# EEC120 Teaching/Evaluation Plan

Plan for EEC120 Computer Programming I

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

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

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

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