



COURSE : How to build web-based business applications

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COURSE STRUCTURE

The course is divided into 6 units.

There are four levels of course comprising one or more of the units. These are:

Level 1	Executive (Unit 1 only)	This level is designed for managers and business owners who want to get an overall understanding. It involves no practical work and no real coding. You will learn how internet applications work, how they are structured, and how to prepare business requirements for a new application.
Level 2	Intermediate (units 1 - 2)	This is recommended for all people wanting to know the basics of business application building or want to work in small business situations.
Level 3	Advanced (units 1 - 5)	This is recommended for people who want to be able to build a complete application at small business level or departmental level in corporations
Level 4	Professional (units 1 – 6)	This is recommended for people who hope to eventually work in corporate IT.

ASSESSMENT

There are two levels of assessment – theory and practical assessment. Theory assessment is based on online multiple-choice tests, which are instantly marked and graded. You cannot proceed with the course until each test is passed.

Practical assessment is optional, but costs more. You have to submit practical examples of your work, which we assess manually and return the results to you. But you can proceed with the course while your practical work is being assessed. You get a more substantial certificate and report card with practical assessment.



UNIT 1 – HOW INTERNET APPLICATIONS WORK

LESSON 1 – INTRODUCTION

Web learning – Introduction
Video – Welcome

LESSON 2 – TECHNICAL BASICS

[Video – What is an internet application ?](#)
Web learning – Technical Basics – Theory

- HTML basics
- PHP basics
- Server-side processing

LESSON 3 – YOUR FIRST WEB PAGE

Web learning - Your first web page – Theory

- View pages and controller pages
- PHP statements

[Video – View and controller pages](#)
Web learning - Your first web page – Practical
YourFirstWebPage.html
YourFirstController.html

LESSON 4 – BUSINESS REQUIREMENTS

Web Learning – Business Requirements – Theory

- The business analyst
- Discovering requirements
- High level and detail requirements
- Agile development

Web Learning – Business Requirements - Practical

.pdf reference document – Happy Little Tours High Level Requirements
.pdf reference document – Happy Little Tours Detail Business Requirements



Unit 1 Test - When passed you will receive a qualification certificate at the EXECUTIVE level:



UNIT 2 – DEVELOPING AN INTERNET APPLICATION

SOFTWARE TOOLS INSTALLATION

Those continuing the course will need to start writing scripts and pages. At this point, we explain how to install the software tools needed to do this

Web learning – installing PHP

Web Learning – installing NuSphere PHPEd

Web Learning – installing WYSIWYG web builder

[Video - Software map for this course](#)

[Video - PHPEd Basics](#)

LESSON 5 – BUILDING AND PROCESSING A BUSINESS FORM

Web learning - Building and processing a business form – theory

- PHP syntax
- PHP commands
- PHP variables
- PHP expressions and operators
- PHP Arrays
- PHP logic structures
- Forms and HTML pages
- The “Model-View-Controller” method



Video – Lesson 5 PHP syntax
Video – Lesson 5 PHP Arrays
Web Learning - Building and processing a business form – Sprint
Video – Form processing basics in PHP
Video – using “WYSIWG Web Builder” to design the “New Quote” page

LESSON 6 – STORING DATA

Web learning - Storing Data – theory

- Using JSON (Javascript Object Notation)
- File Handling
- Construction and handling of loops in PHP
- Page switching

Web learning - Storing Data – practical
Exercises - Storing Data

Unit 2 Test 1

LESSON 7 – FUNCTIONS AND CODE RE-USE

Web learning - Functions and code re-use – theory

- Include and require files
- Functions
- Mandatory and optional arguments for functions
- Intellisense
- Environment variables
- Paths, relative and absolute

Web learning - Functions and code re-use – practical

LESSON 8 – PAGE NAVIGATION AND PAGE CONTEXT

Web learning - Page navigation and page context – theory

- Page navigation
- Page context
- Passing data between pages
- PHP Sessions
- Date and time basics



Web Learning – Lesson 8 “Show Me” scripts
Web learning - Page navigation and page context – practical
Video – “Adding an HTML block to a WYSIWYG page”

Unit 2 Test 2

Unit 2 Test - When passed you will receive a qualification certificate at the INTERMEDIATE level:



Unit 2 Practical assessment - When passed you will receive a practical certificate of achievement at the INTERMEDIATE level.

UNIT 3 – MORE COMPLEX PROGRAMMING AND OBJECTS

LESSON 9 – ADVANCED VIEW-PAGE PROGRAMMING

Web learning - Advanced view page programming – theory

- All about selects and drop-down lists

Web learning - Advanced view page programming – practical

LESSON 10 – SIMPLE PHP DEBUGGING

Web learning - PHP debugging – theory

- PHP logging
- Debugging with messages
- Using the PhpEd interactive debugger

Video – using the PhpED debugger



LESSON 11 – OBJECT-ORIENTED PROGRAMMING

Web learning - Object Oriented Programming – theory

- Classes
- Properties
- Methods
- Scope
- Inheritance
- Objects and instantiation
- Static classes
- Constructors and desctructors

LESSON 12 – RE-ENGINEERING YOUR APP WITH OBJECTS

Web learning - Re-engineering your app with objects - practical

Unit 3 Test 1

LESSON 13 – YOUR SECOND VIEW PAGE

Web Learning – Your second view page – theory

- The quote and acceptance process
- Payments and e-commerce
- Payment gateways and portals
- File linking
- Data schemas

Web Learning – Your second view page – practical

LESSON 14 – BASIC ERROR HANDLING

Web Learning – Basic error handling – theory

- Logging and displaying errors
- Recovery from errors
- Designing a simple error-handler



Web Learning – Basic error handling – practical

LESSON 15 – SENDING EMAILS AND REMINDERS

Web Learning – Sending Emails – theory

- Mail() and PHPMailer()
- POP
- SMTP
- IMAP
- TLS
SSL
- CRONS and DAEMONS
- How to send confirmation emails from server scripts
- How to trigger and send SMS reminder messages
- Formatting emails with HTML
- Messaging in different timezones

Web Learning – Sending Emails – practical

Video – creating tables in WYSIWYG Web builder

Unit 3 Test 2

Unit 3 Practical assessment

UNIT 4 - BUILDING APPLICATION SUPPORT INFRASTRUCTURE

LESSON 16 – USERS AND REGISTRATION

Web Learning – Users and registration – theory

- Users and accounts
- Logins and passwords
- The registration process
- Basic user security
- Backend administrative system

Web Learning – Users and registration – practical



LESSON 17 - LOGINS AND BASIC SECURITY

Web Learning – Logins and basic security – theory

- User name considerations
- The login page and functions
- Storing passwords
- The password recovery process
- Username recovery
- Allowing users to change their details
- Generating random numbers and their importance

Web Learning – Logins and basic security – practical

Unit 4 Test 1

LESSON 18 - RE-USABLE TOOLS – DATAVIEWS AND CRUD PAGES

Web Learning – Dataviews and CRUD pages – theory

- How to design and program data views
- Use cases for dataviews
- How to design and program filters
- How to design and program CRUD (Create,Review,Update,Delete) pages
- Use cases for CRUD pages
- Using hidden fields in forms

Web Learning – Dataviews and CRUD pages – practical

LESSON 19 – BUILDING AN ADMINISTRATIVE BACK-END

Building an administrative back-end – theory

- Password Encryption
- Managing storing and verifying encrypted passwords

Building an administrative back-end – practical

Unit 4 Test 2

Unit 4 Practical assessment



UNIT 5 - ADVANCED TECHNIQUES

LESSON 20 – ENHANCING PAGES WITH JAVASCRIPT AND AJAX

Enhancing pages with Javascript and AJAX – Theory

- Javascript basics
- Adding Javascript to web pages
- The DOM (Document Object Model)
- Events and the DOM
- Web services
- Asynchronous requests
- Callbacks
- AJAX (Asynchronous Javascript and XML)
- AJAX use cases

Enhancing pages with Javascript and AJAX – practical

LESSON 21 – CSS, RESPONSIVE PAGES AND MOBILE DEVICES

CSS, Responsive pages and mobile devices theory

- CSS syntax
- CSS rules
- CSS Selectors and scopes
- Exposing CSS in documents and scripts – orders of precedence
- Breakpoints
- Using CSS to create responsive pages

Responsive pages and mobile devices – practical

LESSON 22 – MORE ON ERROR HANDLING

More on Error Handling – theory

- Errors and exceptions
- Writing error and exception handlers
- Try, catch and throw



- Planning an application's error handling strategy

More on Error Handling – practical

Unit 5 Test - When passed you will receive a qualification certificate at the ADVANCED level:



Unit 5 Practical assessment - When passed you will receive a practical certificate of achievement at the ADVANCED level.

UNIT 6 – DATABASE

LESSON 23 – TABLES, ROWS, COLUMNS, KEYS AND RELATIONSHIPS

Tables, rows, columns, keys and relationships – Theory
Databases, SQL and NOSQL

Keys

Primary keys

Keys and relationships

Foreign keys and data integrity

SQL Data definition statements

SQL Data manipulation statements

MySQL Installation and setup

LESSON 24 – INTRODUCTION TO SQL

Introduction to SQL – Theory

- MySQL
- The PHP MySQL object – “mysqli”



- SQL SELECT, UPDATE, INSERT and DELETE
- SELECT DISTINCT, COUNT AND SUM
- Constants, expressions and the SQL CONCAT function
- ALIASES
- SQL SUBQUERIES
- Left, Right, Outer and Cross Joins
- Unions

Introduction to SQL – Practical

ERD.pdf

ERD.png

Video – using the MySQL workbench

LESSON 25 – RE-ENGINEERING YOUR APP WITH MYSQL

Re-engineering your app with MySQL – Theory

- Dates and date formats in MySQL
- Building a data access class for an application
- Optimizing the applications data model
- Planning ahead for any future application migration

Re-engineering your app with MySQL – Practical

LESSON 26 - MORE ADVANCED SQL AND TRANSACTIONS

More advanced SQL – Theory

- Using SQL for grouping, sorting, subtotalling, totalling and counting
- Grouping and rollup with SQL
- Cleaning up SQL results sets with the COALESCE function
- Using the SQL “IF” statement

More advanced SQL – Practical

Unit 6 Test - When passed you will receive a qualification certificate at the PROFESSIONAL level:



How to build web-based business applications COURSE SYNOPSIS



Unit 6 Practical assessment - When passed you will receive a practical certificate of achievement at the PROFESSIONAL level.