Web Technologies

WorldSkills Occupational Standards

WorldSkills Occupational Standards (WSOS)

General notes on the WSOS

The WSOS specifies the knowledge, understanding, and specific skills that underpin international best practice in technical and vocational performance. It should reflect a shared global understanding of what the associated work role(s) or occupation(s) represent for industry and business (www.worldskills.org/WSOS).

The skill competition is intended to reflect international best practice as described by the WSOS, and to the extent that it is able to. The Standard is therefore a guide to the required training and preparation for the skill competition.

In the skill competition the assessment of knowledge and understanding will take place through the assessment of performance. There will only be separate tests of knowledge and understanding where there is an overwhelming reason for these.

The Standard is divided into distinct sections with headings and reference numbers added.

Each section is assigned a percentage of the total marks to indicate its relative importance within the Standards. This is often referred to as the "weighting". The sum of all the percentage marks is 100. The weightings determine the distribution of marks within the Marking Scheme.

Through the Test Project, the Marking Scheme will assess only those skills that are set out in the Standards Specification. They will reflect the Standards as comprehensively as possible within the constraints of the skill competition.

The Marking Scheme will follow the allocation of marks within the Standards to the extent practically possible. A variation of up to five percent is allowed, provided that this does not distort the weightings assigned by the Standards.

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Section	Relative importance (%)
1 Work organization and management	**6**

The individual needs to know and understand:

- Principles and practices that enable productive teamwork
- The principles and behaviour of computer systems
- The aspects of systems that contribute to sustainable products, strategies, and practices
- How to take initiatives and be enterprising in order to identify, analyse and evaluate information from a variety of sources
- How to identify multiple solutions to a problem and offer them as options against time, and other constraints.
- How to use existing available tools to create proper solutions to a problem and requirement
- How to optimize code deployment.

The individual shall be able to:

- Troubleshoot common web design and development problems
- Take into account time limitations and deadlines
- Debug and handle errors
- Use a computer or a device and a range of software packages
- Apply research techniques and skills to keep up-to-date with the latest industry guidelines
- Apply deployment optimization, such as page loading, with latest industry guidelines.
- Plan each day's production schedule according to available time
- Include linked images, fonts, native files, and production file format when archiving
- Use version control systems

2 Communication and interpersonal skills	**6**

The individual needs to know and understand:

- How to solve communication problems including identifying the problem, research, analysis, solution generating, prototyping, user and functional testing and outcome evaluation
- How to express design concepts by creating wire frames, and flowcharts
- Software design concepts and techniques including flowchart and ER diagrams

Section	Relative importance (%)

The individual shall be able to:

- Read and understand specifications documents
- Read and use provided source code of front end and back end technologies
- understand and run unit and end-to-end-tests on front end and back end technologies
- Deliver products that respond to client requirements and specification
- Gather, analyze, and evaluate information
- Interpret standards and requirements
- Match client requirements
- Present concepts to meet business requirements

3	**Website Design**	**22**

The individual needs to know and understand:

- How to follow design principles and patterns in order to produce aesthetically pleasing, creative, and accessible interfaces.
- Issues relating to the cognitive, social, cultural, accessible, technological, and economic contexts for design
- Various graphic formats and when to use the appropriate format in their design.
- Different target markets and the elements of design which satisfy each market
- Protocols for maintaining a corporate identity, brand, and style guide
- The limitations of Internet enabled devices and screen resolutions

The individual shall be able to:

- Create, analyse, and develop visual response to communication problems, including understanding hierarchy, typography, aesthetics, and composition
- Create, manipulate, and optimize images for the internet
- Identify target markets and create concept for designs
- Create responsive designs that function correctly on multiple screen resolutions and/or devices
- Transform ideas into aesthetically pleasing and creative designs
- Critique draft concepts, colour, and typography choices
- Create wireframes, interactive prototypes, and design of full user interfaces, considering user experience.

Section	Relative importance (%)
4 Layout	**22**

The individual needs to know and understand:

- World Wide Web Consortium (W3C) standards for HTML and CSS
- Positioning and layout methods
- Usability and interaction design
- Accessibility and communication for users with special needs
- Cross browser compatibility
- Multi device compatibility
- Search Engine Optimization (SEO) and performance optimization
- How to embed and integrate animations, audio and video where needed
- World Wide Web Consortium (W3C) standards for WCAG

The individual shall be able to:

- Create codes that conform to and validate the W3C standards including the accessibility guidelines
- Create accessible and usable web interfaces for a variety of devices and screen resolutions
- Use CSS or other external files to modify the appearance of web interfaces
- Use CSS pre/post-processors
- Create and update web interfaces for proper user experience and to assist with search engine performance
- Use CSS to develop animations and interactions to user interfaces

Section	Relative importance (%)
5 Front-End Development	**22**

The individual needs to know and understand:

- ECMAScript (JavaScript)
- How to integrate libraries, frameworks and other systems or features with JavaScript
- How to use JavaScript pre/post processors and task running workflow
- Test-driven for front-end development

The individual shall be able to:

- Create website animations and functionalities to assist in context explanations and add visual appeal
- Create and update JavaScript code to enhance websites' functionality, usability, and aesthetics
- Manipulate data and custom media with JavaScript
- Create modular and reusable JavaScript code
- Write documentation comments in code
- Use open source JavaScript libraries
- Manipulate graphical elements and content elements using JavaScript
- Write test cases and execute automated testing for JavaScript implementation.

Section	Relative importance (%)
6　**Back-End Development**	**14**

The individual needs to know and understand:

- Object-oriented PHP
- Open Source server-side Libraries and Frameworks
- How to connect to servers through SSH to operate server-side libraries and frameworks.
- File system permissions and ownership
- How to design and implement databases
- sFTP (Secure File Transfer Protocol) server and client relationships and software packages.
- How to manage data exchange between server and client systems
- Software design patterns (E.g. MVC (Model View Controller))
- Web application security
- Test-driven for back-end development

The individual shall be able to:

- Manipulate data making use of programming skills
- Protect against security exploits
- Integrate with existing code with API (Application Programming Interfaces), libraries and frameworks
- Create or maintain databases to support system requirements
- Create codes that are modular and reusable
- Write documentation comments in code
- Write test cases and execute automated testing for back-end implementation.

7　**Content Management Systems**	**8**

The individual needs to know and understand:

- The benefits and limitations of open source Content Management Systems
- How to find, choose and implement suitable themes
- How to find, choose and implement suitable plugins/modules
- How to implement client-side functionalities to CMS web sites
- the need for maintenance and updates to CMS plugins and modules for security

The individual shall be able to:
- Install, configure, and update Content Management Systems
- Install, configure, and update CMS plugins/modules
- Configure, implement security and protection on the CMS
- Use and modify open source theme starters to create themes for CMS
- Create custom themes/templates for Content Management Systems
- Create custom plugins/modules/ widgets

Total	**100**

References for industry consultation

WorldSkills is committed to ensuring that the WorldSkills Occupational Standards fully reflect the dynamism of internationally recognized best practice in industry and business. To do this WorldSkills approaches a number of organizations across the world that can offer feedback on the draft Description of the Associated Role and WorldSkills Occupational Standards on a two-yearly cycle.

In parallel to this, WSI consults three international occupational classifications and databases:

- ISCO-08: (http://www.ilo.org/public/english/bureau/stat/isco/isco08/) ILO 2513
- ESCO: (https://ec.europa.eu/esco/portal/home)
- O*NET OnLine (www.**onet**online.org/)

Your competition appears most closely to relate to *Web Developer*:
https://www.onetonline.org/link/summary/15-1134.00

and/or *Web Developer*:
http://data.europa.eu/esco/occupation/c40a2919-48a9-40ea-b506-1f34f693496d

Adjacent occupations ban also be explored through these links.

The following table indicates which organizations were approached and provided valuable feedback for the Description of the Associated Role and WorldSkills Occupational Standards in place for WorldSkills Shanghai 2021.

Organization	Contact name
Crossthinker Network and Design Company Limited (Macao)	Samuel Chan, Developer/Owner
Post Finance Ltd (Switzerland)	Michael Fischer, Senior Web Developer
Ridgeon Network Ltd (United Kingdom)	Chris Ridgeon, Managing Director
SwissCom (Switzerland, Italy)	Sebastian Hani, Fullstack Web Developer, Scrum Master, Tutor