Study Guide

Web Programming 281

Academic Year 2024

"Research has shown that it takes 31 days of conscious effort to make or break a habit. That means, if one practices something consistently for 31 days, on the 32nd day it does become a habit. Information has been internalized into behavioral change, which is called transformation."

Shiv Khera

Academic Year 2024

Version 2.0 (January 2024)

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MODULE DESCRIPTION	
Module Name	Web Programming 281
Module Code	WEB281
Qualification	BIT & BCOMP
NQF Level	8
Duration (weeks)	3
Pre-requisites	WPR181

PURPOSE

The purpose of the course is to introduce interactive and dynamic web design using a programming language. The course covers language-specific details that need to be implemented in order to achieve the desired results. It will also look at how data should be represented for it to be best transmitted between the client and server.

OUTCOMES

Upon successful completion of this module, the student will be able to:

- Demonstrate detailed knowledge of the main areas of dynamic website programming, including an understanding of and the ability to apply the principles of programming to the area of web development.
- Evaluate, select and apply appropriate website development techniques to create and deploy a dynamic website by analysing and modelling requirements.
- Identify, analyse and solve problems by creating dynamic websites that accommodate specified requirements and constraints, based on analysis or modelling or requirements specification.
- Communicate effectively with a variety of audiences through a range of modes and media, in particular to present a clear, coherent and independent exposition of functional websites to IT and/or non-IT personnel via reports or presentations.

STUDENT SUPPORT

Please contact your lecturer for subject-related support. The lecturers presenting this subject are:

- Mr S. Zengeni – zengeni.s@belgiumcampus.ac.za
- Miss M. Magorimbo – magorimbo.m@belgiumcampus.ac.za
- Mr. M. Combrinck - combrinck.m@belgiumcampus.ac.za
- Mr R. Hood – hood.r@belgiumcampus.ac.za
- Mr. P Moila - saula.l@belgiumcampus.ac.za
- Mr. T.Mkwaira – mkwaira.t@belgiumcampus.ac.za
- Mrs E. Shayamano – shayamano.e@belgiumcampus.ac.za

If the lecturers were unable to assist, you can also contact the cluster head for this subject:

- Ms A. Mundackal – joy.a@belgiumcampus.ac.za

Further student support services are available via the counsellors:

- Lethlabile L. Selamolela – selamolela.l@belgiumcampus.ac.za
- Mathapelo Leshilo – leshilo.m@belgiumcampus.ac.za

ASSESSMENT PLAN			
ASSIGNMENTS/PROJECTS			
Project M1, M2	10 + 30	Project due date:	2024-08-07
		Presentation	2024-08-08
TESTS			
Test 1 weight:	10	Test 1 date:	2024-07-26
Test 2 weight:	20	Test 2 date:	2024-08-02
Summative Test weight:	30	Summative Test date:	2024-08-12

STUDENT RESOURCES

Which resources will be used during this module?

PRESCRIBED MATERIAL

Textbook 1

(Learning made easy) Chris Minnick - JavaScript All-in-One For Dummies-John Wiley & Sons, Inc. (2023)

Location (Library / URL / PDF)	On Moodle https://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=3585958&site=ehost-live&authtype=sso&custid=ns266672&ebv=EB&ppid=pp_C1

Textbook 2

Paul McFedries - HTML, CSS, & JavaScript All-in-One For Dummies (For Dummies) [Team-IRA] (2023, For Dummies) - libgen.li

Location (Library / URL / PDF)	
STUDENT MATERIAL	
Item	**Location**
Content on Moodle	The relevant Moodle course
PowerPoint slides	Distributed to students via Moodle
Exercises / Activities	Dispersed throughout the course on Moodle. Some quizzes to be hosted on AssessmentQ.
TECHNOLOGY (HARDWARE OR SOFTWARE) REQUIRED	
Software/Hardware	**Details e.g. version to be used (either minimum or required version)**
VS-Code Node-js	Any versions from 2022

LESSON PLAN OUTLINE			Resources
Date	**Outcomes to be covered / Class Activity / Assessment**		
Day 1	**Introduction To JavaScript**	• How websites work (HTML + CSS + JavaScript) • JavaScript Basics and Usage • VS-Code Setup • Running JavaScript (console vs browser) • Intro to Node.js and V8 Engine • JavaScript Basic Input & Output	**Moodle – Lesson 1,** **Textbook 1- chapter 1 – pages 7-37** **Textbook 1- chapter 2 – pages 41-53** **Slides available on MoodleExercises**
	Variables	• Variable variables (declare, initialize, use and naming using let, const) • Falsy Values	
	Datatypes	• Datatypes • JavaScript is loose and dynamic.Passing by value • Strings data types • Numbers data types • BigInt data types • Boolean data types • Undefined datatypes • Symbol datatypes	

Day 2	**Numbers, Date & Math Operators** **Operators**	• Numbers • Date Object • Strings • Operators' precedence • Assignment Operators • Comparison Operators • Arithmetic operators • Concatenation Operators • Logical Operators • Combining Operators	**Moodle – Lesson 2,** **Textbook 1 – chapter 2 pages 55-62** **Exercises** **Textbook 1 – chapter 3 pages 63-80** **Exercises** **Slides available on Moodle**
Day 3	**Conditional Statements** **Loops and Iteration** **Functions**	• If-else • Else – if • Switch statement • Making loops • For loops • For in loops • For of loops • While loops • Do…while loops • Break and continue statement • Introduction to Functions • Passing argument • Returning data • Function declaration (expression and anonymous functions) • Function scope and hoisting	**Moodle – Lesson 3,** **Textbook 1 – chapter 1 pages 81-89** **Exercises** **Textbook 1 – chapter 6 pages 105- 122** **Exercises** **Textbook 1 – chapter 8 pages 139-165** **Exercises** **Slides available on Moodle**

Day 4	**Arrays**	• Creating Arrays
		  ○ Using Array () constructor
		  ○ Using Literal notation
		• Accessing Array elements
		• Adding or removing elements
		  ○ Push
		  ○ Pop
		  ○ Shift
		  ○ Unshifting
		  ○ Slicing
		  ○ splicing
		• Spread arrays
		• Iterating an array
		• Searching an array
		• Transforming an array
			Moodle – Lesson 4,
			Textbook 1 – chapter 5 pages 91-102
			
			Exercises

Day 5	**Class Test 1**	**Covering week 1 content**	

Day 6	**Objects**	• The basics of Objects
		• Creating Objects
		  ○ literal notation
		  ○ constructor function
		  ○ Object.create()
		• Modifying objects Using the dot notation
		• Using square brackets notation
		• Comparing and copying Objects
		• Understanding Prototypes
		• Deleting Objects Properties
			Moodle – Lesson 6,
			Textbook 1 – chapter 7 pages 125-138
			Exercises
			
			Slides available on Moodle

Day 7	**DOM-1**	• Introduction the HTML DOM
		• Selecting element nodes with:
		  ○ getElementById(),
		  ○ getElementsByClassName()
		  ○ getElementsByTagName()
		  ○ querySelector()
			Moodle – Lesson 7
			Textbook 1 – chapter 11 pages 249 -257
			Exercises
			
			Slides available on Moodle

		○ Selecting Within Elements • Dynamically referencing DOM element using textContent	
Day 8	**DOM-2**	• Creating Elements ○ Creating a <p> Element ○ Creating list Elements ○ Creating a table Elements ○ Using innerHTML	**Slides available on Moodle**
Day 9	**Revision** **Mock Test**	**Revision** **Mock Test**	**Revision** **Mock Test**
Day 10	**Class Test 2**	**Covering week 2 content**	
Day 11	**Events-1**	• Listening for Events • Using addEventListener() ○ Click Event ○ Hover Event ○ Form Submission Event	**Slides available on Moodle**
Day 12	**Events-2**	• Adding Multiple Event Listeners • Understanding JavaScript Runtime Model • The event loop	**Slides available on Moodle**
Day 13	**Asynchronous JavaScript**	• Callbacks • Asynchronous • Promises • Async await • Revision	**Slides available on Moodle**
Day 14	**Project Presentation**	**Project Presentation**	

Day 15	**Summative Test**	**Summative Test**	