



Unit title:	Human computer interaction
Unit number:	9
Level:	4
Credit value:	15
Guided learning hours:	60
Unit reference number:	A/601/0457

UNIT AIM AND PURPOSE

This unit will provide a core understanding and knowledge of the principles of human computer interaction (HCI) and human centered design disciplines. The unit encourages learners to develop a transferrable design-based skill set beneficial to roles in the creation of IT systems.

LEARNING OUTCOMES AND ASSESSMENT CRITERIA

A pass grade is achieved by meeting **all** the requirements in the assessment criteria.

Learning Outcome (LO)	Pass
The Learner will:	The Learner can:
LO1 Understand recent human computer interaction related developments and their application	1.1 evaluate recent HCI related developments and their applications 1.2 discuss the impact of HCI in the workplace
LO2 Understand the issues related to a chosen human computer interface	2.1 discuss the issues related to user characteristics for a chosen HCI
LO3 Be able to develop a human computer interface	3.1 design and create a human computer interface for a specified application 3.2 explain the principles that have been applied to the design 3.3 critically review and test an interface 3.4 analyse actual test results against expected results to identify discrepancies 3.5 evaluate independent feedback and make recommendations for improvements 3.6 create onscreen help to assist the users of an interface 3.7 create documentation for the support and maintenance of an interface

GRADING CRITERIA

A merit grade is achieved by meeting **all** the requirements in the pass criteria **and** the merit descriptors.

A distinction grade is achieved by meeting **all** the requirements in the pass criteria **and** the merit descriptors **and** the distinction descriptors.

Merit Criteria (M1, M2, M3)	Distinction Criteria (D1, D2, D3)
(M1, M2, and M3 are mandatory to achieve a merit grade. Each must be achieved at least once per unit to achieve a merit grade.)	(D1, D2, and D3 are mandatory to achieve a distinction grade. Each must be achieved at least once per unit to achieve a distinction grade.) (In order to achieve a distinction grade, all merit criteria must also have been achieved.)
MANDATORY TO ACHIEVE A MERIT GRADE	MANDATORY TO ACHIEVE A DISTINCTION GRADE
M1 Analyse concepts, theories or principles to formulate own responses to situations.	D1 Evaluate approaches to develop strategies in response to actual or anticipated situations.
M2 Analyse own knowledge, understanding and skills to define areas for development.	D2 Evaluate and apply strategies to develop own knowledge, understanding and skills.
M3 Exercise autonomy and judgement when implementing established courses of action.	D3 Determine, direct and communicate new courses of action.

TEACHING CONTENT

The Teaching Content describes what has to be taught to cover **all** Learning Outcomes.

Learners must be able to apply relevant examples to their work although these do not have to be the same as the examples specified.

LO1 Understand recent human computer interaction related developments and their application

HCI: What is it and where did it come from? History of developments, standards for HCI design, design thinking (Norman's concepts of constraints and affordances)

Core principles of HCI design, e.g.

- Signifiers – a signifier is a designed indication of how to use an object
- Mapping – the relationship between an object and the thing it effects
- Feedback – the mechanism by which we understand if have/don't have the intended result
- Conceptual model – how the 'user' expects the designed object to work; they form this model through the use and experience of other things or by following social or designed signifiers.
- Sociable design – inclusion of empathy and understanding of interruptions and unexpected events
- Pleasure (Emotion) – things work better when they look pretty, and/or make us feel good about ourselves

HCI Evolution

Command lines and development of graphical user interfaces (GUIs), data entry screen design, accessibility, changes in 'look and feel' over time

Users and HCI

Study of users' interactions with ICTs (different needs of user groups, e.g. novice, occasional user, professional), effect on workplace (change management, ensuring design does not have unexpected effect on how people do their work, e.g. Button and Swift's study of a printing company)

Building HCIs

Selection of interface (touch screen, GUI or command line, voice control) use of multimedia modelling, role of event-driven systems and distributed applications, HCI impact on safety and efficiency.

LO2 Understand the issues related to a chosen human computer interface

Different types of user groups for a chosen technology or system, documenting

- User type
- Demographics
- Goals and objects

Obstacle to uses

Particularly in reference to physical or mental impairment, reference industry and legal guidelines such as:

- *Web Content Accessibility Guidelines version 2 (WCAG 2)*
- Disability Discrimination Act

Business drivers for HCI design

Such as cost impact, system requirements (hardware and software), training requirements for users, ergonomic and ecological considerations (e.g. specific concerns such as seating, effect of lighting etc.)

LO3 Be able to develop a human computer interface

Consider HCI concepts when developing a system, e.g

- Alignment
- Proximity
- Similarity
- Uniform connectedness
- Fitts' Law
- Inverted Pyramid (for written instructions)
- The fundamental principles of interaction design

Types of user interface (UI) elements, e.g.

- Text fields
- Radio button
- Drop down list
- Tabs
- Accordions
- Buttons

Learners should be taught how to create

- User journeys
- Wireframes
- Rapid prototypes

Document the interaction design principles and UI elements that were used in the construction of a UI

Evaluate UI using the standard industry techniques, such as

- Task-based usability testing
- Keystroke level model (KLM)
- Automated accessibility testing
- System usability scale questionnaire (SUS)

Analyse the test results to identify where the deficiency exists in the UI by looking at a range of feedback to include	<ul style="list-style-type: none"> • Error rates • Task completion rates • Task completion times compared to predictions • User interviews/feedback
Critical analysis of feedback and evaluation of the impact on the wider user group and making recommendations for improvement based on the feedback	
Onscreen help to assist the users of an interface, e.g.	<ul style="list-style-type: none"> • Online help documentation • Task-based user guides
Interface user documentation, e.g.	<ul style="list-style-type: none"> • User journeys • Personas • UI/screen definition (Wireframes and visual design) • Functional specification (Interaction guidelines)
Documentation for the maintenance of the interface, e.g.	<ul style="list-style-type: none"> • Version history (date of amendment and the nature of the change) • Sitemaps • Common screen/interaction elements • Screen definitions

GUIDANCE

Delivery guidance

It will be beneficial to deliver this unit in a way that uses actual events, industry forecasts or sector specific contexts which offer the learner the opportunity to explore, develop and apply the fundamental principles of HCI. Typical delivery contexts could include the analysis and design of a new interface in the learner's workplace.

Learners will benefit from being encouraged to exercise autonomy and judgement to identify a suitable potential piece of development work that needs to be properly analysed prior to development. This will give them the opportunity to adapt their thinking and reach considered conclusions when deciding the scope of the analysis project (based on a foundation of relevant knowledge, understanding and/or practical skill).

Learners would benefit from being presented with subject/sector-relevant problems from a variety of perspectives and from being given the opportunity to explore them using diverse approaches and schools of thought. For example, the core differences in style between traditional analysis and design and agile methods.

Assessment evidence guidance

Evidence must be produced to show how a learner has met each of the Learning Outcomes. This evidence could take the form of assignments, project portfolios, presentations or, where appropriate, reflective accounts.

Where group work/activities contribute to assessment evidence, the individual contribution of from each learner must be clearly identified.

All evidence must be available for the visiting moderator to review. Where learners are able to use real situations or observations from work placement, care should be taken to ensure that the record of observation accurately reflects the learner's performance. This should be signed, dated, and included in the evidence. It is best practice to record another individual's perspective of how a practical activity was carried out. Centres may wish to use a witness statement as a record of observation. This should be signed and dated and included in the evidence.

RESOURCES

Books

Gawande, A. *The Checklist Manifesto: How To Get Things Right*.

Kuniavsky, M. *Observing the User Experience: A Practitioner's Guide to User Research*. Morgan Kaufmann Publishers In.

Lidwell, W., Holden, K., & Butler, J. *Universal Principles of Design*. rockport.

Norman, D. A. *Design of Everyday Things*. MIT Press.

Weinschenk, S. *100 Things Every Designer Needs to Know About People: What Makes Them Tick? Voices That Matter*.