PDE3823 Major Project and Professional Practice

Design Engineering, Mechatronics and Robotics, Computer Systems Engineering and Electronic Engineering

Module Narrative

Aims:

This module gives students the opportunity to synthesise prior learning and develop their planned graduation trajectory through a self-selected, self-initiated and self-directed major project and complementary professional practice components including EDI (equality, diversity and inclusion) principles.

The direction of the project is a personal choice supported by appropriate staff to help them best synthesise their course experiences into a project that develops their working practice and professional profile to a quality and in a direction suited to their exit trajectory.

Students will develop a body of coherent and detailed knowledge of project development, management and communication frameworks and methods in an appropriate professional sector.

Module Leader

Wyn Griffiths
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Module Narrative

Learning outcomes:

Knowledge

On successful completion of this module, the student will be able to:

1. Consolidate and extend a systematic understanding of the techniques and requirements for sector-appropriate early-stage project exploration, research, planning for and definition of a self-directed project.
2. Critically review and apply their knowledge to generate a sector-appropriate and compelling plan/brief/specification for a built environment, design or engineering project.
3. Exemplify their ability to capture, communicate and reflect upon a self-initiated and self-directed project portfolio at a professional level.

Skills

On successful completion of this module, the student will be able to:

4. Develop a systematic understanding of processes and techniques for researching, generating, exploring, developing, validating and communicating built environment, design or engineering concepts for a self-directed project.
5. Apply their knowledge to create a compelling, plausible and feasible project while adopting an inclusive approach to their practice and recognising their responsibilities as an EDI aware professional.
6. Synthesise a systematic understanding of processes and techniques for analysing, evolving, prototyping, testing, refining and defining a built environment, design or engineering concept.
7. Create a final design scheme synthesising their development process into a coherent and detailed final outcome applying sector-relevant standards and guidelines.

Module Structure
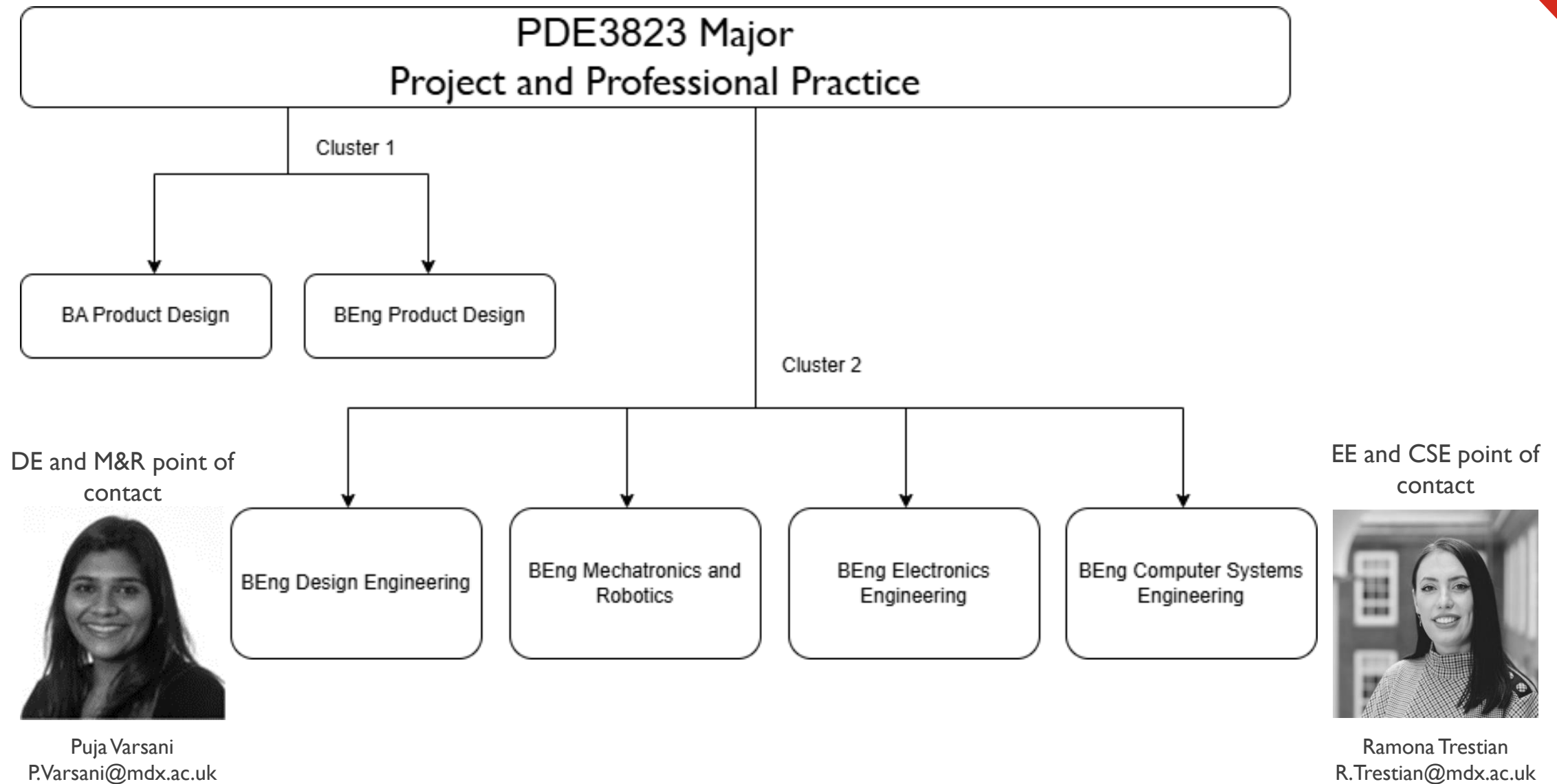
Supervisors

Ramona Trestian

Puja Varsani

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Vaibhav Gandhi

Alex Zivanovic

Huan Nguyen

Mehnaz Hamilton

Nick Weldin

Tuan Le

Inas El-Aroussi

Purav Shah

Michael Margolis

Current Plan - TBC

Each week, you will have three 3-hour sessions scheduled as part of this module. These sessions are carefully designed to provide you with the tools, resources, and guidance necessary to successfully complete your major project:

1. **Professional Practice Session (3 hours)**

This session is common across all six programs and focuses on developing your skills as a professional engineer or designer. Topics include:

- Ethics and responsibilities in your profession.
- Communication skills (e.g., report writing, presenting).
- Employability and career readiness.

Current Plan - TBC

2. Project Management & Research Session (3 hours)

This session is shared across the four engineering programs and covers essential project management and research skills to support your project development. Key topics include:

- Preparing your project proposal and defining a problem.
- Setting up clear aims, objectives, and deliverables.
- Managing your project timeline with tools like Gantt charts.
- Structuring your project report and blog.
- Conducting background research and writing a literature review.
- Planning methodologies, resources, and approaches for your work.
- Understanding testing, validation, and evaluation of results.

Current Plan - TBC

3. Lab and Specialised Support Session (3 hours)

This session is dedicated to hands-on work on your project, with access to specialised facilities and equipment. You will be booked into labs tailored to your project needs, such as:
- CAD suites for design work.
- Workshops for prototyping.
- 3D printing and laser cutting facilities.

In addition to these booked sessions, you will have access to drop-in specialised support sessions for focused assistance with tools and techniques. For example:
- Advanced CAD skills.
- Operating workshop equipment.
- Using 3D printing or laser cutting technologies.
- Multi-meter, oscilloscope, power supply

Understanding the Time Commitment for Your Major Project

This **60-credit** module represents a significant component of your final year and is designed to reflect a workload of approximately **600 hours**.
Of these, **108 hours** are scheduled as timetabled sessions, where you will receive direct support through classes, workshops, and supervision meetings.

The remaining **492 hours** are allocated for independent work, which includes research, design, development, documentation, and preparation for assessments. While this is the recommended guideline, we understand that many of you have responsibilities outside your studies, such as part-time work or family commitments.

It's essential to approach this module with a **structured and realistic plan** that works around your individual circumstances. Effective time management and prioritisation will help you make the most of your available hours.

Your supervisors and tutors are here to support you and can help with guidance on how to structure your work efficiently. If you ever feel overwhelmed, please reach out to us or the university's support services for assistance.

Remember, the key to success in this module is consistent, steady progress over the semester. By breaking the workload into manageable steps and maintaining clear communication with your supervisors, you can achieve your goals while balancing other commitments.

Understanding Commitment for Your Major Project
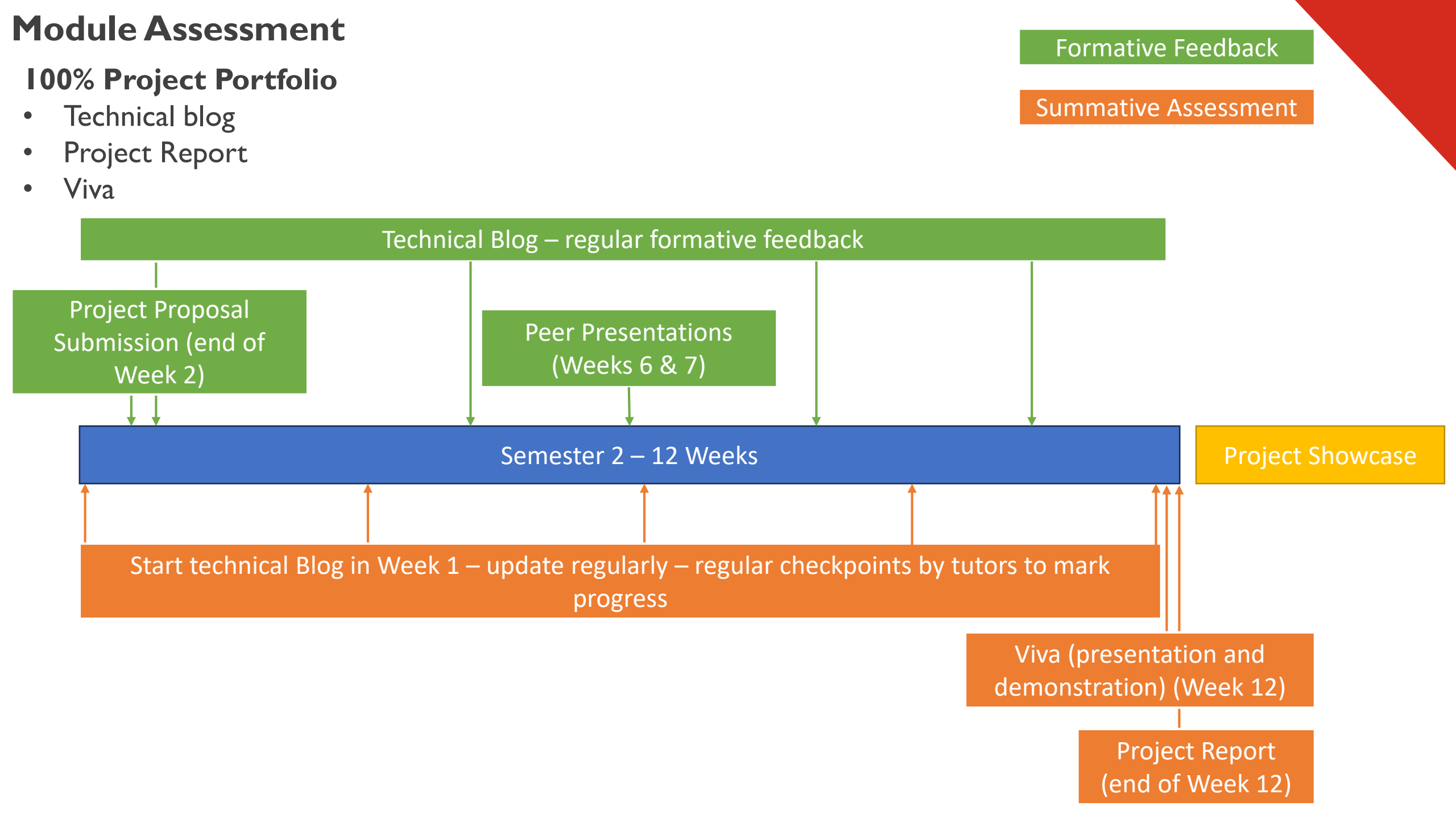
Common Pitfalls

- Poor planning
- Scope creep
- Poor time management
- Insufficient documentation
- Miscommunication
- Underestimating the project
- Unengagement

Proposed Timeline

Proposed 12-Week Project Timeline
Week 1: Introduction & Planning
• Familiarise yourself with the module structure, deliverables, and assessment criteria. • Meet with your supervisor to discuss the project brief, initial thoughts, and expectations. • Begin literature review and preliminary research. • Draft your project plan, including key milestones, tasks, and a Gantt chart.
Week 2: Proposal Submission Deadline
• Submit the **Project Proposal Form** (research question/problem definition, justification, aims, objectives, research methodology, and resources). • Refine the project scope and ensure it is realistic for the 12-week timeframe. • Begin detailed research and identify key resources (tools, materials, software, etc.).
Week 3-4: Concept Development & Initial Research
• Conduct an in-depth literature review and document findings in your blog/report. • Develop initial concepts, designs, or system architectures (depending on the project type). • Validate ideas through discussions with your supervisor and peers. • Refine your project objectives and deliverables based on feedback.
Week 5: Midpoint Check-In
• Submit an interim update to your supervisor (can be informal, such as a blog post or structured meeting). • Present progress, including research findings, initial designs or experiments, and challenges faced. • Adjust project goals, timeline, or scope if necessary based on progress and supervisor feedback.

Proposed Timeline

Week 6-8: Development Phase & Peer Presentations

- **For Prototyping/Working System**: Build and refine your prototype/system. Document the process with photos, videos, and written notes.

- **For Simulation**: Develop and test your simulation models. Record and analyse results.

- **For Experimentation**: Set up experiments, conduct trials, and collect data systematically.

- Conduct iterative testing and refine designs/solutions.

- Continue updating the project blog with progress and insights.

Week 9-10: Testing, Evaluation, & Finalisation

- **Testing**: Validate your project's functionality, accuracy, or performance (e.g., simulate edge cases, prototype testing, or experimental repeatability).

- **Evaluation**: Analyse results and assess whether project objectives were met.

- Refine final deliverables (e.g., working system, detailed simulation results, or experimental findings).

- Update the literature review and ensure references are complete.

Week 11: Final Preparations

- Finalise the project blog with all key elements (summary, detailed progress, multimedia, literature review, references).

- Write and edit the project report, ensuring it meets professional standards.

- Prepare for the viva: organise materials, rehearse presenting your project, and anticipate questions.

Week 12: Submission & Viva

- Submit the project deliverables:

  - **Project Report**

  - **Blog Link**

  - Any supporting files or documentation.

- Attend your viva with your supervisor and second marker.

- Reflect on feedback received during the viva for future improvement.

Module Assessment

100% Project Portfolio

- Technical blog
- Project Report
- Viva

Formative Feedback

Summative Assessment

Technical Blog – regular formative feedback

Project Proposal Submission (end of Week 2)

Peer Presentations (Weeks 6 & 7)

Semester 2 – 12 Weeks

Project Showcase

Start technical Blog in Week 1 – update regularly – regular checkpoints by tutors to mark progress

Viva (presentation and demonstration) (Week 12)

Project Report (end of Week 12)

Project Proposal Form

PDE3823 – Project Proposal - Formal Form

Student Name	
Student Number	
Program of study	
Assigned Supervisor	
Working title	

Problem Definition/Research Question(s)

Justification and context

Project Aims and Objectives

Research Methodology

Project Scope and Feasibility

Required Resources

Intended Deliverables

Initial Bibliography/Reference List

Risk Assessment

Supervisor approval	

Signed
(digitally)..Date........................

Thank you!!!

Any questions?