**FEEG2001 Technical Design Report - Template**

2023-24

**Guidance:**

* This page and the text in red included in this document are for guidance only and should be deleted; not included within your final submission.
* All body text should be Calibri (Body), 11 point font size. All section titles should be Calibri (Body), bold; main sections 14 point, sub-sections 12 point, font size.
* Page size is A4 throughout (including the Gantt Chart and appended drawings) with 2cm margins.
* Document Page Breaks between sections should be retained.
* Illustrations should be sized appropriately and Figure titles referenced in the text.
* Text which does not count toward the section word count
  + Section headings
  + Figure and table titles, only where they are used as captions with the figure or table
  + Reasonable entries and annotations in figures. (Do not use figures to provide lengthy text.)

Text in a table counts towards the section word count.

*Tip - More content is not necessarily better. Editing is very important to ensure that all content is highly relevant and professionally communicated i.e. a larger amount of lower quality, poorly compiled, work is not as good as having a smaller quantity of high quality, well considered work.*

FEEG2001 Systems Design and Computing

Technical Design Report

Project Title: Your title here e.g. Eurobot, Soundseeking Robot, Versatile Rover, Responsive System etc.

Group: XX (your group number here)

Team Members:

List your team members below (first name, surname, student number)

Project Supervisor(s):

List your Project supervisor(s) here.

Date:

Write the Report submission date here (in format Day Month Year)

# Table of Contents

1. General Summary
   1. Assumptions
   2. Project background and contexts

1. Design Concept Development
   1. Concept generation & Selection
   2. Design development Milestones

1. Final Design Review
   1. Overview
   2. Performance Scenario
   3. System Requirements
   4. Technical research areas
   5. Materials
   6. Structural design
   7. Design for other aspects of System Performance
   8. Design for Manufacture
   9. Testing
   10. Resource Use
2. Suggested Future Developments
3. Management

5.1 Team Structure and Roles

5.2 Project Management

1. References

Appendix A – Design Specification

Appendix B – Engineering Drawings

Appendix C – Project Presentation slides (where applicable)

# General Summary

## Project background and contexts

Please describe key project background information and the context of your design (150 words maximum). You may include illustration.

## Assumptions

Please identify your key project assumptions (150 words maximum). You may include illustration.

*Tip:* *Project assumptions are stated conditions related to the design brief, expected performance scenario, project activity or design solution, which are uncertain due to current or future variation, so not absolutely quantifiable within the project.*

*An uncertain condition leading to a design/project judgement or to a design/project performance outcome, may benefit from being estimated as a reasonably likely expected condition, and used as a justifiable assumption to design to. It can be helpful to include a justification to explain the basis of the estimate, perhaps with a description of the expected likelihood.*

# Design Concept Development

## Concept Generation & Selection

Please provide an overview of your design concept generation and concept selection process (250 words maximum) with integrated illustrations. Illustrations should include annotated diagrams and drawings that highlight the features most valuable within each concept in relation to your given/ developed design parameters.

## Design Development Milestones

Please provide an illustrated overview of your key design development milestones – from confirmed concept through to your final proposal (250 words maximum).

# Final Design Review

## Overview

Please provide an overview of your final design proposal (200 words maximum). You may include illustration.

## Performance Scenario

Please provide an overview of your system performance scenario (300 words maximum). You may include illustration.

## System Requirements

Please identify your system and sub-system requirements (300 words maximum). Illustrations should be included.

## Technical Research Areas

Please provide an overview of the most relevant technical research areas relevant to your design (200 words maximum).

## Materials

Please provide an overview of your material selection and describe why notable materials have been selected in relation to your system performance, it’s operational environment and life cycle considerations (300 words maximum). Illustrations should be included.

## Structural Design

Please provide an overview of your structural design proposal and expected performance, identifying and quantifying loads and forces, and where relevant the deformations and/or stresses in key components (300 words maximum). This should be at a whole system level, as well as at a sub-system and part level where relevant. Illustrations should be included.

## Design for other aspects of System Performance

Please provide an overview of the design in relation to the expected performance (other than structural) of the systems within your proposal, including; inputs, computation, control and responses e.g. actuation, with other outputs (500 words maximum). Illustrations should be included.

## Design for Manufacture

Please provide an overview related to your system’s design for manufacture, including aspects of purchasing, prototyping/ production processes, assembly and scope for re-purposing at the end of life (300 words maximum). Illustrations should be included.

## Performance Evaluation / Testing

Please provide an overview of your system performance evaluation / testing, identifying the specific aims for verification of the design in relation to the system and sub-system requirements, and the results (300 words maximum). You may use illustration.

**3.10 Resource Use**

Please provide an overview of the following (500 words maximum). You may include illustration.

* A material cost breakdown, including the total cost of materials applied in the final design/build (not including those used in development which are not included in the final design/build).
* Time (person hours) for manufacture and for testing.
* Description of facilities and services used.
* Description of capabilities applied – knowledge and practical skills applied.

# Suggested Future Developments

Highlighting areas of potential improvement in relation to the design requirements, please provide an illustrated overview of your suggested future design developments (250 words maximum).

# Management

## Team Structure and Roles

Please provide an overview description of your team structure and team member roles (200 words maximum). You may include illustration.

## Project Management

Please provide an overview description of your project management, including an explanation of the critical path - linking the items determining the overall completion time for the project (250 words maximum), and a Gantt Chart. (Your Gantt Chart should be readable at A3 size, though reproduced here at A4).

# References

**Appendix A – Design Specification**

Please add your full design specification. You should refer to your design specification in sections 2 and 3 of your report when justifying design and development decisions your team have come to. Those decisions should align with your design specification.

**Appendix B – Engineering Drawings**

Please include the following drawings (they should be readable A3 landscape though presented here as A4):

1. **An assembly engineering drawing** including a parts list table identifying the parts, showing how parts are designed to fit together, making designed clearances clearly visible where relevant (enlarged detail views and section views may help). Showing the limits of position for moving parts and any relevant interfacing surfaces is highly desirable.
2. **Part engineering drawings** of 2 or 3 unique/ important parts of your design with suitable views in 3rd angle projection and suitable tolerances applied to all specifying dimensions.
3. **A three-dimensional view or views titled ‘Final Design’** presented in its working context in a manner that communicates your design to an external audience. For example, a three-dimensional exploded/ transparent view, highlighting specific parts or sub-systems, and perhaps indicating the motion of any moving parts – your design clearly shown in its context; showing the relevant physical interfaces in its environment.

**Appendix B – Project Presentation slides**

**If** your project has a final presentation scheduled e.g. in week 33, please append a copy of your Presentation slides – one slide per A4 landscape page.