

Overview of Technical Skills and Competencies

Technical Skills and Competencies (TSCs)

TSC Category	TSC Title	TSC Description	Proficiency Levels					
			1	2	3	4	5	6
Automation Management	Automated Food Manufacturing System Maintenance	Maintain automation systems to meet operation requirements as well as propose strategies for improvement of automation systems' performance	●	●	●	●	●	
	Automated Operation Monitoring	Ensure smooth automation operations by maintaining and monitoring the automated systems and manufacturing process flows	●	●	●	●		
	Automated System Design	Design and commission automated systems as well as evaluate the system design specification against functional requirements				●	●	
	Automation Process Control	Apply automation process control to monitor performance metrics and quality of manufacturing outputs to determine the optimal settings as well as productivity improvement strategies			●	●	●	●
	Embedded System Integration	Implement control systems to perform pre-defined tasks and also real-time monitoring for the real world				●	●	
	Equipment Maintenance	Maintain tools and equipment to meet operation requirements as well as propose strategies for tools and equipment performance improvement		●	●	●	●	
	Internet of Things Management	Interrelate computing devices, equipment and machines' data in a networked environment to provide specific solutions		●	●	●	●	
Big Data	Data Analytics System Design	Integrate the use of data analytics in the production environment for the identification of bottlenecks and system improvements			●	●	●	
	Data Synthesis	Analyse factory automation and manufacturing data to monitor the manufacturing processes for operations and product or process flow optimisation			●	●	●	●
Business-to-Business Management	Business Negotiation	Manage end to end business negotiations, decide whether and how to engage as well as translate defining processes and procedures in order to support business requirements			●	●	●	
	Business Networking	Establish mutually beneficial relationships with other business stakeholders and potential clients and/or customers					●	●
	Business Relationship Building	Formulate business partnership strategies and establish relevant networks of strategic partners that provide value to the organisation			●	●	●	●

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Business-to-Consumer Management	Brand Portfolio Management	Formulate brand portfolio strategies, branding features and differentiators			●	●	●	
	Consumer Intelligence Analysis	Devise frameworks for consumer intelligence analysis to develop an understanding of customer knowledge from various customer touch points, for example, customer relationship management (CRM), point-of-sale (POS) and e-commerce systems	●	●	●	●		
	Customer Acquisition Management	Develop customer acquisition strategies as well as foster customer relationships to attract new customers	●	●	●	●		
	Customer Behaviour Analysis	Devise customer behaviour analysis tools and approaches and perform analysis on information pertaining to customer behaviours	●	●	●	●		
	Customer Loyalty and Retention Strategy Formulation	Formulate and implement customer loyalty and retention strategies based on data from customer relationship management				●	●	●
	Food Product Marketing	Develop strategies for marketing campaigns, including the conceptualising of product 'stories' to create emotional connections with the target audience	●	●	●	●		
	Market Research	Formulate market research frameworks, as well as develop market research study objectives, market research plans and methodologies to analyse market trends and developments to forecast emerging market needs	●	●	●	●		
	Marketing Communications Plan Development	Formulate, develop and implement marketing communications plans and evaluate tools and vehicles appropriate to reflect effective execution of communication strategies	●	●	●	●		
E-commerce Management	E-Commerce Campaign Management	Develop, manage and execute e-commerce strategies and campaigns according to agreed timelines and budgetary requirements	●	●	●	●		
	Social Media Marketing	Formulate, execute and evaluate social media strategic plans to establish positive relationships with industry and social media colleagues and proactively seek and evaluate innovative marketing opportunities	●	●	●	●		

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Export Market Development	Business Environment Analysis	Analyse data pertaining to the business landscape and environment, including competitor-analysis		●	●	●	●	●	
	Business Opportunities Development	Capitalise on local and international business opportunities to identify and evaluate commercially viable opportunities to continuously create value for customers			●	●	●	●	
	Communications Channel Management	Devise frameworks for selection and evaluation of the effectiveness of distribution channels		●	●	●	●		
	International Marketing Programmes Management	Research, implement international marketing programmes and formulate international marketing objectives to determine key performance indicators to meet organisational requirements			●	●	●		
	International Trade Legislation for Business	Identify all aspects of international trade processes and foreign and multilateral trade laws for food product export business		●	●	●	●		
	New Export Market Entry Strategy Formulation	Develop strategic plans to enter new export markets in foreign countries, based on assessed costs, benefits and risks involved				●	●	●	
Food Regulatory Compliance	Food Safety Analysis	Apply methods to analyse ingredients and manufactured products for safety and quality management		●	●	●	●		
	Food Safety Management	Implement hygiene and food safety practices in food manufacturing	●	●	●	●			
	Good Manufacturing Practices Implementation	Implement good manufacturing practices in the design, monitoring, and control of food manufacturing processes and facilities to ensure that works are carried out based on industry practices and protocols		●	●	●	●		
General Management	Budgeting	Prepare organisational budgets to support short- and long-term business plans through forecasting, allocation and financial policy setting			●	●	●		
	Business Continuity Management	Execute business impact analysis, risk analysis, testing and exercising to ensure the currency of the organisation's business continuity plans				●	●	●	
	Business Performance Management	Implement the organisation's performance systems to meet business plans and objectives by establishing performance indicators, tracking progress and addressing gaps				●	●	●	
	Change Management	Implement organisational change smoothly as well as manage reactions to ensure seamless transition during change			●	●	●	●	
	Conflict Resolution	Resolve conflicts by evaluating and implementing resolution approaches, analysing mediation outcomes and finding solutions				●	●	●	
	Continuous Process Improvement	Apply continuous improvement processes to improve products, services or processes seeking incremental improvement over time or breakthrough improvement all at once	●	●	●	●	●		

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General Management	Innovation Management	Respond to external or internal opportunities and apply creativity to introduce new ideas, processes or products			●	●	●	●
	Project Management	Execute projects by managing stakeholder engagement, resources, budgets and resolving problems			●	●	●	●
	Risk Management	Implement risk management strategies to support business operations				●	●	●
	Stakeholder Management	Build and maintain constructive relationships with stakeholders to move the organisation toward its business goals			●	●	●	
	Strategy Development	Develop organisational strategies and policies by analysing the impact of internal and external influencing factors				●	●	●
	Systems Thinking	Integrate understanding of food manufacturing with interactions between components when developing manufacturing processes or overseeing manufacturing activities		●	●	●	●	
	Technical Presentation	Deliver effective and engaging presentations for a variety of audiences				●	●	●
	Technical Report Writing	Produce reports with specific information and evidence presented in a clear and structured format		●	●	●		
Manufacturing and Operations	Food Manufacturing Facility Maintenance	Manage and enhance facility systems to support product manufacturing and business operations		●	●	●	●	
	Food Manufacturing Process Design	Analyse food product designs to establish manufacturing process workflows and identify potential risks and problems to reduce manufacturing costs				●	●	●
	Food Production Management	Manage operations and production levels in food manufacturing	●	●	●	●	●	
	Green Manufacturing Design and Implementation	Design and implement manufacturing processes that reduce waste, conserve energy, and use replacements for hazardous substances			●	●	●	●
	Manufacturing Process Management	Perform process engineering and ensure the stability of the manufacturing process as well as troubleshoot process deviations and propose strategies for process performance improvement		●	●	●	●	
	Production Performance Management	Plan and manage resources to optimise production performance as well as manage production constraint and improve manufacturing efficiency			●	●	●	
	Utilities Management	Develop plans to meet manufacturing utility and energy requirements while conserving and managing the use of energy and utilities by the plant			●	●	●	

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Quality Management	Chemical Risk Management	Implement chemical safety and security practices to ensure a safe work environment		●	●	●	●		
	Cleanliness Testing	Perform tests to verify that residue and contaminant levels are at risk-free levels on manufacturing equipment and surfaces			●	●	●		
	Document Control	Implement documentation policies to facilitate referencing of process, systems and equipment information to comply with regulatory requirements		●	●	●			
	Laboratory Data Analysis	Analyse laboratory data		●	●	●			
	Laboratory Management	Implement good laboratory practice (GLP) procedures to ensure that performance, quality and health and safety standards are met		●	●	●	●		
	Packaging Testing	Verify that packaging materials maintain the desired level of compliance			●	●	●		
	Process Validation	Verify that a process is reproducible and consistent in delivering quality products according to specifications and standards		●	●	●	●		
	Product Testing	Test manufactured food products for verification of meeting required quality and regulatory standards		●	●	●	●		
	Quality Assurance Management	Establish and implement quality assurance procedures and conduct audits to ensure compliance with food safety and legislative requirements			●	●	●		
	Quality Control Management	Establish quality control procedures to ensure the desired level of compliance at all stages			●	●	●		
	Quality Systems Management	Coordinate and direct the organisation's activities to meet customer and regulatory requirements as well as identify opportunities for improvement		●	●	●	●	●	
Research and Development	Active and Smart Packaging	Application of active/smart packaging methodology and processes to improve shelf-life, quality and safety of food product		●	●	●	●	●	
	Advanced Processing Technology	Design and apply advanced processing technology to manufacture food products that are appealing, tasty, nutritious and have a long shelf life		●	●	●	●	●	
	New Product Introduction for Food	Develop manufacturing plans and processes for new food products to achieve cost-effective production and meet research and development specifications			●	●	●		
	Product Improvement	Analyse the technical specifications of manufactured food products and identify ways to make improvements		●	●	●	●		
	Recipe Formulation	Innovate new food products through the creation and refinement of new recipes				●	●		
Workplace Safety and Health	Emergency Response Management	Respond to emergencies by executing emergency response plans and procedures to mitigate impact of emergency incidents		●	●	●	●		
	Hazards and Risk Control, and Policy Management	Ensure a systematic and objective approach for hazards identification and risk assessment to effectively manage the hazards that may occur within the workplace		●	●	●			
	WSH Performance Management	Implement workplace safety and health (WSH) practices in accordance with legislative requirements		●	●	●	●		

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General Descriptors for Technical Skills and Competencies (TSCs)

Level	Responsibility (Degree of supervision and accountability)	Autonomy (Degree of decision-making)	Complexity (Degree of difficulty of situations and tasks)	Knowledge and Abilities (Required to support work as described under Responsibility, Autonomy and Complexity)
6	Accountable for significant area of work, strategy or overall direction	Empower to chart direction and practices within and outside of work (including professional field/ community), to achieve/ exceed work results	Complex	<ul style="list-style-type: none"> • Synthesise knowledge issues in a field of work and the interface between different fields, and create new forms of knowledge • Employ advanced skills, to solve critical problems and formulate new structures, and/or to redefine existing knowledge or professional practice • Demonstrate exemplary ability to innovate, and formulate ideas and structures
5	Accountable for achieving assigned objectives, decisions made by self and others	Provide leadership to achieve desired work results; Manage resources, set milestones and drive work	Complex	<ul style="list-style-type: none"> • Evaluate factual and advanced conceptual knowledge within a field of work, involving critical understanding of theories and principles • Select and apply an advanced range of cognitive and technical skills, demonstrating mastery and innovation, to devise solutions to solve complex and unpredictable problems in a specialised field of work • Manage and drive complex work activities
4	Work under broad direction Hold accountability for performance of self and others	Exercise judgment; Adapt and influence to achieve work performance	Less routine	<ul style="list-style-type: none"> • Evaluate and develop factual and conceptual knowledge within a field of work • Select and apply a range of cognitive and technical skills to solve non-routine/ abstract problems • Manage work activities which may be unpredictable • Facilitate the implementation of innovation
3	Work under broad direction May hold some accountability for performance of others, in addition to self	Use discretion in identifying and responding to issues, work with others and contribute to work performance	Less routine	<ul style="list-style-type: none"> • Apply relevant procedural and conceptual knowledge, and skills to perform differentiated work activities and manage changes • Able to collaborate with others to identify value-adding opportunities
2	Work with some supervision Accountable for a broader set of tasks assigned	Use limited discretion in resolving issues or enquiries. Work without frequently looking to others for guidance	Routine	<ul style="list-style-type: none"> • Understand and apply factual and procedural knowledge in a field of work • Apply basic cognitive and technical skills to carry out defined tasks and to solve routine problems using simple procedures and tools • Present ideas and improve work
1	Work under direct supervision Accountable for tasks assigned	Minimal discretion required. Expected to seek guidance	Routine	<ul style="list-style-type: none"> • Recall factual and procedural knowledge • Apply basic skills to carry out defined tasks • Identify opportunities for minor adjustments to work tasks