

## الخطة التنفيذية لمركز الاستشارات

- تقرر عمل نسبة خصم 30 % لأبناء العاملين بالكلية.
- تقرر عمل نسبة خصم 25 % لأبناء أعضاء هيئة التدريس بالكلية.

### قائمة بأسماء الدورات التدريبية وأسعارها وعدد الساعات

م	اسم الدورة التدريبية	عدد الساعات	سعر الساعة	إجمالي سعر الدورة	متطلب سابق	ملاحظات
1	برمجة الحاسب الآلي للأطفال 1	21	30	630	لا يوجد	
2	برمجة الحاسب الآلي للأطفال 2	24	30	720	برمجة الحاسب الآلي للأطفال 1	
3	Project Based Python Programming for Kids & Beginners	24	40	960	لا يوجد	
4	4. Real-World Programming for Kids with Python	24	30	720	لا يوجد	
5	Coding for Kids - Scratch Programming for Beginners	24	30	720	لا يوجد	
6	The Complete Machine Learning Course with Python 1	24	30	720	لا يوجد	
7	The Complete Machine Learning Course with Python 2	24	40	960	The Complete Machine Learning Course with Python 1	
8	Mobile development using Kotlin	24	30	720	لا يوجد	

	لا يوجد	630	30	21	Mobile Development using Flutter 1	9
	Mobile Development using Flutter 1	630	30	21	Mobile Development using Flutter 2	10
	لا يوجد	720	30	24	Introduction to Embedded System for Kids	11

## 1. برمجة الحاسب الآلى للأطفال

- تعليم اساسيات برمجة الحاسب الآلى للأطفال من 6 سنوات والمبتدئين باللغة العربية باستخدام الألعاب بطريقة شيقة وممتعة
- تعلم أغلب الأساسيات البرمجية بشكل مبسط مما يمكن الطفل من تعلم أى لغة برمجة أخرى بسهولة ويسر
- التدريب على شكل ألعاب على موقع Code dot org
- عمل أنشطة ورقية للتدريب على المفاهيم البرمجية
- عمل مشاريع بالبرمجة

# Level 1

مدة الدورة التدريبية: 21 ساعة      تكلفة الساعة: 30      تكلفة الدورة: 630

بمعدل مرتين بالاسبوع كل مرة 3 ساعات

### Course content

#### Algorithms – الدرس الأول

- 1.1- الهاردوير والسوفت وير والفرق بينهما
- 1.2- ما هى البرمجة
- 1.3- شرح الإشتراك على موقع code.org
- 1.4- شرح ال algorithm
- 1.5- Lesson 2 on code.org Algorithm

- 1.6- نشاط ورقي Graph paper programming

### الدرس الثاني - Bugs and Debugging

- 2.1- شرح Bug and Debug
- 2.2- lesson 3 on code.org
- 2.3- lesson 4 on code.org
- 2.4- lesson 5 on code.org Bug / Debug
- 2.5- النشاط الورقي Debug with graph paper programming
- 2.6- قصة unspotted bugs

### الدرس الثالث - Loops

- 3.1- شرح نظري Loop
- 3.2- lesson 6 on code.org
- 3.3- lesson 7 on code.org Loops
- 3.4- النشاط الورقي My Robotic friends
- 3.5- قصة Stevie and the big project

### الدرس الرابع - Nested loops

- 4.1- شرح نظري Nested Loops
- 4.2- lesson 8 on code.org
- 4.3- lesson 9 on code.org
- Nested Loop
- 4.4- النشاط الورقي My loopy robotic friends
- 4.5- العمل الجماعي
- Teamwork

### الدرس الخامس - IF conditions

- 5.1- شرح نظري if conditions
- 5.2- lesson 11 on code.org
- 5.3- lesson 10 on code.org
- IF conditions
- 5.4- النشاط الورقي conditions with cards
- 5.5- قصة Going places safely
- Going places safely

### الدرس السادس - Events

- 6.1- شرح نظرى Events
- 6.2- lesson 12 in pre-reader course on code.org
- 6.3- lesson 1 on code.org
- Events
- 6.4- النشاط الورقى My first computer
- My first computer

### While and Until - الدرس السابع

- 7.1- while loop
- 7.2- lesson 12 on code dot org
- 7.3- Until loop
- 7.4- lesson 14 on code dot org
- 7.5- lesson 13 on code dot org
- 7.6- lesson 15 on code dot org
- While and until loops
- 7.7- النشاط الورقى Binary

## 2. برمجة الحاسب الآلى للأطفال

# Level 2

مدة الدورة التدريبية: 24 ساعة      تكلفة الساعة: 30      تكلفة الدورة: 720

بمعدل مرتين بالاسبوع كل مرة 3 ساعات

### Functions - الدرس الثامن

- 8.1- Functions
- 8.2- lesson 17 on code dot org
- 8.3- lesson 18 on code dot org
- 8.4- lesson 16 on code dot org
- Functions
- 8.5- النشاط الورقى Binary image

## Variables - الدرس التاسع

- 9.1- Variables
- 9.2- lesson 19 on code dot org
- 9.3-lesson 20 on code dot org
- 9.4- lesson 21 on code dot org
- Variables
- 9.5- النشاط الورقي - Envelop
- 9.6- Personal and Private information's
- Personal and private information's

## For Loop - الدرس العاشر

- 10.1- For loop
- 10.2- lesson 22 on code dot org
- 10.3- lesson 23 on code dot org
- For loop
- 10.4- النشاط الورقي - For loop fun
- 10.5- Powerful password
- Powerful password

## Sprites - الدرس الحادى عشر

- 11.1- Sprite Labs
- 11.2- lesson 24 on code dot org
- 11.3- lesson 25 on code dot org
- 11.4- lesson 26 on code dot org
- 11.5- lesson 27 on code dot org
- Sprites
- 11.6- Pseudo code
- 11.7- Flow Chart
- Pseudo code and flow chart
- 

## Projects - الدرس الثانى عشر

- 12.1- Eating Fish Project
- 12.2- Drawing House Project
- 12.4- Assignments

## 3. Project Based Python Programming for Kids & Beginners

### What you'll learn

- Build simple Python based games using programming loops and functions.
- Draw graphics using the Python module Turtle.
- Build Python Graphical User Interfaces (GUI) with Tkinter.
- Get a handle on working with Python 2 and 3.
- Be able to use the in-built Python modules for their own projects.
- Beginners and children will create their own projects and advance to more complicated concepts.

مدة الدورة التدريبية: 24 ساعة      تكلفة الساعة: 40      تكلفة الدورة: 960

بمعدل مرتين بالاسبوع كل مرة 3 ساعات

### Course content

#### Introduction to Project Based Python Programming

- Introduction to the Course & Me
- Scripts Used in the Course
- Python Installation for Windows
- Python Installation for Other OS
- Online Python IDLE
- Hello World in Python
- Python Coding with Visual Studio
- Some Common Python Terms
- Conclusion to Section 1
- Section 1 Quiz

#### Diving into the Python Basics

- Basic Arithmetic in Python
- Welcome to the World of Data Types
- Random Number Generation
- Working With Strings
- Get User Inputs
- Different Python Data Structures

- Tuples
- Lists
- Dictionaries
- Defining our Own Functions in Python-Basic
- Some More on Functions
- Conclusions to Section 2
- Section 2 Quiz

### Decision Making with Programming

- Rationale for this section.
- If-else loops.
- elif in if-else loops.
- While loop.
- For loop.
- More on loops.
- Nested For Loop.
- Build a Number Guessing Game!!-Basic.
- Build a Number Guessing Game!!-Advanced.
- Conclusion to Section 3.
- Section 3 Quiz.

### Graphics with Python10 lectures

- Working With Graphics in Python
- Draw a Square
- The Idea Behind Angles
- Draw a Rectangle Using Loops
- Create a Rectangle Function
- Code Along1: Draw an Equilateral Triangle
- Code Along2: Draw an Equilateral Triangle with Loops
- Code an Irregular Shape: Start a Snowflake
- Snowflakes!
- Conclusions to Section 4
- Section 4 Quiz

### GUI Programming with Python1

- What is a GUI?
- Start with GUIs in Python.

- Create a Simple Button With tkinter.
- Add Functionality to the Button.
- The Tkinter Grid.
- Common Tkinter GUI Widgets.
- Canvas for Drawing-part1.
- Canvas for Drawing-part2.
- Simple Expression Evaluator.
- Start With the Temperature Conversion App.
- Complete the App-1.
- Complete the App-2.
- Conclusions to Section 5.

### Miscellaneous Section

- Github

### Requirements

- Should have an interest in programming.
- Interest in learning Python programming.
- Install Python 3.6 on your computer (the code will work on Windows, Mac, Linux and even Raspberry Pis).
- The course is especially suitable for beginners and/or children looking to get started with Python programming.

## 4. Real-World Programming for Kids with Python

### What you'll learn

- Computer programming fundamentals using Python.
- Hands on exercises creating fun games and real-world applications.

مدة الدورة التدريبية: 24 ساعة    تكلفة الساعة: 30    تكلفة الدورة: 720

بمعدل مرتين بالاسبوع كل مرة 3 ساعات

### Course content

#### Course Introduction

- Introduction

## Programming Fundamentals 14 lectures • 2hr 1min

- Overview of Python Programming.
- Getting Started - Setting up your environment (Windows / Mac).
- My first Program - Hello World.
- Introduction to Variables.
- String Manipulation - Working with letters, words, and sentences.
- Math Operations - Working with Numbers.
- If Else Statements - If this does that, else do this.
- For Loops - Repeating repeatedly.
- While Loops - Keep going until I say so.
- Input/output - How to talk to your program.
- Lists - How to organize lots of stuff.
- Functions - Creating reusable code.
- Libraries - Expand your programs to do all kinds of stuff.
- Wrap up - Reviewing what we learned.
- Programming Fundamentals Review.

## Programming Basic Console Applications

- Fortune Teller.
- Funny Fill-in Story.
- Trivia Game.
- Prime Number Generator.
- Blackjack Game.
- Wrap up - Reviewing what we learned.

## Creating Games with Graphics

- Intro to Graphics
- An Amazing Maze
- Let's Break Some Bricks
- Space Shooter

## Course Wrap-up

- Final Wrap-up and Next Steps

## 5. Coding for Kids - Scratch Programming for Beginners

### What you'll learn

- You will learn how to cope with scratch.
- You will learn the fundamentals of programming.
- You will work on fun and intuitive coding projects.
- Coding for Kids.
- Scratch Programming.
- Scratch Coding.
- Basic Commands.
- Loops
- Coding Syntax.
- Designing Algorithms.
- Executing Commands.

مدة الدورة التدريبية: 24 ساعة تكلفة الساعة: 30 تكلفة الدورة: 720

بمعدل مرتين بالاسبوع كل مرة 3 ساعات

### Course content

#### Introduction to Scratch Programming

- Introduction
- Set Up your Account.
- Movement
- Position
- Move the Car.
- Direction
- Kick the Ball.
- Loops

#### Project 1 - My Name Is...

- Project Description - My Name.
- Animating "My Name"
- Animating "Is."
- Adding Your Name.

## Project 2 -Guess the Number

- Project Description - Guess the Number
- How to Create Your Own Sprite
- Design the Game Menu
- Add a Variable
- Repeat Until the Game Ends
- Add the Right Sound

## Project 3 - Paint

- Project Description - Paint
- DOWNLOAD FILES - Paint Costumes
- Designing the Working Area
- Adding the Pencil
- Broadcasting from the Buttons
- Changing the Color
- Changing the Background

## Project 4 - Racing Car

- Project Description - Racing Car
- DOWNLOADABLE FILES - Checkpoint Costumes
- Set Up the Track
- Move Function
- Rotate Function
- Slowing Down When Off-Track
- Set Up Checkpoints
- Checkpoint Function
- Add Timer
- Count the Laps
- Sound and Finishing

## Project 5 - Apple Collector

- Project Description - Apple Collector
- DOWNLOADABLE FILES - Apple Collector Costumes
- Set Up Bear Movement
- Variables & Clones
- Falling Motion
- Sound Effects

## Project 6 - Lifeguard

- Project Description - Lifeguard
- DOWNLOADABLE FILES - Lifeguard Costumes
- Import Video Sensing
- Clone Function
- Responding to Motion

## Project 7 - Asteroid Project

- Project Description - Asteroid Shooter
- DOWNLOADABLE FILES - Asteroid Shooter Costumes
- Costumes & Variables
- Turning the Ship
- Laser Beams
- Meteors
- Putting it Together
- Final Touches

## Project 8 -Snake

- Project Description - Snake
- DOWNLOADABLE FILES - Snake Project
- Moving the Head
- Producing the Body
- Removing the Extra Squares
- When to End the Game
- Spawning the Food

## You Made It...

- You Made It...

# 6. The Complete Machine Learning Course with Python Level 1

## What you'll learn

- Machine Learning Engineers earn on average \$166,000 - become an ideal candidate with this course.
- Solve any problem in your business, job or personal life with powerful Machine Learning models.
- Train machine learning algorithms to predict house prices, identify handwriting, detect cancer cells & more.
- Go from zero to hero in Python, Seaborn, Matplotlib, Scikit-Learn, SVM, unsupervised Machine Learning etc.

مدة الدورة التدريبية: 24 ساعة    تكلفة الساعة: 30    تكلفة الدورة: 720

بمعدل مرتين بالاسبوع كل مرة 3 ساعات

## Course content

### Getting Started with Anaconda

- [Installing Applications and Creating Environment](#)
- Iris Project 1: Working with Error Messages
- Iris Project 2: Reading CSV Data into Memory
- Iris Project 3: Loading data from Seaborn.
- Iris Project 4: Visualization

### Regression

- Scikit-Learn
- EDA
- Correlation Analysis and Feature Selection
- Correlation Analysis and Feature Selection
- Linear Regression with Scikit-Learn
- Five Steps Machine Learning Process
- Robust Regression
- Evaluate Regression Model Performance
- Multiple Regression 1
- Multiple Regression 2
- Regularized Regression
- Polynomial Regression
- Dealing with Non-linear Relationships

- Feature Importance
- Data Preprocessing
- Variance-Bias Trade Off
- Learning Curve
- Cross Validation
- CV Illustration

## Classification

- Logistic Regression
- Introduction to Classification
- Understanding MNIST
- SGD
- Performance Measure and Stratified k-Fold
- Confusion Matrix
- Precision
- Recall
- f1
- Precision Recall Tradeoff
- Altering the Precision Recall Tradeoff
- ROC

## Support Vector Machine (SVM)

- Support Vector Machine (SVM) Concepts
- Linear SVM Classification
- Polynomial Kernel
- Radial Basis Function
- Support Vector Regression

## Tree

- Introduction to Decision Tree
- Training and Visualizing a Decision Tree
- Visualizing Boundary
- Tree Regression, Regularization and Over Fitting
- End to End Modeling
- Project HR
- Project HR with Google Collab

## 7. The Complete Machine Learning Course with Python

### Level 2

#### What you'll learn

- Machine Learning Engineers earn on average \$166,000 - become an ideal candidate with this course.
- Solve any problem in your business, job, or personal life with powerful Machine Learning models.
- Train machine learning algorithms to predict house prices, identify handwriting, detect cancer cells & more.
- Go from zero to hero in Python, Seaborn, Matplotlib, Scikit-Learn, SVM, unsupervised Machine Learning etc.

مدة الدورة التدريبية: 24 ساعة تكلفة الساعة: 40 تكلفة الدورة: 960

بمعدل مرتين بالاسبوع كل مرة 3 ساعات

#### Ensemble Machine Learning

- Ensemble Learning Methods Introduction
- Bagging
- Random Forests and Extra-Trees
- AdaBoost
- Gradient Boosting Machine
- XGBoost Installation
- XGBoost
- Project HR - Human Resources Analytics
- Ensemble of Ensembles Part 1
- Ensemble of ensembles Part 2

#### k-Nearest Neighbor (KNN)

- KNN Introduction
- Project Cancer Detection

- Addition Materials
- Project Cancer Detection Part 1

### Unsupervised Learning: Dimensionality Reduction

- Dimensionality Reduction Concept
- PCA Introduction
- Project Wine
- Kernel PCA
- Kernel PCA Demo
- LDA vs PCA
- Project Abalone

### Unsupervised Learning: Clustering

- Clustering
- K\_Means Clustering

### Deep Learning

- Estimating Simple Function with Neural Networks
- Neural Network Architecture
- Motivational Example - Project MNIST
- Binary Classification Problem
- Natural Language Processing - Binary Classification

### Foundations of Deep Learning

- Introduction to Neural Networks
- Differences between Classical Programming and Machine Learning
- Learning Representations
- What is Deep Learning
- Learning Neural Networks
- Why Now?
- Building Block Introduction
- Tensors
- Tensor Operations
- Gradient Based Optimization
- Getting Started with Neural Network and Deep Learning Libraries
- Categories of Machine Learning
- Over and Under Fitting

- Machine Learning Workflow

## Computer Vision and Convolutional Neural Network (CNN)

- Outline
- Neural Network Revision
- Motivational Example
- Visualizing CNN
- Understanding CNN
- Layer - Input
- Layer - Filter
- Activation Function
- Pooling, Flatten, Dense
- Training Your CNN 1
- Training Your CNN 2
- Loading Previously Trained Model
- Model Performance Comparison
- Data Augmentation
- Transfer Learning
- Feature Extraction
- State of the Art Tools.

## 8. Mobile development using Kotlin

مدة الدورة التدريبية: 24 ساعة تكلفة الساعة: 30 تكلفة الدورة: 720  
بمعدل مرتين بالأسبوع كل مرة 3 ساعات

### Mobile development using Kotlin.

#### 1. Lesson 1: Build your first app.

- Teaches you android architecture, how to set up Android Studio to use Kotlin and how to build apps.
- Start with “Hello World” and move up to an app. You learn how Android projects are structured.

#### 2. Lesson 2: Layouts.

- Learn how to use the Android Studio Layout Editor to create layouts.
- Create apps that get and display user input, respond to user actions.

#### 3. Lesson 3: Navigation.

- Learn how to create useful navigation in an app.
- Passing data between activities.
- Get results from another activity.
- How to work with the app's back stack.

#### **4. Lesson 4: Activity and fragment lifecycles.**

- Learn about the activity and fragment lifecycles, and you learn how to manage complex lifecycle situations.
- Work with a starter app that contains several bugs related to the Android lifecycle.
- Add logging to the app to better understand the app's lifecycle events.
- Fix the bugs that the app contains.

#### **5. Lesson 5: advanced layout components such as RecyclerView.**

- Use advanced UI components such as a RecyclerView.
- Use RecyclerView to efficiently display lists and grids of items.
- Make items in a RecyclerView clickable.

#### **6. Lesson 6: Database.**

- Setting up and configuring a database and simplifies the code for interacting with the database.
- You learn how to use Kotlin coroutines to move database operations away from the main thread.

#### **7. Lesson 7: Using Notifications.**

- Send messages to users using notifications.
- Design and style notifications.
- Add buttons and actions to notifications.

#### **8. Lesson 7: Using REST API Android.**

- Create an application to call rest API.
- Displays results using learned UI components.
- Using firebase.

## **Mobile Development using Flutter. Level 1**

مدة الدورة التدريبية: 21 ساعة تكلفة الساعة: 30 تكلفة الدورة: 630  
بمعدل مرتين بالأسبوع كل مرة 3 ساعات

### **1. Lesson 1: Introduction**

- Mobile development approaches overview.
- What is Flutter.
- Flutter Architecture.
- Flutter Widgets.
- Install Flutter.
- Create project.

### **2. Lesson 2: Introduction to Dart**

- Dart Introduction.
- Operators
- Data Types.
- Collections
- Decision Making.
- Looping Statements.
- Function

### **3. Lesson 3: Dart Object-Oriented Concepts**

- Exception Handling.
- Objects and Class.
- OOP Concepts.
- Inheritance

### **4. Lesson 4: Flutter Basic Widgets**

- Scaffold widget.
- Basic Material Widgets.

### **5. Lesson 5: Flutter Layout Widgets- Part 1**

- Center widget.
- Container widget.
- Column widget.

- Row widget.
- Expanded widget.
- SingleChildScrollView widget.
- Stack widget.
- SafeArea widget.

## 6. Lesson 6: Flutter Layout Widgets- Part 2

- BoxDecoration widget.
- Card widget.
- Layout Widgets.
- ListView Widget.
- GridView Widget.

## 7. Flutter Stateless and Stateful Widgets

- Stateless widget.
- Stateful widget.

# 9. Mobile Development using Flutter.

## Level 2

مدة الدورة التدريبية: 21 ساعة تكلفة الساعة: 30 تكلفة الدورة: 630

بمعدل مرتين بالأسبوع كل مرة 3 ساعات

### 1. Lesson 1: Introduction

- Revision to dart and Flutter.
- Flutter Architecture.
- Flutter Widgets.

### 2. Lesson 2: Navigation

- Using Navigator.
- Pushing a route onto the Navigator's stack.
- Popping a route from the Navigator's stack.

- Navigate with Named Routes.
- Send and Return Data Among Screens.
- Animate a Widget Across Screens.

### **3. Lesson 3: Forms**

- Building a form for user data.
- Working with validation.
- Login example.

### **4. Lesson 4: Asynchronous Task**

- Synchronous VS Asynchronous.
- Asynchronous operations.
- Future, async and await keywords.
- Persist data on device with SQLite.

### **5. Lesson 5: Accessing REST API**

- Create an application to call rest API.
- Displays results using learned UI components.

### **6. Lesson 6: Firebase Introduction**

- What is the JSON?
- How does Firebase Database work.
- Firebase authentication (Signup and Login to Flutter App).
- Configure Your App to use Firebase Services.
- Configuring Firebase Authentication.
- Firebase Database.

### **7. Lesson 7: Flutter state management**

- What is state management.
- How to implement state management.

## **10. Introduction to Embedded System for Kids.**

Source: <https://www.udemy.com/share/103qP4/>

Simulator: [Tinkercad | Create 3D digital designs with online CAD](#)

## Course content

### Introduction

- Introduction
- Creating a Tinkercad account.
- Tinkercad interface explained.
- What is an Arduino.
- Blink a LED.
- Challenge: Change Blink.

### Electrical Engineering Basics

- The first circuit: LED and battery.
- OHM's Law.
- Challenge: Series connection of batteries.
- What is a breadboard.

### Digital Outputs

- Programming a single LED.
- Programming multiple LEDs.
- Challenge: Play with multiple LEDs.
- Project 1: Traffic light.
- Project 1: Traffic light (while loop).
- How does a buzzer work.
- Challenge: Change buzzer tone.
- Project 2: Add a buzzer to traffic light.

### Digital Inputs: Pushbutton

- How a push-button works?
- Challenge: Light up two LEDs with a button
- Programming a push-button
- Challenge: Add the second LED
- Programming multiple pushbuttons
- Project 3: Walk button or Push-to-walk button.

### Digital Inputs: Sensors

- What is a sensor?
- How a tilt sensor works?
- Programming a tilt sensor
- How a motion sensor works?
- Challenge: Add a LED to motion sensor circuit
- Programming a motion sensor
- Project 4 Catch the burglar.

## **Analog Outputs**

- How a RGB LED works?
- Programming a RGB LED
- Challenge: Turn off a RGB LED

## **Analog Inputs**

- How a potentiometer work?
- Challenge: Produce any color with potentiometers
- Serial communication and programming a potentiometer - Part 1
- How does a photoresistor work?
- Programming a photoresistor

## **Electric Motors**

- How does an electric motor work?
- How does a servo motor work?
- Challenge: Change a direction of the servo motor

## **Final Project: Smart Home**

- The final project.
- Seven Segment Display.

## **Requirements**

- No prior programming knowledge is required.

## **Description**

In this course, you will learn the basics of electrical engineering and important computer science concepts using Tinkercad, a fun and easy-to-use programming and electronics simulator tool designed by Autodesk. Throughout the course, I will guide you through programming the Arduino, using sensors, electric motors, and creating real-life electronic circuits. We will learn by practicing and analyzing real-world applications, with lessons designed to target specific programming and electronics concepts without getting into boring or complex details.

- We will start by understanding microcontrollers, especially Arduino, and then jump right into creating our first circuit and learning the basics of electrical engineering.
- We will learn how traffic lights works and how they are programmed to control the flow of traffic.
- Then, we are going to learn what is a push button and how walk buttons work to help pedestrians cross the road safely.
- Next, we will dive into sensors and create an alarm system that alerts us when a enters our home.
- Following that, we are going to see how electric motors work and we will create a servo motor circuit that automates opening and closing the doors or windows.
- Finally, we will work on a Smart Home Project that allows us to control items around the house with automation.

By the end of the course, you will have the skills and knowledge needed to create fun and useful Arduino projects. And with regular updates, including new materials, exercises, tips, and tricks, you can continue to expand your skills and knowledge in this exciting field.

## **11. Web Development (backend)**

### **Course content**

- Install XAMPP on MAC OS X
- Install XAMPP on Ubuntu Linux
- Addendum: Visual Studio Code now the recommended editor
- Install Atom on Windows
- Install Atom on MAC OS X
- Install Atom on Ubuntu Linux

## Variables

- Write Your First PHP Code: Display a Message in Your Web Browser
- Variables in PHP: What They are, How to Create Them, and How to Name Them
- Basic Variable Types: Strings and Numbers
- Basic Variable Types: Boolean and Null
- Perform Operations on Variables: Operators
- Strings: Using Single or Double Quotes and Variable Interpolation
- PHP concepts, variables and operators
- Variables and Operators

## Arrays

- Introduction to Arrays: Create an Array and Access its Elements.
- Assign Manual Array Indexes and Create Associative Arrays.
- Create and Access Multidimensional Arrays.
- Process Each Element of an Array for-each Loop.
- Process the value and index of each array element using a for-each loop.
- Arrays

## Control structures

- Run Code Conditionally: the if Construct.
- Compare One Value to another: Comparison Operators.
- Run Code Multiple Times Based on a Condition: While Loops.
- Run Code a Specific Number of Times: For Loops.
- Add More Conditions to an If Statement Using Elseif
- Perform Different Actions Based on Different Conditions: The Switch Statement.
- Control structures and comparison operators.
- Control structures and comparison operators.

## An Introduction to HTML

- The Language of Web Pages: an Introduction to Html
- Use Head and Body Elements to Structure a Html Document
- Structure the Content of your Page Using Heading and Paragraph Elements
- Give Text Emphasis or Importance Using the em and Strong Elements
- Display Ordered and Unordered Lists of Items
- Insert Images into a Html Document
- Add a Link from One Page to Another Using a Hyperlink
- Add Semantic Structure to The Body of a Html Document
- HTML
- HTML basics

## Mixing PHP and HTML

- Create Dynamic Content: Mixing HTML and PHP.
- Use PHP Control Structures Mixed with HTML.
- Make HTML More Readable: Use White space and Comments.
- Addendum: changes to the available resources in the following video.
- Make PHP Easier to Maintain: Use Comments and Coding Standards.
- Mixing PHP and HTML.
- Mixing PHP and HTML.

## An Introduction to Databases

- Where to Store Data in a Dynamic Website: An Introduction to Databases.
- Access the Database Server Using phpMyAdmin And Create a Database.
- Use Tables to Store Structured Data in a Database.
- Select Some Data from The Database: An Introduction to Sql
- Using Indexes: Make Queries Faster and Order the Result Set.
- Connect to the Database from PHP.
- Query the Database from PHP And Get the Results.
- Combine PHP and HTML to Show a Formatted List of Articles.
- Databases
- Databases - connecting and selecting data.

## Multiple Pages in PHP

- Add a New Page to Show a Single Article
- Passing Data in the URL: Send the Article ID Using the Query String
- Avoid SQL Injection: Validate the ID Passed in from the Query String
- Don't Repeat Yourself: Extract Repeated Code to a Separate File
- Addendum: changes to the code in the following video
- Organize and Secure Access to the Included Files
- Multiple pages in PHP
- Multiple pages in PHP

## An Introduction to HTML Forms

- Getting Data from the User: An Introduction to forms in HTML.
- Change the Method of the Form Uses to Send its Data: get vs post.
- Addendum: date time and date-time-local input types.
- Get Different Types of Data from the User: Basic Input Types.
- Access Data from the form on the Server.
- Add a Multi-line Text Control: the textarea Element.
- Present a Fixed List of Options: The Select Element.
- Toggle an option on or off checkboxes.
- Select only one Option from a List: Radio Buttons.

- Add an Accessible Caption to Each Input: The Label Element.
- Make the Form Easier to Use: fieldsets and placeholders.
- Common form Control Attributes: read-only, disabled and autofocus.
- Validate Input Using HTML5 form Validation.
- Forms in HTML.
- HTML Forms.

## Inserting Data into the Database from PHP

- Addendum: the date-time-local input type
- Add a Form to Insert a New Article
- Insert Data into the Database: The SQL INSERT INTO Statement
- Insert a New Article into the Database and Get the ID of the New Record
- How SQL Injection Attacks Work
- Avoid SQL Injection Attacks: Escape Input
- Avoid SQL Injection Attacks: Use Prepared Statements
- Inserting data into the database
- Databases - inserting data

## An Introduction to Functions and Validation in PHP

- Functions: Define and Call a Function in PHP
- Create a Function to Connect to the Database
- Validate the Form Data and re-display the Form with Error Messages if Invalid.
- Maintain Previously supplied Data When re displaying an Invalid Form
- Avoid Cross-site Scripting (XSS) Attacks: Escape Untrusted Content
- Insert NULL if the Publication Date is Empty
- Validate the Publication Date is a Valid Date and Time
- Redirect to the Article Page After Inserting a New Article
- Functions
- Functions in PHP

## Editing Data in the Database from PHP

- Editing Existing Articles: Create a Function to Get a Single Article
- Add a Form for Editing an Existing Article
- Add a Validation Function and Validate the Form Data
- Change Existing Data in the Database: The SQL UPDATE Statement
- Update an Existing Article in the Database
- Create a Function to Redirect to Another URL
- Databases - updating data using MySQLi

## Deleting Data from the Database from the PHP

- Delete Existing Data in the Database: The SQL DELETE Statement
- Delete an Existing Article in the Database
- Use the POST Request Method to Delete the Article
- Get Confirmation from the User Before Deleting the Article
- Improve Database Performance: Only use SELECT \* when necessary.
- Updating and deleting data in the database

## Using Sessions to Log in and Restrict Access

- Make the Web Browser Remember You Between Visits: An Introduction to Sessions
- Store Data in the Browser: Cookies in PHP
- Store a Value in the Session to Log in and log out a User.
- Add a Login form and process the User's Login Credentials
- Completely Destroy the Session on Logout and Redirect Back to the Index Page
- Increase Security: Prevent Session Fixation Attacks
- Restrict Access to a Page to a Logged-in User Only
- Sessions and cookies

## An Introduction to Object-Oriented PHP

- Classes and Objects: An Introduction to Object-Oriented PHP
- Object Attributes: Adding Properties to a Class
- Object Functions: Adding Methods to a Class
- Object Initialization: The Constructor Method
- Control Access: Public and Private visibility of Properties and Methods
- Public Properties vs Getter and Setter Methods
- Static Properties and Methods
- Constants: Using Define and const to Create Constant Values
- Inheritance: Using the Extends Keyword to reuse Code and reduce Repetition
- Overriding Methods and Using the Parent Keyword to Call the Parent Class Code
- Control Access: Protected Visibility of Properties and Methods
- Object-oriented PHP
- Object-Oriented PHP

## PDO: PHP Data Objects

- Add a Database Class and Connect to the Database Using PHP Data Objects (PDO)
- Queries in PDO: Change the Index Page to Use the New Database Class
- Catch Database Errors Using Exceptions and try ... catch Blocks.
- Prepared Statements with Named Parameters in PDO: view an Individual Article

- Create an Article Class and Use it on the Index and Article Pages
- Fetch the Database Record as an Object Instead of an Array
- Update the Article Record Using PDO
- Move the Validation Function to the Article Class
- Delete the Article Record Using PDO
- Insert a new Article Record Using PDO and get the ID of the New Record

## Authentication Using the Database

- Create a User Class and a Method to Authenticate a User
- Create a Table to Store User Data in the Database
- Authenticate the User with Data from the Database
- Store Passwords Securely: PHP Password Hashing Functions
- Store the Password as a Hash in the Database and Verify it on Login.
- PDO and password hashing

## Class Autoloading

- Convert the auth Include into a Class
- Convert the URL Include into a Class
- Autoloading Classes: Require Class Files Automatically
- Add an Initialization Script Including an Autoloader
- Returning a Value Using Require: Add a Script to get the Database Connection

## Site Administration

- Move all Authentication-related Code to the Auth Class.
- Create an Admin Index and Load Classes Relative to the site root Directory.
- Displaying Tabular Data in HTML: Tables.
- Display the Admin List of Articles in a Table and Restrict Access to the Page.
- Add Sitewide Navigation Links.
- Move the Edit and Delete Article Scripts to the admin Area.
- Move the New Article Script to the admin Area.
- Autoloading classes and requiring files.

## Pagination

- Pagination: Split Database Results up Into Pages.
- Add a Method to the Article Class to get a Single Page of Article Records.
- Add a Paginator Class and calculate the offset and limit from the Page Number.
- Get the Page Number from the Query String.
- Validate the Page Number using the filter\_var Function.
- Add Previous and Next Pagination Links.
- Calculate the Total Number of Records and Pages.

- Add Pagination to the admin Index and Create Shared Pagination Links.
- Tables and pagination.

## Uploading Files

- Uploading Files: Add a Form to Upload an Article Image.
- Handle the Upload Error Code.
- Restrict the Size of all Uploaded Files using PHP Configuration Settings.
- Restrict the Size of an Uploaded File in an Individual Form.
- Restrict the Type of Uploaded File.
- Create a Folder for Uploads and Move the Uploaded File into it.
- Sanitize the Uploaded Filename as a Security Precaution.
- Don't Overwrite Existing Files in the Uploads Folder.
- Save the Filename to the Article Record in the Database.
- Display the Uploaded Image if an article has one.
- Delete the Previous image File when an Article Image is Updated.
- Add an Option to Delete an Article's Image file.
- Uploading files.

## Database Relationships

- Database Relationships: Create a Table and Data for Categories
- One-to-one Relationships Between Tables
- One-to-many Relationships Between Tables
- Joins: Selecting Data from Multiple, Related Tables at Once
- Relationship Constraints
- Many-to-many Relationships Between Tables

## Using Relationships: Article Categories

- Show an Article's Categories on the Individual Article Page
- Get an Article's Categories in an Object Method
- Add a Category Class and form Inputs to edit an Article's Categories
- Insert Article Categories while Avoiding Duplicate Records in the Join Table
- Insert Article Categories More Efficiently using a Single Query
- Delete Article Category Records if Unchecked in the Form
- Add Categories When Inserting a new Article Record
- Pagination and Joins: Show Categories in the Index Page
- Database relationships

## Requirements

- Access to a computer running Windows, Mac OS X or Linux