Assessment Criteria

You will be assessed according to the following criteria:

Log Book – Section 1

Item	Detail	Evaluation	Mark
Log book format	Relevant headings and subheadings used for different sections. All entries dated, entries easy to read. All relevant printed / photocopied material inserted into logbook.	E G A P N	/3
Planning	Your own objectives for this subject. A table containing a chronologically ordered and detailed list of activities to be completed, an estimation of time in hours required and the actual time spent on each.	E G A P N	/3
Research and design	Block diagram of overall system. Relevant background theory for the design including a consideration of other possible solutions. Design approach and calculations to meet the electrical specifications.	E G A P N	/4
Schematic	Schematic capture. Layout. Custom components. Component labelling. Connectivity (net labels, ports, etc.). Project compilation. Parameter table including full component details. Bill of materials.	E G A P N	/10
Component selection	Choice of appropriate components with relevant data sheets.	E G A P N	/5
		SUBTOTAL	**/25**

Laboratory Testing

Item	Detail	Evaluation	Mark
Software	Modularity. Timing. Style. Comments. Ease of use.	**E G A P N**	**/5**
Functional testing	Power (battery/USB). Sensor input. Data logger function. Connectivity (e.g. USB, WiFi). Timing to within 0.1%.	**E G A P N**	**/10**
Accuracy	Voltage tolerance. Voltage noise. Power consumption. Clock. Temperature range.	**E G A P N**	**/10**
		SUBTOTAL	**/25**

Log Book – Section 2

Item	Detail	Evaluation	Mark
EMC	Design approach. Inputs and outputs meet conducted EMC requirements. Mitigation of common impedance, capacitive and inductive coupling. Proper power supply distribution and decoupling.	E G A P N	/4
PCB	Layout. Size. Track widths. Component placing and designators. Ground plane integrity. Views of separate layers. High resolution colour photo of PCA.	E G A P N	/10
Mechanical	Spatial visualisation including front panel layout and isometric view with covers removed showing major component locations. Connectors / cable entry. Dimensions. PCB mounting. Material.	E G A P N	/4
Costing	Design cost. Manufacturing cost. Testing / calibration cost (if any). Inclusion of labour costs, overheads, etc.	E G A P N	/4
Testing	Test methodology, including block diagrams of actual test setups. Recorded results. Debugging.	E G A P N	/2
Summary	Comparative table of desired and actual product specifications, indicating compliance (or otherwise). Summary of own personal objectives as set out at the beginning of the project, and brief description of whether or not they were met.	E G A P N	/1
		SUBTOTAL	**/25**

Presentation and Oral Exam

Item	Detail	Evaluation	Mark
Presentation.	Introduction. Main points highlighted. Logical sequence. Conclusion. Effectively prepared. Voice clear and fluent. Meaningful, natural gestures and mannerisms.	**E G A P N**	**/5**
Technical content.	Appropriate use of jargon, schematics, data sheets, PCB layouts. Engineering methodology. Analytical approach. Consideration of alternative designs. Use and assimilation of subject material. Creativity.	**E G A P N**	**/5**
Oral exam Q1.	Answers in a clear, correct, and professional manner.	**E G A P N**	**/3**
Oral exam Q2.	Answers in a clear, correct, and professional manner.	**E G A P N**	**/3**
Oral exam Q3.	Answers in a clear, correct, and professional manner.	**E G A P N**	**/3**
Oral exam Q4.	Answers in a clear, correct, and professional manner.	**E G A P N**	**/3**
Oral exam Q5.	Answers in a clear, correct, and professional manner.	**E G A P N**	**/3**
		SUBTOTAL	**/25**

Assessment items will be evaluated using the following criteria:

Evaluation	Mark (%)	Description
Excellent	100	**All relevant material is presented in a logical manner showing clear understanding, and sound reasoning.** For hardware – excellent hardware design (showing novel elements or utilising state-of-the-art components) with virtually no flaws, modules operate within specification for all operating conditions (e.g. environment), no numerical errors, excellent performance against all specifications, thorough testing strategy and clear interpretation of results. For process – all steps planned and followed, excellent understanding of design constraints and decisions (showing alternatives and why they were discarded), all relevant material referenced, clear organisation and understanding.
Good	75	**Nearly all relevant material is presented with good organisation and understanding.** For hardware – good hardware design (with only minor flaws in modularity, functionality), modules operate within specification for most operating conditions (e.g. environment), minimal numerical errors, good performance for most specifications, good testing strategy and clear interpretation of results. For process – most steps followed, good understanding of design constraints and decisions, all relevant material referenced, clear organisation and understanding.
Acceptable	50	**Most relevant material is presented with acceptable organisation and understanding.** For hardware – acceptable hardware design (but could show improvement in modularity, functionality), some modules may operate outside specification under certain operating conditions (e.g. environment), occasional numerical errors, performance within acceptable bounds, acceptable testing strategy and results. For process – most steps followed, acceptable understanding of design constraints and decisions, relevant material referenced, acceptable organisation.
Poor	25	**Little relevant material is presented and/or poor organisation or understanding.** For hardware – Conceptual difficulty of the underlying concepts, functionality missing, poor design, inappropriate or incorrect use of passive and active components, numerous numerical errors. For process – incorrect steps, insufficient justification of design decisions, and/or poor organisation.
No attempt	0	**No attempt.** For hardware – missing modules and/or functionality and/or no understanding of specifications. For process – missing steps and /or no justification of design decisions.

Oral Defence

During the assessment of your work you will be asked questions based on material which you have learnt in the subject and then used to implement the assessment task. You are expected to know exactly how your implementation works and be able to justify the design choices which you have made. If you fail to answer the questions with appropriate substance then you will be awarded **zero** for that component.