Next Generation Higher National Unit Specification

Human Computer Interface (SCQF level 8)

Unit code: J7ED 48

SCQF level: 8 (16 SCQF credit points)

Valid from: session 2023–24

Prototype unit specification for use in pilot delivery only (version 1.0) June 2023

This unit specification provides detailed information about the unit to ensure consistent and transparent assessment year on year.

This unit specification is for teachers and lecturers and contains all the mandatory information required to deliver and assess the unit.

This edition: June 2023 (version 1.0)

Unit purpose

This unit is suitable for learners who wish to gain competence in developing successful websites, software applications (apps) or games, by understanding the requirements of a good user experience (UX) and designing interfaces that are responsive to user needs. Before starting the unit, we recommend that learners should have competence in developing software applications. This could be evidenced by achievement of a unit in a software development topic at SCQF level 7.

This is a specialist unit, designed to provide learners with an understanding and appreciation of the importance of the UX in a software app so that they can create interfaces that are satisfying to use and responsive to user needs. The unit develops the skills required to identify the needs and goals of users, and to design, prototype and perform usability testing of human computer interfaces.

On completion of this unit, learners can progress to further development of competence in the production of user interfaces for websites, software applications or games at SCQF level 8 and higher.

Unit outcomes

Learners who complete this unit can:

1 analyse factors that influence the user experience of an interface
2 design user interfaces that are responsive to user needs
3 develop user interface prototypes
4 conduct usability testing of user interface prototypes

Evidence requirements

Learners must provide product evidence. Knowledge is inferred from the product evidence.

Learners must analyse, design, prototype and perform usability testing of user interfaces. Evidence must be gathered using a holistic project based on a brief.

Learners must provide evidence for all knowledge and skills statements. The project report must include an analysis of user requirements, use cases and user profiles, along with a comparative analysis of at least two alternative user interface prototypes designed by the learner to meet the requirements.

The product evidence includes the further development of one of these designs through prototyping and usability testing. The project report describes the final working prototype and the outcomes from usability analysis, including accessibility. The prototype must include a sample of at least six key screens.

Learners must produce evidence on an individual basis. If appropriate, this can form part of a larger group project.

Learners can develop evidence over an extended period and under lightly-controlled conditions. Evidence produced in lightly-controlled conditions must be authenticated. The Guide to Assessment provides further advice on methods of authentication.

The standard of evidence should be consistent with the SCQF level of the unit.

Knowledge and skills

The following table shows the knowledge and skills covered by the unit outcomes:

Knowledge	Skills
Learners should understand: ♦ user analysis ♦ task analysis ♦ user cases ♦ user profiles and persona ♦ user expectations ♦ user needs and limitations ♦ user environments ♦ end-user platforms ♦ design implications ♦ user-friendly interfaces ♦ accessibility ♦ usability methods ♦ layout ♦ content ♦ navigation ♦ information architecture ♦ aesthetics, including colour theory, typography and design patterns ♦ user interaction ♦ functionality usability testing ♦ client communication	Learners can: ♦ perform end-user analysis ♦ create a requirements analysis ♦ create interface designs and prototypes ♦ create site navigation maps ♦ create a functional prototype ♦ create user-friendly interfaces ♦ perform usability testing ♦ analyse usability testing results ♦ make modifications to improve an interface ♦ justify final designs

Meta-skills

Throughout this unit, learners develop meta-skills to enhance their employability in the software development sector.

Self-management

This meta-skill includes:

- focusing: filtering and sorting information
- integrity: working with consistency
- adapting: critically reflecting on new knowledge
- initiative: independent thinking; decision making; self-belief; self-motivation; and responsibility

Social intelligence

This meta-skill includes:

- communicating: sharing information to a range of audiences
- feeling: justifying final decisions
- collaborating: sharing ideas; peer evaluation
- leading: being a change catalyst

Innovation

This meta-skill includes:

- curiosity: questioning; information sourcing and problem recognition
- creativity: visualising; understanding design implications
- sense-making: analysis
- critical thinking: logical thinking and judgement

Delivery of unit

You can deliver the outcomes sequentially and holistically, starting with outcome 1. For example, you could deliver the knowledge elements of outcome 1 with the skills elements of outcome 2, to help learners better understand the theory and put knowledge into practice. You could also use a reverse engineering approach, where you start by asking learners to test and evaluate existing interfaces. This could help learners to gain a better understanding of the analysis stage and the importance of taking time to create iterations or versions of designs and prototypes. In a 3-hour class, you could split the time between theory, formative exercises and practice.

Based on 80 hours of delivery and assessment time, we suggest the following distribution:

Outcome 1 — Analyse factors that influence the UX of an interface (20 hours)

Outcome 2 — Design user interfaces that are responsive to user needs (20 hours)

Outcome 3 — Develop user interface prototypes (20 hours)

Outcome 4 — Conduct usability testing of user interface prototypes (20 hours)

Learners require access to appropriate hardware and software throughout the unit.

There are opportunities for learners to work in groups to evaluate designs. We recommend that you carry out most of the formative and all summative assessment individually, to help learners to gain a better understanding of the subject and meet the unit outcomes.

Where learners might also be studying other topics in software development, web development or games development, there may be opportunities to consider interface design along with the project or practical work for that topic or unit.

Additional guidance

The guidance in this section is not mandatory.

Content and context for this unit

You could start by looking at where the human-computer interaction (HCI) occurs in the development lifecycle, what precedes it, and the importance of this stage to a project. You should make learners aware of the job roles involved and current lifecycle methodologies used, for example Lean Agile. You should make learners aware that user interface (UI) design is part of the extensive UX design process.

The user analysis process can be extensive, especially to research, survey, gather and extract data. It is beyond the scope of the unit to carry out this process to the same level as a professional project. You should expose learners to the current concepts and methods used and focus on some of these. You could show learners examples of the extent of work carried out on a professional project.

You should place a strong emphasis on the need to create user-centred designs. You should focus a large part of outcome 2 on accessibility, cultural differences, age, gender, equality and diverse groups in society, to make learners aware that designers have to get to know their target audience and not design just for their own demographic.

You should emphasise the importance of unambiguous and cohesive designs and how to use these to communicate ideas to users and clients. It should be clear that, in the absence of creative skills, learners can still achieve this with certain techniques, such as wireframes. However, you should encourage learners to sketch initial ideas to help them better understand that time is money. Ideas should evolve over time into digital formats.

Usability testing, or verification, should cover the range of this process, for example:

- methods of usability testing: end users, set tasks, observation, feedback, questionnaires
- usability goals: accessibility, ease of use, time taken to perform tasks, efficiency, accuracy, overall success and satisfaction
- analysis of usability testing results: report based on the usability testing

Where possible, you should use examples from the industry in lessons.

Approaches to assessment

We recommend that you assess the unit with a single project covering all four outcomes. We suggest you issue this assessment at the start of the unit to help learners evolve through the application of their ideas as they learn about the subject. You could use peer evaluation or take an Agile approach to assessment, asking learners to keep their ideas in a portfolio for use in their assessment, either as evidence or guidance. The subject is not about memorising facts, but applying techniques.

Equality and inclusion

This unit is designed to be as fair and as accessible as possible with no unnecessary barriers to learning or assessment.

You should take into account the needs of individual learners when planning learning experiences, selecting assessment methods or considering alternative evidence.

Guidance on assessment arrangements for disabled learners and/or those with additional support needs is available on the assessment arrangements web page: www.sqa.org.uk/assessmentarrangements.

Information for learners

Human Computer Interface (SCQF level 8)

This information explains:

- what the unit is about
- what you should know or be able to do before you start
- what you need to do during the unit
- opportunities for further learning and employment

Unit information

The unit is suitable for learners who wish to gain competence in developing successful websites, applications (apps), software or games. Before starting the unit, we recommend that you should have competence in developing software apps. This could be evidenced by achievement of a unit in a software development topic at SCQF level 7.

This specialist unit provides you with an understanding and appreciation of the importance of the user experience (UX) so that you can create interfaces that are receptive to user needs. The unit develops the skills you need to identify the needs and goals of users, and to design, prototype and perform usability testing of human computer interfaces.

During the unit you:

1 analyse the factors that influence the UX of a software interface
2 design user interfaces that are responsive to user needs
3 develop user interface prototypes
4 conduct usability testing of user interface prototypes

Throughout the unit, you develop meta-skills covering self-management, social intelligence and innovation.

Your work may be evaluated by your peers, or you could be asked to keep your ideas in a portfolio for use in assessment, either as evidence or guidance. These opportunities vary depending on the different delivery approaches that can be used to teach the unit.

On completion of this unit, you may progress to further development of competence in the production of user interfaces for websites, software applications or games at SCQF Level 8 and higher.

Administrative information

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Superclass: CB

History of changes

Version	Description of change	Date

Note: please check SQA's website to ensure you are using the most up-to-date version of this document.