**CYPRESS SEMICONDUCTOR CORPORATION**

Internal Correspondence

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| **Date:** | 1/2/2018 |
| **To:** | **Alan Hawse (ARH)** |
| Author: | Greg Landry (GJL) |
| **Author File#:** | GJL-1344 |
| **Subject:** | **Cypress Academy WICED Bluetooth 101 Course Outline** |
| **Category:** | IoT, PSoC, MCU, Bluetooth Classic, BR, EDR, BLE |
| **Distribution:** | GRGA, HNTR, MIFO, SKUV, YFS, SGUP, RICA | |

# History

| **Version** | **Summary of Changes** |
| --- | --- |
| \*\* | Initial version |

# Summary

A proposed outline for a 2-day Cypress Academy WICED Bluetooth 101 (WBT-101) class is provided below. The proposed class is similar in format to the existing WICED Wi-Fi 101 (WW-101) class.

The class will use a WICED Bluetooth kit containing a CYW20719 device and a separate shield kit. The current plan is to use the CYW920719Q40EVB-01 Evaluation Board and the CY8CKIT-032 PSoC 4 Analog Front End Shield.

# Class Outline

Chapter 0 – Intro

Lecture:

Class Summary and Expectations

Pre-requisites

Assumptions

Scope

Agenda

Chapter 1 – Survey

Lecture:

Tour of WICED Studio SDK

Tout of Documentation

Reporting Issues

Tour of SDK Structure

Tour of BLE and Bluetooth BR/EDR

Tour of Chips

Tour of Development Kits

Tour of Partners

Labs:

Create a Community Account

Explore the Documentation

Chapter 2 – Peripherals

Lecture:

Intro to WICED Studio:

Basic operation and organization

Project files and organization

Example projects and location

Platform file location and contents

Make Targets

How to interact with peripherals using WICED Studio

Labs:

Blink LED

Use Debug UART Printing

Button

Interrupt

I2Cwrite

I2Cread

PWM

ADC

Chapter 3 – RTOS

Lecture:

RTOS fundamental concepts

Using RTOS in WICED

Labs:

Threads

Semaphores

Mutex

Queues

Timers

Chapter 4 - Debugging

Lecture:

Using the Debugger in WICED Studio

(?) Using 3rd party debugging tools

Labs:

TBD

Chapter 5 – BLE

Lecture:

Details of the BLE standard

Details of the WICED firmware implementation

Bluetooth Designer Wizard

CySmart PC application and Mobile application

Labs:

Advertise and change advertising info when button is pressed

Create a project that supports a CapSense profile – test with CySmart

Add bonding info saved to NVRAM to the CapSense project

Add a pairing key requirement to the CapSense project

Chapter 6 – Bluetooth Classic (BR and EDR)

Lecture:

Details of the Bluetooth Classic standard - Basic Rate and Extended Data Rate

Details of the WICED firmware implementation

Bluetooth Designer Wizard

Labs:

SPP (serial port protocol)

(?) AVRCP (audio/video remote control profile)

(?) HFP (hands-free profile)

(?) HID (human interface device)

(?) A2DP (advanced audio distribution profile)

(?) Classic/BLE Combo project - TBD

(?) Chapter 7 – Class Project

Lecture:

Introduce class project

Labs:

(?) Create an audio control interface for Windows media player, Android music player, or iTunes. This uses AVRCP

(?) Display track info on the OLED

(?) Use CapSense buttons for play/pause, next track, previous track, mute/unmute.

(?) Use POT for volume.

Supplemental Resources:

List of profiles: <https://en.wikipedia.org/wiki/List_of_Bluetooth_profiles>

Bluetooth Lecture from Wayne State University: <http://ece.eng.wayne.edu/~smahmud/PersonalData/PubPapers/Talk_Jul12_05.pdf>