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D2.2

Model for Skills Intelligence Skills Mapping

Occupations in the Public lighting workforce

ISSO

Occupation:	Electronics Engineer	EQF Level:	7	ULOS (Units of Learning Outcomes)		
Tasks and responsibilities:		**Level of competence:**		**Knowledge**	**Skills**	**Attitude**
a)	The electronics engineer advises on and designs electronic devices or components, circuits, semiconductors, and systems.	4		The electronics engineer can advise[4] on and designing electronic devices or components, circuits, semi-conductors, and systems;		
b)	The electronics engineer specifies production or installation methods, materials, and quality standards, and directs the production or installation work of electronic products and systems.	3		The electronics engineer can specify[3] production or installation methods, materials and quality standards, and directing production or installation work of electronic products and systems;		
c)	The electronics engineer establishes control standards and procedures to ensure efficient functioning and safety of electronic systems, motors, and equipment.	4		The electronics engineer can establish[4] control standards and procedures to ensure efficient functioning and safety of electronic systems, motors and equipment;		
d)	The electronics engineer organizes and directs the maintenance and repair of existing electronic systems and equipment.	3			The electronics engineer can organise[3] and directing maintenance and repair of existing electronic systems and equipment;	
e)	The electronics engineer designs electronic circuits and components for use in fields such as aerospace guidance and propulsion control, acoustics, or instruments and controls.	5			The electronics engineer can design[5] electronic circuits and components for use in fields such as aerospace guidance and propulsion control, acoustics, or instruments and controls;	
f)	The electronics engineer researches and advises on radar, telemetry, and remote control systems, microwaves, and other electronic equipment.	3		The electronics engineer can research[3] and advising on radar, telemetry and remote control systems, microwaves and other electronic equipment;		
g)	The electronics engineer designs and develops signal processing algorithms and implements these through the appropriate choice of hardware and software.	5			The electronics engineer can design[5] and developing signal processing algorithms and implementing these through appropriate choice of hardware and software;	
h)	The electronics engineer develops apparatus and procedures to test electronic components, circuits, and systems.	5		The electronics engineer can develop[5] apparatus and procedures to test electronic components, circuits and systems.		

i)	The electronics engineer **verifies** basic electrical calculations (current, voltage, power), **constructs** the electrical design of different luminaire types, and **compiles** laboratoric electrical measurements including voltage, current, THD, and harmonics for performance validation.	5	The electronics engineer **specifies** basic electrical calculations (current, voltage, power), as part of electrical system development in the context of luminaire design.	The electronics engineer **initiates** laboratoric electrical measurements including voltage, current, THD, and harmonics during testing procedures for luminaire performance validation.	The electronics engineer **verifies** electrical calculations and measurements during luminaire validation with a strong sense of accuracy and professional responsibility.
j)	The electronics engineer **combines** and **structures** luminaire communication systems by specifying suitable communication types and applications for indoor and outdoor environments, including sensor integration and connection to Central Management Systems.	5	The electronics engineer **structures** suitable communication types and applications, during the development of indoor and outdoor luminaire systems.	The electronics engineer **constructs** luminaire communication systems including sensor integration and CMS connection, during the design and implementation of connected lighting solutions.	The electronics engineer **proposes** the structure of communication systems to ensure functional integration in luminaires with a proactive and solution-oriented mindset.
k)	The electronics engineer **runs** various types of goniophotometers, **executes** standardized photometric measurement procedures, and **measures** blue light hazards **to comply with** lighting safety guidelines.	2	The electronics engineer **demonstrates** the function of different goniophotometers and their role, while performing photometric measurement procedures in lighting laboratories.	The electronics engineer **measures** blue light hazards using standardized procedures as part of the compliance process with lighting safety guidelines.	The electronics engineer **responds** to safety regulations while measuring photometric parameters using appropriate instruments with full commitment to compliance and safety.
l)	The electronics engineer **develops** advanced PCB design skills using CAD software such as Altium or alternatives to **design** optimized layouts and ensure electronic compatibility within luminaires.	5	The electronics engineer **conceptualises** advanced PCB layout principles, during the design phase to ensure electronic compatibility within luminaire systems.	The electronics engineer **creates** PCB layouts using CAD software such as Altium or alternatives during the development phase of electronic circuits for luminaire integration.	The electronics engineer **revises** advanced PCB designs with precision and attention to detail demonstrating a commitment to continuous improvement and high-quality standards.
m)	The electronics engineer **acquires** a fundamental understanding of light propagation and **estimates** basic lighting lens calculations to support optical system development within luminaire designs.	1	The electronics engineer **learns** fundamental principles of light propagation and lens calculation theory for lighting design, during the early stages of optical system design for lighting applications.	The electronics engineer **identifies** basic lighting lens parameters to support optical system development in luminaires during initial optical design evaluations.	The electronics engineer **identifies** optical principles in luminaire design with curiosity and engagement, reflecting a keen interest in deepening technical understanding.
n)	The electronics engineer **selects** basic 3D models and mechanical constructions of different luminaire types, **documents** technical drawings, and **chooses** CAD tools such as SolidWorks, Creo, or SolidEdge for mechanical design tasks.	1	The electronics engineer **describes** mechanical construction features of different luminaire types and **selects** relevant CAD tools, while supporting the mechanical design process.	The electronics engineer **chooses** 3D models and **describes** technical drawings using SolidWorks, Creo, or SolidEdge in the context of mechanical design and documentation of luminaire components.	The electronics engineer **selects** appropriate tools and **describes** mechanical designs with responsibility and a focus on engineering integrity.
o)	The electronics engineer **employs** electrical and mechanical simulators and **constructs** digital twins to **monitor** and **optimise** the performance of lighting systems in virtual environments.	2	The electronics engineer **relates** the concept and function of digital twins to lighting system optimization, within simulated and virtual testing environments.	The electronics engineer **assembles** digital twins using electrical and mechanical simulators to **run** system performance tests, in a virtual prototyping and analysis environment.	The electronics engineer **introduces** simulation tools to optimise lighting system behaviour, showing innovation and a forward-thinking approach.

p)	The electronics engineer **adopts** the basics of production technologies and **includes** aluminum die-casting, extrusion (aluminum/plastic/silicone), glass processing, plastic injection, abrasive processing, welding, powder coating, anodising, 3D printing, and machining relevant to luminaire manufacturing.	2	The electronics engineer **includes** basic production technologies relevant to luminaire manufacturing such as casting, extrusion, and coating methods, during the design-for-manufacture phase.	The electronics engineer **applies** relevant production technologies in the context of luminaire design and development, especially during material selection and manufacturing planning.	The electronics engineer **looks after** appropriate manufacturing processes in product development, with care, diligence, and respect for quality standards.
q)	The electronics engineer **adapts** rapid prototyping methods and **evaluates** verification procedures before production to **validate** design functionality and manufacturability.	4	The electronics engineer **evaluates** key principles of rapid prototyping and pre-production verification methods, when preparing for functional testing and manufacturability checks.	The electronics engineer **adapts** prototyping methods and **assesses** design functionality prior to production, as part of the product validation and iteration cycle.	The electronics engineer **approves** continuous testing as part of responsible product development, valuing thoroughness and long-term reliability.
r)	The electronics engineer **prepares** technical documentation including Bill of Materials (BOM), part order specifications, assembly manuals, and user manuals to **support** product development and manufacturing processes.	3	The electronics engineer **specifies** types of technical documentation including BOMs, part order specs, and user manuals, as required during the product development and handover process.	The electronics engineer **assembles** product documentation to **fulfil** manufacturing and assembly processes, during the preparation of technical handover packages.	The electronics engineer **prepares** technical documents with clarity and structure, showing respect for precision and effective communication.
s)	The electronics engineer **identifies** relevant lighting certifications and standards, **cooperates** with certification laboratories, and **manages** the certification process to ensure regulatory compliance.	3	The electronics engineer **examines** key lighting certifications and relevant international standards, during the compliance assessment and product qualification phases.	The electronics engineer **coordinates** the certification process in cooperation with accredited laboratories, during the product compliance and approval phase.	The electronics engineer **follows** regulatory frameworks to ensure compliant product development, demonstrating accountability and ethical awareness.
t)	The electronics engineer **analyses** the market and **compares** key competitors in the lighting industry to **justify** design decisions and maintain competitive product positioning.	3	The electronics engineer **analyses** market trends and **distinguishes** key competitors in the lighting sector to support strategic design and development decisions.	The electronics engineer **conducts** competitor feature analysis to justify luminaire design decisions, in the context of market research and benchmarking.	The electronics engineer **explains** awareness of competitive positioning in the lighting industry, showing strategic insight and market-oriented thinking.
u)	The electronics engineer **implements** indoor and outdoor lighting calculations using software such as DIALux, Relux, and AGI32, **applies** basic lighting theory, and **assesses** real-world project examples, including price-focused, efficacy-focused, and green-focused scenarios.	2	The electronics engineer **adopts** basic indoor and outdoor lighting theory using DIALux, Relux, and AGI32, in the context of lighting simulation and planning.	The electronics engineer **processes** lighting calculations and **tests** scenarios including price, efficacy, and sustainability, during the design and simulation of lighting projects.	The electronics engineer **reports** lighting decisions based on both technical and economic considerations with transparency and professional judgment.
v)	The electronics engineer **integrates** fast information search methods and **combines** AI technologies to **assess** information and conduct technical research in the lighting field.	4	The electronics engineer **assesses** information using fast methods and AI-based technologies, while conducting technical research in the lighting field.	The electronics engineer **configures** AI tools to **transform** technical research processes effectively, in the context of engineering innovation and knowledge discovery.	**The electronics engineer integrates** AI for technical purposes with curiosity and adaptability, embracing innovation and continuous learning.
w)	The electronics engineer **conceptualises** solutions using first principle thinking by applying deconstructional reasoning, rapid learning techniques, and strategies to **solve** complex design and engineering challenges.	5	The electronics engineer **relates** first principle thinking to problem-solving in lighting engineering, during the development of innovative or complex solutions.	The electronics engineer **builds** solutions through deconstructional reasoning and rapid learning strategies, during the resolution of complex design or technical challenges.	The electronics engineer **self-evaluates** when **solving** complex design challenges, demonstrating self-awareness, growth mindset, and reflective thinking.

x)	The electronics engineer **programs** principles of automation into repetitive engineering tasks, **explores** AI tools including large language models, AI agents, and AI-powered research systems, and **builds** automation processes with AI support to improve efficiency.	3	The electronics engineer **relates** principles of work automation and AI-based engineering tools to modern engineering practices aimed at improving workflow and efficiency.	The electronics engineer **builds** automation processes using AI tools such as LLMs and AI agents, to enhance efficiency in routine engineering tasks and workflows.	The electronics engineer **undertakes** automation strategies to increase engineering efficiency with initiative and a drive for optimisation.
y)	The electronics engineer **organises** project planning and leading by **drawing** Gantt charts and **handling** project management software such as ASANA, ClickUp, Microsoft Project, and others to **assure** development timelines and milestones are met.	2	The electronics engineer **organises** project planning fundamentals and the use of tools like Gantt charts and software platforms, as part of the coordination and management of engineering projects.	The electronics engineer **handles** and **sets up** projects using software such as ASANA, ClickUp, and Microsoft Project, in the context of planning and managing development activities and timelines.	The electronics engineer **assists** in project leadership to **meet** timelines and coordinate development activities with a collaborative and team-focused attitude.

Occupation:	Electrical engineer	EQF Level:	6	ULOS (Units of Learning Outcomes)		
Tasks and responsibilities:		**Level of competence:**		**Knowledge**	**Skills**	**Attitude**
(a) The electrical engineer advises on and designs power stations and systems which generate, transmit, and distribute electrical power.		4,5		The electrical engineer can advise[4] on power stations and systems which generate, transmit and distribute electrical power.	The electrical engineer can design[5] power stations and systems which generate, transmit and distribute electrical power	
(b) The electrical engineer supervises, controls, and monitors the operation of electrical generation, transmission, and distribution systems.		2, 3		The electrical engineer can monitor[2] the operation of electrical generation, transmission and distribution systems	The electrical engineer can supervise[3] and manage[3] the operation of electrical generation, transmission and distribution systems.	
(c) The electrical engineer advises on and designs systems for electrical motors, electrical traction, and other equipment, or electrical domestic appliances.		4,5		The electrical engineer can advise[4] on systems for electrical motors, electrical traction and other equipment, or electrical domestic appliances.	The electrical engineer can design[5] systems for electrical motors, electrical traction and other equipment, or electrical domestic appliances	
(d) The electrical engineer specifies electrical installation and application in industrial and other buildings and objects.		3		The electrical engineer can specify[3] electrical installation and application in industrial and other buildings and objects		
(e) The electrical engineer establishes control standards and procedures to monitor performance and safety of electrical generating and distribution systems, motors, and equipment.		4		The electrical engineer can establish[4] control standards and procedures to monitor performance and safety of electrical generating and distribution systems, motors and equipment		
(f) The electrical engineer determines manufacturing methods for electrical systems, as well as maintenance and repair of existing electrical systems, motors, and equipment.		4		The electrical engineer can establish[4] manufacturing methods for electrical systems, as well as maintenance and repair of existing electrical systems, motors and equipment		
g) The electrical engineer **designs** basic electrical calculations (X, V, A) for luminaires, constructs electrical components, and **conducts** laboratory electrical measurements (V, A, THD, Harmonics, etc.)		5		The electrical engineer **designs** basic electrical calculations (X, V, A) and **constructs** electrical components in the context of laboratory electrical measurements (V, A, THD, Harmonics, etc.).	The electrical engineer **constructs** electrical components and **creates** electrical measurements under laboratory conditions for luminaires.	The electrical engineer **verifies** electrical calculations and measurements to support luminaires' performance analysis.
h) The electrical engineer **designs and integrates** luminaire communication systems, **selects** suitable communication types, and **implements** central management systems and sensors.		5		The electrical engineer **designs** luminaire communication systems and **implements** central management systems and sensors in the context of selecting suitable communication types.	The electrical engineer **creates** integrated luminaire communication systems using central management systems and sensors.	The electrical engineer **proposes** suitable communication types for integrating luminaire communication systems.

i) The electrical engineer **measures** photometric values with goniophotometers and **tests** blue light hazards.	2	The electrical engineer **applies** photometric values and blue light hazard concepts in the context of using goniophotometers	The electrical engineer **measures** photometric values using goniophotometers under testing conditions for blue light hazards.	The electrical engineer **selects** photometric values and blue light hazard tests when working with goniophotometers.
j) The electrical engineer **designs** PCBs for lighting control systems using CAD software such as Altium.	5	The electrical engineer **designs** PCBs for lighting control systems in the context of using CAD software such as Altium.	The electrical engineer **creates** PCB layouts for lighting control systems using Altium under design specifications.	The electrical engineer **revises** PCB designs to meet lighting control system requirements.
k) The electrical engineer **interprets** optics physics for lens calculations and lighting performance optimization.	1	The electrical engineer **interprets** optics physics for lens calculations and lighting performance optimization.	The electrical engineer **distinguishes** lens calculations in the context of lighting performance optimization using optics physics.	The electrical engineer **follows** optics physics when performing lens calculations and optimizing lighting performance.
l) The electrical engineer **documents** mechanical design of luminaires using 3D modeling tools like SolidWorks, Creo, or SolidEdge.	1	The electrical engineer **documents** the mechanical design of luminaires using 3D modeling tools like SolidWorks, Creo, or SolidEdge.	The electrical engineer **selects** 3D modeling tools for documenting the mechanical design of luminaires.	The electrical engineer **follows** mechanical design procedures when using 3D modeling tools to document luminaires.
m) The electrical engineer **constructs** digital twins for electrical and mechanical processes and employs simulation tools.	2	The electrical engineer **constructs** digital twins for electrical and mechanical processes using simulation tools.	The electrical engineer **employs** simulation tools to construct digital twins for electrical and mechanical processes.	The electrical engineer **obtains** digital twins to model electrical and mechanical processes with simulation tools.
n) The electrical engineer **selects and applies** production technologies such as die-casting, machining, and extrusion for luminaire manufacturing.	2	The electrical engineer **applies** production technologies such as die-casting, machining, and extrusion for luminaire manufacturing.	The electrical engineer **executes** luminaire manufacturing using production technologies such as die-casting, machining, and extrusion.	The electrical engineer **selects** production technologies such as die-casting, machining, and extrusion for luminaire manufacturing.
o) The electrical engineer **oversees** prototyping processes before initiating mass production.	4	The electrical engineer **oversees** prototyping processes in the context of preparation for mass production.	The electrical engineer **assesses** prototyping processes before initiating mass production to ensure production readiness.	The electrical engineer **organises** prototyping processes in collaboration with mass production.
p) The electrical engineer **prepares** technical documentation such as BOMs, assembly manuals, and part order specifications.	3	The electrical engineer **identifies** technical documentation such as BOMs, assembly manuals, and part order specifications in the context of engineering processes.	The electrical engineer **organises** technical documentation such as BOMs, assembly manuals, and part order specifications under production planning conditions.	The electrical engineer **prepares** technical documentation such as BOMs, assembly manuals, and part order specifications when supporting engineering workflows.
q) The electrical engineer **enforces** compliance with lighting standards and **supervises** certification processes.	3	The electrical engineer **distinguishes** lighting standards in the context of certification processes for compliance.	The electrical engineer **enforces** compliance with lighting standards under certification procedures.	The electrical engineer **guides** certification processes and compliance actions when applying lighting standards.
r) The electrical engineer **conducts** market analysis and **researches** competitors in the public lighting industry.	3	The electrical engineer **researches** competitors in the public lighting industry for the purpose of conducting market analysis.	The electrical engineer **conducts** market analysis under public lighting industry review conditions.	The electrical engineer **demonstrates** interest in public lighting market analysis and competitor
s) The electrical engineer **executes** lighting calculations using tools like DIALux, Relux, and AGI32, **applies** theories for various lighting projects.	2	The electrical engineer **applies** lighting calculation theories for various lighting projects using tools like DIALux, Relux, and AGI32.	The electrical engineer **executes** lighting calculations for various lighting projects using DIALux, Relux, and AGI32.	The electrical engineer **presents** lighting calculation outcomes using DIALux, Relux, and AGI32 for lighting projects.
t) The electrical engineer **integrates** AI-powered research tools to innovate in lighting technology.	4	The electrical engineer **elaborates** use cases of AI-powered research tools in the context of lighting technology innovation.	The electrical engineer **adapts** AI-powered research tools to support innovation in lighting technology.	The electrical engineer **integrates** AI-powered research tools when innovating in lighting technology.
u) The electrical engineer **conceptualises** deconstructional thinking to solve problems in public lighting projects.	5	The electrical engineer **conceptualises** deconstructional thinking in the context of solving problems in public lighting projects.	The electrical engineer **initiates** problem-solving strategies using deconstructional thinking in public lighting contexts.	The electrical engineer **solves** problems in public lighting projects through deconstructional thinking approaches.

v) The electrical engineer **programs** repetitive engineering tasks using AI-based tools.	3	The electrical engineer **programs** repetitive engineering tasks in the context of using AI-based tools.	The electrical engineer **constructs** solutions for repetitive engineering tasks using AI-based tools under optimisation conditions.	The electrical engineer **initiates** programming of repetitive engineering tasks using AI-based tools.
w) The electrical engineer **administers and organises** public lighting projects using tools like Gantt charts, ASANA, and ClickUp.	2	The electrical engineer **administers** public lighting projects using Gantt charts, ASANA, and ClickUp.	The electrical engineer **organises** tasks using tools like Gantt charts, ASANA, and ClickUp for public lighting projects.	The electrical engineer **reports** project progress using tools like Gantt charts, ASANA, and ClickUp for public lighting.

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