Professional Membership Application: Log book

Part One: Summary of tasks

Instructions

1. Complete the table below, listing tasks you'll draw on to demonstrate your experience, a 'task' being any goal-directed activity, often undertaken as part of a project. You need to include:
    - Between 6 and 10 tasks for Technical Member applications.
    - Between 10 and 15 tasks For Registered Member and Fellow applications.

   Tips: *Choose a range of tasks that best show the breadth and depth of your experience. You may have carried out longer term projects that could provide a number of different tasks that would be suitable for inclusion.*

2. For each task, number it sequentially, give it a descriptive title and provide a short, concise summary of its aims, indicating your part in the work.

   Tip: *For each Core Competency, select the tasks that best demonstrate how you cover both the knowledge requirements and a range of skills and abilities.*

3. Show (with an 'X') which tasks you'll be drawing on to describe how you meet the requirements for each Core Competency. A minimum of two tasks is needed for each Competency.

4. Add an approximate number of days spent on each task with approximate dates. The total time spent over all tasks should be a minimum of:
    - 200 days over a minimum of 2 years for Technical Member applications.
    - 300, 400 or 600 days for Registered Member applications: 300 days over a minimum of 3 years for a graduate from a Qualifying Course, including a minimum of 1 year (at least 150 days) of mentored activity; 400 days over a minimum of 4 years for a graduate from a non-Qualifying Course, including a minimum of 2 years (at least 300 days) of mentored activity; 600 days over a minimum of 6 years for all others.
    - The equivalent of 10 years for Fellow applications, including a minimum of 5 years' senior professional responsibility.

   Tip: *Choose tasks that you completed within the last 10 years, if possible.*

Task Instruction 1,2			**Core Competency** Instruction 3					**Days spent & when** Instr'n 4
No	Title (each max 10 words)	Summary of aims: What did you do and why? (each max 50 words)	1	2	3	4	5	
1	Redesigning emergency room workflow to reduce physician fatigue	Analysed workloads, optimised workflows, and implemented design solutions to minimise cognitive and physical fatigue among healthcare providers during high-stress scenarios.	X	X				30 days, May - Jun 2024
2	Improving usability of smart home interfaces for older adults	Conducted usability testing and iterative design of smart home controls to enhance accessibility, focusing on age-related changes in vision, motor skills and cognitive processing.		X			X	55 days, Jan - Aug 2023
3	Developing driver assist systems for reduced reaction time	Investigated the impact of interface design and alert timing on driver response, improving system feedback for quicker recognition and decision-making during critical driving events.	X		X			45 days, Jul - Dec 2023
4	Enhancing safety in air traffic	Redesigned workstations and communication tools to reduce errors and stress among air			X	X		30 days,

	control workstations	traffic controllers, emphasising human-machine interaction and environmental ergonomics.						Apr – Jul 2022
5	Optimising surgical instrument design for precision	Applied anthropometric and biomechanical data to create surgical instruments that improve hand ergonomics, reducing surgeon fatigue and enhancing precision during prolonged procedures.		X		X		20 days, Jan – May 2019
6	Designing VR training modules for disaster response teams	Created immersive virtual reality scenarios to train emergency responders, ensuring realism and refining team coordination under pressure through evidence-based usability testing.				X	X	40 days, Mar – Dec 2018
7								
8								
9								
10								
11								
12								
13								
14								
15								
		Totals	*2*	*3*	*2*	*2*	*2*	*220*

Part Two: Demonstration of knowledge and practical skills

Instructions

Answer the questions for each Core Competency, using the tasks you specified in Part One above. Make reference to the knowledge requirements and a range of skills and abilities for each Competency, as listed in the Professional Competency Checklist.

Include a minimum of 4 pieces of evidence in total across all competencies, for different tasks. Add the evidence filename at the end of the description. Provide the evidence as separate documents when you submit your application, ensuring it's clear from their filename which tasks they refer to.

Tips

- *Choose tasks that overall show a range of types of evidence, if possible, e.g. reports, published papers, training material, etc., but that also demonstrate your skills and abilities well.*
- *If your evidence has multiple contributors (for example, a multi-authored report), make it clear in the description your exact contribution to the work.*

<table>
<tr><th>Task No</th><th>Describe how you took a human-centred approach to each chosen task with reference to the knowledge requirements for this Competency. Give examples of the skills and abilities you used and how.

(Guide length: 300-500 words for each task)</th><th>Core Competency 1
Uses a human-centred approach to the design and development of systems.</th></tr>
<tr><td>1</td><td colspan="2">In Task 1: Redesigning emergency room workflow to reduce physician fatigue, I took a human-centred approach by focusing on the needs, capabilities, and constraints of ER staff, ensuring the system aligned with their requirements.

Using Knowledge Requirement 1.7, I defined user needs by conducting task analyses, interviews, and observations with ER staff to understand their workload, stress points and inefficiencies. These findings revealed indicators of a poor match between the staff and existing systems (Knowledge Requirement 1.1), such as unclear task priorities and ergonomic issues with workstations.

Stakeholders, including doctors, nurses and administrators, were identified (Knowledge Requirement 1.4) and involved in co-design workshops. This participative process ensured their insights shaped the iterative workflow redesign, improving acceptance and alignment with their daily challenges (Knowledge Requirement 1.3).

Collaboration with IT specialists and operations teams supported multidisciplinary input (Knowledge Requirement 1.6), ensuring the system addressed both technical and human factors. I identified constraints to change, such as budget limits and workflow disruptions, and mitigated (Knowledge Requirement 1.8) by introducing gradual, non-invasive improvements.

This human-centred focus optimised performance (Knowledge Requirement 1.5), creating a sustainable workflow that minimised fatigue and improved both staff efficiency and patient care.

I applied these skills:

1. Human-centred interactions: I prioritised the needs of ER staff by mapping their tasks and communication flows. This approach ensured that the redesigned workflow</td></tr>
</table>

	supported seamless interactions between healthcare professionals and the technology they used. 2. Iterative design & prototyping: I tested multiple iterations of workflow adjustments using prototypes, such as layout simulations and mock-ups of revised task scheduling tools. Feedback from ER staff guided refinements to ensure solutions met real-world demands. 3. Participative, user-centred design: ER physicians and nurses were actively involved in co-design sessions, sharing their daily challenges and validating the proposed changes. This participative approach fostered acceptance and ensured the workflow enhancements addressed their pain points effectively. I created a system that reduced physician fatigue by aligning the workflow with user needs while maintaining high-quality patient care. Evidence: Task 1 Emergency room
3	In Task 3, Developing driver assist systems for reduced reaction time, I used a human-centred approach to ensure the system aligned with the cognitive and physical abilities of drivers during critical scenarios. Using Knowledge Requirement 1.7, I defined driver needs by conducting usability studies, driving simulations and focus groups to identify challenges such as delayed recognition of alerts and information overload. This process revealed indicators of a poor match (Knowledge Requirement 1.1), such as alerts that were too subtle or overwhelming in high-stress situations. I identified and involved stakeholders, including drivers, automotive engineers and safety experts (Knowledge Requirement 1.4). Their input helped shape the interface design, ensuring that alerts were intuitive, non-intrusive and responsive to real-world driving contexts. Recognising the value of user participation (Knowledge Requirement 1.3), drivers tested prototypes in simulations, providing feedback that guided iterative improvements. Multidisciplinary collaboration (Knowledge Requirement 1.6) between engineers, human factors specialists and psychologists ensured the system incorporated both technical precision and user-centred insights. Constraints such as regulatory requirements and cost considerations were identified (Knowledge Requirement 1.8) and addressed by prioritising scalable, modular design changes. Ultimately, this human-centred approach optimised the system's ability to enhance driver response time, improving both safety and user satisfaction (Knowledge Requirement 1.5). I applied these skills: 1. Human role in automation: The system was designed to support the driver's decision-making without over-reliance on automation. Alerts were carefully calibrated to maintain driver awareness and engagement, preventing over-trust or underuse of the assistive features. 2. Iterative design & prototyping: Multiple prototypes of the interface and alert systems were developed and tested in driving simulators. Feedback from drivers was incorporated into each iteration, refining the timing, format and sensory modalities (visual, auditory, haptic) of alerts to ensure they were both effective and non-intrusive. 3. User & target audience identification: Ealy on, I identified target users, including novice, experienced and elderly drivers. This ensured the system accounted for a range of capabilities, preferences and reaction times. Insights from focus groups and usability tests shaped a design that addressed diverse user needs.

	By combining these skills, I balanced automation with human control, creating a system that enhanced safety and minimised reaction time while maintaining usability for a broad range of drivers. This approach ensured the assistive system was practical, effective and widely accepted.

<table>
<tr><th>Task No</th><th>Describe how you focused on human characteristics, capabilities and limitations in the context of your chosen tasks, referring to the knowledge requirements for this Competency. Describe some examples of skills and abilities you used and how.

(Guide length: 300-500 words for each task)</th><th>Core Competency 2
Focuses on
human characteristics,
capabilities and limitations.</th></tr>
<tr><td>1</td><td colspan="2">In Task 1: Redesigning emergency room workflow to reduce physician fatigue, human characteristics, capabilities and limitations were central to the design process, ensuring a system optimised for diverse users under demanding conditions.

Using Knowledge Requirement 2.1, I assessed the diversity in physical, cognitive and emotional capabilities among ER staff. For example, variations in physical endurance and cognitive attention spans during long shifts were considered, ensuring the workflow addressed fatigue and minimised mental overload. This variability (Knowledge Requirement 2.2) informed the design, as differences in performance influenced how tasks were allocated and supported, while staff perceptions of risk (e.g., error potential) guided improvements in communication and task prioritisation.

I analysed psychosocial factors, such as stress from high-pressure environments and interpersonal dynamics (Knowledge Requirement 2.3) to design solutions that improved teamwork and resilience. For example, strategies to reduce interruptions during critical tasks enhanced focus and emotional wellbeing.

Attributes contributing to productivity and efficiency (Knowledge Requirement 2.4), such as streamlined task handoffs and reduced redundancy, were emphasised, while the interplay of factors affecting safety, health and wellbeing (Knowledge Requirement 2.5) shaped workstation designs and task scheduling adjustments to prevent burnout.

By integrating these considerations, the redesigned workflow promoted a safer, more efficient and healthier environment for ER staff.

I applied the following skills:

1. Situation awareness: The redesigned workflow enhanced physicians' awareness of their environment by simplifying task handoffs, improving communication channels, and integrating visual cues to highlight critical information. This ensured that staff could quickly prioritise tasks and respond effectively in high-pressure situations.
2. Stress: Stress levels among ER staff were a critical consideration. I implemented strategies to reduce stress by minimising unnecessary interruptions and restructuring workloads to distribute tasks more evenly during peak times. Break schedules and quiet zones were also introduced to provide recovery periods, promoting mental and emotional resilience.
3. Circadian rhythms: The impact of circadian rhythms on fatigue was addressed by adapting shift schedules to align better with natural energy patterns. Workflows were adjusted to reduce cognitive demands during night shifts, improving staff performance and wellbeing during less optimal times of the day.

By focusing on these factors, I accounted for the physical and cognitive demands placed on ER staff, creating a safer and more efficient environment. This approach improved their ability to maintain vigilance and decision-making accuracy, even under challenging conditions.

Evidence: Task 1 Emergency room</td></tr>
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2	In Task 2, Improving usability of smart home interfaces for older adults, human characteristics, capabilities, and limitations were prioritised to create accessible and effective interfaces. Using Knowledge Requirement 2.1, I considered the variability in physical, cognitive and sensory capabilities among older adults. For example, declining vision and reduced dexterity were addressed by designing larger buttons, high-contrast displays and simplified navigation. Cognitive variability influenced the system's reliance on straightforward commands and intuitive workflows to minimise confusion. Knowledge Requirement 2.2 guided adjustments to the interface, ensuring usability across a range of abilities while reducing perceived risks, such as the fear of making mistakes or damaging the system. I addressed psychosocial factors (Knowledge Requirement 2.3) by recognising how feelings of frustration or intimidation toward technology could reduce engagement. The interface was designed to build confidence and familiarity through gradual learning and positive reinforcement, enhancing users' comfort and trust. Attributes contributing to productivity and efficiency (Knowledge Requirement 2.4) included minimising task complexity and providing clear feedback, ensuring users could complete tasks quickly and correctly. Finally, the interplay of factors affecting safety, health and wellbeing (Knowledge Requirement 2.5) informed the system's focus on reducing strain and empowering users, fostering independence while maintaining safety. This human-centred approach ensured the interface was accessible, usable and supportive of older adults' unique needs. I applied the following skills: 1. Vision: The design addressed age-related declines in visual acuity by incorporating larger, high-contrast text and symbols. Colour schemes were chosen to enhance readability, particularly for users with conditions like cataracts or colour vision deficiencies. 2. Memory: The interface was simplified to minimise reliance on short-term memory. Features such as clear navigation paths, consistent layouts, and gentle reminders for incomplete tasks ensured ease of use for individuals experiencing age-related cognitive changes. 3. Empathy: Empathy was central to understanding the emotional responses of older adults when engaging with unfamiliar technology. Testing sessions included active listening to their frustrations and fears, leading to designs that promoted confidence, reduced intimidation and encouraged engagement through user-friendly interactions. By addressing these human characteristics, I created an interface that aligned with the physical and cognitive capabilities of older adults, improving their independence and satisfaction. This human-centred approach also reduced errors and the need for external assistance, fostering trust and usability while accommodating the diverse needs of the target audience. Evidence: Task 2 Smart home interfaces
5	In Task 5, Optimising surgical instrument design for precision, human characteristics, capabilities and limitations were crucial to designing instruments that enhanced surgeon performance while reducing physical and cognitive strain. Using Knowledge Requirement 2.1, I addressed variability in physical characteristics, such as hand sizes and grip strength, by designing instruments that accommodated a wide range of users. Cognitive factors, like the ability to maintain focus during prolonged procedures, were also considered to ensure instruments required minimal mental effort to operate. Knowledge

Requirement 2.2 guided the design to meet diverse user requirements, reducing risks of fatigue or errors caused by poorly fitting or complex tools.

Psychosocial factors (Knowledge Requirement 2.3), such as stress and pressure during surgeries, were considered to ensure instruments promoted confidence and reduced frustration. Features like intuitive controls and tactile feedback helped surgeons maintain precision and control under high-pressure conditions.

Attributes influencing productivity and efficiency (Knowledge Requirement 2.4) included designing lightweight and easy-to-clean instruments that minimised downtime and improved procedural flow. Finally, the interplay of factors affecting safety, health and wellbeing (Knowledge Requirement 2.5) was addressed by reducing repetitive strain injuries and enhancing overall comfort, ensuring long-term surgeon health without compromising performance.

This approach resulted in surgical instruments that optimised both functionality and user wellbeing.

I applied the following skills:

1. Anthropometry: I measured and analysed variations in hand sizes and grip strengths among surgeons to ensure the instruments suited a wide range of users. This data informed the handle design, creating tools that felt comfortable and secure during extended use.
2. Biomechanics & strength: I focused on reducing muscle fatigue and strain by designing instruments that required minimal force for precise manipulation. By studying hand and wrist movements, I optimised the tool's weight and balance to support natural motion and improve control.
3. Stress: I recognised that the high-pressure surgical environment heightened stress levels, which could affect performance. To address this, I incorporated features such as anti-slip grips and ergonomic handles, enabling surgeons to maintain confidence and precision even during challenging procedures.

By focusing on these aspects, I ensured the instruments improved both performance and wellbeing. The final design not only enhanced precision but also reduced the physical demands on surgeons, enabling them to perform at their best across a variety of procedures. This human-centred approach reflected my commitment to understanding and supporting the needs of the end user.

Evidence: Task 5 Instrument design

<table>
<tr><th>Task No</th><th>Describe the skills and abilities you applied for this Competency in the context of the tasks you’ve chosen, explaining the performance influencing factors at play. Refer to the knowledge requirements for this Competency where appropriate.

(Guide length: 300-500 words for each task)</th><th>Core Competency 3
Recognises how other system components and performance influencing factors affects people.</th></tr>
<tr><td>3</td><td colspan="2">In Task 3: Developing driver assist systems for reduced reaction time, I applied various skills to address performance-influencing factors and ensure the system supported drivers effectively.

Activities & Tasks: I focused on complexity and error potential (Knowledge Requirement 3.2). By conducting systematic reviews of driver behaviour during critical scenarios, I identified tasks where excessive cognitive load increased error rates. For example, multi-tasking while responding to sudden alerts was a key issue. This led to simplifying information processing demands through intuitive, multimodal alerts that reduced the likelihood of misinterpretation. Recognising fatigue as a significant factor, I ensured that alerts were designed to re-engage attention without overwhelming the driver, particularly during prolonged driving sessions.

Physical Environment: Factors like lighting, noise, and vibration were considered in the system's development (Knowledge Requirement 3.1). During testing, I identified how glare or ambient noise could interfere with visual and auditory alerts. Adjustments were made to ensure alerts were clear in diverse environmental conditions, such as bright daylight or loud cabin noise.

Tools & Equipment: I focused on human-machine interaction and controls & displays, integrating features that supported the driver’s natural behaviours (Knowledge Requirement 3.5). For example, haptic feedback was used to complement visual and auditory signals, ensuring redundancies that improved reliability. I also designed input devices to be accessible and intuitive, reducing the risk of delayed responses.

Organisational Environment: Understanding stress and its impact on reaction time, I worked on creating a system that alleviated driver pressure. For example, alerts were designed to promote trust by being accurate and timely, reducing over-reliance or distrust in the system (Knowledge Requirement 3.3). I also recognised the limits of training as a solution (Knowledge Requirement 3.4); instead of requiring extensive learning, the system was designed to be intuitive and operable without formal instruction.

System Components: By addressing human error, I recognised emergent behaviours (Knowledge Requirement 3.6), such as over-trusting automation, which could reduce driver engagement. The system incorporated safeguards like periodic prompts for driver attention to mitigate these risks.

Through these efforts, I ensured the system addressed key performance-influencing factors, supported human capabilities, and reduced the risk of errors, creating a safer and more effective driver-assist system.</td></tr>
<tr><td>4</td><td colspan="2">In Task 4: Enhancing safety in air traffic control workstations, I applied a range of skills to address the human, organisational and environmental factors affecting air traffic controllers’ performance and wellbeing.

To begin, I identified and scoped relevant task, equipment and environmental factors by conducting detailed observations and interviews with controllers to understand their daily challenges (Knowledge Requirement 3.1). This highlighted complexity and error potential in their activities due to high workloads, multitasking, and time constraints. Controllers frequently</td></tr>
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	relied on outdated displays and unclear alarms, which increased cognitive load and the risk of errors during peak periods. Using a systematic review of demands on people (Knowledge Requirement 3.2), I analysed lighting and noise levels in control rooms. Poor lighting caused eye strain, while noise from communication systems created distractions, both negatively affecting situational awareness. I redesigned workstation layouts and introduced adjustable lighting to accommodate individual needs, improving comfort and focus. Recognising the interactions between people and wider system components, I evaluated the human-machine interaction of existing controls and displays (Knowledge Requirement 3.5). Controllers struggled with inconsistent interface designs and unclear visual cues. I worked with interface designers to create standardised, intuitive displays that prioritised critical information, reducing the risk of misinterpretation during emergencies. I also addressed organisational factors, such as shiftwork and rostering, which significantly impacted controllers' performance (Knowledge Requirement 3.3). To mitigate fatigue and cognitive overload, I proposed flexible rostering systems and relaxation zones within control centres. While education and training programmes were already in place, I recognised their limits in addressing systemic issues (Knowledge Requirement 3.4), emphasising design changes instead. Throughout the task, I remained alert to emergent behaviours, such as increased reliance on automated systems during high-stress situations (Knowledge Requirement 3.6). To counter this, I incorporated feedback loops and task-sharing features between controllers and automated tools, promoting collaboration and maintaining situational awareness. By redesigning the workstations, I reduced error potential, improved teamwork and optimised workspace layouts. These interventions not only enhanced safety and performance but also contributed to a more supportive and resilient working environment for air traffic controllers.

Core Competency 4

Applies relevant methods, tools and techniques.

Task No	Describe the main methods, tools and techniques you used in your chosen tasks, the data you gathered, what you did with it, and how you applied the knowledge requirements for this Competency, where relevant. (Guide length: 300-500 words for each task)
4	In Task 4: Enhancing safety in air traffic control workstations, I used targeted methods and tools to gather data, interpret findings and solutions that addressed design, cognitive and organisational challenges. To define the scope and identify sources of information, I conducted interviews with controllers and supervisors, focusing on the practical issues they faced in their tasks and their interactions with communication tools (Knowledge Requirement 4.1). These interviews provided qualitative data on high-stress periods, error-prone tasks and perceived shortcomings in workstation design. I complemented this with task analysis, breaking down workflows to identify bottlenecks and risks in information flow. Using NASA-TLX workload assessments, I quantified cognitive demands during peak traffic times, revealing that multitasking and unclear displays were significant contributors to stress and errors (Knowledge Requirements 4.2 & 4.4). With the data, I prioritised key areas for intervention. For example, glare measurements identified suboptimal lighting conditions, leading to the design of adjustable lighting systems to reduce eye strain. Situation awareness assessments revealed how cluttered interfaces distracted controllers, prompting iterative prototyping of user-friendly designs with simplified controls and clear prioritisation of alerts (Knowledge Requirement 4.3). I applied an iterative design process, using simulations where controllers interacted with redesigned workstations in realistic scenarios. Their feedback was used to refine layouts, ensuring the proposed solutions aligned with their needs and capabilities (Knowledge Requirement 4.13). To evaluate risks, I applied the Human Error Assessment and Reduction Technique (HEART), identifying and addressing failure points in communication tools and task handovers. These insights informed the integration of clear, standardised messaging systems, which reduced miscommunication during high-pressure situations (Knowledge Requirement 4.6). I then synthesised all findings into evidence-based recommendations and specifications, which were presented to stakeholders. These recommendations optimised human-machine interaction, improved safety and adhered to organisational performance goals, while ensuring unexpected results and user acceptance were considered (Knowledge Requirements 4.8, 4.14 & 4.18). Ultimately, this approach resulted in safer, more efficient workstations tailored to the demands of air traffic control.
5	In Task 5: Optimising surgical instrument design for precision, I applied a comprehensive and systematic approach to improve hand ergonomics for surgeons, enhancing precision and reducing fatigue during prolonged procedures. To achieve this, I focused on gathering and analysing both quantitative and qualitative data to inform the design of more user-friendly surgical instruments.

	The first step was to define the task scope by reviewing existing research on surgical tool ergonomics and understanding the specific challenges faced by surgeons. I conducted interviews with surgeons to gather insights into the most critical pain points, such as hand strain, repetitive motion injuries, and difficulties with precision during extended procedures (Knowledge Requirement 4.1). These discussions helped to identify the ergonomic factors most impacting the usability and effectiveness of surgical tools. To collect relevant data, I used functional anthropometry to measure surgeons' hand dimensions, ensuring that the new instruments would fit a wide range of hand sizes comfortably. This data, along with biomechanical modelling, helped assess the forces and angles required during common surgical tasks, such as grasping, cutting and suturing (Knowledge Requirements 4.2 & 4.5). To further understand ergonomic risks, I employed RULA assessments to evaluate postural stress during surgery, ensuring the instruments did not exacerbate physical strain. I then applied an iterative design process, where initial prototypes of the surgical instruments were tested in simulated surgical environments. Usability testing was conducted, with surgeons providing direct feedback on instrument comfort, grip and precision. This feedback led to multiple refinements, particularly around handle shape, weight distribution and surface texture to optimise grip and reduce hand fatigue (Knowledge Requirement 4.13). Additionally, I used NASA-TLX to assess the cognitive and physical workload involved in using the instruments during surgery, ensuring they alleviated surgeon stress rather than contributing to it. The data gathered was analysed holistically to identify how various factors, such as instrument design, surgeon physiology, and surgical task complexity, interacted to affect performance (Knowledge Requirement 4.4). After refining the design, I prepared design specifications and guidelines based on the analysis, detailing the optimal materials, dimensions, and weight distribution for the instruments. I also conducted a post-implementation review, where surgeons provided feedback on the final designs, confirming that the instruments reduced fatigue and enhanced precision during surgery (Knowledge Requirements 4.16 & 4.17). Throughout the task, I continuously assessed alternative solutions, considering the safety hierarchy of control, to optimise both the tools and the broader system without relying solely on changing surgeon behaviour (Knowledge Requirements 4.9 & 4.10). Ultimately, the task successfully enhanced ergonomic design in surgical instruments, leading to improvements in surgeon wellbeing and operational efficiency. Evidence: Task 5 Instrument design
6	In Task 6: Designing VR training modules for disaster response teams, my goal was to create immersive virtual reality (VR) scenarios that could train emergency responders in realistic, high-pressure environments. By enhancing realism and refining team coordination, the task aimed to improve overall response times and team effectiveness during actual emergencies. To achieve this, I focused on applying human factors principles to design an effective and engaging VR training system. To begin, I defined the scope of the task by identifying the critical tasks and environments that disaster response teams face. This involved conducting user requirements capture through interviews and focus groups with emergency responders. This participatory approach ensured that the training modules accurately reflected the tasks they perform during real-world disasters and provided a deep understanding of the challenges faced during coordinated emergency responses (Knowledge Requirement 4.3). Next, I employed task analysis to break down emergency response activities, identifying key actions and decisions required in different scenarios. This allowed me to create VR scenarios

	that simulated high-stress environments with realistic demands on both individual performance and team coordination (Knowledge Requirements 3.1 & 3.2). Using usability testing and user experience assessments, I collected data on how effectively the responders navigated the scenarios, identifying any areas where realism could be improved or where interactions were unintuitive (Knowledge Requirement 4.2). I also assessed the mental workload of participants using the NASA-TLX tool during training sessions. This helped gauge how demanding each scenario was, ensuring the tasks were challenging but not overwhelming, and that the VR system did not contribute to unnecessary cognitive load. Adjustments were made to improve user performance and task efficiency. This was particularly important in the context of teamwork and communication, where I assessed how well teams coordinated actions and made decisions under stress, ensuring the VR module accurately simulated real-world disaster scenarios (Knowledge Requirements 3.5 & 3.6). The iterative design process played a significant role in refining the training modules. Feedback from the training sessions allowed me to improve the system, making modifications to enhance task realism and ensuring that the VR system provided practical value for emergency responders. I also incorporated situation awareness assessments to understand how well participants maintained an understanding of their surroundings and the unfolding scenario, key to effective disaster response (Knowledge Requirements 4.13 & 4.14). Finally, I ensured the VR modules were integrated with other training systems and real-world protocols, offering a holistic approach to training. By the end of the task, the VR training modules were effective tools for improving disaster response times, team coordination and individual performance under pressure, aligning with both user needs and organisational requirements (Knowledge Requirements 4.15 & 4.5). Evidence: Task 6 VR training

Task No	Describe the professional skills and abilities you used during your chosen tasks and how they contributed to the outcomes. Refer to the knowledge requirements for this Competency where relevant. (Guide length: 300-500 words for each task)	**Core Competency 5** Adopts professional skills and behaviours.
2	In Task 2: Improving usability of smart home interfaces for older adults, I applied several professional skills and behaviours that were crucial to the success of the task. These skills contributed to designing a user-friendly interface for older adults, enhancing accessibility and usability, especially in light of age-related changes in vision, motor skills and cognitive processing. A key skill that I used was contextual interpretation of results. I carefully analysed usability testing data, taking into account the unique needs and limitations of the target audience – older adults. By interpreting the results in the context of age-related factors such as reduced vision, slower motor responses and cognitive processing delays, I was able to make design changes that directly addressed these challenges. This ensured the interface was accessible and effective for the users, meeting their physical and cognitive needs (Knowledge Requirement 5.6). Ethical practice played an essential role in ensuring that the design process was conducted responsibly. I made sure that the usability testing was performed with the informed consent of participants and that their privacy and comfort were prioritised throughout the process. This ethical approach not only protected the rights of older adults but also fostered trust in the task, allowing for more open and honest feedback from participants (Knowledge Requirement 5.4). I also engaged in effective leadership when managing the team of designers and researchers. I provided clear direction and ensured that the team understood the importance of considering the user experience from the perspective of older adults. By promoting a user-centred approach, I helped the team stay focused on the end goal of improving accessibility and usability for this specific demographic (Knowledge Requirement 5.5). Throughout the task, I showed that I knew my limitations by actively seeking expert advice when needed. For example, I consulted with specialists in gerontology and accessibility to ensure that our design was grounded in sound knowledge about the challenges faced by older adults. Recognising when to seek expert input ensured that the design process was informed by the latest research and best practices (Knowledge Requirement 5.8). Lastly, communicating findings appropriately for the audience was crucial in ensuring the design recommendations were understood and implemented by stakeholders, including product developers and marketing teams. I created clear and concise reports that translated complex usability findings into actionable insights, making it easier for all stakeholders to understand the user needs and design rationale (Knowledge Requirement 5.7). Through these professional skills and behaviours, I was able to successfully guide the design of an interface that addressed the unique challenges faced by older adults, ultimately improving the usability and accessibility of smart home systems for this demographic. Evidence: Task 2 Smart home interfaces	
6	In Task 6: Designing VR training modules for disaster response teams, I employed various professional skills and behaviours that were crucial to the successful development and implementation of immersive training scenarios for emergency responders. These skills directly	

	contributed to the creation of realistic and effective VR training modules, enhancing team coordination and response under pressure. One of the key skills I utilised was collaborative problem solving. I worked closely with emergency response professionals, VR developers, and instructional designers to ensure that the VR scenarios accurately mirrored real-world disaster situations. This teamwork enabled us to identify specific training needs and fine-tune the scenarios, ensuring they were both realistic and practical. By involving end-users in the design process, we ensured the modules were relevant to the challenges faced by responders in the field (Knowledge Requirement 5.3). Stakeholder inclusion and management were critical throughout the task. I engaged regularly with emergency responders, training coordinators, and VR experts to ensure the scenarios were aligned with the training objectives and the realities of disaster response. Through regular feedback loops, I was able to refine the VR modules, ensuring that all user needs were considered and incorporated into the design (Knowledge Requirement 5.4). Effective communication about human factors impact was another vital aspect of the task. I had to convey the importance of key elements such as stress, time pressure, and situational awareness within the VR environment. By clearly communicating the human factors considerations, I helped the team understand how these factors would affect training outcomes and how to optimise the VR scenarios for improved realism and effectiveness (Knowledge Requirement 5.7). Additionally, task planning and design were essential in managing the iterative development of the VR modules. I structured the task into clear phases, including concept development, prototype testing, and user feedback collection, ensuring each step was aligned with the task goals and timelines. This helped keep the task on track and ensured that the modules met all user requirements and performance criteria. Through lifelong learning, I stayed current on VR technology and best practices in training design, attending conferences and workshops to improve my understanding of how immersive technologies could be applied to emergency response training. This continuous professional development helped ensure the task was cutting-edge and met the evolving needs of disaster response teams (Knowledge Requirement 5.8). Ultimately, these professional skills and behaviours led to the successful development of VR training modules that not only improved the realism of disaster response training but also enhanced team coordination and individual performance under high-pressure conditions. Evidence: Task 6 VR training