**Software Engineering - KSB mapping to EPA Assessment Methods (Knowledge)**

| **KSB #** | **Knowledge** | **Assessment methods** |
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| **K1** Core | How organisations adapt and exploit digital technology solutions to gain a competitive advantage. | Project Report with presentation, questions and answers |
| **K2** Core | 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. | Project Report with presentation, questions and answers |
| **K3** Core | Principles of estimating the risks and opportunities of digital and technology solutions. | Project Report with presentation, questions and answers |
| **K4** Core | 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. | Project Report with presentation, questions and answers |
| **K5** Core | A range of digital technology solution development techniques and tools. | Project Report with presentation, questions and answers |
| **K6** Core | The approaches and techniques used throughout the digital and technology solution lifecycle and their applicability to an organisation’s standards and pre-existing tools. | Professional Discussion underpinned by a portfolio |
| **K7** Core | The roles, functions and activities within digital technology solutions within an organisation. | Professional Discussion underpinned by a portfolio |
| **K8** Core | How teams work effectively to produce digital and technology solutions. | Professional Discussion underpinned by a portfolio |
| **K9** Core | The concepts and principles of leadership. | Professional Discussion underpinned by a portfolio |
| **K10** Core | Management techniques and theories. For example, effective decision making, delegation and planning methods, time management and change management. | Professional Discussion underpinned by a portfolio |
| **K11** Core | The nature and scope of common vulnerabilities in digital and technology solutions. For example, the risks of unsecure coding and unprotected networks. | Professional Discussion underpinned by a portfolio |
| **K12** Core | The role of data management systems within Digital and Technology Solutions. | Professional Discussion underpinned by a portfolio |
| **K13** Core. | Principles of data analysis for digital and technology solutions. | Professional Discussion underpinned by a portfolio |
| **K14** Core. | A range of quantitative and qualitative data gathering methods and how to appraise and select the appropriate method. | Professional Discussion underpinned by a portfolio |
| **K15** Core. | Principles of estimating cost, and time resource constraints within digital and technology solutions activities. | Project Report with presentation, questions and answers |
| **K16** Core. | Fundamental computer networking concepts in relation to digital and technology solutions. For example, structure, cloud architecture, components, quality of service. | Professional Discussion underpinned by a portfolio |
| **K17** Core. | Reporting techniques, including how to synthesise information and present concisely, as appropriate to the target audience. | Project Report with presentation, questions and answers |
| **K18** Core. | Techniques of robust research and evaluation for the justification of digital and technology solutions. | Project Report with presentation, questions and answers |
| **K19** Core | 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. | Professional Discussion underpinned by a portfolio |
| **K20** Core | Sustainable development approaches as applied to digital and technology solutions such as green computing. | Professional Discussion underpinned by a portfolio |
| **K21**: software engineering | How to operate at all stages of the software development life cycle and how each stage is applied in a range of contexts. For example, requirements analysis, design, development, testing, implementation. | Professional Discussion underpinned by a portfolio |
| **K22**: software engineering | Principles of a range of development techniques, for each stage of the software development cycle that produce artefacts and the contexts in which they can be applied. For example, UML, unit testing, programming, debugging, frameworks, architectures. | Professional Discussion underpinned by a portfolio |
| **K23**: software engineering | Principles of a range of development methods and approaches and the contexts in which they can be applied. For example, Scrum, Extreme Programming, Waterfall, Prince2, TDD. | Professional Discussion underpinned by a portfolio |
| **K24**: software engineering | How to interpret and implement a design, compliant with functional, non-functional and security requirements including principles and approaches to addressing legacy software development issues from a technical and socio-technical perspective. For example, architectures, languages, operating systems, hardware, business change. | Professional Discussion underpinned by a portfolio |
| **K25**: software engineering | The factors affecting product quality and approaches for how to control them throughout the development process. For example, security, code quality, coding standards. | Project Report with presentation, questions and answers |
| **K26**: software engineering | How to select and apply a range of software tools used in Software Engineering. | Project Report with presentation, questions and answers |
| **K27**: software engineering | Approaches to the interpretation and use of artefacts. For example, UML, unit tests, architecture. | Project Report with presentation, questions and answers |
| **K28**: software engineering | Approaches to effective teamwork and the range of software development tools supporting effective teamwork. For example, configuration management, version control and release management. | Professional Discussion underpinned by a portfolio |

**Software Engineering - KSB mapping to EPA Assessment Methods (Skills)**

| **KSB #** | **Skill** | **Assessment methods** |
| --- | --- | --- |
| **S1**  Core | Analyse a business problem to identify the role of digital and technology solutions. | Project Report with presentation, questions and answers |
| **S2**  Core | Identify risks, determine mitigation strategies and opportunities for improvement in a digital and technology solutions project. | Project Report with presentation, questions and answers |
| **S3**  Core | Analyse a business problem to specify an appropriate digital and technology solution. | Project Report with presentation, questions and answers |
| **S4**  Core | Initiate, design, code, test and debug a software component for a digital and technology solution. | Professional Discussion underpinned by a portfolio |
| **S5**  Core | Apply relevant standard processes, methods, techniques and tools. For example, ISO Standards, Waterfall, Agile in a digital and technology solution project. | Project Report with presentation, questions and answers |
| **S6** Core | Manage digital and technology solutions projects. For example, identifying and resolving deviations from specification, applying appropriate Project Management methodologies. | Project Report with presentation, questions and answers |
| **S7** Core | Work effectively within teams, leading on appropriate digital technology solution activities. | Professional Discussion underpinned by a portfolio |
| **S8**  Core | Apply relevant organisational theories. For example, change management principles, marketing approaches, strategic practice, and IT service management to a digital and technology solutions project. | Professional Discussion underpinned by a portfolio |
| **S9**  Core | Apply relevant security and resilience techniques to a digital and technology solution. For example, risk assessments, mitigation strategies. | Professional Discussion underpinned by a portfolio |
| **S10**  Core | Initiate, design, implement and debug a data product for a digital and technology solution. | Professional Discussion underpinned by a portfolio |
| **S11**  Core | Determine and use appropriate data analysis techniques. For example, Text, Statistical, Diagnostic or Predictive Analysis to assess a digital and technology solutions. | Professional Discussion underpinned by a portfolio |
| **S12** Core | 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. | Professional Discussion underpinned by a portfolio |
| **S13** Core | Report effectively to colleagues and stakeholders using the appropriate language and style, to meet the needs of the audience concerned. | Project Report with presentation, questions and answers |
| **S14**  Core | Research, investigate, and evaluate innovative technologies or approaches in the development of a digital and technology solution. | Project Report with presentation, questions and answers |
| **S15** Core | Apply relevant legal, ethical, social and professional standards to a digital and technology solution. | Professional Discussion underpinned by a portfolio |
| **S16** software engineering | .  Identify and define software engineering problems that are non-routine and incompletely specified. | Project Report with presentation, questions and answers |
| **S17** software engineering | Provide recommendations as to the most appropriate software engineering solution. | Project Report with presentation, questions and answers |
| **S18** software engineering | Use appropriate analysis methods, approaches and techniques in software engineering projects to deliver an outcome that meets requirements. | Project Report with presentation, questions and answers |
| **S19** software engineering | Implement software engineering projects using appropriate software engineering methods, approaches and techniques. | Project Report with presentation, questions and answers |
| **S20** software engineering | Respond to changing priorities and problems arising within software engineering projects by making revised recommendations, and adapting plans as necessary, to fit the scenario being investigated. | Professional Discussion underpinned by a portfolio |
| **S21** software engineering | Determine, refine, adapt and use appropriate software engineering methods, approaches and techniques to evaluate software engineering project outcomes. | Professional Discussion underpinned by a portfolio |
| **S22** software engineering | Evaluate learning points arising from software engineering work undertaken on a project including use of methods, analysis undertaken, selection of approach and the outcome achieved, to identify both lessons learnt and recommendations for improvements to future projects. | Project Report with presentation, questions and answers |
| **S23** software engineering | Extend and update software development knowledge with evidence from professional and academic sources by undertaking appropriate research to inform best practice and lead improvements in the organisation. | Professional Discussion underpinned by a portfolio |

**Software Engineering - KSB mapping to EPA Assessment Methods (Behaviours)**

| **KSB #** | **Behaviour** | **Assessment methods** |
| --- | --- | --- |
| **B1** Core | Has a strong work ethic and commitment to meet the standards required. | Professional Discussion underpinned by a portfolio |
| **B2** Core | Reliable, objective and capable of both independent and team working. | Professional Discussion underpinned by a portfolio |
| **B3** Core. | Acts with integrity with respect to ethical, legal and regulatory requirements ensuring the protection of personal data, safety and security. | Project Report with presentation, questions and answers |
| **B4** Core | Commits to continuous professional development; maintaining their knowledge and skills in relation to developments in digital and technology solutions that influence their work. | Professional Discussion underpinned by a portfolio |
| **B5** Core | Interacts professionally with people from technical and non-technical backgrounds. Presents data and conclusions in an evidently truthful, concise and appropriate manner. | Project Report with presentation, questions and answers |
| **B6** Core | Participates in and shares best practice in their organisation, and the wider community for aspects relevant to digital and technology solutions. | Professional Discussion underpinned by a portfolio |
| **B7**  Core | 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. | Professional Discussion underpinned by a portfolio |
| **B8** Core | Champions diversity and inclusion in their work ensuring that digital technology solutions are accessible. | Professional Discussion underpinned by a portfolio |