

## Module Content and Delivery

### Learning outcomes

On completion of this module a learner should:

1. Be able to create HTML5 pages
2. Be able to code using JavaScript
3. Be able to create forms using HTML5
4. Be able to communicate with a remote data source
5. Be able to style HTML5 by using CSS3
6. Be able to create interactive pages using HTML5 Application Programming Interfaces (APIs)
7. Be able to add offline support to web applications
8. Be able to implement an adaptive User Interface (UI)
9. Be able to create graphics
10. Be able to animate the User Interface (UI)
11. Be able to implement Real-Time communications by using Web sockets
12. Be able to create a Web Worker Process

Indicative Content
The programme module can be delivered through classroom-based learning activities, group discussions, one-to-one tutorials, field trips, case studies, role play and other suitable activities, as appropriate.
Learning Outcome 1: Be able to create HTML5 pages
<p>Facilitate the learner to understand and create HTML5 pages, including being able to:</p> <ul style="list-style-type: none"> <li>• describe basic HTML5 (elements and attributes)</li> <li>• explain the structure of Cascading Style Sheets (CSS)</li> <li>• describe Integrated Development Environment (IDE) tools available for building Web applications</li> <li>• create static pages using features of HTML5</li> <li>• apply styling to the elements in an HTML5 page</li> </ul>
Learning Outcome 2: Be able to code using JavaScript
<p>Facilitate the learner to learning to code using JavaScript, specifically to be able to:</p> <ul style="list-style-type: none"> <li>• explain the syntax of JavaScript</li> <li>• describe how to use JavaScript with HTML5</li> <li>• write JavaScript code that manipulates the HTML DOM</li> <li>• write JavaScript code that handles events</li> <li>• describe how to use jQuery to simplify code</li> <li>• describe the benefits of structuring JavaScript code</li> <li>• explain best practices for creating custom objects in JavaScript</li> </ul>

<ul style="list-style-type: none"> <li>describe how to extend objects to add functionality</li> </ul>
<b>Learning Outcome 3: Be able to create forms using HTML5</b>
<p>Facilitate the learner to understand how forms are created using HTML5 and be able to:</p> <ul style="list-style-type: none"> <li>create forms using HTML5</li> <li>validate user input using HTML5 attributes</li> <li>create feedback using HTML5 attributes</li> <li>write JavaScript code to validate user input</li> </ul>
<b>Learning Outcome 4: Be able to communicate with a remote data source</b>
<p>Facilitate the learner to understand how data is communicated and to be able to:</p> <ul style="list-style-type: none"> <li>communicate data by using XMLHttpRequest objects (member types, events, methods, properties)</li> <li>simplify code that communicates data using the jQuery ajax method</li> </ul>
<b>Learning Outcome 5: Be able to style HTML5 by using CSS3</b>
<p>Facilitate the learner in understanding how CSS3 is used to style HTML5, and to be able to:</p> <ul style="list-style-type: none"> <li>style text elements on an HTML5 page by using CSS3</li> <li>apply styling to block elements by using CSS3</li> <li>use CSS3 selectors to specify the elements to be styled in a Web Application</li> <li>implement effects by using CSS3 properties</li> </ul>
<b>Learning Outcome 6: Be able to create interactive pages using HTML5 Application Programming Interfaces (APIs)</b>
<p>Facilitate the learner to understand and create interactive pages using HTML5 APIs, to be able to:</p> <ul style="list-style-type: none"> <li>use APIs to interact with files in a Web application</li> <li>incorporate media (audio, video) into a Web application</li> <li>detect the location of the user running a Web application</li> <li>explain how to debug a Web application</li> <li>explain how to profile a Web application</li> </ul>
<b>Learning Outcome 7: Be able to add offline support to web applications</b>
<p>Facilitate the learner to understand create offline supports for web applications, including:</p> <ul style="list-style-type: none"> <li>save data locally on the user's computer</li> <li>retrieve data locally on the user's computer</li> <li>incorporate offline support for a Web application</li> </ul>
<b>Learning Outcome 8: Be able to implement an adaptive User Interface (UI)</b>
<p>Facilitate the learner to understand and implement adaptive User Interfaces, including be able to:</p> <ul style="list-style-type: none"> <li>describe the need for a Web application to detect device capabilities</li> <li>describe the need for a Web application to react to different form factors</li> <li>create a Web page that can dynamically adapt its layout to match different form factors</li> </ul>

<b>Learning Outcome 9: Be able to create graphics</b>
<p>Facilitate the learner to use Scalable Vector Graphics to:</p> <ul style="list-style-type: none"> <li>• add interactive graphics to an application</li> <li>• draw complex graphics on an HTML5 Canvas element by using JavaScript code</li> </ul>
<b>Learning Outcome 10: Be able to animate the User Interface (UI)</b>
<p>Facilitate the learner to learn to animate a User Interface (UI) using CSS key-frames and JavaScript code, to be able to:</p> <ul style="list-style-type: none"> <li>• describe the types of transitions available with CSS3</li> <li>• apply CSS transitions to elements on an HTML5 page</li> <li>• implement complex animations</li> <li>• write JavaScript code to detect when a transition has occurred</li> </ul>
<b>Learning Outcome 11: Be able to implement Real-Time communications by using Web sockets</b>
<p>Facilitate the learner to implement real-time communications using Web Sockets; ranging from sending and receiving data to handling the different events that occur when a message is sent or received, to include being able to:</p> <ul style="list-style-type: none"> <li>• explain how Web Sockets work</li> <li>• describe how to communicate data through a Web Socket</li> <li>• use the Web Socket API with JavaScript to communicate with a Web Socket server</li> </ul>
<b>Learning Outcome 12: Be able to create a Web Worker Process</b>
<p>Facilitate the learner to understand and create, run and monitor a Web Worker process, including being able to:</p> <ul style="list-style-type: none"> <li>• describe the purpose of a Web Worker process</li> <li>• use the Web Worker APIs from JavaScript code for a Web Worker process</li> </ul>