



Higher National Unit specification

General information

Unit title: Web Technologies 1: HTML and CSS (SCQF level 7)

Unit code: HF3K 34

Superclass: CB

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Version: 01

Unit purpose

The purpose of this Unit is to introduce learners to web technologies used in the creation of web sites. The Unit is suitable for a wide range of learners who are interested in web development and the creation of websites. It may also be of interest to those who are involved in the development of mobile applications.

The Unit includes the development of practical skills in the use of Hypertext Markup Language (HTML) to structure web pages along with the application of Cascading Style Sheets (CSS) to enhance the design of the web pages. Learners will also develop an understanding of the implication of the diversity of screen sizes and apply appropriate techniques to make websites responsive. The importance of testing websites will be covered and learners will be taught how to carry out the essential testing of functionality and performance of the website on common devices and browsers. On completion of this Unit the learner will be able to use HTML and CSS to construct a basic responsive website containing common web page elements.

Following successful completion of this Unit the learner may wish to progress to the Unit *Web Technologies 2: HTML, CSS & JavaScript* or another authoring or scripting Unit at SCQF level 8.

Outcomes

On successful completion of the Unit the learner will be able to:

- 1 Develop a website incorporating a range of HTML elements and attributes.
- 2 Enhance the design of the website using CSS properties and rules.
- 3 Apply techniques to make the website responsive.
- 4 Test functionality and performance of the website on common devices and browsers.

Higher National Unit specification: General information (cont)

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Credit points and level

1 Higher National credit at SCQF level 7: (8 SCQF credit points at SCQF level 7)

Recommended entry to the Unit

Access to this Unit is at the discretion of the centre. The successful completion of the following units would be a good foundation for learners undertaking this Unit.

F1VV 34 *User Interface Design*

Xxxx xx *User Interface Design*

Core Skills

There is no automatic certification of Core Skills or Core Skill components in this Unit.

Opportunities to develop aspects of Core Skills are highlighted in the Support Notes for this Unit specification.

Context for delivery

If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

The Assessment Support Pack (ASP) for this Unit provides assessment and marking guidelines that exemplify the national standard for achievement. It is a valid, reliable and practicable assessment. Centres wishing to develop their own assessments should refer to the ASP to ensure a comparable standard. A list of existing ASPs is available to download from SQA's website (<http://www.sqa.org.uk/sqa/46233.2769.html>).

Equality and inclusion

This Unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website www.sqa.org.uk/assessmentarrangements.

Higher National Unit specification: Statement of standards

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Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the Knowledge and/or Skills section must be taught and available for assessment. Learners should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Outcome 1

Develop a website incorporating a range of HTML elements and attributes.

Knowledge and Skills

- ◆ Current version of HTML
- ◆ HTML Structural Elements
- ◆ HTML Form Elements
- ◆ HTML Media Elements
- ◆ HTML Attributes

Outcome 2

Enhance the design of the website using CSS properties and rules.

Knowledge and Skills

- ◆ Current version of CSS
- ◆ External stylesheets and internal styles
- ◆ CSS Rules
- ◆ CSS Selectors
- ◆ CSS Text Properties
- ◆ CSS Font Properties
- ◆ CSS Background Properties
- ◆ CSS Border Properties
- ◆ Basic Box Properties

Outcome 3

Apply techniques to make the website responsive.

Knowledge and Skills

- ◆ Usability, accessibility and user experience
- ◆ Diversity in devices and screen sizes
- ◆ Breakpoints
- ◆ Use of current techniques for responsive design

Higher National Unit specification: Statement of standards (cont)

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Outcome 4

Test functionality and performance of the website on common devices and browsers.

Knowledge and Skills

- ◆ HTML validation
- ◆ Functionality testing
- ◆ Device testing
- ◆ Browser testing
- ◆ Accessibility testing

Evidence Requirements for this Unit

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills across all Outcomes.

The Evidence Requirements for this Unit will only take one form — Evidence of practical competence (practical abilities) for all Outcomes.

Candidates will need to provide evidence to demonstrate that they will be able to:

- ◆ Develop a website incorporating a range of HTML elements and attributes to include:
 - HTML Structural Elements
 - HTML Form Elements
 - HTML Media Elements
 - HTML Attributes

This must be implemented using a code editor and not a WYSIWYG application.

- ◆ Enhance the website design using CSS properties and rules to include:
 - CSS Rules
 - CSS Selectors
 - CSS Text Properties
 - CSS Font Properties
 - CSS Background Properties
 - CSS Border Properties
 - Basic Box Properties

This must be implemented using a code editor and not a WYSIWYG application.

- ◆ Apply current techniques to make the website responsive
- ◆ Carry out HTML validation to W3.org standards and correct all errors.
- ◆ Carry out and record a log of testing on the website for functionality and performance on common devices and browsers

It is recommended that all Outcomes are assessed together in a holistic manner.

Higher National Unit specification: Statement of standards (cont)

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The Scope of the practical assignment should be of the size of five web pages/ menu items in order to keep this feasible within the 40 hour timescale for delivery. The candidate must exemplify all of the evidence requirements in their website.

Evidence of practical competence may be produced over an extended period of time under open-book conditions. Evidence may be wholly or partly produced under controlled conditions. When evidence is produced in uncontrolled or loosely controlled conditions it must be authenticated.

The Guidelines on Approaches to Assessment (see the Support Notes section of this specification) provides further advice on methods of authentication and specific examples of instruments of assessment.



Higher National Unit Support Notes

Unit title: Web Technologies 1: HTML and CSS (SCQF level 7)

Unit Support Notes are offered as guidance and are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

Guidance on the content and context for this Unit

This is a mandatory Unit in the HNC Digital Design and Web Development, HND Digital Design and Development and HND Web Development frameworks. It may also be taken as a standalone Unit in other computing frameworks. It is intended for those who want to know how to create web pages using HTML and apply CSS to add design properties and basic responsiveness.

The Outcomes in this Unit are intended to provide learners with the knowledge and skills to enable them to develop a basic responsive a website using the current versions of HTML and CSS.

Outcome 1

This Outcome covers the fundamentals of HTML required to create a web site including:

- ◆ HTML Structural Elements — at least the following should be covered — head, title, body, div, main, section, article, nav, footer, aside, figure, lists, h1-h6, p
- ◆ HTML Form Elements — at least the following should be covered — input, select, textarea, button, label, keygen, datalist, fieldset, option and output
- ◆ HTML Media Elements — an appropriate selection of the following - audio, video, embed, source
- ◆ HTML Attributes — at least the following should be covered — lang, href, src, alt, style, class, id, title(as in tool tip display)

Outcome 2

This Outcome covers the application of CSS required to enhance the design of a web site including:

- ◆ CSS Rules — at least the following should be covered — use element selectors followed by declarations, cascading order and writing comments
- ◆ CSS Selectors-at least id, class, and grouping selectors
- ◆ CSS Text Properties — at least, color, align, decoration
- ◆ CSS Font Properties — at least font family, weight, style, boldness, size

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- ◆ CSS Background Properties - an appropriate selection of color, image, repeat, attachment, position
- ◆ CSS Border Properties — at least, width, style and color
- ◆ Basic Box Properties — at least width, height, padding, border and margin

The amount and variation of HTML and CSS for the learner to implement will be at the discretion of the centre. Realistic goals should be set for the time allocated for delivery of this Unit. The learner should cover all of the items in the Knowledge and Skills for Outcomes 1 and 2.

Outcome 3

This Outcome covers the application of current techniques to make the website responsive.

- ◆ Usability and accessibility — the learner should be taught the importance of designing for all browsers and devices, W3C code validation, using easily readable fonts and sizes, the value of consistency in layout between pages and be able to implement features to make a website usable, accessible and hence responsive and a positive user experience. Other aspects of accessibility can be covered but at this stage but what is important is that the learner understands that to be accessible and usable a website must be responsive.
- ◆ Diversity in devices and screen sizes — learner should be taught about the importance of designing for the web rather than one particular device. At this stage the learner should be able to design a basic website that displays properly on the main devices used for browsing — mobile phone, tablet and laptop/desktop.
- ◆ Breakpoints — know about media query syntax and apply common breakpoints for popular devices.
- ◆ Use of current techniques for responsive design — at the time of writing, the current techniques used are media queries and flexbox.

The scope of this Outcome should be limited and it should be kept as simple as possible. It could be used as an opportunity to stimulate interest in designing responsive websites.

Outcome 4

This Outcome covers the essential and minimum amount of testing required.

- ◆ HTML should be validated using W3C standards, (refer to <https://validator.w3.org/>) and any errors corrected. Warnings are acceptable but the learner should understand the reason for warnings. By carrying out this process, the website will become more accessible although detailed accessibility testing is not required.
- ◆ Functionality testing can be combined with device and browser testing as each function must perform to an acceptable level on all devices and browsers. Emulators within browsers can easily be used for this without the website being live on a server. At the time of writing the website should display properly on at least a small screen, ie mobile phone; a medium screen, ie, tablet, iPad, small laptop; large screen, ie laptop or desktop. The essential functions that must be tested are that the pages and page content loads, links all work, user input to a form, form submit, etc.

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- ♦ The most common browsers and versions should be used to check the website. At the time of writing these are Chrome, Firefox, IE. The most used browsers can be checked here: <http://gs.statcounter.com/>
- ♦ By validating HTML and performing device and browser testing, the website will automatically become more accessible and the importance of this should be stressed to learners. Using the lang attribute on HTML will also help with accessibility.

Progression from this Unit would be to the Unit *Web Technologies 2: HTML, CSS and JavaScript* at SCQF level 8.

Guidance on approaches to delivery of this Unit

Practical work exercises and demonstrations could be used to instruct on the use of HTML and CSS. There will be areas of overlap between Outcomes 1 and 2, eg in the explanation of block and inline elements, use of the id attribute, and use of classes. Tutors could teach each Outcome separately to begin with but a more holistic approach would be easier as students gain the knowledge and practice.

For example, tutors could begin with completion exercises on simple HTML page structure and common elements used, then slowly add aspects of CSS, perhaps begin with inline properties then eventually move on to external stylesheets. They could use examples of how to write style sheets and how to link to them. Case studies of sites already in existence could be used to illustrate web design features such as consistency, colour, typeface, alignment and layout.

Possible content to teach in this subject area is vast, since CSS has so many possibilities and the technologies implemented change frequently. Tutors should keep realistic goals on what to teach but could direct learners to many resources and possibilities and allow them to expand upon their own learning.

Some current online resources include the following:

- ♦ Web developer information website <http://www.w3schools.com/>
- ♦ The W3C working draft for mobile usability <https://www.w3.org/Mobile/mobile-web-app-state/>
- ♦ A variety of online tutorials for web development are found here <http://www.way2tutorial.com/index.php>
- ♦ A well-resourced site with links and useful material <https://responsivedesign.is/>
 - especially this page <https://responsivedesign.is/resources>
 - and this page about breakpoints <https://responsivedesign.is/develop/browser-feature-support/media-queries-for-common-device-breakpoints>
- ♦ Tutorial site Quakit — <http://www.quackit.com/>
- ♦ Sign up sites such as code academy <https://www.codecademy.com/>, or <https://www.udemy.com/>, <https://teamtreehouse.com/> or www.lynda.com

There are also downloadable educational apps available. Current relevant apps are Solo learns — Learn HTML and Learn CSS, available for Android and iOS.

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Tutors should ensure that they have taught sufficient CSS and HTML to enable the learner to implement the site issued in their brief.

Outcome 3 looks at basic responsiveness and is a precursor for what will come in the *Web Technologies 2: HTML, CSS and JavaScript* Unit. The approach to teaching this Outcome could be learner-centred and research oriented. There are a variety of ways in which to make a website responsive for display on a mobile device. Learners could research aspects of layout to make it flexible for a variety of devices, the use of media queries, and if time allows, investigate aspects of HTML 5 and CSS 3.

However, practical work in this Outcome should be kept as simple as possible.

Outcome 4 covers testing which will naturally occur as a website is being coded. Learners should be checking to make sure the site loads properly in a browser at each stage and that all content displays as they expect. Learners should be encouraged to use semantic HTML and CSS from the outset. Previewing in different browsers should be encouraged from the start and once CSS for responsive has been introduced the webpages should be checked on an emulator or even by narrowing the browser window to make sure that it displays as required. This means that when formal testing takes place at the end, there are likely to be fewer flaws. Only the essential testing need be introduced at this stage. As sites are not required to be uploaded within this Unit, page loading times are not required to be tested. End user testing is also not required within this Unit. However it would be beneficial for the learners to be aware of this further testing.

Guidance on approaches to assessment of this Unit

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to candidates.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

The assessment for this Unit is a practical assignment where the candidate demonstrates skills in the use of HTML and CSS to build a responsive website using only a code editor. Assessment will take the form of a web project assignment which closely follows a design brief provided by the tutor. The candidate should be encouraged to use a code-editor. Current examples include Notepad++, Sublime Text, Brackets, Dreamweaver and CoffeeCup.

A holistic approach for all Outcomes should be taken where the candidate is aware of the need for a responsive design solution.

A checklist covering all of the Evidence Requirements should be used to ensure the candidate has gained these knowledge and skills.

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The assessment should be open-book where the candidate can refer to notes and previously completed exercises. Candidates should work at their own pace but in a supervised environment where the tutor can be assured of the authenticity of work produced.

The tutor will supply the candidate with a project brief and page content. This should give a good indication of how the site should appear. This Unit could be delivered in association with another Unit which requires the candidate to plan and design a website or user interface.

A suggestion for the project brief could include items such as:

- ◆ Text files for page content
- ◆ Colour schemes of various elements of the page
- ◆ Use of white space and alignment
- ◆ Use of typography
- ◆ Use of navigation
- ◆ A table to display data
- ◆ A form containing a variety of elements
- ◆ A multimedia component to include
- ◆ An appropriate responsive template

The project website should be of the order of five web pages or five menu items; the content does not need to be extensive but sufficient to demonstrate the application of CSS to emulate the design given in the brief.

Possible examples for project briefs are, fictional dental or veterinary surgeries, new rock bands, tourist guides, event sites, and any other site where there is not too much written content yet provides the opportunity of linking internal content, adding images, formatting layout, having an external link and applying CSS to obtain a simple yet effective design.

Opportunities for e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at www.sqa.org.uk/e-assessment.

Higher National Unit Support Notes (cont)

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Opportunities for developing Core and other essential skills

The Core Skill of *Problem Solving* at SCQF level 5 is developed throughout this Unit, the evidence produced for all Outcomes is the final design solution created from basic text files.

Throughout the Unit learners will be expected to use the Core Skill of *Information and Communication Technology (ICT)* at SCQF level 5. They will be required to use the internet for research, and they will be creating web pages using a code editor and web browsers.

There are also opportunities for developing the Using Number skills required for the *Numeracy* Core Skill at SCQF Level 5. Learners will be expected to use numerical skills to solve real-life problems involving measurement when perform calculations for responsive design and breakpoints involving percentages and interface layout using ratios.

The skills in web authoring developed in this Unit are essential for employment as a professional web developer. The learners will be encouraged to develop a sustainable and robust product. The issued project brief could contain elements of citizenship where appropriate.

History of changes to Unit

Version	Description of change	Date

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General information for learners

Unit title: Web Technologies 1: HTML and CSS

This section will help you decide whether this is the Unit for you by explaining what the Unit is about, what you should know or be able to do before you start, what you will need to do during the Unit and opportunities for further learning and employment.

This Unit has been devised to help you to learn about website development using Hypertext Markup Language (HTML) and Cascading Style Sheets (CSS). This is essential for employment as a web developer or designer.

In this Unit you will learn to code using a code editor rather than a web authoring tool. You will learn how to use HTML to structure the layout of a web page, add content like text, images, forms and other media elements and you will also learn how to use CSS to enhance the web page by changing the position of elements, changing the fonts, colours margins — to name a few — to help you design professional looking web sites.

You will be taught the importance of designing and coding websites that work on all devices and browsers. This is known as responsive design and you will have the chance to learn the basic techniques involved in this.

You will learn about and have the opportunity to carry out essential testing of a website so that it displays and performs as it should on various devices and browsers.

There will be at least one assessment that you will need to complete during this Unit which will be a practical task. For this task you will be given set of website requirements and design instructions and from these you will code and test a small responsive website.

There are opportunities for you to develop the Core Skills of *Problem Solving, Numeracy and Information and Communication Technology (ICT)* at SCQF level 5.

The skills in web authoring developed in this Unit are essential for employment as a professional web developer. You will be encouraged to develop a sustainable and robust product. The issued project brief could contain elements of citizenship where appropriate.