Digital & Technology Solutions Degree Apprenticeship: Data Analyst Knowledge, Skills and Behaviours

This reference document is intended to help you understand the Digital & Technology Solutions (DTS) Professional Degree Apprenticeship Standard and the expected knowledge, skills and behaviours that Apprentices will develop through both the workplace and university teaching.

What is an Apprenticeship Standard?

An Apprenticeship Standard outlines the *knowledge, skills* and *behaviours* (KSBs) that Apprentices will develop over the course of their Apprenticeship.

All Apprenticeship standards can be found on the Institute for Apprenticeships & Technical Education website and the DTS Professional Degree Apprenticeship Standard can be found here.

However, we have created this document for Employers and Apprentices to help you understand your standard and all of the KSBs you will develop throughout the four years on programme.

KSBs: Why are they important to me?

Apprentices on our DTS Professional Degree Apprenticeship you will develop:
•   Year 1, 2, 3 & 4 KSB Targets for your Professional Discussion(Page 2-5)
•   The Full Standard: Core Knowledge (Page 6 and 7)
•   The Full Standard: Data Analyst Knowledge (Page 8)
•   The Full Standard: Core Skills (Page 9 and 10)
•   The Full Standard: Data Analyst Skills (Page 11)
•   The Full Standard: Core Behaviours (Page 12)

The KSBs for this Apprenticeship programme were defined by employers and industry-experts and Manchester Metropolitan University have carefully planned our programme to ensure that the standard has been fully integrated and is met through our teaching. It is also expected that these KSBs will be developed through workplace activities and projects. Apprentices will complete a Skills Scan at the start of each year to monitor progress towards these KSBs and KSB development will be discussed in review meetings with an Apprentices allocated Skills Coach.

At End Point Assessment, Apprentices will be assessed on the KSBs they have demonstrated through a Synoptic Project Report, Presentation and Questions and formal Professional Discussion

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BSc Digital & Technology Solutions Degree Apprenticeship
Data Analyst
Year 1 Knowledge, Skills and Behaviours Targets

As part of your End Point Assessment (EPA), you will have a formal professional discussion with an Independent Assessor. This Professional Discussion will provide you with an opportunity to demonstrate how you have met the KSBs mapped to this assessment method. This professional discussion will be underpinned by a portfolio of evidence. The questions in your EPA will be explored following the below themes:

THEME A: Underlying Principles   **THEME B: Technical Solutions**

THEME C: Innovation & Response   **THEME D: Legal, Ethics & Landscape**

Each year we will set you targets and ask you to collect evidence that demonstrates how you have met these KSBs mapped to this assessment method. Below you will see the Year 1 KSB targets:

K7	**Theme A**	The roles, functions and activities within digital technology solutions within an organisation.
K12	**Theme A**	The role of data management systems within Digital and Technology Solutions.
K13	**Theme A**	Principles of data analysis for digital and technology solutions.
S4	**Theme B**	Initiate, design, code, test and debug a software component for a digital and technology solution.
S10	**Theme B**	Initiate, design, implement and debug a data product for a digital and technology solution.
S11	**Theme B**	Determine and use appropriate data analysis techniques. For example, Text, Statistical, Diagnostic or Predictive Analysis to assess a digital and technology solutions.
B1	**Theme D**	Has a strong work ethic and commitment in order to meet the standards required.
B2	**Theme D**	Reliable, objective and capable of both independent and team working.
B4	**Theme C**	Commits to continuous professional development; maintaining their knowledge and skills in relation to developments in digital and technology solutions that influence their work.

Below you will see the Year 2 KSB targets:

K6	**Theme A**	The approaches and techniques used throughout the digital and technology solution lifecycle and their applicability to an organisation's standards and pre-existing tools.
K8	**Theme C**	How teams work effectively to produce digital and technology solutions.
K10	**Theme C**	Management techniques and theories. For example, effective decision making, delegation and planning methods, time management and change management.
K11	**Theme A**	The nature and scope of common vulnerabilities in digital and technology solutions. For example, the risks of unsecure coding and unprotected networks.
K14	**Theme A**	A range of quantitative and qualitative data gathering methods and how to appraise and select the appropriate method..
K16	**Theme A**	Fundamental computer networking concepts in relation to digital and technology solutions. For example, structure, cloud architecture, components, quality of service.
K20	**Theme D**	Sustainable development approaches as applied to digital and technology solutions such as green computing.
DAK1	**Theme A**	The barriers that exist to effective data analysis between analysts and their stakeholders and how to avoid or resolve these.
S9	**Theme B**	Apply relevant security and resilience techniques to a digital and technology solution. For example, risk assessments, mitigation strategies.
S12	**Theme B**	Plan, design and manage simple computer networks with an overall focus on the services and capabilities that network infrastructure solutions enable in an organisational context.
B6	**Theme C**	Participates in and shares best practice in their organisation, and the wider community for aspects relevant to digital and technology solutions.
B7	**Theme C**	Maintains awareness of trends and innovations in the subject area, utilising a range of academic literature, online sources, community interaction, conference attendance and other methods which can deliver business value.

Below you will see the Year 3 KSB targets:

| K9 | Theme C | The concepts and principles of leadership. |

| K19 | Theme D | Relevant legal, ethical, social and professional standards to a digital and technology solution. For example, Diversity, Accessibility, Intellectual Property, Data Protection Acts, Codes of Practice, Regulatory and Compliance frameworks. |

| DAK5 | Theme A | Approaches to data processing and storage, database systems, data warehousing and online analytical processing, data-driven decision making and the good use of evidence and analytics in making choices and decisions. |

| DAK7 | Theme B | How Data Analytics can be applied to improve an organisation's processes, operations and outputs. |

| S7 | Theme C | Work effectively within teams, leading on appropriate digital technology solution activities. |

| S8 | Theme C | Apply relevant organisational theories. For example, change management principles, marketing approaches, strategic practice, and IT service management to a digital and technology solutions project. |

| S15 | Theme D | Apply relevant legal, ethical, social and professional standards to a digital and technology solution. |

| DAS1 | Theme C | Define Data Requirements and perform Data Collection, Data Processing and Data Cleansing. |

| DAS2 | Theme C | Apply different types of Data Analysis, as appropriate, to drive improvements for specific business problems. |

| DAS4 | Theme C | Identify barriers to effective analysis encountered both by analysts and their stakeholders within data analysis projects. |

In the final year, you will spend time curating your final portfolio for submission to the Independent Assessor. There are therefore less KSB targets within this year to allow you time to effectively curate ahead of submission. Below you will see the Year 4 KSB targets:

DAK3	Theme A	Data formats, structures, architectures and data delivery methods including "unstructured" data.

DAK8	Theme D	How data and analysis may exhibit biases and prejudice. How ethics and compliance affect Data Analytics work, and the impact of international regulations. For example, General Data Protection Regulation, Data Protection Act 2018.

B8	Theme D	Champions diversity and inclusion in their work ensuring that digital technology solutions are accessible.

Core Knowledge (K)

K1	How organisations adapt and exploit digital technology solutions to gain a competitive advantage.
K2	The principles of strategic decision making concerning the acquisition or development of digital and technology solutions. For example business architecture approaches such as capability models and target operating models.
K3	Principles of estimating the risks and opportunities of digital and technology solutions.
K4	Techniques and approaches involved in creating a business case for new digital and technology solutions. For example journey, product and capability mapping and value chains.
K5	A range of digital technology solution development techniques and tools.
K6	The approaches and techniques used throughout the digital and technology solution lifecycle and their applicability to an organisation's standards and pre-existing tools.
K7	The roles, functions and activities within digital technology solutions within an organisation.
K8	How teams work effectively to produce digital and technology solutions.
K9	The concepts and principles of leadership.
K10	Management techniques and theories. For example, effective decision making, delegation and planning methods, time management and change management.

Core Knowledge (K)

K11	The nature and scope of common vulnerabilities in digital and technology solutions. For example, the risks of unsecure coding and unprotected networks.
K12	The role of data management systems within Digital and Technology Solutions.
K13	Principles of data analysis for digital and technology solutions.
K14	A range of quantitative and qualitative data gathering methods and how to appraise and select the appropriate method..
K15	Principles of estimating cost, and time resource constraints within digital and technology solutions activities.
K16	Fundamental computer networking concepts in relation to digital and technology solutions. For example, structure, cloud architecture, components, quality of service.
K17	Reporting techniques, including how to synthesise information and present concisely, as appropriate to the target audience.
K18	Techniques of robust research and evaluation for the justification of digital and technology solutions.
K19	Relevant legal, ethical, social and professional standards to a digital and technology solution. For example, Diversity, Accessibility, Intellectual Property, Data Protection Acts, Codes of Practice, Regulatory and Compliance frameworks.
K20	Sustainable development approaches as applied to digital and technology solutions such as green computing.

Data Analyst Specialist Knowledge (DAK)

DAK1 — The barriers that exist to effective data analysis between analysts and their stakeholders and how to avoid or resolve these.

DAK2 — How to critically analyse, interpret and evaluate complex information from diverse datasets.

DAK3 — Data formats, structures, architectures and data delivery methods including "unstructured" data.

DAK4 — Sources of data such as files, operational systems, databases, web services, open data, government data, news and social media.

DAK5 — Approaches to data processing and storage, database systems, data warehousing and online analytical processing, data-driven decision making and the good use of evidence and analytics in making choices and decisions.

DAK6 — How Data Analytics operates within the context of data governance, data security, and communications.

DAK7 — How Data Analytics can be applied to improve an organisation's processes, operations and outputs.

DAK8 — How data and analysis may exhibit biases and prejudice. How ethics and compliance affect Data Analytics work, and the impact of international regulations. For example, General Data Protection Regulation, Data Protection Act 2018.

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Core Skills (S)

S1	Analyse a business problem to identify the role of digital and technology solutions.

S2	Identify risks, determine mitigation strategies and opportunities for improvement in a digital and technology solutions project.

S3	Analyse a business problem in order to specify an appropriate digital and technology solution.

S4	Initiate, design, code, test and debug a software component for a digital and technology solution.

S5	Apply relevant standard processes, methods, techniques and tools. For example, ISO Standards, Waterfall, Agile in a digital and technology solution project.

S6	Manage digital and technology solutions projects. For example, identifying and resolving deviations from specification, applying appropriate Project Management methodologies.

S7	Work effectively within teams, leading on appropriate digital technology solution activities.

S8	Apply relevant organisational theories. For example, change management principles, marketing approaches, strategic practice, and IT service management to a digital and technology solutions project.

Core Skills (S)

| S9 | Apply relevant security and resilience techniques to a digital and technology solution. For example, risk assessments, mitigation strategies. |

| S10 | Initiate, design, implement and debug a data product for a digital and technology solution. |

| S11 | Determine and use appropriate data analysis techniques. For example, Text, Statistical, Diagnostic or Predictive Analysis to assess a digital and technology solutions. |

| S12 | Plan, design and manage simple computer networks with an overall focus on the services and capabilities that network infrastructure solutions enable in an organisational context. |

| S13 | Report effectively to colleagues and stakeholders using the appropriate language and style, to meet the needs of the audience concerned. |

| S14 | Research, investigate, and evaluate innovative technologies or approaches in the development of a digital and technology solution. |

| S15 | Apply relevant legal, ethical, social and professional standards to a digital and technology solution. |

Data Analyst Skills (DAS)

DAS1

Define Data Requirements and perform Data Collection, Data Processing and Data Cleansing.

DAS2

Apply different types of Data Analysis, as appropriate, to drive improvements for specific business problems.

DAS3

Find, present, communicate and disseminate data analysis outputs effectively and with high impact through creative storytelling, tailoring the message for the audience. Visualise data to tell compelling and actionable narratives by using the best medium for each audience, such as charts, graphs and dashboards.

DAS4

Identify barriers to effective analysis encountered both by analysts and their stakeholders within data analysis projects.

DAS5

Apply a range of techniques for analysing quantitative data such as data mining, time series forecasting, algorithms, statistics and modelling techniques to identify and predict trends and patterns in data.

DAS6

Apply exploratory or confirmatory approaches to analysing data. Validate and test stability of the results.

DAS7

Extract data from a range of sources. For example, databases, web services, open data.

DAS8

Analyse in detail large data sets, using a range of industry standard tools and data analysis methods.

Core Behaviours (B)

B1	Has a strong work ethic and commitment in order to meet the standards required.
B2	Reliable, objective and capable of both independent and team working.
B3	Acts with integrity with respect to ethical, legal and regulatory requirements ensuring the protection of personal data, safety and security.
B4	Commits to continuous professional development; maintaining their knowledge and skills in relation to developments in digital and technology solutions that influence their work.
B5	Interacts professionally with people from technical and non-technical backgrounds. Presents data and conclusions in an evidently truthful, concise and appropriate manner.
B6	Participates in and shares best practice in their organisation, and the wider community for aspects relevant to digital and technology solutions.
B7	Maintains awareness of trends and innovations in the subject area, utilising a range of academic literature, online sources, community interaction, conference attendance and other methods which can deliver business value.
B8	Champions diversity and inclusion in their work ensuring that digital technology solutions are accessible.