# Chapter 0: Introduction

## Objective

After completing Chapter 0 you will understand the objectives for the Wireless Internet Connectivity for Embedded Devices (WICED) WiFi 101 Class. You should be able to explain the learning objectives, agenda, scope of the class, and format of the lab manual.

## Time: 30 Minutes

## Prerequisites

Solid fundamentals in C-Programming (data types, operators, expressions, control flow, functions, program structure, pointers and arrays, data structures, multi-file module programming).

Some experience with standard MCU concepts and peripherals (Serial communication, PWMs, ADCs).

## Assumption

There is literally a 96 page PowerPoint presentation in which Cypress present**s** compelling data that**:**

* You should use a partner and buy modules (you should NOT try to design using bare chips).
* Cypress has the most robust WiFi in terms of RF, Chips, Power, Stability, and Partner Integration.
* You should use a Cloud partner (e.g. AWS, IBM, Ali etc.).

So… that is what we are going to assume and I am not going to address any of that.

## Scope

What this class is?

* A survey of the WICED WiFi Ecosystem (Chips, Modules, Software Development Kit (SDK), Forum etc.)
* A survey of using the WICED WiFi SDK to create an IoT device by connecting common MCU I/O peripherals to the “Cloud”.
* An introduction to the “TCP/IP Network Stack”.
* An introduction to WiFi.
* An introduction to common cloud application protocols (MQQT, HTTP, COAP), JSON and REST.
* An introduction to some cloud providers (Amazon AWS, IBM Bluemix, Microsoft Azure) and a taste of their programming model.

What this class is not?

* A C-programming primer.
* A detailed examination of WiFi or RF Parameters.
* A class on using WICED Chip-on-board (unless you are a very special case you should use a module).
* An advanced network programming class.
* An introduction to Bluetooth.
* An introduction to Zigbee.
* A discussion of Linux integrated WICED.
* A discussion of how to pick the correct WiFi Module.
* A detailed examination of MCU peripherals.
* A tutorial of the advanced uses of WICED (Streaming Audio, Bluetooth/Wifi Combos, TCP/IP Bridging/Routing, WiFi Station Introducers, BLE Introducers).

## Chapters

The remaining chapters in this class are as follows:

| **Chapter** | **Purpose** |
| --- | --- |
| 01-Survey | A tour of the WICED WiFi SDK, WiFi Standard, Chips, Modules, and Kits. |
| 02-Peripherals | How creating a new project and how to use chip peripherals such as GPIOs, interrupts, UART, I2C, etc. |
| 03-RTOS | How to use the Thread-X RTOS in a WICED chip. |
| 04-Library | How to use libraries for file systems and graphics LCDs. |
| 05-WiFi | How to connect to and interact with WiFi access points. |
| 06a-Cloud, 06b-MQTT, 06c-HTTP, etc. | How to use the cloud to send and receive data. |
| 07-Project | Class project. |
| 08-Shield | Details on the analog co-processor shield board. |
| 09-Glossary | Glossary of terms. |