

DESIGN IN TECHNOLOGY: HUMAN FACTORS IN DESIGN

Human factors in design refers to ergonomic and aesthetic factors that influence the design of products, systems and environments. These factors are supported by the use of anthropometric, psychological and sensory data gathering and analysis techniques. Understanding spatial relationships between people, objects and their environments is important when considering human factors in design.

Initially students learn about human factors that need to be considered when designing a product, system or environment. This should progress to students learning about the relationship between anthropometric data, user preference and ergonomic fit in a product, system or environment; as well as how customisation is undertaken to address personal preference and obtain ergonomic fit.

	LEVEL 6	LEVEL 7	LEVEL 8
LO	<i>Demonstrate understanding of basic concepts and techniques related to human factors in design</i>	<i>Demonstrate understanding of advanced concepts and techniques related to human factors in design</i>	
TEACHER GUIDANCE	<p>To support students to develop understandings about the basic concepts related to human factors in design, at level 6 teachers could:</p> <ul style="list-style-type: none"> • Guide students to understand human factors that need to be considered when designing products, systems and environments • Guide students to understand what the terms personal preference, style, and fashion refer to, how they differ from each other and can impact on the design of products, systems and environments • Guide students to explore why ergonomics and aesthetics needed to be considered in the design of a range of products, systems and/or environments • Provide opportunities for students to explore data gathering, including: anthropometrics, psychological and sensory data, and analysis techniques that were used inform the design of products, systems and environments. Discuss why they were used and their suitability. 	<p>To support students to develop understandings about advanced concepts related to human factors in design, at level 7 teachers could:</p> <ul style="list-style-type: none"> • Provide opportunities for students to explore the role of statistics and probability in establishing guiding ratios and ergonomic aids • Guide students to consider ethical and economic parameters as human factors • Support students to explore how socio-cultural considerations impact on personal preference, style and fashion. • Support students to understand how customisation techniques are used to address user preferences. These include: using dressmakers mannequins, patterns, and ergonomics; using data from anthropometric, psychological and sensory data, focus groups and test subjects; using investigation and stimuli to establish personal preferences; and using functional modelling and prototypes • Support students to understand the relationships between anthropometric data, user preference and ergonomic fit across a range of products, systems and environments • Support students to identify the customisation undertaken to address personal preference and obtain ergonomic fit across a range of products, systems and environments. 	<p>LEARNING OBJECTIVE PROGRESSES TO: <i>Demonstrate understanding of complex concepts in design</i> See previous page</p>
INDICATORS	<p>Students can:</p> <ul style="list-style-type: none"> • describe the human factors that need to be considered when designing products, systems and environments • explain how personal preference, group preferences, style and trends may impact on the design of products, systems and/or environments • explain how data gathering and analysis techniques may be used in the design of products, systems and environments • discuss why human factors identified for the design of a product, system and/or environment need to be considered • discuss the suitability of data gathering and analysis techniques that may be used in the design of a product, system and/or environment. 	<p>Students can:</p> <ul style="list-style-type: none"> • explain how statistics and probability are used to establish guiding ratios for anthropometric data and ergonomic aids • explain how anthropometric data, user preference and ergonomic fit in a product, system or environment • discuss the relationship between anthropometric data, user preference and ergonomic fit in a product, system or environment • discuss customisation undertaken to address user preference and obtain ergonomic fit in a product, system or environment. 	
AS	<p>AS91054 Generic Technology 1.11 <i>Demonstrate understanding of basic human factors in design</i></p> <p>Level 1 Generic Technology standards & assessment resources</p>	<p>AS91363 Generic Technology 2.11 <i>Demonstrate understanding of advanced concepts related to human factors in design</i></p> <p>Level 2 Generic Technology standards & assessment resources</p>	