Cape Peninsula University of Technology

Industrial Design Project 3 DES370S (GA 10: Engineering professionalism)

Project Title: **Open Source Based ASV**

Student Initial and Surname: JF Williams
Student Number: 221343687
Lecturer: Dr M. Mnguni

Date of Evaluation: 15/08/2024

Outline

- ❑Behaviour and Responsibility
- ❑Code of Ethics and Professionalism
- ❑ Workplace Health and Safety
- ❑ Proper Use of Others' Work
- ❑Conclusion
- ❑References

Behaviour and Responsibility

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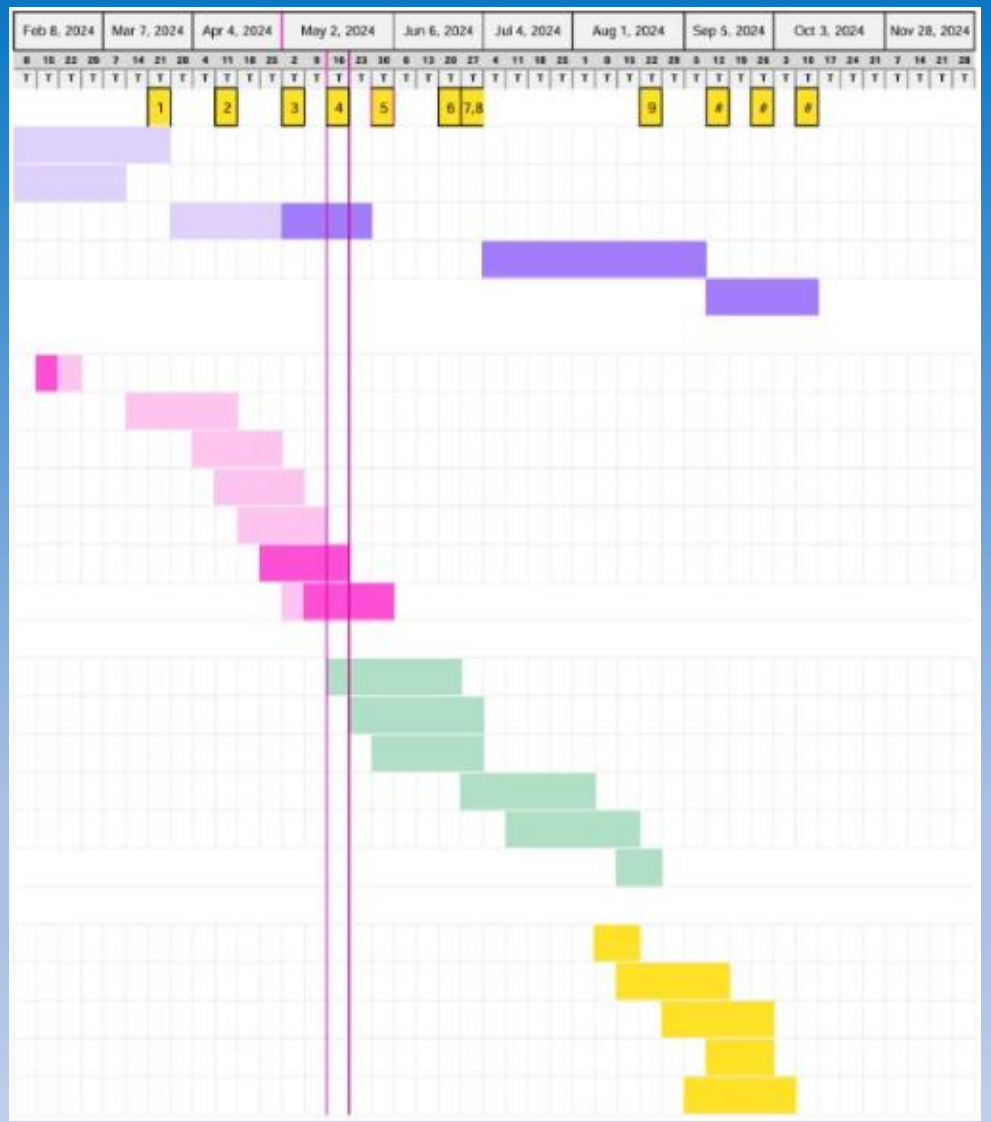
Behaviour Assessment

- The interaction between engineers and clients.
- Profession behaviour contributes to projects success

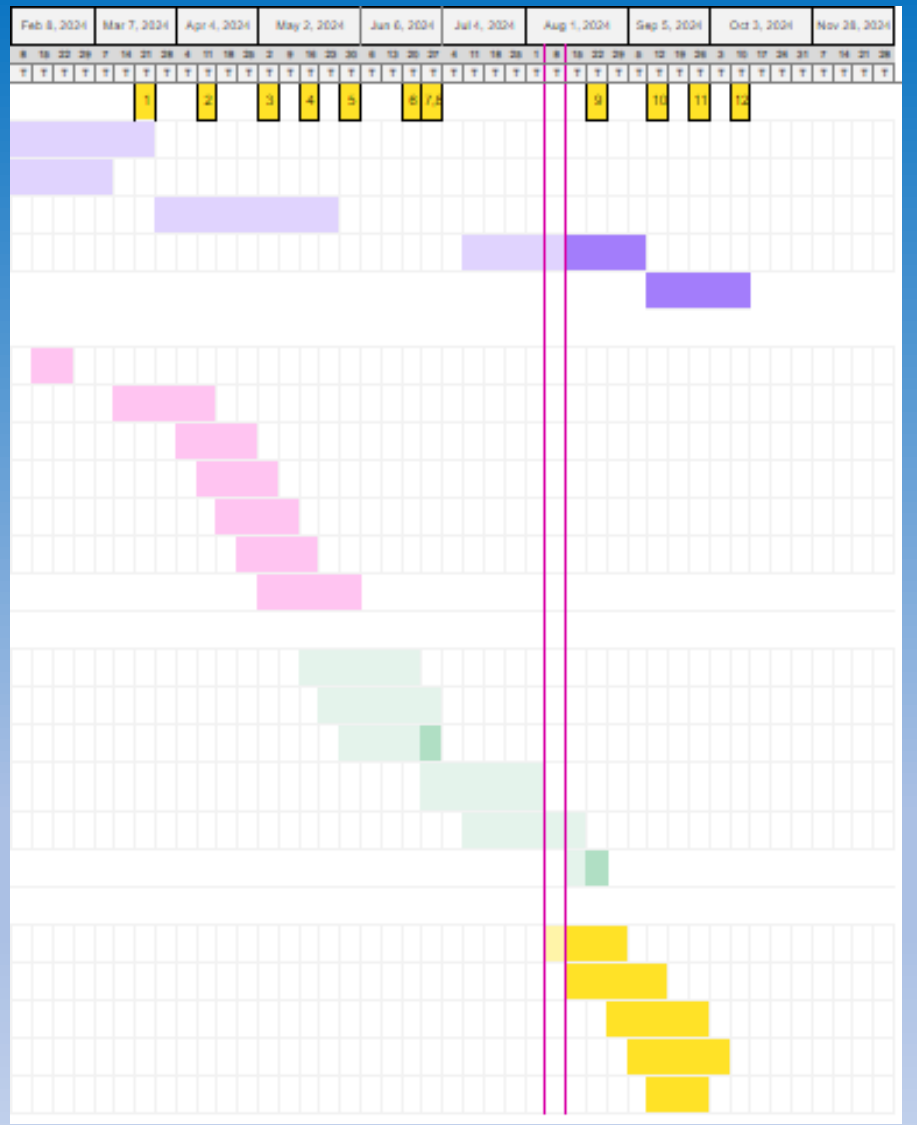
- Criteria: Adherence to Timeline, Honest Communication, Proactive Problem-solving
- Project applications: Updating GANTT and milestones, communication between myself and supervisor

Behaviour and Responsibility

16 May 2024: 40% complete



13 August 2024: 74% complete



Behaviour and Responsibility

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Responsibility Evaluation

- Criteria: Accountability, Ownership of Tasks, Critical thinking
  - Shows good professional principals
- Familiarise with standards and have work reviewed
  - Shows forethought and collaberation

Code of Ethics and Professionalism

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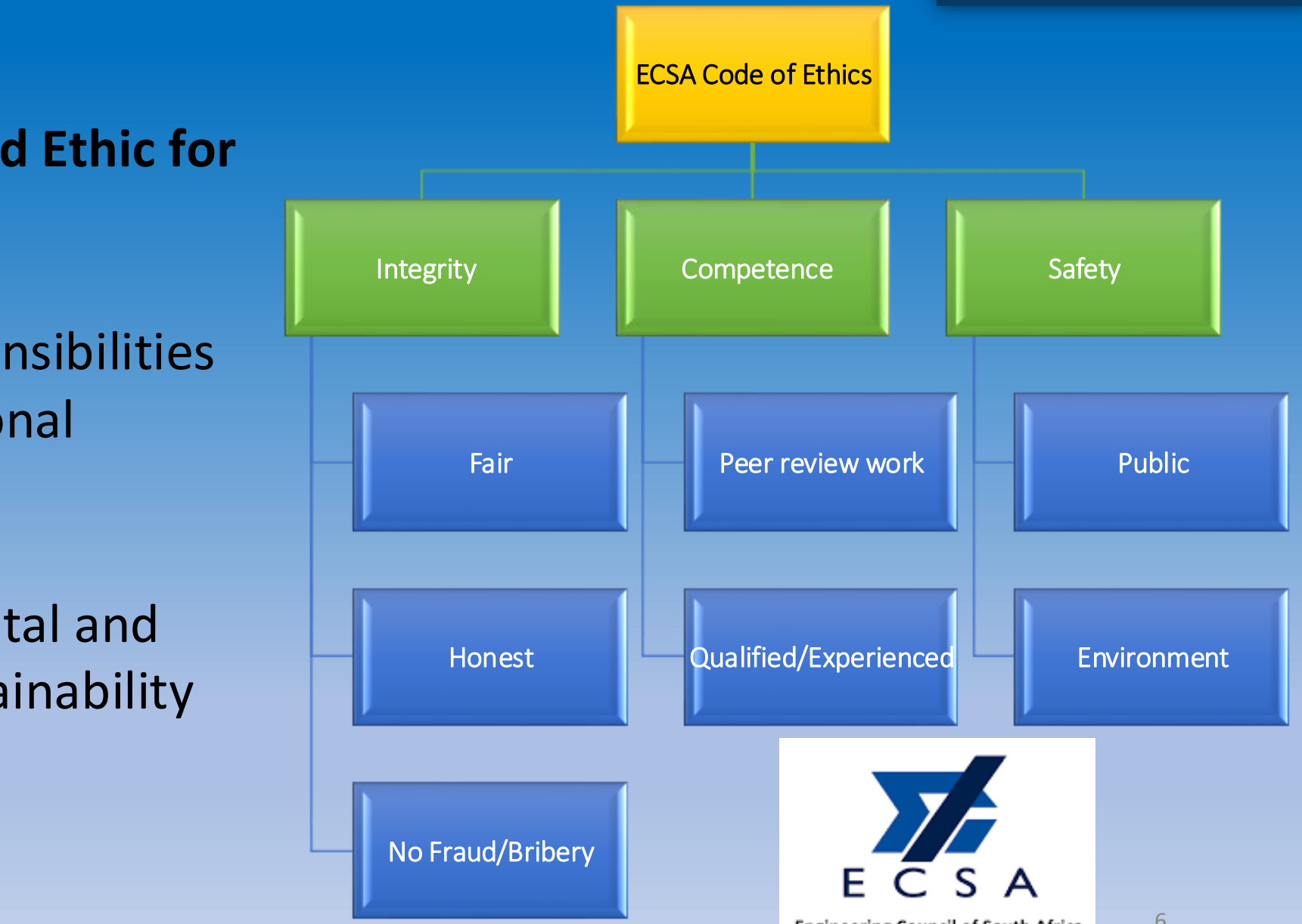
ECSA Code of Conduct and Ethic for Registered Persons.

- Regulations and responsibilities of registered professional engineers
- Promotes environmental and public safety and sustainability and best practises



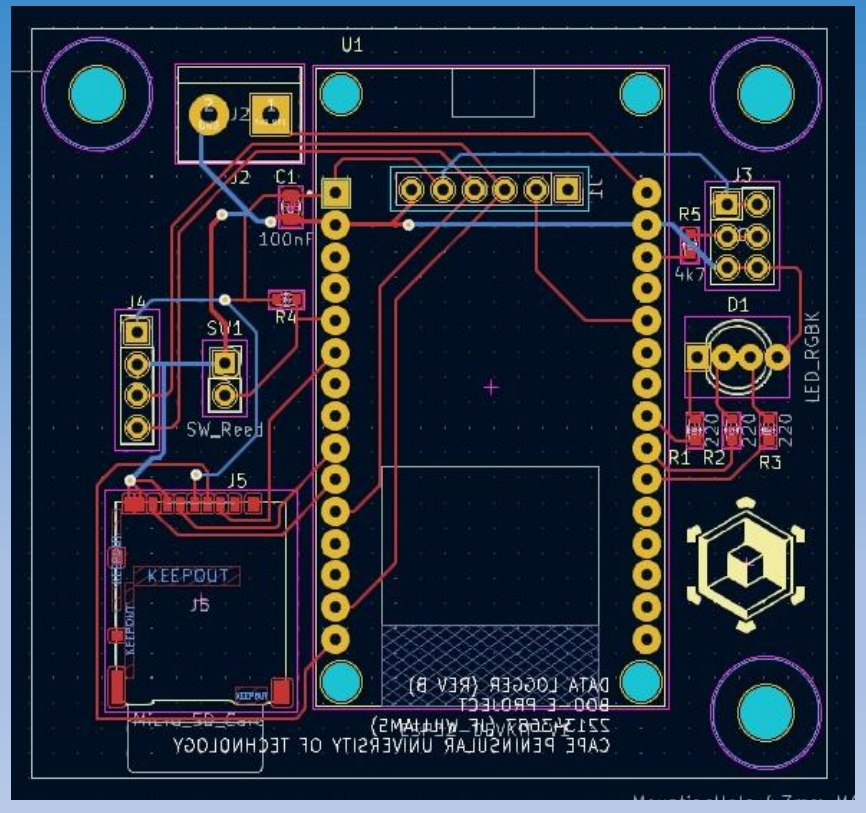
ECSA
Engineering Council of South Africa

Code of Ethics and Professionalism

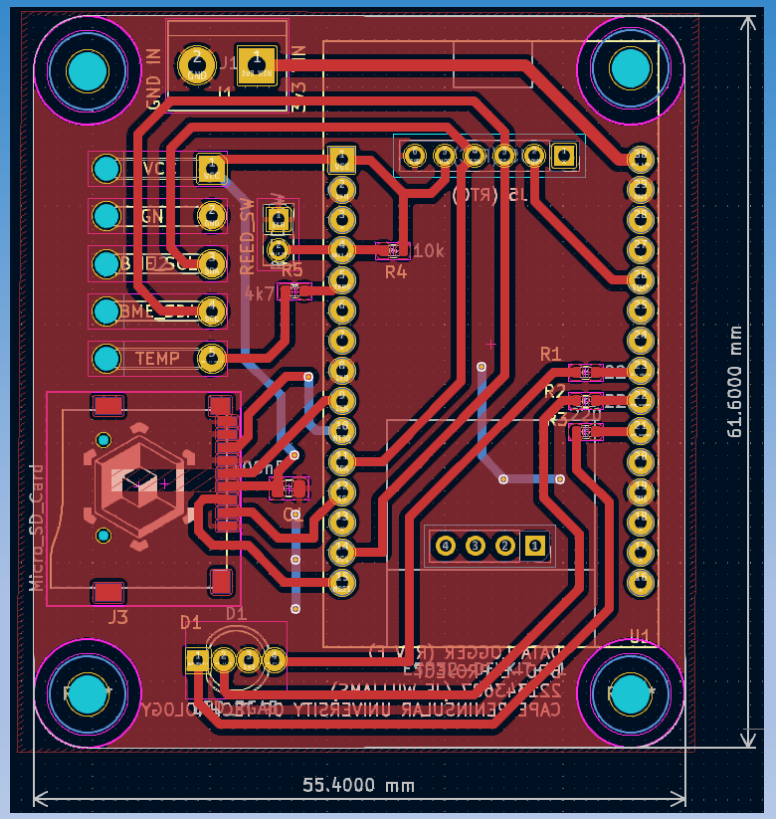
Cape Peninsula University of Technology

ECSA Code of Conduct and Ethics project application

Initial design



Revision E



Improvements:

- Thicker tracks
- Ground plane
- Better layout
- 95% of tracks on one side

Code of Ethics and Professionalism

Engineering Profession Act, 2000 (Act No. 46 of 2000).

- ❑Legal framework for engineering industry standards to protect the public
- ❑Non-compliance = disciplinary actions (i.e. Fines, derigistration)
- ❑Criteria: Accountability, Staying current, Environmental and public safety

Workplace Health and Safety

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Workplace Health and Safety Overview

- OHS = Occupational Health and Safety Act, 1993" (Act No. 85 of 1993: **Legal responsibilities** of employer and employee **to ensure safe workspace** for all.
- SHE = SAFETY HEALTH and ENVIRONMENT: **Internal** procedure to mitigate and **address risks.**

Workplace Health and Safety

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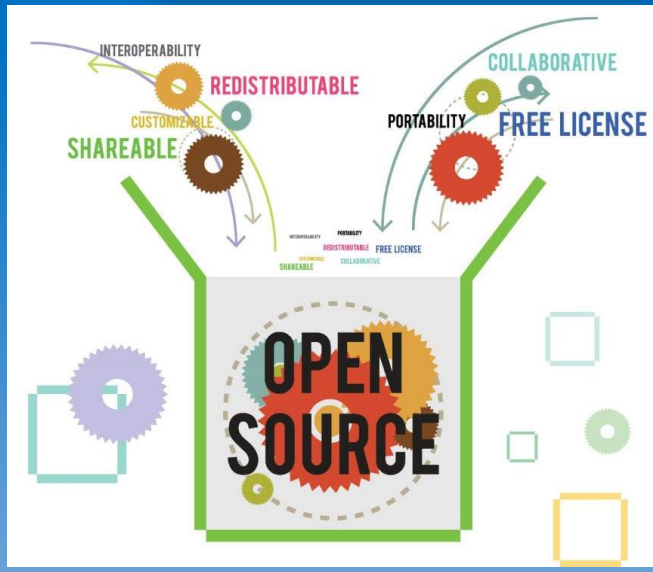
Project examples:

- Use of tools correctly
- Implementing ISO and IEC standards
- PPE where necessary
- Supervisor present when doing "live" work

Industry standard	Project application
IEC 61508	Programmable electronics safety and reliability implementations
AIS	Marine vessel International standard messages used for tracking and avoidance
Open-source Licensing Standards	Adhere to the relevant open-source licensing agreements
ISO 14001	Development considers environmental impact and sustainability
ISO 9001	Structured quality management process

Proper Use of Others' Work



Intellectual Property and Copyright

- Use without citation = THEFT of IP ---> lack of integrity

Methods to protect IP: Copyrights, patents, license agreements

- Non-compliance = legal action, dismissal, deregistration
- Open-source allow for derivative of work but must give credit

Conclusion

- **How can we uphold and contribute to the integrity and professionalism of engineering?**

- Approach to professionalism = Perceived image of integrity
- Adhere to safety protocols and standards
- Safer practices = professional environment and workspace
- Reference all external sources used in the project

References

- Dr M. Mnguni, “Behaviour and Responsibility”, Cape Peninsula University of Technology, July 2024
- Dr M. Mnguni, “Code of Ethics”, Cape Peninsula University of Technology, July 2024
- Dr M. Mnguni, “Workplace Safety”, Cape Peninsula University of Technology, Aug 2024
- Dr M. Mnguni, “Proper Use of Other’s Work”, Cape Peninsula University of Technology, Aug 2024
- Engineering Counsel of South Africa, “Regulation of Engineering Practices - Code of Conduct,” *Ecsa.co.za*, 2017. https://www.ecsa.co.za/regulation/SitePages/Code%20of%20Conduct.aspx
- Engineering Counsel of South Africa, “REPUBLIC OF SOUTH AFRICA ENGINEERING PROFESSION ACT REPUBLIEK VAN SUID-AFRIKA,” Dec. 2008. Available: https://www.ecsa.co.za/regulation/RegulationDocs/EngProfAct_46_2000.pdf
- R. Bellairs, “What Is IEC 61508? Overview + Safety Integrity Levels | Perforce,” *www.perforce.com*, Jan. 31, 2019. https://www.perforce.com/blog/qac/what-iec-61508-safety-integrity-levels-sils

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GA10: Engineering professionalism

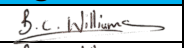
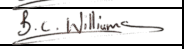
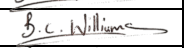
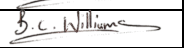
Student Name: Jordan Williams

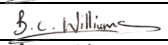
Project Title: Open-source Based ASV

Supervisor Name: B. Williams

Purpose of the project time sheet

This time sheet should provide a record of meetings between the student and supervisor, including the date, time in, time out, duration of the meeting, and the purpose of the meeting. It helps track the time spent on the project and the various activities undertaken during each meeting such as Behaviour and Responsibility, ECSA Code of Ethics and Professional, Workplace Health and Safety Act and Proper Use of Others' Work. The student will be required to deliver an oral PowerPoint presentation encompassing a summary of all the meetings on 5th of September 2024.

Date	Time In	Time Out	Duration	Purpose of the meeting	Student signature	Supervisor Signature
07/02/2024	13:30	14:30	1hr	Initial meeting and discuss project ideas		
15/02/2024	12:00	13:00	1hr	Discuss project specifications and problem statement		
01/03/2024	12:00	12:30	30min	Discuss MOU		
11/04/2024	12:30	13:30	1hr	Proposal feed back and discuss GA11		
25/04/2024	12:30	13:30	1hr	GA11 discussion and project update		
23/05/2024	10:30	11:30	1hr	GA11 presentation and project update		
14/06/2024	13:00	13:30	30 min	Discuss project plans for recess period		
18/07/2024	12:00	13:00	1 hr	Update and demonstrate on project progress over holiday		
22/07/2024	13:00	16:30	30 min	Project update		

Date	Time In	Time Out	Duration	Purpose of the meeting	Student signature	Supervisor Signature
24/07/2024	12:00	15:30	3.5 hrs	Work in labs		
25/07/2024	13:00	15:30	2.5 hrs	Work in labs		
26/07/2024	16:00	17:30	1.5 hrs	Project update		
08/08/2024	12:30	13:30	1hr	PCB design review and project update		
19/08/2024	12:30	15:30	3 hrs	GA 10 pre-presetation and PCB manufature		
22/08/2024	10:00	13:00	4 hrs	Work in labs and feedback on GA10 presetation