ARDEN UNIVERSITY QUALITY ASSURANCE DOCUMENT QA3 - PROGRAMME SPECIFICATION

1. Target Award	BSc (Hons)
2. Programme Title	BSc (Hons) Digital and Technology Solutions (Software Engineering)
3. Exit Awards	From BSc (Hons): BSc Digital and Technology Solutions (Ordinary) Diploma of Higher Education (240 Credits) Certificate of Higher Education (120 Credits)
4. Programme Leader(s)	Ben Silverstone
5. Delivery Model Restrictions	Apprenticeship – with work based learning Online P/T PT/FT campus based delivered at approved delivery centres
6. Start date	January 2019
7. Programme Accredited by *(PSRB or other, if applicable)*	BCS accreditation will be sought when criteria related to completers is reached
8. UCAS Code *(If applicable)*	
9. Relevant QAA subject benchmark statement	QAA Benchmarks for Batchelors Degrees in Computing (2016), I260 (Data Management)

10. Programme Aims

The primary aim of the BSc (Hons) Digital and Technology Solutions (Software Engineering) programme is to provide an apprenticeship route to enable students to gain a broad understanding of computing, and related topics, and to develop their practical and intellectual skills in relation to the deployment of technology in the workplace.
The core aims to provide generic computing and business knowledge and skills including the fundamentals of databases, programming, security and systems analysis and design. The Software Engineering route will also aim to provide skills and knowledge in the creation, analysis, review, testing and delivery of high quality software solutions.

In particular, the purpose of the programme is to provide participants with:

- An ability to analyse systems development and deployment needs within organisations and apply agreed standards and tools.
- A critical and applied understanding of the fundamentals and application of database design solutions.
- An ability to analyse risks associated with cyber security and propose applied resolutions.
- To critically analyse and apply organisational and project management theory in practical situations to delivery technology solutions to generate competitive advantage
- To evaluate core networking theory and apply it effectively
- An applied understanding of how to undertake analysis, design and produce high quality code, operating at all stages of the software cycle
- An ability to analyse, test and deliver software to meet specified requirements

The programme provides for the opportunity for applicants to gain exemptions against modules based on their previous certificated learning on comparable programmes. In addition, Accreditation of Prior Experiential Learning will also be considered for exemptions on the apprenticeship route only.

Arden Values Mapping: the table below identifies how programme outcomes (listed within section 11) meet provide for full coverage of Arden University Values.

	Knowledge & Understanding	**Intellectual Thinking**	**Practical Skills**	**Transferable Skills**
We Support People	A3	B2		D5
We Do The Right Thing	A4	B2	C3	
We Innovate	A1, A2, A5	B3	C1, C2, C3	
We Take Ownership	A1, A2, A3	B2	C1, C2, C5	D6, D8

11. Intended programme learning outcomes and the means by which they are achieved and demonstrated		
BSc (Hons) 360 credits		
11a. Knowledge and understanding	The means by which these outcomes are achieved	The means by which these outcomes are demonstrated
A1 – Critically understand the value of technology investment, how to formulate a business case and generate competitive advantages A2 – Understand how to design, develop and test software to agreed standards A3 – Analyse the strategic process and roles related to technology in an organisation and how teams function A4 – Evaluate the role of data management ethics, and security in a technology context A5 – Analyse approaches to project management and delivery including associated constraints with an understanding of business needs. A6 – Analysis requirements to design software solutions independently and as part of a team A7 – Critically evaluate the role of security compliance and unit testing when making use of a range of software tools A8 – Demonstrate a critical understanding of a specified Digital and Technology solutions issue explored via an extended project	Learning and Teaching methods and strategy: Apprenticeship – All apprentices will be enrolled on modules that will have a variable amount of face to face contact alongside online learning. All of the knowledge criteria will be delivered via this method and will make use of the approaches developed in the delivery of distance and blended learning provision as well as support offered in additional contact sessions. Acquisition of knowledge and understanding in a distance learning context (A1 – A8) at all levels is through an integrated learning and teaching pedagogy that includes both asynchronous and synchronous activity. That is: Asynchronous Independent and directed student study, supported throughout by comprehensive online multi-media teaching materials and resources accessed through our VLE Guided group / project based work. Discussion forums where students discuss and critically engage with themes emerging from the materials they engage with, following the posing of questions or propositions, case studies or similar by either tutor or students themselves Podcasts and narrated PowerPoint's Synchronous Online seminars facilitated by VOIP's where theory and practice are integrated. Live chats Blended delivery is facilitated by a combination of synchronous face to face classroom based delivery and Asynchronous Independent and directed student study, supported throughout by comprehensive online multi-media	Knowledge and understanding are assessed through in-module assessments of portfolio submissions, presentations, time-constrained examinations, report based assignments and for the apprenticeship route through practical activities that evidence the achievement of these core aims. Formative assessments are the precursor to the summative assessments. Appropriate and diverse formative assessments are provided for students and are communicated to them via a clear overview to be found in the assessment brief for each module.

	teaching materials and resources accessed through our VLE Based upon the profile of our typical student body, our strategy enables students to engage with a variety of learning tools that best meet their learning styles, overall objectives and personal circumstances. Independent study is the cornerstone of the learner experience supported by engagement with the specialist tutor and peer engagement. There is a requirement for written work at all levels including reports, essays, practical tasks, developed targeted plans etc., and our formative assessment policy informs how feedback is supplied by tutors at the draft assessment phase.	
11b. Intellectual (thinking) skills	The means by which these outcomes are achieved	The means by which these outcomes are demonstrated
B1 - Engage in critical thinking and be able to accurately identify issues and formulate an articulate response in given contexts. This will include the selection and use of information from a variety of sources, discerning between assumptions and evidence. B2 - Apply theoretical concepts and practical techniques to problem solving and decision-making in order to generate solutions to digital and technology problems B3 – Analyse and interpret quantitative and qualitative data to extrapolate important data/conclusions with which to reach a conclusion based upon logic and evidence. B4 - Generalise appropriately to utilise judgement to draw appropriate conclusions and make recommendations from one context to another.	Intellectual skills (B1 – B4) are developed throughout the programme by the methods and strategies outlined in section A, above. Intellectual development (B3 & B4) is further encouraged via formative assessment tasks including set briefs, in-module activities, case studies, self-initiated briefs, and discussion with tutors and peers (in online forums/debates). Specific modules support the development of quantitative and qualitative analysis, and the development of criticality and self-reflective skills. In addition, the student's thinking skills will be evident in a summative assessment process which requires and rewards learners for the demonstration of creative thinking and problem solving, analysis, judgement and self-reflection in the development of contextually relevant solutions, and a willingness to explore and engage with a range of media. Throughout, the learner is encouraged to develop intellectual skills further by undertaking further independent study and research.	Intellectual skills are assessed through a combination of in-course formative exercises and summative assignments, including the submission of portfolios, self-reflective evidence, statistical analyses, qualitative judgements, and research reports/dissertation.

11c. Practical skills	The means by which these outcomes are achieved	The means by which these outcomes are demonstrated
C1 – Critically analyse business needs and generate information systems and development opportunities to meet needs. C2 – Identify data needs and implement solutions to meet them including ongoing database tasks. C3 – Analyse and apply methods to assess security risks and mitigate against them. C4 – Apply effective project management and organisational change strategies. C5 – Effectively implement networking solutions C6 – Demonstrate how to undertake analysis and design effective and secure software solutions using at least one language C7 – Critically assess code to ensure that it is tested, that functional requirements are met and that the deliverables meet required standards C8 – Carry out extended research into an identified Digital and Technology solutions issue demonstrating a critical approach to research and generating appropriate recommendations	Practical and professional skills (C1-C8) are employed in the production of solutions to real life situations developed through set briefs, exercises and practical activities. In the case of apprentices, these are developed specifically in the workplace and the assessments target the development of solutions to real problems. The important modern-day skills of managing projects, working within differing organisational and national cultures are provided by specific modules, as are specific inputs with an emphasis upon practical functional decision-making skills related to digital and technology solutions management; managing others; and managing knowledge. Practical skills are further developed and integrated through a series of in-course online activities and projects intended to test skills acquired. Group forums provide opportunities to discuss ideas, progress, the work of others and the strengths and weakness in the work presented. Activities are provided so that students can work independently to consolidate their knowledge and grasp of practical skills.	To support the development of practical skills students must supply worked materials and evidence in support of their assignments. Critical reasoning, good presentation and sound evidence trails in all assignments are rewarded. For apprentices, assessment briefs are targeted towards creating solutions in their own workplaces. For other deliver modes, assessment briefs include a variety of commercial and geographical contextual setting. All students receive feedback on all activities and assignments which includes practical examples for improvement in the application of theory to practice to help them improve both aspects of their skill base.
11c. Transferrable skills	The means by which these outcomes are achieved	The means by which these outcomes are demonstrated
D1 - Critically reflect to support enhanced learning, self-awareness and interaction with others D2 - Identify and critically analyse issues in order to generate contextually relevant and workable solutions. D3 - Undertake effective communication and presentation skills	(D1-D8) Personal responsibility becomes an increasingly important skill as students Progress, culminating in the writing of the Dissertation. As the programme progresses work becomes more complex and students are tested on their abilities to respond positively to feedback from a variety of audiences, as well as to manage increasingly large workloads. Students are required to complete a number of assignments and a 'research artefact'	To develop transferable skills all assignments must meet time deadlines and word count guidelines. All assessed work must be submitted independently even where group activity has been an element of the process. Students must take responsibility for their own work. All assignments require students to adopt a spirit of critical enquiry and self-reflection which is rewarded in marking guides. These guides are shared with students.

D4 - Effectively use CIT to communicate and in a variety of settings D5 - Work effectively as a member of a team, including leadership and team working skills, and cross-cultural awareness D6 - Work independently and to take responsibility for own learning D7 - Undertake multidisciplinary research through the acquisition of skills relevant to the context of management D8 - Effectively plan and undertake personal development including the awareness of an ethical and socially responsibly dimension to decision making	that rewards independence originality, and critical enquiry, and which further enhance communication and self-reflective skills.	

Exit Awards: Programme Outcomes

Exit Award	Knowledge & Understanding	Intellectual Skills	Practical Skills	Transferrable Skills
Ordinary Degree (300 credits)	A1-A7	B1-B4	C1-C7	D1 – D8
Graduate Diploma (240 credits)	A1, A2, A3, A4	B1 – B4	C1, C2, C3	D1 – D8
Graduate Certificate (120 credits)	A1-A3	B1, B2	C1-C3	D1-D4

12. Graduate Attributes and the means by which they are achieved and demonstrated

Graduate Attributes

The concept of the Arden University Graduate, based upon the definition of 'graduate attribute' by Bowden et al (2000) has been developed around 6 attributes.

Lifelong Learning: Manage employability, utilising the skills of personal development and planning in different contexts to contribute to society and the workplace.

Reflective Practitioner: Undertake critical analysis and reach reasoned and evidenced decisions, contribute problem-solving skills to find and innovate in solutions

Professional Skills: Perform effectively within the professional environment. Work within a team, demonstrating interpersonal skills such as effective listening, negotiating, persuading and presentation. Be flexible and adaptable to changes within the professional environment

Discipline Expertise: Knowledge and understanding of chosen field. Possess a range of skills to operate within this sector, have a keen awareness of current developments in working practice being well positioned to respond to change.

Responsible Global Citizenship: Understand global issues and their place in a globalised economy, ethical decision-making and accountability. Adopt self-awareness, openness and sensitivity to diversity in culture.

Effective Communication: Communicate effectively both, verbally and in writing, using a range of media widely used in relevant professional context. Be IT, digitally and information literate.

Discipline Expertise: Knowledge and understanding of chosen field. Possess a range of skills to operate within this sector, have a keen awareness of current developments in working practice being well positioned to respond to change

The means by which these outcomes are achieved and demonstrated

All six attributes are relevant to this programme and will be developed throughout the BSc (Hons) Digital & Technology Solutions (Software Engineering) award where they are integrated into all modules and assessed via unit study tasks (individual and group work) and through summative assessment tasks.

Mapping

Module	Graduate Attribute
Professional Development Computing Project Data Communications	**Lifelong Learning:** Manage employability, utilising the skills of personal development and planning in different contexts to contribute to society and the workplace.
Database Design and Implementation Emerging Technology Mobile Technology Implementations	**Reflective Practitioner:** Undertake critical analysis and reach reasoned and evidenced decisions, contribute problem-solving skills to find and innovate in solutions
Data Structures and Algorithms e-Commerce Systems	**Professional Skills:** Perform effectively within the professional environment. Work within a team, demonstrating interpersonal skills such as effective listening, negotiating, persuading and presentation. Be flexible and adaptable to changes within the professional environment.
Information Systems in Organisations Computer Systems Security	**Responsible Global Citizenship:** Understand global issues and their place in a globalised economy, ethical decision-making and accountability. Adopt self-awareness, openness and sensitivity to diversity in culture.
Systems Analysis and Design Software Engineering	**Effective Communication:** Communicate effectively both, verbally and in writing, using a range of media widely used in relevant professional context. Be IT, digitally and information literate.
Business Organisation Project Management and Strategy Programming Website Design Advanced Programming	**Discipline Expertise**: Knowledge and understanding of chosen field. Possess a range of skills to operate within this sector, have a keen awareness of current developments in working practice being well positioned to respond to change

13. Learning and teaching methods and strategies

Apprenticeship

Much of the apprenticeship programme will be studied via 'ilearn' (VLE), however it will also include 20% structured 'off-the-job' training, prior to the end-point assessment, this will help develop competences within an occupation. 'Off-the- job' training is defined as learning which is undertaken outside the normal day-to-day working environment and contributes towards the achievement of the apprenticeship. Although this can include training that is delivered at the apprentice's normal place of work, it must not be delivered as part of their normal working duties. The 'off-the-job' training must be directly relevant to the apprenticeship. The bulk of the delivery approach will reflect that used in distance and blended learning which is detailed below.

Distance Learning

Acquisition of programme outcomes is via engagement with the online module learning material and the online tutoring and programme participant support mechanisms, both of which are delivered via Arden University's ilearn platform (a Moodle-based system). The learning material comprises purpose-written self-contained lessons with frequent activities and feedback to generate learning and reinforce the knowledge acquisition through frequent application of learning to specific examples.

Embedded within the text are links to further reading and appropriate websites. Feedback within the learning material is provided to allow programme participants to check their understanding with that of the tutor. Additionally, group learning activities direct programme participants to the tutor-facilitated discussion forums where they engage in discussion with their peers and receive formative feedback from the module tutor.

Each of the 20 credit modules provide programme participants with an understanding of key theoretical and practical management issues, debates and academic informed literatures.

Teaching/learning methods adopted are transferrable across modules and are similar across modules and include online class discussions, exercises/case studies and group discussions.

For each subject being taught a programme of structured online learning activities using both formative and summative assessment is applied. The emphasis is on action learning through the mediation of the module leader for each module.

Learning and Teaching activities are:

Asynchronous

Independent and directed student study, supported throughout by comprehensive online multi-media teaching materials and resources accesses through our Virtual Learning Environment
Guided group / project based work
Research tasks
Discussion forums where students discuss and critically engage with themes emerging from the online materials they engage with, following the posing of questions or propositions, case studies or similar by either tutor or students themselves
Podcasts and narrated PowerPoints

Synchronous

Online seminars facilitated by VOIP's (voice over internet protocol) where theory and practice are integrated

Live chats

Based upon the profile of our typical student body, our strategy enables students to engage with a variety of learning tools that best meet their learning styles, overall objectives and personal circumstances. Independent study is the cornerstone of the learner experience, supported by subject specialist engagement with the tutor and peer engagement.

Blended Learning

A strategy which incorporates elements from the above criteria plus the support of face to face input will be utilised.

A-synchronous learning will be supported by in class face to face lectures, seminars and workshops. Students will have full access to the 'ilearn' platform (VLE) and all programme resources within it. Formative opportunities will be available in class and also via forum / e mail feedback.

Student leaning will be supported and nurtured at our partner institutions by our tutor team and dedicated centre administrator and on line via our student support team.

Summative submissions will all be made via the 'Turn it In' platform.

14. Assessment methods and strategies

The assessment process involves both formative and summative elements and is continuing in nature.

There will be a focus on encouraging students to apply their knowledge to practical situations within their own workplaces. A significant part of this comes from the Dissertation module. Here students will be required to identify a topic of interest to them, which falls within the specified route that they are following. Students will explore this, and will apply their research to the topic, putting forward recommendations which are of practical benefit to the organisation.

The approach to coursework assignments will be to encourage students to apply their knowledge to their own organisation, adding value whilst they learn.

The assessment designed for each module reflects the intentions of that module and will measure the identified learning outcomes. A variety of assessment strategies will be used to reflect and test the achievement of the learning outcomes. These are detailed within each module and mapped in the table below. Assessment questions and cases are seen to be dynamic and are reviewed quarterly in order to maintain rigour and reflect changes in professional focus and practice.

There is a requirement for written work at all levels including reports, essays, developed plans, portfolios of work etc. supplemented by other approaches as identified in the apprenticeship standard assessment guide. Our assessment policy informs how feedback is supplied by tutors at the formative and summative assessment stage. Critical analysis is encouraged at all levels culminating in a final project.

In addition, for apprenticeship students only

Skills and behaviours will be observed and assessed within the workplace throughout the duration of the programme and an end point assessment associated with the apprenticeship process.

The end point assessment is constituted of:
Project showcase, based on work-based project, including report, presentation and questioning

Professional discussion, based on review of portfolio. In addition, students will be assessed on various skills and competencies within the workplace

Summative & Formative Mapping

BSc (Hons) Digital and Technology Solutions (Software Engineering)	Summative Assessment (DL)	Summative Assessment (BL)	Summative Assessment (Apprenticeship)	Formative Assessment
Level 4				
Professional Development	3000 words. Individual Assignment comprising two components: 1) a scenario based case-study of a student's own current or previous employment and learning which requires the student to: reflectively assess their current personal and professional development, including personal and transferable skills, ethical awareness and a personal development plan, and the use and application of communication skills; 2) a reflective account of a student's own understanding of different learning styles, including their own, and its impact upon others.		3000 words. Individual Assignment comprising two components: 1) a scenario based case-study of a student's own current employment and learning which requires the student to: reflectively assess their current personal and professional development, including personal and transferable skills, ethical awareness and a personal development plan, and the use and application of communication skills; 2) a reflective account of a student's own understanding of different learning styles, including their own, and its impact upon others.	Formative feedback through tutor discussions and peer review; Individual learning activities, research tasks and activities and knowledge check activities, as directed by the learning material. Plus, Assignment completion. Students will have the opportunity to submit elements of their portfolio for formative assessment up until a specified point in the module.
Computer Systems Security	3000 words. Individual Assignment based on a case study requiring the student to develop a security policy for a given scenario.	1 - Up to 25 Multiple choice questions either hosted online or on paper addressing common security risks and risk analysis within IT environment. 2 - 2000 words. Individual Assignment based on a case	3000 words. Individual Assignment based on a case study selected from the student's own workplace. Student will need to evaluate the security strategies and methods and develop an amended policy and make	In all cases there will be opportunity for formative feedback in the form of ongoing activities within the module and draft submission of the final assessment.

		study requiring the student to develop a security policy for a given scenario.	recommendations for adjusted working practices where relevant.	
Information Systems in Organisations	3000 words. Individual Assignment comprising a scenario based case study of a typical large-scale organisation which requires the student to analyse it in terms of its information needs according to its business functions, and levels of management, with a view to producing useful management information for effective decision making.	1 - 15-minute group discussion with each student leading on the information needs of a specified functional area of an organisation, plus to compare and contrast information systems within different structural and functional areas of organisations. 2 - 2000 words. Individual Assignment comprising a scenario based case study of a typical large-scale organisation which requires the student to analyse it in terms of its information needs according to its business functions, and levels of management, with a view to producing useful management information for effective decision making.	3000 words. Individual Assignment comprising a case study based on the student's own organisation which requires the student to analyse it in terms of its information needs according to its business functions, and levels of management, with a view to producing useful management information for effective decision making.	Students will have the opportunity to submit work for formative assessment via specific learning activities within the module and through draft submissions up to a specified point prior to final submission.
Data Structures and Algorithms	Notional 3000-word equivalent 24-hour open book assessment based around theory questions testing the application and evaluation of techniques covered in the module			A wide range of formative activities will be provided throughout the module and will include mock questions. Each subject topic will be accompanied by a set of knowledge-check questions to ensure students have multiple examples of each

				technique before these are built upon in subsequent lessons.
Website Design	Notional 3000-word individual assignment with scenario involving the design, implementation and testing of a prototype website to meet the specified requirements, plus documentation of the design implementation and testing.	1 - Given a well-defined website design task, deliver a 20-minute presentation on initial design analysis including usability, accessibility, functional requirements, and development technologies. 2 - Notional 2000-word individual assignment with scenario involving the design, implementation and testing of a prototype website to meet the specified requirements, plus documentation of the design implementation and testing.	Notional 3000-word individual assignment where students draw on needs from their own organisation to inform the design, implementation and testing of a prototype website to meet the specified requirements, plus documentation of the design implementation and testing.	In all cases there will be opportunity for formative feedback through submission of draft work prior to the summative deadline.
Mobile Technology Implementations	3000 words individual assignment based on a business case study related to the development and implementation of software applications for mobile, location aware, sensor and social web networked devices. The student is required to design and conduct a literature search to investigate the current practices and present the impact of mobile technologies	1 - Lead on a 10-minute group discussion that uses relevant literature to evaluate a recent development in mobile technologies, considering security and ethical issues 2 - 2000 words individual assignment based on a business case study related to the development and implementation of software applications for mobile, location aware, sensor and social web networked	3000 words individual assignment based on a business case study related to the student's own working environment. The student is required to appraise how their organisation currently engages with mobile technologies and design a solution to meet a specific organisational need, demonstrating an awareness of relevant hardware and ethical requirements.	In all cases there will be opportunity for formative feedback through submission of draft work prior to the summative deadline.

	and applications while addressing business, organisational, ethical, legal and security concerns.	devices. The student is required to design and conduct a literature search to investigate the current practices and present the impact of mobile technologies and applications while addressing business, organisational, ethical, legal and security concerns.		
Level 5				
Systems Analysis and Design	4000 words Requirements Specification consisting of a case study for the students to analyse. The student will be required to select and justify an approach to the systems analysis. Using this approach, they will produce a requirements specification, analyse the system using appropriate tools/techniques and produce recommendations for the client.	1 - 1 hour in-class test on different systems life cycle, systems analysis & design techniques. 2 - 20-minute group presentation. Requirements Specification consisting of a case study for the students to analyse and critically evaluate the solutions. The student will be required to select and justify an approach to the systems analysis. Using this approach, they will produce a requirements specification, analyse the system using appropriate tools/techniques, critically evaluate the solutions and produce recommendations for the client.	1 - A 2000-word report. A case study where the student needs to evaluate system life cycles and identify the most appropriate approach including proposing appropriate fact-finding and system modelling tools. 2 - A 2000-word report. Applying system analysis and design techniques for a case study in their own organisation, the student would then devise design solutions and effectively present them.	Students will have the opportunity to submit work for formative assessment via specific learning activities within the module and through draft submissions up to a specified point prior to final submission. There will be opportunities to submit presentations for formative review and to practice class tests using previous questions.

Programming	4000-word equivalent Individual Portfolio comprising a series of short questions/answers covering programming and object-oriented systems engineering techniques and a scenario based case study requiring the student to create the relevant UML structures for the case study provided.	4000-word equivalent Individual Portfolio comprising a series of short questions/answers covering programming and object-oriented systems engineering techniques and a case study based on the student's own organisation which requires the student to create the relevant UML structures for the case study selected.	Students will have the opportunity to submit work for formative assessment via specific learning activities within the module and through draft submissions up to a specified point prior to final submission. Student will also have the opportunity to practice their programming skills as part of the ongoing activities built into the modules.
Database Design and Implementation	1 - **Either** a 20-minute individual stand-up presentation with slides (if done face-to-face) **OR** a set of *narrated slides* (if done distance learning). In either case, the presentation should summarize the fundamental data management issues and DBMS features. 2 - **3000-word** equivalent individual assignment covering data analysis, database design & Implementation via SQL and a DBMS. The assignment will consist of a case study for which the student will design and implement an appropriate database solution but also to include database security, database optimization and other SQL programming constructs such as triggers, functions and procedures. A fully-working and tested database is the deliverable. Novel and emerging technology alternatives should also be discussed.	1 - 20-minute individual stand-up presentation with slides summarising the fundamental data management issues and DBMS features. 2 - **3000-word** equivalent individual assignment covering data analysis, database design & Implementation via SQL and a DBMS. The student will design and implement an appropriate database solution to a specified problem within their own organising to include database security, database optimization and other SQL programming constructs such as triggers, functions and procedures. A fully-working and tested database is the	Students will have the opportunity to submit work for formative assessment via specific learning activities within the module and through draft submissions up to a specified point prior to final submission.

			deliverable. Novel and emerging technology alternatives should also be discussed.	
Data Communications	4000 words. Individual Assignment comprising a scenario based case study and requiring the student to define a network solution to a loosely defined problem.	1 - 10-minute presentation summarizing the key knowledge, terminology and critical understanding of data communications principles and concepts. 2 - 3000 words. Individual Assignment comprising a scenario based case study and requiring the student to define a network solution to a loosely defined problem.	4000 words. Individual Assignment comprising a work based case study related closely to the student's employment, requiring the student to identify and address a network solution to a specifically identified problem.	Formative assessment opportunities will be made available throughout the module via activities within the materials and draft submission of summative assessments.
Software Engineering	4000 words. Individual Assignment The assignment will have a series of tasks based on a combination of theoretical and practical questions including input into the stakeholder process.		4000 words. Individual Assignment The assignment will have a series of requiring students to apply software engineering principles to their own organisation to address specific issues, including input into the stakeholder process.	Students will have the opportunity to submit draft work for formative assessment prior to submission of the final portfolio of tasks.
E-Commerce Systems	4000-word equivalent individual assignment involving the design and implementation of an externally hosted e-Commerce solution to a given scenario including documentation of the design and implementation and an	1 - Choose any e-commerce website as an example and critically review it based on the technologies used, usability and aspects of security. Present your findings in a presentation lasting no more than 15 minutes	4000-word equivalent individual assignment involving the design and implementation of an externally hosted e-Commerce solution to meet a specific need within the student's own organising including documentation of the design and implementation	Students will be provided with the opportunity to submit work for formative assessment both as part of ongoing module activities and as draft submission of the final assessment work.

	analysis of the implemented application.	2 - 1500-word equivalent individual assignment involving the design and implementation of an externally hosted e-Commerce solution to a given scenario including documentation of the design and implementation and a critical evaluation of the implemented application	and an analysis of the implemented application.	
Level 6				
Emerging Technology	4000-word evaluation of emerging technology and implementation plan based either in the student's own organisation or on a case study scenario		4000-word evaluation of emerging technology relevant to the student's own organisation setting. Generate a proposal for the implementation of an emerging technology to solve an identified organisational need. (An opportunity exists here to evidence presentation skills)	In all cases there will be opportunity for formative feedback in the form of ongoing activities within the module and draft submission of the final assessment.
Business Organisation	4000-word report which involves the development of a well- reasoned investment proposal providing business insights to management in view of developing new technology solutions, products, services and to increase an organisation's productivity using digital	4000-word case study which involves the development of a well- reasoned investment proposal providing business insights to management in view of developing new technology solutions, products, services and to increase productivity using	4000-word report which involves the development of a well- reasoned investment proposal for the student's own organisation providing business insights to management in view of developing new technology solutions, products, services	Students will have the opportunity to submit work for formative assessment via specific learning activities within the module and through draft submissions up to a specified point prior to final submission.

	technologies. Students may use their own case study, or where one is not available, will be provided with one.	digital technologies in the given case study.	and to increase productivity using digital technologies.	
Project Management and Strategy	4000-word report makes use of either a real working example, or a case study, to evaluate PM strategies in an IT context and applies principles to generate a solution by preparing an appropriate business case and demonstrating how the project can be led effectively.	4000-word report makes use of a case study to evaluate PM strategies in an IT context and applies principles to generate a solution by preparing an appropriate business case and demonstrating how the project can be led effectively.	4000-word report makes use of a working project example in the student's own organisation to evaluate PM strategies in an IT context and applies principles to demonstrate how a solution has been generated and demonstrating effective project management leadership	Students will have the opportunity to submit work for formative assessment via specific learning activities within the module and through draft submissions up to a specified point prior to final submission.
Advanced Programming	1 - (2000 words). Analysis and design of a complex real-world system based on a case study of student choice. A detailed set of requirements and constraints should be identified and a meaningful system specification developed in UML. 2 - (2000-word equivalent). Object-oriented programming of certain key components of the system designed in A1. The specific components can be selected by the student but should include GUI, data structures, advanced algorithms and multithreading.		1 - (2000 words). Analysis and design of a complex real-world system based on a specifically identified need within the student's own organisation. A detailed set of requirements and constraints should be identified and a meaningful system specification developed in UML. 2 - (2000-word equivalent). Object-oriented programming of certain key components of the system designed in A1. The specific components can be selected by the student but should include GUI, data structures,	Students will have the opportunity to submit work for formative assessment via specific learning activities within the module and through draft submissions up to a specified point prior to final submission. Student will also have the opportunity to practice their programming skills as part of the ongoing activities built into the modules.

		advanced algorithms and multithreading.	
Computing Project	1 - **Project Proposal** 2000 words. Individual Assignment comprising a project proposal, identifying the proposed artefact, supported by an initial literature review. 2 - **Project Report & Presentation -** 4,200-word report (70%) and one presentation (1,800-word equivalent for artefact) (30%).		Formative guidance will be given as part of the student / supervisor relationship

15. Employability

Entrants to this programme on an apprenticeship route must be employed and due to the nature of the content and assessment, should the programmes be used as distance or blended learning products, it would be advantageous for the student to be employed in a relevant field. The Digital and Technology Solutions programme is designed to offer the degree of flexibility required to ensure that all students have the maximum opportunity to fulfil their programme of study. The programme aims to develop skills, behaviours and knowledge such that graduates can confidently enter the project management environment or can improve their existing career prospects within it. The degree develops a range of transferrable skills and provides opportunities for these to be evidenced. In particular the final dissertation provides the ability to demonstrate higher level academic skills.

Arden values are imbedded within the programme as a whole and these values will be instilled in students as they progress through their studies, thus ensuring that graduating students are fully equipped with highly current, appropriate and ethically sound knowledge, procedures and processes.

The addition of imbedded graduate attributes adds value to the qualification in terms of providing 'industry ready' graduating students.

16. Entry Requirements

- Two Subjects at GCE A level or equivalent, plus passes at grade C or above in three subjects, including Maths and English at GCSE level or equivalent; or
- Completion of a recognised Access Programme or equivalent.
- IELTS 6.0 or equivalent for students whose medium of prior learning was not English.
- Evidence of eligibility for funding
- Written employer support and evidence of appropriate employment

Exemption may be offered to students where they are able to demonstrate alignment of modules studied to those on the programme offered at Arden University. The specialist nature of the modules makes it unlikely that a large number of exemptions will be given on any route and as such there is no specified option to apply for direct entry to a top up qualification based on possession of an appropriate qualification at level 5. In addition to this APCL route, Applicants who possess work related experience may be able to gain module exemptions through demonstration of prior experiential learning via an APEL process. Each case will be considered on its own merits and sufficient evidence will have to be provided to demonstrate competence equivalent to the outcomes of any given module.

17. Programme Structure

Level 4

Module Code	Module Title	Credits	Module Type (Core/Route)
	Professional Development	20	C
	Computer Systems Security	20	C
	Information Systems in Organisations	20	C
	Data Structures and Algorithms	20	R
	Website Design	20	R

	Mobile Technology Implementations	20	R

Level 5

Module Code	Module Title	Credits	Module Type (Core/Route)
	Systems Analysis and Design	20	C
	Programming	20	C
	Database Design and Implementation	20	C
	Data Communications	20	C
	Software Engineering	20	R
	e-Commerce Systems	20	R

Level 6

Module Code	Module Title	Credits	Module Type (Core/Route)
	Emerging Technology	20	C
	Business Organisations	20	C
	Project Management and Strategy	20	C
	Advanced Programming	20	R
	Computing Project	40	C

18.Subject:	I300 Software Engineering

Last Updated: March 2016

Annex – Mapping of Intended Programme Learning Outcomes and Modules

	Programme Learning Outcomes / **Modules**	A1	A2	A3	A4	A5	A6	A7	A8	B1	B2	B3	B4	C1	C2	C3	C4	C5	C6	C7	C8	D1	D2	D3	D4	D5	D6	D7	D8
Level 4	Professional Development	X	X							X												X		X				X
	Computer Systems Security				X											X						X							
	Information Systems in Organisations	X		X							X		X	X									X						
	Data Structures and Algorithms		X				X					X			X					X					X				
	Website Design			X			X	X			X	X		X					X	X		X							
	Mobile Technology Implementations	X						X		X	X			X					X	X							X		
Level 5	Systems Analysis and Design	X		X							X		X	X									X						
	Programming		X							X		X			X												X		
	Database Design and Implementation				X							X			X								X		X				
	Data Communications				X					X						X		X								X		X	
	Software Engineering		X				X	X			X		X	X					X	X			X		X				
	E-Commerce Systems			X			X	X			X	X		X					X	X						X	X		

Level 6	Emerging Technology	X		X						X	X			X									X				X			
	Business Organisations	X				X								X			X													
	Project Management and Strategy			X		X							X				X													X
	Advanced Programming		X				X			X		X			X													X		
	Computing Project								X	X	X	X	X									X						X	X	