assessments, practical examination/observation and project reports.</li> </ul>

<b>3B. Cognitive skills</b>	
<b>Learning outcomes:</b>	<b>Learning and teaching strategy/ assessment methods</b>
<p><b>B1:</b> An understanding of the scientific method and its applications to problem solving in this area.</p> <p><b>B2:</b> Review the extent to which a solution meets the criteria defined for its current use and future development.</p> <p><b>B3:</b> Design testing strategies to ensure the functionality, effectiveness, resilience and security of developed applications.</p> <p><b>B4:</b> Methods and tools: explain appropriate theory, practices and tools for the specification, design, implementation and evaluation of computer based systems.</p> <p><b>B5:</b> Professional considerations: recognise the professional, economic, social, environmental, moral and ethical issues involved in the sustainable exploitation of computer technology and be guided by the adoption of appropriate professional, ethical and legal practices.</p>	<ul style="list-style-type: none"> <li>• Teaching and Learning Methods: Lectures, tutor directed tutorials, supervised practical sessions, student led seminars and use of the College's Virtual Learning Environment.</li> <li>• Assessment Methods: Coursework related to assignments, case studies and projects, written unseen examinations, open book assessments, presentations, practical examination/observation, project and placement reports.</li> <li>• Application and use of online virtual labs that enable students to construct real life scenarios to experiment and test out practical approaches to simulate application development and cloud deployment.</li> </ul>

<b>3C. Practical and professional skills</b>	
<b>Learning outcomes:</b>	<b>Learning and teaching strategy/ assessment methods</b>
<p><b>C1:</b> Specify and design computing solutions.</p> <p><b>C2:</b> The ability to plan and manage projects to deliver computing systems within constraints of requirements, timescale and budget.</p> <p><b>C3:</b> Communicate technical information to technical, management, user and academic audiences.</p> <p><b>C4:</b> The ability to recognise any risks and safety aspects that may be involved in the deployment of computing systems within a given context.</p> <p><b>C5:</b> The ability to recognise complex problems, including those with incomplete information and devise appropriate solutions.</p> <p><b>C6:</b> Develop effective solutions to practical problems individually and as a member of a team.</p>	<ul style="list-style-type: none"> <li>• Teaching and Learning Methods: Lectures, tutor directed tutorials, student led seminars, supervised practical sessions and self directed learning employing study packs and use of the College's Virtual Learning Environment.</li> <li>• Assessment Methods: Coursework related to assignments, case studies and projects, written unseen examinations, open book assessments, presentations, practical examination/observation, project and placement reports.</li> <li>• Application and use of online virtual labs that enable students to construct real life scenarios to experiment and test out practical approaches to simulate application development and cloud deployment.</li> <li>• Site visits to organisations and companies to reflect on industry standards, procedures, best practice and current trends.</li> <li>• Use of work based learning unit and case studies to build on knowledge and apply theoretical concepts and practical skills to real life situations.</li> <li>• Employ case studies in online virtual labs to test out advanced Cloud and Internet Application Development concepts.</li> </ul>

<b>3D. Key/transferrable skills</b>	
<b>Learning outcomes:</b>	<b>Learning and teaching strategy/ assessment methods</b>
<p><b>D1:</b> Students are expected to develop a wide range of generic skills to ensure they become effective in the workplace, to the benefit of themselves, their employer and the wider economy.</p> <p><b>D2:</b> The ability to construct well argued and grammatically correct documents and communicate these effectively, using a range of media and with a variety of audiences.</p> <p><b>D3:</b> Team working and management: the ability to recognise and make best use of the skills and knowledge of individuals to collaborate. To be able to identify problems and desired outcomes and negotiate to mutually acceptable conclusions. To understand the role of a leader in setting direction and taking responsibility for actions and decisions.</p> <p><b>D4:</b> Self-management: self awareness and reflection; goal setting and action planning; independence and adaptability; acting on initiative; innovation and creativity. The ability to work unsupervised, plan effectively and meet deadlines, and respond readily to changing situations and priorities.</p> <p><b>D5:</b> Interaction: reflection and communication: the ability to succinctly present rational and reasoned arguments that address a given problem or opportunity, to a range of audiences (orally, electronically or in writing).</p>	<ul style="list-style-type: none"> <li>• Teaching and Learning Methods: Lectures, tutorials, practical sessions and Work based Learning.</li> <li>• Assessment Methods: Placement report assessment, written unseen examinations, open book assessments, presentations and coursework.</li> </ul>

Exit award Level 4 is Certificate in Higher Education in Software and Cloud Development with Data Analysis

Programme Structure - LEVEL 5					
Compulsory modules	Credit points	Optional modules	Credit points	Is module compensatable?	Semester runs in
Data Analytics and Data Visualisation	20			Yes	1
Secure Programming and Testing	20			Yes	1
Distributed Apps	20			Yes	1
Work Based Learning	40			No	2
Advanced Programming and Web Development	20			Yes	1

Foundation Degree intended learning outcomes are listed below.

3A. Knowledge and understanding	
Learning outcomes:	Learning and teaching strategy/ assessment methods
<p><b>A1:</b> Knowledge and understanding: demonstrate knowledge and understanding of essential facts, concepts, principles and theories relating to Computing and computer applications as appropriate to the programme of study.</p> <p><b>A2:</b> Become familiar with the theory and practice of a range of development environments and software technologies.</p>	<ul style="list-style-type: none"> <li>Teaching and Learning Methods: Lectures, tutor directed tutorials, practical sessions, student led seminars and use of the College's Virtual Learning Environment</li> <li>Assessment Methods: Coursework related to assignments, case studies and projects, written unseen examinations, open book assessments, practical examination/observation and project reports.</li> </ul>

<b>3A. Knowledge and understanding</b>	
<p><b>A3:</b> Methods and tools: deploy appropriate theory, practices and tools for the specification, design, implementation and evaluation of computer based systems.</p> <p><b>A4:</b> Demonstrate a sound understanding of the key professional, legal, moral and ethical issues involved in application development.</p> <p><b>A5:</b> Demonstrate through written and practical exercises a sound knowledge of current developments in a selection of software development technologies and applications.</p> <p><b>A6:</b> Apply a software engineering approach to the design and deployment of secure application solutions.</p>	

<b>3B. Cognitive skills</b>	
<b>Learning outcomes:</b>	<b>Learning and teaching strategy/ assessment methods</b>
<p><b>B1:</b> An understanding of the scientific method and its applications to problem solving in this area.</p> <p><b>B2:</b> Evaluate the extent to which a solution meets the criteria defined for its current use and future development.</p> <p><b>B3:</b> Design and implement testing strategies to ensure the functionality, effectiveness, resilience and security of developed applications.</p>	<ul style="list-style-type: none"> <li>• Teaching and Learning Methods: Lectures, tutor directed tutorials, supervised practical sessions, student led seminars and use of the College's Virtual Learning Environment.</li> <li>• Assessment Methods: Coursework related to assignments, case studies and projects, written unseen examinations, open book assessments, presentations, practical examination/observation, project and placement reports.</li> </ul>

<b>3B. Cognitive skills</b>	
<p><b>B4:</b> Methods and tools: deploy appropriate theory, practices and tools for the specification, design, implementation and evaluation of computer based systems.</p> <p><b>B5:</b> Professional considerations: recognise the professional, economic, social, environmental, moral and ethical issues involved in the sustainable exploitation of computer technology and be guided by the adoption of appropriate professional, ethical and legal practices.</p>	<ul style="list-style-type: none"> <li>• Application and use of online virtual labs that enable students to construct real-life scenarios to experiment and test out practical approaches to simulate application development and cloud deployment.</li> </ul>

<b>3C. Practical and professional skills</b>	
<b>Learning outcomes:</b>	<b>Learning and teaching strategy/ assessment methods</b>
<p><b>C1:</b> Specify, design, construct and test computing solutions.</p> <p><b>C2:</b> The ability to plan and manage projects to deliver computing systems within constraints of requirements, timescale and budget.</p>	<ul style="list-style-type: none"> <li>• Teaching and Learning Methods: Lectures, tutor directed tutorials, student led seminars, supervised practical sessions and selfdirected learning employing study packs and use of the College's Virtual Learning Environment.</li> </ul>

### 3C. Practical and professional skills

**C3:** Communicate technical information to technical, management, user, and academic audiences.

**C4:** The ability to recognise any risks and safety aspects that may be involved in the deployment of computing systems within a given context.

**C5:** The ability to critically evaluate and analyse complex problems, including those with incomplete information, and devise appropriate solutions, within the constraints of a budget.

**C6:** Develop effective solutions to practical problems individually and as a member of a team.

- Assessment Methods: Coursework related to assignments, case studies and projects, written unseen examinations, open book assessments, presentations, practical examination/observation, project and placement reports.
- Application and use of online virtual labs that enable students to construct real life scenarios to experiment and test out practical approaches to simulate application development and cloud deployment.
- Site visits to organisations and companies to reflect on industry standards, procedures, best practice and current trends.
- Use of work based learning unit and case studies to build on knowledge and apply theoretical concepts and practical skills to real life situations.
- Employ case studies in online virtual labs to test out advanced Cloud and Internet Application Development concepts.

<b>3D. Key/transferrable skills</b>	
<b>Learning outcomes:</b>	<b>Learning and teaching strategy/ assessment methods</b>
<p><b>D1:</b> Students are expected to develop a wide range of generic skills to ensure they become effective in the workplace, to the benefit of themselves, their employer and the wider economy.</p> <p><b>D2:</b> The ability to construct well argued and grammatically correct documents and communicate these effectively, using a range of media and with a variety of audiences.</p> <p><b>D3:</b> Team working and management: the ability to recognise and make best use of the skills and knowledge of individuals to collaborate. To be able to identify problems and desired outcomes and negotiate to mutually acceptable conclusions. To understand the role of a leader in setting direction and taking responsibility for actions and decisions.</p> <p><b>D4:</b> Self-management: self awareness and reflection; goal setting and action planning; independence and adaptability; acting on initiative; innovation and creativity. The ability to work unsupervised, plan effectively and meet deadlines, and respond readily to changing situations and priorities.</p> <p><b>D5:</b> Interaction: reflection and communication: the ability to succinctly present rational and reasoned arguments that address a given problem or opportunity, to a range of audiences (orally, electronically or in writing).</p>	<ul style="list-style-type: none"> <li>• Teaching and Learning Methods: Lectures, tutorials, practical sessions and Work based Learning.</li> <li>• Assessment Methods: Placement report assessment, written unseen examinations, open book assessments, presentations and coursework.</li> </ul>

3D. Key/transferable skills	
<b>D6:</b> Apply problem solving and critical thinking; making a case; numeracy and literacy; information literacy.	

Exit award at Level 5 is Foundation Degree in Software and Cloud Development with Data Analysis



## Annexe 1 - Curriculum map

This table indicates which study units assume responsibility for delivering (shaded) and assessing (✓) particular programme learning outcomes.

Level	Study module/unit	Programme Outcomes																						
		A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	D5	
4	Systems Design and Cloud Development	✓	✓	✓	✓		✓	✓	✓		✓			✓	✓	✓	✓		✓	✓		✓	✓	
	Programming and Scriting	✓		✓		✓			✓	✓			✓	✓	✓		✓	✓	✓		✓	✓		
	Database Design and Development	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓				✓	✓	✓	✓	✓	✓	✓
	Mathematics for Computing	✓	✓			✓		✓	✓				✓		✓			✓			✓	✓	✓	✓
	Cloud and Cyber Security Fundamentals	✓	✓			✓	✓		✓	✓	✓	✓	✓	✓				✓	✓	✓				✓
	Machine Learning	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	

Level	Study module/unit	Programme Outcomes																							
		A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	D5	D6	
5	Data Analytics and Data Visualisation	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	
	Secure Programming and Testing	✓	✓	✓			✓	✓	✓	✓		✓	✓	✓				✓	✓	✓	✓	✓		✓	
	Distributed Apps	✓	✓	✓		✓		✓	✓		✓			✓	✓			✓		✓	✓	✓		✓	
	Work Based Learning	✓	✓		✓	✓		✓	✓		✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	
	Advanced Programming and Web Development	✓	✓	✓		✓	✓	✓	✓	✓			✓	✓						✓		✓	✓		✓