SKILLS FRAMEWORK FOR DESIGN
TECHNICAL SKILLS AND COMPETENCIES (TSC) REFERENCE

SKILLSFuture SG

TSC Category	Technical Craft					
TSC	Material Studies and Production Processes					
TSC Description	Administer the study of material properties and applications to facilitate production, construction, engineering and processing of materials into specific designs					
TSC Proficiency	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**
			DSN-PMN-3021-1.1	DSN-PMN-4021-1.1	DSN-PMN-5021-1.1	
			Apply relevant materials to specific designs	Analyse physical and digital materials and their production techniques and processes, to determine appropriate materials to be utilised for designs	Explore new and existing physical and digital materials to uncover new, efficient and effective methods of utilisation	
Knowledge			• Properties of materials and their influence on suitability for designs • Methods of material selection • Contemporary issues and historical precedents regarding materials • Types of structures and surfaces • Design and manufacturing processes • Classifications of materials • Research methodologies for material culture studies	• Methods of material selection • Contemporary issues and historical precedents regarding materials • Types of structures and surfaces • Design and manufacturing processes • Classification of materials • Research methodologies for material culture studies • Concept of digital materials	• Methods of material selection • Behaviour and properties of different types of materials • Evolution of materials used for design • Characteristics of materials • Current and future roles of new materials in design, sustainability and industry • Concept and principles of digital materials • Stakeholder management	

Abilities			• Maintain collections of materials both in their original forms and processed forms • Analyse users' demands and purchase patterns to identify materials necessary for production • Propose suitable materials for design • Inspect the final design works to ensure they function as intended	• Implement the application of suitable physical and/or digital materials for the organisations' products to meet business strategies • Analyse the use of existing materials to discover new ways of utilisation • Conduct research to examine the quality of physical and/or digital materials used • Develop material planning models to ensure proper utilisation of materials for production • Evaluate materials utilised to ensure alignment to organisational and international standards • Manage the collection of materials and production methods to provide range for experimentation • Propose strategies to push the boundaries of physical and/or digital material use and production methods	• Lead research on alternative physical and/or digital materials and material processing that is applicable to the organisation • Attain buy-in on the usage of new physical and/or digital materials • Facilitate exploration of new materials, material processing and related technologies to produce new material applications, new material developments and/or new production methods • Initiate the selection of physical and/or digital materials at the beginning of the design process to introduce innovation in design work	