# EEC120 Teaching/Evaluation Plan

Plan for EEC120 Computer Programming I

| Week | Lecture | Laboratory | Notes |
|---|---|---|---|
| **Week 01 - 02** | • Course Introduction<br>• Introduction to Computer Systems<br>1. Hardware (CPU, input, output)<br>2. Software (Kernel, OS, userspace)<br>3. Numbers & Logic<br>• Introduction to Computer Programming<br>1. Algorithms: instruction sequencing<br>2. Flow-charts: visual representation<br>3. Interpreters ⇒ scripts<br>4. Compiler and Linkers ⇒ binary executables<br>• Introduction to C language<br>1. Basic code structure (syntax)<br>2. Function and code-block<br>• Creating first executable binary<br>1. Syntax (language) and semantic (decision logic) errors<br>2. Simple debugging | • Tools (compiler/IDE) Installation/Setup<br>• Explore building binary from c source code | • **[VIDEO GUIDE]**??? |
| **Week 03** | 1. Introduction to C language (cont.)<br>1. Variables and Operators<br>2. Data processing: equations and tasks | • **[DEVELOPMENT WORK]** | **Assignment 1 Queue** |

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| **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 | |
| **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** |

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| **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 | |
| **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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