Fresher Embedded - Training Schedule

Training Unit/Chapter		Day	Lecture	Content	Learning Objectives	Delivery Type	Duration (hrs)		Training Materials / Logistics & General Notes (Required, For Reference, etc.)
	<Pre-Test>	Day0		<Pre-Test: Theory Part>		Exam	1.00		
			Lecture 0	Getting Started <Introduction to the course>	<Learning objectives>	Concept/Lecture	0.50		<Giới thiệu về các nội dung sẽ học, cách học, các hình thức kiểm tra, thời gian kiểm tra. Dựa trên nội dung Syllabus này>
Unit 1	Variables in C	Day 1	Variable in C	- Introductory question? - Basic Data Types	<Learning objectives>	Concept/Lecture	5.00	KhoTV	
				Example exercise			1.00		
	Arrays & Decision & Looping	Day 2	Array, Decision and Looping	**1 Array in C** 1.1 What is Array? 1.2 Multidimensional Arrays	<Learning objectives>	Concept/Lecture	2.50	NghiaNV16	
				Daily Assignment Giving: Assignment 2	<Recap the lecture>	Assignment/Lab	0.50		
	Function	Day 3	Function	**1 What is function** 1.1 Syntax 1.2 Declaration and function prototype	<Learning objectives>	Concept/Lecture	3.00	BachNN	
				Practice Time: Assignment 1			2.00		
				Daily Assignment Review & Guides	<Recap the lecture>	Test/Quiz	1.00		
		Day 4	Practicce and review	Practice Time: Assignment			5.00	BachNN	
				Daily Assignment Review & Guides		Guides/Review	1.00		
	Macro & Bit Operation	Day 5	Macro and Bit Operation	1 C Preprocessor Overview 2 Macro 2.1 Macro definition	<Learning objectives>	Concept/Lecture	2.50	ToanNH9	
				Daily Assignment Giving	<Recap the lecture>	Test/Quiz	0.50		
				Practice Time: Assignment					
				Daily Assignment Review & Guides		Guides/Review	1.00		
Unit 2	Memory Management & Pointer Basics	Day 6	Lecture 5	1 Memory layout 2 Variable and memory location 3 Linker file and memory	<Learning objectives>	Concept/Lecture	2.50	DungNT104	
				Daily Assignment Giving	<Recap the lecture>	Assignment/Lab	0.50		
				Practice Time: Assignment					
				Daily Assignment Review & Guides		Guides/Review	1.00		
Unit 3	Data Structure & Algorithms	Day 7	Lecture 6	Data structure and Algorithm 1 Data structure 1.1 Data structure Fundamental	<Learning objectives>	Concept/Lecture	5.50	TrungTV7	
				Daily Assignment Giving		Assignment/Lab	0.50		
				Practice Time: Assignment			3.00		
		Day 8		Daily Assignment Review & Guides		Guides/Review	1.00	TrungTV7	
				Practice Time: Assignment			5.00		
				Daily Assignment Review & Guides		Guides/Review	1.00		
Unit 4	Present and review	Day 9		Present and review		Guides/Review	3.00	HaiND1	
				Break Time					
				Present and review (Cont)			2.00		
Unit 5	Pointer Advances	Day 10	Lecture 7	Assigning pointer to address Wrong using pointer	<Learning objectives>	Test/Quiz	2.50	DungNT104	
				Daily Assignment Giving		Assignment/Lab	0.50		
				Practice Time: Assignment			3.00		
				Daily Assignment Review & Guides		Guides/Review	1.00		
		Day 11		Practice Time: Assignment			5.00	DungNT104	
				Daily Assignment Review & Guides		Guides/Review	1.00		
Unit 6	Optimization in C and C_Common defects, FILE	Day 12	Lecture 8	Optimization - why to optimize code - trade off between speed and size	<Learning objectives>	Concept/Lecture	3.00	LinhNH13	
				C common defect - Alignment and packing		Concept/Lecture	3.00		
		Day 13		File - how file is oganized in disk - how OS manage files		Concept/Lecture	3.00	LinhNH13	
				Daily Assignment Giving		Assignment/Lab	1.00		
				Practice Time: Assignment			3.00		
		Day 14		Daily Assignment Review & Guides		Guides/Review	1.00	LinhNH13	
				Practice Time: Assignment			5.00		
				Daily Assignment Review & Guides		Guides/Review	1.00		
Unit 7	Unit test	Day 15	Lecture 10	1 Why do we need to test Software? 2 What is UnitTest ? 3 Why we test UnitTest?	<Learning objectives>	Concept/Lecture	3.00	CuongNV43	
				Daily Assignment Giving		Assignment/Lab	0.50		

				Practice Time: Assignment			3.00		
				Daily Assignment Review & Guides		Guides/Review	1.00		
Unit 8	GIT source control	Day 16	Lecture 11	1 What is GIT? 2 Repositories and Branches	<Learning objectives>	Concept/Lecture	3.00		
				Daily Assignment Giving		Assignment/Lab	0.50	LapPV	
				Practice Time: Assignment			3.00		
				Daily Assignment Review & Guides		Guides/Review	1.00		
Unit 9	Present and review	Day 17		Present and review		Guides/Review	3.00		
				Break Time				HaiND1	
				Present and review (Cont)		Guides/Review	2.00		
Unit 10	Mock project	Day 18- 26			<Learning objectives>	Concept/Lecture	12.00	HaiND1	
					<Recap the lecture>	Test/Quiz	0.17		
Final Test		Day 27					3.00		
Uint1	**Embedded System Getting Started + Embedded Software Development**	Day 28		Introduction to the course	Giới thiệu về các nội dung sẽ học, cách học,	Concept/Lecture	0.50	NghiaNV16	Embedded_Syllabus_vX.Y.xlsx
				Discuss with trainee to know where they are	Kiểm tra để đánh giá HV ở một số kiến	Guides/Review	0.50		
				Embedded system Introduction	Giới thiệu cơ bản về hệ thống nhúng	Concept/Lecture	1.00		Lecture\Lecture 01 - Embedded System Getting Started.pptx
				Introduce about Mock test	Giới thiệu đề bài mock	Guides/Review	0.50		MockProjects\PrjX
				Setup working environment and try to create a sample project for Freedom KL46Z board by using IAR IDE then download to the board.	Guides/review Các tài liệu hướng dẫn trong thư mục cài đặt, chú ý việc cài đặt yêu cầu quyền admin, usb	Guides/Review	2.00		Create new project IAR.pdf
				Quiz	Kiểm tra lại bài cũ	Test/Quiz	0.50		Quiz*
		1/2 Day 29		Embedded Software Overview and Basic Development Process	Phát triển phần mềm nhúng	Concept/Lecture	1.00	NghiaNV16	Lecture\Lecture 02 - Embedded Software Development.pptx
				Input/output Basic	Cơ bản về vào ra trên thiết bị nhúng	Concept/Lecture	1.50		Lecture\Lecture 02 - Embedded Software Development.pptx
				Quiz	Kiểm tra lại bài cũ	Test/Quiz	0.50		Quiz*
	Getting started with KI46 freedom board	1/2 Day 29		Overview on Freescale Freedom KL46	Giới thiệu các module của board Freedom KL46	Concept/Lecture	2.50		Lecture\Lecture 03 - Getting Started with KL46 freedom board.pptx
				Overview on Development IDE: IAR	Giới thiệu về công cụ lập trình IAR	Concept/Lecture	0.50		Lecture\Lecture 03 - Getting Started with KL46 freedom board.pptx
		Day 30		Write an example application to blink a led with given frequency.	Hướng dẫn, giải thích code cho học viên về PORT, GPIO pheripheral.	Guides/Review	2.50	NghiaNV16	Assignments\Assignments_vX.Y.doc
				Daily Assignment Giving	Lab/Self-Study	Guides/Review	0.50		Assignments\Assignments_vX.Y.doc
				Assigment guide		Guides/Review	1.00		
	Cortex Microcontroller Software Interface Standard (CMSIS)	Day 31		Overview on Common Microcontroller Software Interface Standard (CMSIS).	- Giới thiệu chuẩn phần mềm nhúng cho code Cotex (CMSIS). - Porting GPIO code to CMSIS	Concept/Lecture	2.50	CuongTM8	Lecture\Lecture 02 - Embedded Software Development.pptx
				Daily Assignment Giving		Guides/Review	0.50		
				Update Assignment 1 base on CMSIS	Lab/Self-Study	Assignment/Lab	3.00		
				Assigment guide	Hướng dẫn học viên sử dụng CMSIS cho bài tập LCD 16x2.	Guides/Review	1.00		
	ARM Cortex-M architecture overview			Introduction to ARM Cortex-M architecture	Giới thiệu về kiến trúc ARM Cortex-M	Concept/Lecture	2.00		Lecture\Lecture 04 - ARM Cortex-M architecture overview.pptx
				Describe about the programmer model in ARM Cortex-M	Trao đổi về programmer model của lõi Cortex-M	Concept/Lecture	0.50		Lecture\Lecture 04 - ARM Cortex-M architecture overview.pptx
				Explain on Instruction Set Archtecture	Giới thiệu tập lệnh của ARM Cortex-M	Concept/Lecture	1.00		Lecture\Lecture 04 - ARM Cortex-M architecture overview.pptx

		Day 32 Day 33		Write an example application to blink a led by using a system timer (SysTick)	Lab/Self-Study	Assignment/Lab	3.00	BachNN	Assignments\Assignments_vX.Y.doc
				Daily Assignment Giving		Guides/Review	0.50		
				Update the previous exercise, the blink frequency can be changed by using the SW1 button	Lab/Self-Study	Assignment/Lab	1.00		Assignments\Assignments_vX.Y.doc
				Assigment guide		Guides/Review	1.00		
Unit 2				Quiz	Kiểm tra lại bài cũ	Test/Quiz	0.50		Quiz*
	Exception and Interrupt	Day 34 Day 35		Introduce on Interrupt Management in ARM Cortex-M	Giới thiệu về cơ chế quản lý ngắt	Concept/Lecture	1.00	BachNN	Lecture\Lecture 05 - ARM Cortex-M Exception & Interrupt.pptx
				Organization of Vector Table	Giải thích về tổ chức bảng vector ngắt	Concept/Lecture	0.50		Lecture\Lecture 05 - ARM Cortex-M Exception & Interrupt.pptx
				Some important registers: NVIC & SCB	Giải thích về các thanh ghi quan trọng trong khối xử lý ngắt của ARM Cortex-M	Concept/Lecture	0.50		Lecture\Lecture 05 - ARM Cortex-M Exception & Interrupt.pptx
				Exceptions sequences and handling optimization technique	Các bước xử lý exception/interrupt	Concept/Lecture	2.00		Lecture\Lecture 05 - ARM Cortex-M Exception & Interrupt.pptx
				Daily Assignment Giving		Guides/Review	0.50		
				Write an software timer	Lab/Self-Study	Assignment/Lab	3.50		Assignments\Assignments_vX.Y.doc
				Assigment guide		Guides/Review	1.00		
				Quiz	Kiểm tra lại bài cũ	Test/Quiz	0.50		Quiz*
	Pheripheral ADC/DAC	Day 36		ADC/DAC module	Giới thiệu nguyên lý chuyển đổi ADC/DAC	Concept/Lecture	3.00	KhoTV	Lecture\Lecture 02 - Embedded Software Development.pptx
				Daily Assignment Giving		Guides/Review	0.50		
				Write an example application use light sensor to show light intensity to LCD 16x2 module.	Lab/Self-Study	Assignment/Lab	3.00		Lecture\Lecture 02 - Embedded Software Development.pptx
				Assigment guide		Guides/Review	1.00		
				Quiz	Kiểm tra lại bài cũ	Test/Quiz	0.50		Quiz*
	Peripherals PIT Timer	Day 37		Overview on KL46 Timer modules	Giới thiệu về khối timer của KL46	Concept/Lecture	1.00	LinhNH13	Lecture\Lecture 07 - Peripherals Timer.pptx
				Periodic Interrupt Timer (PIT)	Giải thích về PIT	Concept/Lecture	1.50		Lecture\Lecture 07 - Peripherals Timer.pptx
				KL46 PIT Module	Giải thích về PIT của KL46	Concept/Lecture	1.00		Lecture\Lecture 07 - Peripherals Timer.pptx
				Write an application to trigger the PIT Timer interrupt for every 5.12ms and 30ms	Lab/Self-Study	Assignment/Lab	2.00		Assignments\Assignments_vX.Y.doc
				Daily Assignment Giving		Guides/Review	0.50		
				Write an application to trigger the PIT Timer interrupt for every 10min with chainning both channel 0 & 1	Lab/Self-Study	Assignment/Lab	2.00		Assignments\Assignments_vX.Y.doc
				Assigment guide		Guides/Review	1.00		
				Quiz	Kiểm tra lại bài cũ	Test/Quiz	0.50		Quiz*
	Pheripheral I2C	Day 38		I2C module	Giới thiệu chuẩn truyền thông I2C.	Concept/Lecture	3.00	TungTV	Lecture\Lecture 02 - Embedded Software Development.pptx
				Daily Assignment Giving		Guides/Review	0.50		
				Write an example application use read/write EEPROM module by I2C connection.	Lab/Self-Study	Assignment/Lab	3.00		Lecture\Lecture 02 - Embedded Software Development.pptx
				Assigment guide		Guides/Review	1.00		
				Quiz	Kiểm tra lại bài cũ	Test/Quiz	0.50		Quiz*
	Peripherals UART	Day 39 Day 40		Introduction to UART	Giới thiệu về UART	Concept/Lecture	1.50	ToanNH7	Lecture\Lecture 08 - Peripherals UART.pptx
				Data Transmission/Data Reception	Cơ chế truyền/nhận dữ liệu	Concept/Lecture	0.50		Lecture\Lecture 08 - Peripherals UART.pptx
				RS232 Standard	Giới thiệu về chuẩn RS232	Concept/Lecture	0.50		Lecture\Lecture 08 - Peripherals UART.pptx
				Freedom KL46 UART	Giới thiệu về khối UART của KL46	Concept/Lecture	1.50		Lecture\Lecture 08 - Peripherals UART.pptx

	Day 40		Daily Assignment Giving		Guides/Review	0.50		
			Write a program sends a “Hello world!” to PC through UART.	Lab/Self-Study	Assignment/Lab	3.50		Assignments\Assignments_vX.Y.doc
			Assigment guide		Guides/Review	1.00		
			Quiz	Kiểm tra lại bài cũ	Test/Quiz	0.50		Quiz*
Introduce to Basic Real-Time Applications and RTOS	Day 41 Day 42 Day 43 Day 44		What is Real-Time and its application in real world?	Giải thích về thời gian thực và ứng dụng của thời gian thực trong thực tế	Concept/Lecture	2.00	PhuongDV8	Lecture\Lecture 09 - Introduce to Basic RTOS Concepts.pptx
			Introduce on Real-Time Operating System – RTOS * RTOS Kernel * RTOS Tasks and Processes * RTOS Scheduler * RTOS Non-Preemptive Kernel and Preemptive Kernel	Giới thiệu sơ bộ các thành phần chính thường gặp trong hệ điều hành RTOS	Concept/Lecture	3.00		Lecture\Lecture 09 - Introduce to Basic RTOS Concepts.pptx
			Basic Synchronization in RTOS * Semaphore * Event * Message Mailboxes * Message Queue	Cơ chế đồng bộ hay gặp trong RTOS	Concept/Lecture	3.00		Lecture\Lecture 09 - Introduce to Basic RTOS Concepts.pptx
			Researching the pros/cons on most popular RTOS in the market (VxWorks, ThreadX, FreeRTOS, Freescale MQX, ultron)	Lab/Self-Study	Assignment/Lab	24.00		Assignments\Assignments_vX.Y.doc
			Seminar about RTOS	Học viên trình bày về các kiến thức tìm hiểu được	Seminar/Workshop	8.00		
Final Exam	Day 45		Final exam (Quiz & Pratice in Lab)		Test/Quiz	4.00		Assignments\Assignments_vX.Y.doc
Mock test	Day 46 Đến Day 54		Introduce about Mock test	Giới thiệu về mock test	Guides/Review	4.00		
			Do the Mock test		Test/Quiz	20.00		
			Review Mock test		Guides/Review	4.00		
			Do the Mock test		Test/Quiz	20.00		
			Review Mock test		Guides/Review	4.00		
			Do the Mock test		Test/Quiz	24.00		
			Review Mock test		Guides/Review	4.00		MockProjects\PrjX
Wrap-up	Day 55		Wrap-up	GV và HV review lại toàn bộ khóa học	Guides/Review	4.00		

Concept/Lecture	87.00		38%
Assignment/Lab	52.00		23%
Guides/Review	12.00		5%
Test/Quiz	76.17		33%
Exam	1.00		0%
Total	**228.2**		**100%**

Concept/Lecture	48.50		21%
Assignment/Lab	3.00		1%
Guides/Review	12.00		5%
Test/Quiz	4.00		2%
Exam	1.00		0%
Total	**68.5**		**30%**