

PGT302 Teaching/Evaluation Plan

Week	Lecture	Laboratory	Notes
Week 01	• Course Introduction (Lecture Part 0) • Introduction to Embedded World (Lecture Part 1) ◦ embedded systems ◦ embedded software ◦ hardware platform ◦ software development	• Lab Work 1 • [DEVELOPMENT WORK] • my1barepi: t00_intro4u • my1barepi: t01_gpio	• [VIDEO GUIDES] • install xcompiler • install code editor • install scm software • prepare my1barepi • prepare sd card • workflow demo • scm basics (git)
Week 02	• Hardware Platform 1 (Lecture Part 2) ◦ Board (Raspberry Pi) specifications ◦ Microcontroller (BCM2835) details	• Lab Work 2 • [DEVELOPMENT WORK] • my1barepi: t02_timer • my1barepi: t03_interrupt	
Week 03	• Hardware Platform 1 (cont.) (Lecture Part 2) ◦ Features: I/O, Timer, Interrupt	• Lab Work 2 (cont.) • [DEVELOPMENT WORK] • my1barepi: t04_textlcd • my1barepi: t05_senstemp • my1barepi: t06_framebuffer • my1barepi: t07_video	Assignment 1 Queue
Week 04	• Bare-metal Programming (Lecture Part 3) ◦ single task, multi-tasking ◦ event triggered	• Lab Work 2 (cont.) • [DEVELOPMENT WORK] • my1barepi: t08_uart • my1barepi: t09_bluetooth ◦ needs bluetooth terminal app	

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Week 05	- Bare-metal on Raspberry Pi (Lecture Part 3) - Timer access - Interrupt Access	Lab Work 2 (cont.) [DEVELOPMENT WORK] - my1barepi: t10_gsm - my1barepi: t11_gps - my1barepi: t12_rtc	Assignment 1 Due (5%)
Week 06	- Simple Applications - traffic light control - temperature control - input signal detection/measurement	Lab Work 3 [DEVELOPMENT WORK] - practical programming: - detect edges - measure pulse width - measure frequency - generate pwm (single/periodic)	Lab Assessment 1 (10%)
Week 07	- Hardware Platform 2 (Lecture Part 4) - Board (GTUC51B001) specifications - Mirocontroller (NXP P89V51RD2) details	Lab Work 3 (cont.) [DEVELOPMENT WORK] - system integration	Mid-term Examination (20%)
Week 08	- Hardware Platform 2 (cont.) (Lecture Part 4) - Features: I/O, Timer, Interrupt	Lab Work 3 (cont.) [DEVELOPMENT WORK] - system integration	Assignment 2 Queue
Week 09	- Embedded OS on Raspberry Pi - running Raspbian Linux - basic I/O access	Lab Work 4 [PREPARATION WORK] - prepare raspbian (pgt302pi image) - change hostname (make unique) [DEVELOPMENT WORK] - my1linuxpi: gpio	

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Week 10	- Embedded OS on Raspberry Pi - running Raspbian Linux - basic peripheral interface	- Lab Work 4 (cont.) [PREPARATION WORK] - make sure avahi/mdns is running on pi - make sure bonjour/avahi/mdns is available on host [DEVELOPMENT WORK] - remote access using putty - my1codelib: run custom server - my1linuxpi: run gpio http server	Assignment 2 Due (5%)
Week 11	- Setup/running simple data server - server side programming (C @ PHP)	Lab Project	Lab Assessment 2 (10%)
Week 12	- Setup/running simple data server - client side programming (C @ HTML/CSS/JAVASCRIPT)	Lab Project (cont.)	
Week 13	- Practical Applications - requirements and considerations	Lab Project (cont.)	
Week 14	- Practical Applications (cont.) - requirements and considerations	Lab Project (cont.)	Lab Project Due (10%)

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