DIGITAL INDUSTRIES - ASSESSMENT PLAN

DIGITAL & TECHNOLOGY SOLUTIONS PROFESSIONAL

BSC (Hons) Digital & Technology Solutions

Introduction

The Technology Solutions Professional is an apprenticeship that typically will take 3 years or more to complete. It leads to a BSc Honours degree qualification that is contextualised for workplace occupational competency as a Digital & Technology Solutions Professional who can operate in one of the following roles:

- Software Engineer
- IT Consultant
- Business Analyst
- Data Analyst
- Cyber Security Analyst
- Network Engineer

This new route to recruitment of young talent for employers will produce competent technology solutions professionals to complement their graduate recruitment and apprenticeship programmes. This apprenticeship will develop the technical, business, project, interpersonal and behavioural skills and knowledge to operate effectively in the digital economy.

What distinguishes this apprenticeship is the blend of employer defined skills, knowledge and behaviour outcomes that are integrated and assessed as part of the degree. The achievement of the degree ensures that the standard has been met. This is a closed degree for this occupation and the degree also acts as assessment verification that the standard has been met by the apprentice.

The assessment approach within the degree has been designed to ensure that apprentices meet the skills, knowledge and behaviour outcomes as defined in the standard whichever university is delivering the programme. This means that universities will need to carefully design their programmes and delivery to ensure all aspects of the standard are met. They will also need to develop approaches to delivery and assessment that will deliver high quality education and training to apprentices and fulfil employer expectations.

The universities will implement assessment that focuses on the specialism chosen and this will be assessed through a comprehensive project based end point assessment within the degree. The end point assessment has two elements; the project assessment and presentation assessment. Completion of the project and presentation signify the completion of not only the degree but the overall programme.

Universities have robust and respected assessment processes and quality assurance that incorporates internal moderation and external examiners to ensure independence across the degree programme and between the suggested formative and end point assessment.

The remainder of this assessment plan will set out the approach to assessment, including what will be assessed, how it will be assessed and the role of the assessors, employer and apprentice in the assessment process.

1. Assessment Overview

The delivery of the apprenticeship by the university provides an integrated approach to developing and assessing skills and knowledge across the range of modules in the degree programme. Each university will develop its own degree programme and will map the individual modules to the outcomes in the standard. Individual modules will contribute formative assessment to the skills, knowledge and behaviour outcomes en-route to the final synoptic project and presentation. The final synoptic project is a substantial piece of work, typically taking around 6 months to undertake alongside the apprentices normal duties to their employer. The end point assessment integrates the project outcomes and presentation into the overall synoptic project assessment. It is this end point assessment which will be judged against the standard, and test the skills, knowledge and behaviours together as applied through the project.

The separation of suggested formative assessment to final assessment of the degree is shown in figure 1 below.

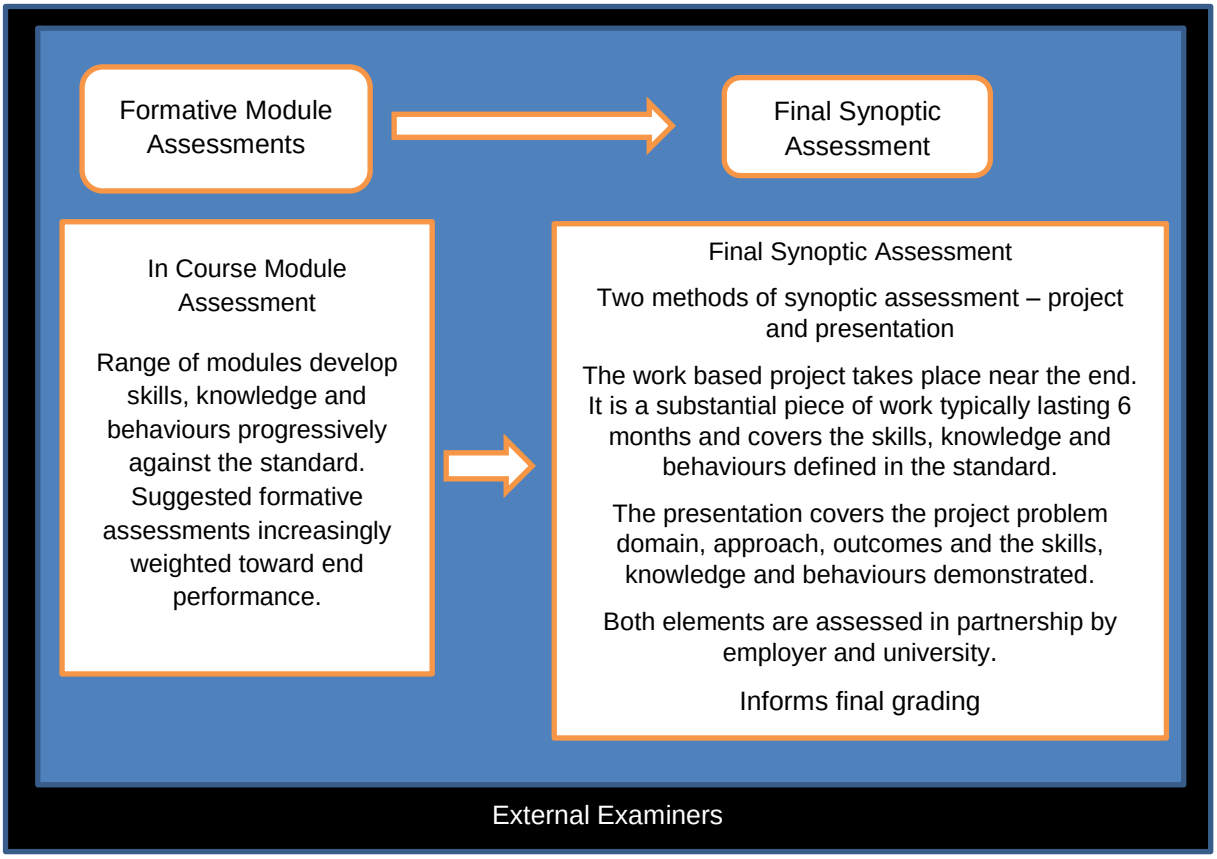

Figure 1 overview of assessment

2. Assessment Details

This is typically a three to four year apprenticeship with an integrated approach to the assessment of knowledge, skills and behaviours. Delivery and assessment are organised through a range of

‘modules’ that deliver the university’s approach to the curriculum. The modules will cover the breadth and depth of the standard using suggested formative assessment methods that integrate the knowledge, skills and behaviour components and which ensure that the apprentice is sufficiently prepared to undertake the synoptic project that will be assessed in partnership with the employer and against the standard.

The modules, synoptic project and their assessments can therefore be clearly mapped to the outcomes in the standard to show how the outcomes in the standard will be met.

2.1 Assessment methods

The assessment strategy includes formative and end point assessments. Formative assessment methods will include an appropriate mix of essays, reports, practical exercises, end tests and exams. These will be applied to the modules proposed by each university to assess the development of skills, knowledge and behaviours. The end point assessment is by synoptic project and presentation. Appendix 1 sets out the formative and end point assessment methods for the skills, knowledge and behaviours defined in the standard.

Employers have stated that apprentices must also maintain a digital portfolio of their completed work, to demonstrate their achievements and capabilities. The practical outputs of the assessments, including software, plans, reports etc. submitted for module assessments, will be collected and maintained in a digital portfolio of apprentices’ work. These will have been assessed against individual module assignments and the portfolio will not separately be assessed. It is the collection in one place of practical outputs that demonstrate evidence of the skills, knowledge and behaviours an apprentice has acquired against the standard. This will also include the synoptic project report and presentation.

2.2 Assessment processes

Early modules introduce awareness and establish the foundational skills. The levels of knowledge and skill build as the apprentices gain more experience in the workplace and can use and apply their knowledge and skills to develop improved competence.

Toward the end of the apprenticeship the apprentice will specialise in one occupational area. Later modules will increasingly focus on the specialism and will enhance the skills and knowledge in line with the standard.

2.2.1 Formative module assessment

The suggested formative module assessments assess the technical skills, and knowledge and behaviours as set out in the Digital & Technology Solutions Professional standard and as detailed in Appendix 1. In totality, the degree modules will cover the full range of the required skills and knowledge from the standard. The modules will be developed against the standard to integrate appropriate blends of skill and knowledge. This will enable individual instances of degree apprenticeship programmes to be mapped against the standard.

The suggested formative assessment will give an ongoing indication of performance against the final outcomes defined in the standard. The university and employer will be able to support the apprentice and provide extra guidance where performance issues might arise to ensure that the apprentice is fully supported in meeting the outcomes on the standard. This will provide regular review points to ensure guided progression.

This approach draws upon the established good practice already undertaken in universities, but with the advantage of employer support and the workplace context to help apprentices see the real world application of their skills, knowledge and behaviours on an ongoing basis.

In practice this means that:

- apprentices acquire skills, knowledge and behaviours as defined in the standard via the modules and assessments provided by the university, and have equivalent outcomes across universities.
- employers can select their preferred university location and/or delivery model.
- apprentices do not have to be assessed more than once in specific knowledge areas.

Individual modules will be assessed and must be passed in accordance with university regulations. This will ensure that the student is prepared and ready to undertake the synoptic project near the end of the programme and that will demonstrate successful outcomes against the skills, knowledge and behaviours defined in the standard.

2.2.2 Synoptic project assessment

The synoptic project is a work based project that broadly represents the skills, knowledge and behaviours in the standard. The project will provide substantive evidence from a business-related project to demonstrate the application of skills and knowledge. The end point assessment integrates the project outcomes and presentation into the overall synoptic project assessment. It will take place over a period of around 6 months, near the end of the programme. It is designed to assess apprentices in a consistent way, irrespective of their particular workplace and university. Because of the significance of the project the employer and university should work together with the apprentice to agree a project that is achievable within the employer's business constraints and that meets the requirements of the standard. The project should be conducted as part of the apprentice's normal work. Employers should make suitable allowance for the project to be undertaken, both in terms of time and resources. However there are some elements such as the writing of the report, particularly in its reflective aspects that may be undertaken outside of normal work. This should be agreed between apprentice, employer and university such that apprentices are not disadvantaged in any way from performing their job and meeting the requirements of the project.

Any issues with confidentiality and/or security will also be addressed between the university, employer and apprentice allowing for projects of business value to be undertaken using real data.

The assessment of the synoptic project should include the employer's assessment against the common criteria for the project. Every project assessment is required to incorporate employer contribution in addition to normal university project assessment. This needs to be consistent for all projects.

The project should relate to one of the specialisms in the standard. High-level descriptors of typical projects are given below for each of the specialisms in the standard.

Software Engineer

This could be a project to design and develop a significant piece of software or a new software product prototype to achieve defined business objectives, for a defined user group or customer group, to meet the business need and applying appropriate levels of security. It will include significant project planning including estimations of both time and cost to proposed solutions, include technical and commercial aspects of the proposed solution.

IT Consultant

This could be a project to undertake an IT consultancy project to formulate and evaluate technical alternatives to meet businesses requirements. This will likely include issues of integration with

existing technology and procedures, maintenance and expansion and the consideration of both proprietary and open source solutions as appropriate. It will include significant project planning including estimations of both time and cost to proposed solutions, include technical and commercial aspects of the proposed solution.

Business Analyst

This could be a Business Analysis study to analyse, and model a problem-specific domain and to develop a solution approach based upon the analysis. It will include significant project planning including estimations of both time and cost to proposed solutions, include technical and commercial aspects of the proposed solution.

Cyber Security Analyst

This could be an analysis of a given domain and evaluation of security threats and vulnerabilities to planned and installed information systems or services with a robust cyber security solution. It will include significant project planning including estimations of both time and cost to proposed solutions, include technical and commercial aspects of the proposed solution.

Data Analyst

This could be a project to analyse, devise and deploy data analytics solutions for a real-world problem domain. In particular, applying data analysis techniques, processes and tools to perform analytics for a significant data-driven business scenario. It will include significant project planning including estimations of both time and cost to proposed solutions, include technical and commercial aspects of the proposed solution.

Network Engineer

This could be a project to plan and configure a network to meet a defined specification, to satisfy security requirements, using one or more of the defined tools, to meet specified criteria and performance levels. It will include significant project planning including estimations of both time and cost to proposed solutions, include technical and commercial aspects of the proposed solution.

Generic Content of the Synoptic Project

Each project must enable the following to be demonstrated:

- the application of the core and specialism knowledge and skills to meet the outcomes in the standard;
- the approach to planning and completion of the project;
- the application of behaviours from the standard.

The project will cover all of the specialism skills, knowledge and behaviours as defined in the standard. The project will cover the specialism skills, knowledge and behaviours from the standard using the occupational domain to select the project as follows:

- Software Engineer: Show competence in software development processes, including the knowledge, skills, and professional competences necessary to practice as a software engineer in a business environment.
- IT Consultant: Perform technical, organisational, and process improvement tasks in a range of environments to solve business problems.

- Business Analyst: Apply structured processes for identifying, defining and analysing unstructured business problems, their root cause and impact.
- Cyber Security Analyst: Analyse and evaluate security threats and vulnerabilities to planned and installed information systems or services and identify how these can be mitigated against.
- Data Analyst: Use a range of analytical techniques such as data mining, time series forecasting and modelling techniques to identify and predict trends and patterns in data.
- Network Engineer: Plan, design, build and test a simple network to a requirement specification that includes hubs, switches, routers and wireless user devices applying appropriate security products and processes.

Practical Requirements for the design of Synoptic Projects

- Agreement to be made between apprentice, employer and university on what systems, tools and platforms will be required to complete the task and how these will be made available.
- Specification of what has to be delivered on completion of the project – must include the output, documented project plans etc.
- Apprentices are required to document their assumptions and to highlight the consequences of those assumptions – enabling them to show their understanding of commercial pressures, and the application of their thinking and problem solving skills.
- Terms of reference developed by the apprentice and agreed by the university and employer early in the project.
- University to provide clear project assessment criteria including terms of reference, approach to the problem, the design of the solution, the implementation of the solution, the final report and presentation etc.

Practical Requirements for the delivery of Synoptic Projects

- Universities will work with the employer and apprentice to agree suitable project title and support arrangements for the project to be undertaken.
- The project should normally be based an agreed business problem that forms part of the apprentices role.
- Suitable time should be set aside by the employer for the apprentice to plan, undertake and write up their project.
- For each project the apprentice will first work out what is required and present terms of reference and an initial plan for agreement across employer, apprentice and university.
- The project will be typically undertaken at the employer's premises as agreed with the employer.
- The employer and university to ensure the apprentice has access to the specified systems, tools and platforms to complete the task.
- The apprentice to provide a signed statement to confirm it is his/her own work.
- Whilst other projects may typically be included during the programme, the synoptic project will be set and completed in the final year of the apprenticeship near the end of the programme.

Practical Requirements for the project environment

- A suitable project environment should be provided ensuring access to all required tools, systems etc. This may be the apprentice's normal workstation or may be another environment as appropriate to the nature of the project.
- Someone responsible for managing the project from the employer perspective.
- The university project tutor will oversee and provide support to the apprentice.

2.2.3 The Presentation

The presentation is a structured discussion between the apprentice and their university lecturers and employer, focusing on the outcomes of the synoptic project. It covers both what the apprentice has done, the standard of their work, and also how they have done it. Typically this is the approach taken in university individual projects. This enables the assessment to include the assessment of skills, knowledge and behaviours as required by the standard.

The purpose of the presentation is to review:

- what the apprentice set out to achieve;
- what they have actually produced in the project;
- the standard of their work;
- how they have approached the work and dealt with any issues arising;
- clarify any questions the university/employer has from their assessment of the project;
- explore aspects of the project work, including how it was carried out, in more detail;
- confirm the demonstration of appropriate interpersonal and behavioural skills.

The presentation will be assessed as part of the overall project assessment. The university will provide guidance on the nature of the presentation and the assessment criteria used. This will ensure that consistent approaches are taken and that all key areas are appropriately explored. The initial and primary focus for the presentation is on the work presented in the project. However, the presentation assessors can explore the apprentice' broader experience from the workplace, to demonstrate that the skills and knowledge defined in the standard have been met.

Practical Requirements for the Presentation

- The presentation will take place following the completion of the project and the preparation of the final report.
- The apprentice should have appropriate notice of their presentation time and have at least seven days' notice.
- A structured brief will be used to support the presentation to ensure a consistent approach.
- The presentation and Q&A will typically last 30 minutes – and no more than one hour.
- The presentation will be conducted face to face or in exceptional circumstances via live media.
- The presentation will be conducted in a suitable location that allows for the project outcomes to be demonstrated. This may be at the university or employer location as appropriate.
- The university must put the apprentice at ease and give the apprentice the opportunity to do his/her very best.
- The presentation is to university module assessor(s) and the employer at the same time.

2.3 Final Assessment and Grading

All apprentices will be studying for a BSc Honours degree in Digital & Technology Solutions. It is the achievement of the Honours degree that demonstrates that the standard has been met and which provides the grading. The grading of the degree award is significantly made up of the synoptic project assessment together with module assessments. The Honours degree award and classification is based on a weighted average mark of the assessed work the apprentice has completed. The synoptic

project contributes greatly to the final year marks. The final year overall contributes to the grading typically in the ratio of 3 – 5 times that of second year modules (based on a three year model). The synoptic project must be passed in all cases to achieve the degree award.

Apprentices will be graded using Honours degree classifications for English universities. All UK universities must follow the QAA (Quality Assurance Agency for Higher Education) Code of practice for the assurance of academic quality and standards in higher education. This ensures continued consistency across universities.

The national degree award outcomes are shown below with apprenticeship grading equivalence. These typically are as follows:

Degree Award Class	Grading Equivalence	Marks Level
First-class Honours (1st)	**Distinction**	**70+**
Second-class Honours, upper division (2:1)	**Merit**	**60–69**
Second-class Honours, lower division (2:2)	**Pass**	**50–59**
Third-class Honours (3rd)	**Pass**	**40–49**

3. Assessment responsibilities and quality assurance

Assessment responsibilities are set out in Appendix 3. The university will use a programme delivery team of lecturers and tutors to deliver and assess the programme. This will be done in collaboration with employers. It is the responsibility of universities to appoint module lecturers with the right mix of skills and experience to undertake assignment setting and assessment, who command the credibility and respect of employers and apprentices and in accordance with the universities guidelines.

Universities are responsible for ensuring that assignments that contribute to module assessments are examined in a consistent way and that the judgements reached are comparable and reliable.

Independence and impartiality of assessment

Universities have extremely robust assessment processes and approaches that ensure independence. The overall governance across the degree programme's formative and end point synoptic assessments is achieved through the use of independent external examiners. The system of external examining is a distinctive feature of Higher Education in the UK. All degree programmes delivered in Higher Education Institutions in the UK will have an external examiner. External examiners are independent experts appointed from other academic institutions. They are suitably qualified to provide subject and academic advice on the academic standards of the degrees or other awards, to which they have been assigned. They independently assure quality through their following responsibilities:

- to evaluate all forms of assessment (including formative and end point synoptic) which contribute to students' degree results;
- to evaluate, and help ensure fairness and consistency in the assessment process;
- to moderate summatively assessed work at module and programme level;
- to comment on draft examination papers and assessment tasks as appropriate;
- to report on the structure, content, academic standards and teaching of programmes;
- to comment, if invited to do so, on any alleged cases of assessment irregularities.

They will review the programme, its modules, teaching materials, student feedback and especially the assessment methods as well as samples of student assessment work across modules. They ensure fair and consistent moderation and to confirm that marking standards are comparable with standards across UK Higher Education. If an external examiner is concerned about accuracy and consistency of marking within a sample of student work, all work within that particular module may be re-marked.

The external examiner also attends the Module and programme Assessment Boards to review the distribution of marks across modules and identify any issues or aspects of good practice.

Each external examiner submits an annual written report at the end of the academic year. This report is based on what the examiner has observed of the University's assessment processes and on samples of student work they have seen. These reports provide invaluable independent feedback to the University at module and/or programme level.

These duties are consistently undertaken in relation to the academic standards of HEIs, and will relate to internal and external reference points, including the digital & technology solution professional standard and assessment plan.

Within modules there are also robust quality assurance procedures. These include setting clear assessment and grading criteria for students, and the use of independent moderators who:

- appraise the set module assessments to ensure they are appropriate;
- review the assessment marking;
- undertake sample marking against the assessment criteria.

Employers will contribute to the assessment of the synoptic project and presentation against the standard. This will include the employer contributing a short written report of the apprentices' project performance against defined assessment criteria and of the project report. They will also attend the presentation and provide input to the assessment of the project presentation. Whilst the ideal is for the presentation to take place in front of a combined audience of the host university and employer, in practice students may be required to give a separate presentation to their employer and university.

4. Affordability

The approach presented offers an affordable and scalable solution to assessment for this apprenticeship. Universities are extremely capable in delivering project based assessment that represents the application of a student's skills, knowledge and behaviours. In this context the capstone synoptic project is set against the specification of the standard and will be validated by built in employer contribution to the assessment.

Appendix 1 – Digital & Technology Solutions professional - Formative Assessment Approaches

A – Assessing the Skills Outcomes

Area of competence	Outcome Required	Typical Assessment	Assessment Criteria
Information Systems:	is able to critically analyse a business domain in order to identify the role of information systems, highlight issues and identify opportunities for improvement through evaluating information systems in relation to their intended purpose and effectiveness.	• Report identifying the current business processes • Benefits analysis • Solution model	• Well structured analysis • Clear benefits vs cost • Well reasoned solution
Systems Development:	analyses business and technical requirements to select and specify appropriate technology solutions. Designs, implements, tests, and debugs software to meet requirements using contemporary methods including agile development. Manages the development and assurance of software artefacts applying secure development practises to ensure system resilience. Configures and deploys solutions to end users.	• Review of specification • Solution design • Software solution plan • Software artefacts • Test acceptance plan • Deployment plan	• Well structured specification review prioritising functional and non-functional requirements • Clear solution plan • Robust well documented solution • Test verification • Clear deployment plan addressing technical build and release
Data:	identifies organisational information requirements and can model data solutions using conceptual data modelling techniques, developing data models and solutions. Is able to implement a database solution using an industry standard database management system (DBMS). Can perform database administration tasks and is cognisant of the key concepts of data quality and data security. Is able to manage data effectively and undertake data analysis.	• Review of data requirements • Database design and data model • Database solution • Database optimisation • Data security plan • Data analysis	• Well structured review of data requirements • Clear data models that represent the business domain • Robust well documented database design • Fit for purpose database solution • Clear security plan • Routine data analysis outcomes
Cyber Security:	is able to undertake a security risk assessment for a simple system and propose remediation advice. Can identify, analyse and evaluate security threats and hazards to planned and installed information systems or services (e.g. Cloud services).	• Threat analysis • Risk assessment • Remediation solution	• Well structured threat analysis • Well reasoned risk assessment that identifies the major risks and their potential impact • Clear solution plan to mitigate each of the risks in the context of the information system under study
Business Organisation:	can apply organisational theory, change management, marketing, strategic practice, human resource management and IT service management to technology solutions development. Develops well-reasoned investment	• Organisational structure chart • Change plan • Investment proposal	• Well structured organisational structure chart • Robust change plan identifying the organisational culture, the main actors

	proposals and provides business insights.	• Value analysis	and the outcomes desired • Accurate investment proposal taking account of all costs and identifying the benefits to be gained • Clear value analysis showing the impact of various investment proposals on business performance outcomes
IT Project Management:	follows a systematic methodology for initiating, planning, executing, controlling, and closing projects. Applies industry standard processes, methods, techniques and tools to manage technology solutions projects. Is able to manage a project (typically less than six months, no inter-dependency with other projects and no strategic impact) including identifying and resolving deviations and the management of problems and escalation processes.	• Project scope and methodology selection • Activity estimates • Project plan • Project costs • Project risk log • Project tolerances • Project escalation plan	• Clear scoping report identifying project deliverables, the project domain and the elected methodology being used • Well reasoned activity estimates • Accurate project plan with clear schedule of deliverables taking into account contingencies • Full costs identified • Clear project risk review • Specification of tolerances • Defined escalation process and mitigation
Computer and Network Infrastructure:	can plan, design and manage computer networks with an overall focus on the services and capabilities that network infrastructure solutions enable in an organisational context. Identifies network security risks and their remediation.	• Network dimension report • Network design • Network implementation plan • Service level agreement	• Accurate network dimensioning report identifying current and future network traffic demands • Clear design that meets the specification • Well structured network plan • Well reasoned network availability targets

B – Assessing the Knowledge Outcomes

Area of competence	Knowledge Outcome Required	Typical Assessment	Assessment Criteria
Business	why technology is important to business and society	• Review of technology impact	• Identifies important aspects and differentiates between business and society
	the technology, people, and organisational components of information systems.	• Business interaction model • Cade study review	• Recognises the interactions people, processes and technology
	the alignment between organisational strategy and technology strategy	• Case study review	• Defines hoe technology strategy supports business objectives
	how business exploits technology solutions for competitive advantage vs. necessity	• Case study review	• Identifies technology exploitation processes
	the value of technology systems investments and how to formulate a business case for a new technology solution, including estimation of both costs and benefits	• Case study review	• Identifies benefits analysis
	how to conduct system/business process analysis	• Exam or in module test question • Case study review	• Identifies key processes
	how strategic decisions are made concerning acquiring technology solutions resources and capabilities including the ability to evaluate the different sourcing options	• Review report • Case study review	• Evaluation of technology make or buy decisions
	the various functions and activities related to technology solutions within an organisation, including the role of the CIO, and managing and developing technology solutions professionals	• Exam or in module test question	• List and describe the main functions
Technology	contemporary techniques for design, developing, testing, correcting, deploying and documenting software systems from specifications, using agreed standards and tools	• Evaluation of solution development methodologies and techniques	• Main methods and activities recognised
	the role and position of legacy technology systems in organisations and how new technology environments interface and integrate with them	• Appraisal of the usage of legacy systems and how they are maintained	• Recognise the importance of legacy systems • Identify key factors in their maintainability

	software design approaches & patterns and how to interpret and implement a given design	• Exam or in module test question • Review report	• Recognise the main design approaches • Identify commonly used software patterns
	how to develop and implement a data model and data solution	• Exam or in module test question • Reflective report	• Identify the stages in developing a data model and data solution
	the role of data management systems in managing organisational data and information	• Exam or in module test questions • Reflective report	• Identify the features of a data management system
	how to identify and characterise different threats, hazards and vulnerabilities, conducting a risk assessment and managing risk	• Exam or in module test question	• Describe the methods to identify threats and vulnerabilities
	the common vulnerabilities in computer networks and systems including un-secure coding and unprotected networks	• Exam or in module test questions • Case study review	• List and describe common vulnerabilities
	the role of service management frameworks in an organisation	• Reflective review	• Identify the main features
	the fundamental building blocks (e.g. routers, switches, hubs, storage, transmission) and typical architectures (e.g. server/client, hub/spoke) of computers networks and the Internet	• Exam or in module test question	• Describe the main networking technologies and their purpose
Project	how to *roll out* a technology solutions project accurately consistent with business needs	• Reflective report • Case study review	• Identify key stages in project planning and delivery
	the issues of *quality, cost and time* concerned with project implementation, including contractual obligations and resource constraints	• Exam or in module test question • Reflective report	• Recognise the interaction of quality, cost and time
	how teams work effectively to produce technology solutions	• Reflective report on project work • Case study review • Exam or in module test question	• List the main criteria for successful team-working
	the *different approaches* for managing projects in an IT environment.	• Review report • Case study review	• Identify aspects in different approaches
	the main features of standard network protocols including https, HTTP, SMTP, SNMP, TCP, IP, etc.	• Exam or in module test question	• Describe the main features

		• Reflective report	
	the main factors that affect network performance and the issues that may arise in the day to day operation of networks	• Exam or in module test question • Reflective report	• List the factors and identify issues

C – Assessing the Core Behavioural Skills

Area of competence	Knowledge Outcome Required	Typical Assessment	Assessment Criteria
Professional, interpersonal and business skills	• Fluent in written communications, able to articulate complex issues. • Makes concise, engaging and well-structured verbal presentations, arguments and explanations. • Able to deal with different, competing interests within and outside the organisation with excellent negotiation skills. • Is able to identify the preferences, motivations, strengths and limitations of other people and apply these insights to work more effectively with and to motivate others. • Competent in active listening and in leading, influencing and persuading others constructively. • Able to give and receive feedback constructively and incorporate it into their own development and life-long learning. • Applies analytical and critical thinking skills to Technology Solutions development and to systematically analyse and apply structured problem solving techniques to complex systems and situations. • Able to put forward, demonstrate value and gain commitment to a moderately complex technology-oriented solution, demonstrating understanding of business need, using open questions and summarising skills and basic negotiating skills. • Able to conduct effective research, using literature and other media, into IT and business related topics.	• Presentation • Report • Team based project • SWOT analysis • Solution design	• Well constructed concise presentation • Clear report with contents well structured and including management summary • Team organised and clear distribution of roles to achieve target outcomes • Peer assessment
Attributes and behaviours	• Have demonstrated that they have mastered basic business disciplines, ethics and courtesies, demonstrating timeliness and focus when faced with distractions and the ability to complete tasks to a deadline with high quality.		

	• Flexible attitude • Ability to perform under pressure • A thorough approach to work • Logical thinking and creative approach to problem solving		

Appendix 2 – Digital & Technology Solutions professional - Synoptic Project Competence Outcomes:

Occupational Specialism	Area of competence	Typical Project	Outcomes
Software Engineer:	Use software development processes, including the knowledge, skills, and professional competences necessary to practice as a software engineer in a business environment	This could be a project to design and develop a significant piece of software or a new software product prototype to achieve defined business objectives, for a defined user group or customer group, using one of the defined languages, within defined business processes, and applying appropriate levels of security. It will include significant project planning including estimations of both time and cost to proposed solutions, include technical and commercial aspects of the proposed solution.	• Clear prioritised specification • Well justified solution design with models • Appropriate test plan • Security appraisal • Solution deliverables • Well documented solution for maintainability
IT Consultant:	Perform technical, organisational, and process improvement tasks in a range of environments to solve business problems	This could be a project to undertake an IT consultancy project to formulate and evaluate technical alternatives to meet businesses requirements. This will likely include issues of integration with existing technology and procedures, maintenance and expansion and the consideration of both proprietary and open source solutions as appropriate. It will include significant project planning including estimations of both time and cost to proposed solutions, include technical and commercial aspects of the proposed solution.	• Clear business requirements • Business process models • Solution proposal and target state models • Integration issues • Make or buy and procurement decisions • Benefits analysis
Business Analyst:	Apply structured processes for identifying, defining and analysing unstructured business problems, their root cause and impact	This could be a Business Analysis study to analyse, and model a problem-specific domain and to develop a solution approach based upon the analysis. It will include significant project planning including estimations of both time and cost to proposed solutions, include technical and commercial aspects of the proposed solution.	• Analysis of current state with models • Problem definition • Requirements engineering • Analysis design models • Future state

Cyber Security Analyst:	Analyse and evaluate security threats and vulnerabilities to planned and installed information systems or services and identify how these can be mitigated against	This could be an analysis of a given domain and evaluation of security threats and vulnerabilities to planned and installed information systems or services with a robust cyber security solution. It will include significant project planning including estimations of both time and cost to proposed solutions, include technical and commercial aspects of the proposed solution.	• Analysis of network domain • Identification of information assets • Threat assessment • Description of assessment methodology • Recommendations
Data Analyst:	Use a range of analytical techniques such as data mining, time series forecasting and modelling techniques to identify and predict trends and patterns in data	This could be a project to analyse, devise and deploy data analytics solutions for a real-world problem domain. In particular, applying data analysis techniques and processes and the tools readily available to perform analytics for data-driven decision making. It will include significant project planning including estimations of both time and cost to proposed solutions, include technical and commercial aspects of the proposed solution.	• Identify data problem • Collect, clean and extract data • Analyse data using a range of standard analytical techniques • Visualise data • Present findings
Network Engineer:	Plan, design, build and test a simple network to a requirement specification that includes hubs, switches, routers and wireless user devices applying appropriate security products and processes	This could be a project to plan and configure a network to meet a defined specification, to satisfy security requirements, using one or more of the defined tools, to meet specified criteria and performance levels. It will include significant project planning including estimations of both time and cost to proposed solutions, include technical and commercial aspects of the proposed solution.	• Plan network infrastructure • Dimension networks for anticipated traffic conditions • Design network solutions • Implement and configure complex switching environments • Configure Firewalls, VPN Concentrators and Security features • Maintain the network environment

Appendix 3 – Assessment Responsibilities

1. Summary of roles in relation to formative module assessment

	Preparation	Assessment
Apprentice	• Prepares by fully reviewing the assignment brief and assessment criteria • Is clear on the submission process and due date	• Submits required work to be assessed
Employer	• Advises the apprentice on assignments that can be undertaken either within the workplace or using workplace scenarios • Permits evidence of commercial value to be included • Provides access to resources required	• Contributes to formative assessment using the defined assessment criteria • Contributes to the capstone project assessment, against the defined criteria • Attends the presentation and contributes to the assessment
University	• Produces module assessment schedule to guide apprentice and employer • Produces individual assessment brief and assessment marking criteria • Advises the apprentice on the assessment brief • Advises the employer on opportunities to conduct assignments in the workplace • Provides guidance and support to the apprentice on their module assignments	• Assesses the work submitted as part of the module assessment • Produces feedback on each assessment
External Examiner	• Independently reviews the programme, its modules and samples of teaching materials • Independently reviews all formative assessments set	• Independently reviews samples of student work by module • Independently reviews samples of completed marking

2. Summary of roles in relation to the synoptic project

	Preparation	Assessment
Apprentice	• Has completed all portfolio and formative outcomes • Agrees project title with employer and university • Plans the project	• Completes and submits project terms of reference and an initial project plan • Undertakes the project and prepares and submits the project report
Employer	• Agrees to provide the apprentice with suitable time to complete those parts of the project that are not part of their normal job • With the University and apprentice agrees the project title and commits to any associated resource requests	• Completes an assessment of the final project report using defined assessment criteria
University	• Advises the apprentice on requirements for synoptic assessment • Reviews practical arrangements for the project to ensure that the apprentice can achieve the desired outcomes	• Responsible for arranging and managing the delivery of the synoptic project to ensure defined conditions are satisfied (aspects of which may be delegated to the employer)

	• Liaises with the employer to select the relevant synoptic project based on apprentices job role	• Responsible for validating the apprentices work (though with arrangements for employer input) • Completes assessment of the project and presentation
External Examiner	• Independently reviews the project aims, assessment criteria and schedule	• Independently reviews student project work • Independently reviews samples of completed marking to ensure consistency and quality

3. Summary of roles in relation to the synoptic presentation

	Preparation	Assessment
Apprentice	• Re-familiarises her/himself with the summative portfolio and synoptic project • Identifies positive aspects of the portfolio and synoptic project to highlight • Gathers any other documents they may want to draw on	• Responds to the university module teams questions • Provides further information as requested
Employer	• Advises the apprentice on which aspects of their recent work to highlight • Allows time off work for the presentation	• Contributes to the assessment of the project presentation • Provides an appropriate venue if required
University	• Advises the apprentice on which aspects of the evidence may be probed/explored and how to respond • Organises the time and place • Identifies aspects of the apprentice's work in the synoptic project and summative portfolio to be probed/explored	• Puts the apprentice at ease • Probes/explores aspects of evidence and quality of the apprentice's work • Assesses the apprentice's responses • Records key points about the apprentice's responses • Uses the additional evidence gained from the apprentice to inform the grading decision
External Examiner	• Independently reviews the presentation scope, assessment criteria and schedule	• Independently reviews student presentations • Independently reviews samples of completed presentation marking to ensure consistency and quality.