## **ELE00040I Design, Construction & Test**

## **Feedback Sheet:**

## **Group: B5 Student: Harry Thomas**

# Cohort feedback

We are impressed that as a cohort you have adapted so well to the current situation caused by COVID-19. We are aware that the practical component of this module was affected particularly harshly with the closure of labs in the latter weeks of the project. However, along with almost every other company and university around the world, we have adapted accordingly. Although the title of this module appears to stress construction and testing, most of the process is about imagination, design and documentation.

As we implied in the briefing emails from Tony Ward, then myself, a key job of an engineer is to work with whatever resources are available, to portray ideas and proposals to other people, and to adapt when situations change. In the original plan this would have involved the construction of a prototype and a live demonstration. Under the new situation, this is all done by planning and report writing.

The extra effort you will have had to put into the report will help you in Stage 3 with either your solo project or your Software Engineering project (depending on whether you are BEng or MEng). But more than that - it will help you with practicing how to put forward product concepts, business plans, group work allocation, and proposed practical work, which are all needed for every business and product proposal or grant/funding application, or competitive tendering opportunity you will have throughout your career.

So thank you for reconfiguring, in such a major way, just as we have been reconfiguring. Read this feedback as it is intended, as a reflection on your current state of report-writing, technical planning, and group work, as these are all vital parts of your next year.

Group feedback

I got the feeling reading through these reports that this group lacked a clear leader who took overall responsibility for getting the project completed; and this has been an issue for you as different people were clearly making progress at very different rates in the first term of the project. Lessons that everyone might want to take forward into Stage 3 and your careers include:

1. It can be helpful to have a team leader (in industry a team of five engineers might have a full time team leader whose only task is to assign tasks, spot problems, re-assign tasks and ensure that everyone is working productively).
2. Make a detailed test plan immediately you get a job / assignment and decide what the product will do
3. Be very clear who is in charge of what, and ensure they report progress regularly
4. Document everything you do (as soon as you do it / think it) in an accessible way for your team, so that everyone knows the progress or lack of progress

Individual feedback

**Summary of the Group’s Product**

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| **Category** | **Mark** | **Comments** |
| **(10%) Product concept** (main aim, who it's targeted at, marketing ideas, work breakdown) | **9** | Very good discussion of alternative possible markets, with some excellent ideas about potential use as an educational tool. I did get the impression that these were an afterthought however: there was little evidence of how your chosen market had influenced the decision decisions. Could have been improved with some marketing suggestions (perhaps a product name?) |
| **(10%) Description of entire system** (technical overview, specification, use of ADC, details of constructing your prototype) | **6** | The flow-chart was good, and the operation and scaling of the ADC is well described, but there’s nothing here about the challenges of measuring AC voltages or currents. In the code for accessing the ADC the “100” isn’t the time it takes to take a reading, it’s a timeout, which is not handled in the code. The LCD would not have worked either, as the variable is passed to the function as a double, but then passed to PB\_LCD\_WriteString() which expects a string. Again, testing would have discovered this very quickly, but careful thought would have avoided this problem entirely. |
| **(10%) Analysis of effectiveness & Future plans** (achievements against specification, description of test strategy and results, quality of user interfacing, further work needed as a group to complete the product) | **6** | I couldn’t find much here about test strategy: just the idea of comparing the readings to the lab DMMs. A more detailed test plan would have been welcome. Future development does outline the main tasks required, but there’s no mention of AC measurements in the future plans. |
| **(10%) Analysis of sustainability** (Impact of your intended product on the environment. Consider the product's entire lifecycle from sourcing components, manufacturing, active operation, and end-of-life (re-use, recycle, disposal). Refer to the official directives on this subject and demonstrate that you understand the effect of your product on the environment and have sought to minimise any negative effects.) | **8** | A very good discussion of the impact of your design, including manufacturability, disposal and re-use, and even the packaging. You could have referred to WEEE and RoHS recommendations in more detail, but this is good. |

**Description of Individual Contribution**

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| --- | --- | --- |
| **Category** | **Mark** | **Comments** |
| **(10%) Clear statement of individual role and list of contributions to the project** | **8** | You’ve clearly commented that you undertook the role of programmer. However your attempts to use the ADC in the simplest way failed, but with no discussion about why. The (more complex) use of the HAL libraries and interrupts never got the opportunity to be tested, which is a shame as I’m sure some of the issues here would have been identified in testing. |
| **(30%) Technical detail of individual contributions** (Work that you have personally contributed (or jointly worked on). Include code, photos and test data. If you have not managed to make as much progress as initially expected, then it is vital that you describe the progress that you have made, and your plans for future work in enough technical detail that someone else could complete the work in a well-equipped laboratory) | **18** | Use of the HAL libraries is fine (although it does inflate the code size), and the code is well-commented but from the code I’m worried that you haven’t really understood how interrupts work. Putting an infinite while() loop in an interrupt handler is guaranteed to eventually crash the program (as the stack fills up with each interrupt). The LCD should not be overwhelmed either: the function calls should only return after the LCD has finished dealing with the new requests.  Also, the LCD is a +5V part, it’s just not powered from the USB (a look at the circuit diagram could have told you this.) |
| **(10%) Reflective summary of group work – including peer review** (Group structure and work. Time management. Project Planning. Major change reconfiguration. Charts, WBS, Risk. Share allocations and paragraphs) | **7** | This section shows a good level of self-awareness, and well-justified reviews of your colleague’s contributions. You are right to highlight the problems with communication: spotting struggling team members at an earlier stage would have been valuable. No Gantt chart or risk analysis: both would have been nice to include. |
| **(10%) Overall appearance and structure** (references were given giving hints on how to write a summary report for a boss, and layouts for technical reports) | **8** | This is a well-structured report, and clearly laid-out, with a good abstract; however the abstract would have benefitted from some information about the target market to differentiate your project. A short table of contents would have made navigation easier. Spelling and grammar very good in the report itself, but there are numerous typos in the diagrams. |

**TOTAL WEIGHTED MARK: 70 %**