**ELE3001 Final Report Plan**

**Structure:**

Project Introduction and Housekeeping

* Title Page
* Abstract
* Specification
* Acknowledgements
* Declaration of Originality
* Table of Contents
* List of Figures
* List of Tables

Main Text Chapters

* Introduction
* Briefly mention growth of necessity of air quality monitors
* Outline structure of report: research > design > implementation > test
* Project Specialization
* Outline why farm was chosen
* Focus on Pollutants
* Focus on GHG
* State of the art
* Go through current models and their shortcomings
* Proposed Solution
* Explain plan for system: Sensing, Data display/recording, Alarm systems
* Go through project timeline: gantt chart
* Reflection of progress since interim
* Sensor Focus
* Go through implementation each sensor: hardware and software
* Explain why it was chosen: accuracy, lifespan, etc.
* Explain challenges with integration if any
* Data display/recording focus
* Same as above only with LCD, micro SD, RTC.
* Alarm system
* Going through alarm limits, LVL 1 and 2
* Explain alarm operation: software and hardware
* Home Test
* PM Experiment
* CH4 experiment
* Farm Test 1
* Farm Test 2
* Critical analysis on conclusions from farm test and performance of device
* Suggestions and Improvements
* Conclusion

Supplementary materials

* Bibliography
* Appendix

**Advice from Interim Report:**

* Keep quotes to a minimum
* Include table of minimum exposure limits
* Make gantt chart as big as possible
* Annotate diagrams
* Go through a step-by-step description of test results and then critically explain them
* Include instances of first person referencing to show off a bit

**Structure #2**

**Table of Contents**

1. **Introduction**  
   1.1 Purpose of the Report  
   1.2 Background and Motivation  
   1.3 Objectives
2. **Review of Farm Air Quality and Pollutants**  
   2.1 Common Agricultural Air Pollutants  
   2.2 Sources and Impact on Health and Environment  
   2.3 Regulatory Standards and Guidelines
3. **State of the Art**  
   3.1 Existing Air Quality Monitoring Solutions  
   3.2 Technologies and Sensors in Use  
   3.3 Limitations and Gaps in Current Systems
4. **Design of the Farm Air Quality Monitor**  
   4.1 Design Requirements and Constraints  
   4.2 System Architecture and Components  
   4.3 Sensor Selection and Justification  
   4.4 Power Supply and Enclosure Design
5. **Construction and Implementation**  
   5.1 Assembly Process  
   5.2 Integration of Hardware and Software  
   5.3 Calibration of Sensors  
   5.4 Challenges Faced During Construction
6. **Testing and Evaluation**  
   6.1 Testing Methodology  
   6.2 Test Environments and Scenarios  
   6.3 Performance Results  
   6.4 Comparison Against Benchmarks
7. **Progress Since Last Report**  
   7.1 Summary of Previous Milestones  
   7.2 Key Improvements and Iterations  
   7.3 Lessons Learned
8. **Reflection and Future Work**  
   8.1 Evaluation of Design and Performance  
   8.2 Potential Enhancements  
   8.3 Long-Term Deployment Considerations
9. **Conclusion**
10. **References**
11. **Appendices**  
    A. Technical Schematics  
    B. Code Listings  
    C. Additional Data Tables

**Mark Scheme:**

* Problem Analysis: in-dept research of problem project is trying to solve, presented clearly and concisely
* Solution Description: project comprehensively answers all problems introduced in first section
* Implementation: Utilising academic background to solve problems efficiently
* Project Testing: tests performed with structured methodology and with clear performance metrics to assess performance of project
* Presentation quality: formatting, language, structure all to a professional degree
* Sustainability: evaluating impact device could have and of practices used
* Reflection on Progress: Deep reflection of milestones achieved
* Project Functionality: Solution achieves goals set out by spec., utilises advanced and creative features.

A diagram of a flowchart

AI-generated content may be incorrect.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sensor** | **Price / £** | **Current Draw / mA** | **Temp. Range / °C** | **Humidity Range / %RH** | **Sensing Resolution** | **Life Span / Years** |
| DFRobot Gravity Sensors | 52.75 | <5 | -20 to 50 | 15 to 90 | +/- 1 ppm | >2 |
| SPS30 | 28.30 | ~55 | -10 to 60 | 0 to 95 | +/- 5 µg/m³ | >10 |
| SCD41 | 51.40 | 15 | -10 to 60 | 0 to 95 | +/- 50 ppm, +/- 6%RH, +/- 0.8 °C | > 10 |
| PID-AH | 400.00 | 28 | -20 to 60 | 0 to 95 | +/- 1 ppm | >5 |
| IRM-AT | 77.90 | 30 | -20 to 50 | 0 to 95 | +/- 1%vol | >3 |

A white box with black buttons and a black wire

AI-generated content may be incorrect.

A white box with black knobs

AI-generated content may be incorrect.A rectangular object with blue rectangular objects on it

AI-generated content may be incorrect.

A toaster with two slices of bread

AI-generated content may be incorrect.