

Operational Research Specialist

Knowledge statement	Corresponding Skill Statement(s)
K1: How to select and apply, a range of problem structuring methods to understand complex problems.	S1: Structure a client's problem using a relevant informal or formal methodology.
K2: How to establish and scope client requirements into clear analytical questions.	S2: Conceptualise complex client problems into tractable operational research questions.
K3: The comparative strengths and weaknesses of informal and formal methods used to structure problems.	S1: Structure a client's problem using a relevant informal or formal methodology.
K4: The approaches used to identify and obtain potentially useful data (including their provenance, scope and limitations).	S4: Manipulates, interrogate and manage raw data, using relevant methodology.
K5: How to manipulate, interrogate and manage raw data.	<p>S3: Critically evaluate and synthesise data relevant to the client problem (including data provenance, scope and limitations).</p> <p>S4: Manipulates, interrogate and manage raw data, using relevant methodology.</p>
K6: How to conduct exploratory data analysis. This includes identifying relationships, robustness and quality, covering both model generated data and external information sources.	S5: Undertake exploratory data analysis. This includes identifying relationships, robustness and quality, covering both model generated data and external information sources.
K7: The range of potential Operational Research techniques & methods, their strengths and weaknesses and how they are used in practice. This includes, optimisation, machine learning, scheduling, forecasting, simulation, decision analysis, inventory models, Markov models, dynamic programming, performance measurement (such as KPIs, metrics and benefits), heuristics and statistical methods.	<p>S6: Exercise judgement by selecting the appropriate technique to design an approach to a client's problem.</p> <p>S8: Creates a model to analyse a problem; applies an appropriate approach including programming, scripting, coding or using spreadsheets.</p>
K8: Operational Research software solutions (packaged and "in-house" developed) and their comparative strengths and weaknesses in analysing client operational research problems.	<p>S7: Use relevant software solutions to support the analysis of a client's problem.</p> <p>S8: Creates a model to analyse a problem; applies an appropriate approach including programming, scripting, coding or using spreadsheets.</p>

Assessment Method 1 – Work-based Project Report and Presentation

KSB Mapping	Pass Descriptor	Distinction Descriptor
S1 S2	<p>Identifies and structures the client problem by applying either a relevant formal or relevant informal methodology. Turns this into relevant and defined operational research questions.</p>	<p>Uses multiple approaches in parallel or combination and reconciles their inconsistencies to deliver practical results.</p>
S3 S4 S5 (+B6)	<p>Actively identifies the provenance, scope and limitations of all key data relevant to a client problem.</p> <p>Sources required raw data. Manipulates, interrogates and manages this raw data, selecting a relevant methodology.</p> <p>Critically analyses available data and compares modelled data with external data. Weighs the relationships, robustness and quality of data to form appropriate data sets.</p>	<p>Critically appraises the data sources and their treatment and makes suggestions for improvements should the analysis be repeated.</p>
S6 S7	<p>Evaluates why their chosen analytical method is appropriate to the client's problem including its theoretical underpinning.</p> <p>Demonstrates the use of relevant software solutions and compares with bespoke modelling when designing the approach to a client's problem.</p>	<p>Demonstrates how they have drawn on research and expertise to improve the robustness of their analytical approach</p>