FINAL YEAR DESIGN PROJECT (FYDP) POLICY

BE Electronic Engineering

(6-Credit Hour, Mandatory & Qualifying Requirement)

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Program	BE Electronic Engineering
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1. INTRODUCTION, PURPOSE, SCOPE AND POLICY FRAMEWORK

1.1 Introduction

The Final Year Project (FYP) is the culminating academic and engineering activity of the B.E. Electronic Engineering program. It provides students with an opportunity to integrate and apply the engineering knowledge, skills, engineering judgement, professional competencies, and engineering tools developed throughout the program to address a Complex Engineering Problem (CEP) through a Complex Engineering Activity (CEA).

The FYP is undertaken as a continuous two-semester academic sequence comprising FYP-I and FYP-II. FYP-I establishes the engineering problem, requirements, analysis, preliminary design, methodology, feasibility, and project plan. FYP-II builds upon the approved FYP-I work through detailed engineering design, development and/or investigation, implementation, testing, verification, validation, evaluation, documentation, demonstration, presentation, and oral defense, as appropriate to the approved project.

This policy shall apply to B.E. Electronic Engineering students of Batch 2K25 onwards and shall govern the planning, approval, supervision, monitoring, assessment, documentation, and completion of FYP-I and FYP-II.

1.2 Policy Statement

The Department shall maintain a structured, transparent, outcome-based, and academically rigorous FYP system for students of Batch 2K25 onwards.

Every approved FYP shall:

1. address a Complex Engineering Problem;
2. be undertaken through a Complex Engineering Activity;
3. require appropriate engineering analysis, design, investigation, and engineering judgement;
4. result in an appropriate engineering solution or validated engineering outcome;
5. provide sufficient evidence for assessing the approved FYP Intended Learning Outcomes (ILOs); and
6. support attainment of the relevant Program Learning Outcomes (PLOs).

The complexity of an FYP shall be determined by the characteristics of the engineering problem and engineering activity, and not merely by the use of advanced technology, programming, hardware, software, artificial intelligence, or the amount of implementation work.

1.3 Purpose

The purpose of this policy is to:

1. establish a standardized framework for FYP planning, approval, supervision, monitoring, assessment, and completion;
2. establish the mandatory CEP and CEA requirement;
3. define the academic structure of FYP-I and FYP-II;
4. establish clear responsibilities for students, supervisors, committees, and assessors;
5. establish an outcome-based assessment system;
6. ensure alignment between FYP ILOs and PLOs;
7. ensure individual achievement can be determined in group projects;
8. establish requirements for academic integrity, plagiarism, responsible use of AI and digital tools, safety, professional conduct, confidentiality, and intellectual property;
9. establish appropriate documentation and record-keeping requirements; and
10. provide a basis for continuous quality improvement.

1.4 Scope

This policy applies to:

1 all B.E. Electronic Engineering students of Batch 2K25 onwards undertaking FYP-I and FYP-II;

2 FYP supervisors;

3 FYP Committee members;

4 project evaluation committees and panels;

5 faculty members involved in FYP assessment; and

6 other persons formally involved in the administration, supervision, or assessment of FYPs.

1.5 Academic and Regulatory Basis

The FYP shall be implemented in accordance with:

1. the approved B.E. Electronic Engineering Scheme of Studies;
2. applicable University of Sindh academic regulations and policies;
3. applicable HEC requirements;
4. applicable PEC requirements;
5. applicable engineering graduate-attribute and competency requirements adopted by the program;
6. University academic-integrity and plagiarism requirements;
7. University health and safety requirements; and
8. other applicable statutory, regulatory, or institutional requirements.

Where a relevant regulatory or institutional requirement is revised, the Department shall review the affected provisions through the appropriate academic approval process.

1.6 Effective Applicability

This policy shall be effective for Batch 2K25 onwards. It shall not automatically be applied retrospectively to earlier batches unless specifically approved by the competent academic authority.

2. DEFINITIONS

Term	Definition
Final Year Project (FYP)	The culminating academic engineering activity through which students integrate and apply engineering knowledge, analysis, design, investigation, engineering tools, professional practices, and engineering judgement to

Term	Definition
	address a Complex Engineering Problem through a Complex Engineering Activity.
FYP-I	The first component of the FYP, carrying 2 credit hours and 50 marks, primarily concerned with establishing and analysing the engineering problem, requirements, constraints, preliminary engineering solutions, methodology, feasibility, and project plan.
FYP-II	The second component of the FYP, carrying 4 credit hours and 150 marks, primarily concerned with detailed design, development and/or investigation, implementation, testing, verification, validation, evaluation, documentation, demonstration, presentation, and oral defense.
Complex Engineering Problem (CEP)	An engineering problem exhibiting applicable characteristics represented by WP1–WP7, requiring substantial engineering knowledge, analysis, judgement, integration, and decision-making beyond routine application of established procedures.
Complex Engineering Activity (CEA)	An engineering activity or project exhibiting applicable characteristics represented by EA1–EA5, requiring appropriate resources, interaction of technical and non-technical considerations, creative or research-informed engineering application, evaluation of consequences, and engineering judgement.
FYP Intended Learning Outcome (ILO)	A specific learning outcome that a student is expected to demonstrate through completion of the FYP and that is aligned with the relevant PLO.
Program Learning Outcome (PLO)	A statement describing what graduates are expected to know and be able to do upon successful completion of the engineering program.
FYP Committee	The departmental committee responsible for FYP coordination, project approval, CEP/CEA evaluation, monitoring, assessment oversight, record keeping, and quality assurance.
FYP Supervisor	A faculty member assigned to provide academic and technical guidance, monitor progress, support engineering decision-making, and conduct prescribed supervisor assessments.

Term	Definition
Industry Co-Supervisor	An external engineering professional from industry appointed to provide domain expertise, resources, and practical guidance for industry-sponsored projects.
Project Evaluation Committee	A committee or panel constituted to assess designated FYP components using approved assessment criteria and rubrics.
Engineering Problem	A technical challenge requiring application of engineering knowledge, analysis, design, investigation, and/or judgement to achieve an appropriate engineering solution.
Engineering Solution	A developed, proposed, implemented, or evaluated response to the approved engineering problem supported by appropriate engineering evidence.
Engineering Judgement	The reasoned selection, interpretation, evaluation, and justification of engineering decisions using relevant knowledge, evidence, constraints, standards, risks, and professional considerations.
Engineering Design	A systematic process of developing an engineering solution that satisfies specified requirements and constraints.
Investigation	A systematic process involving appropriate experimentation, simulation, measurement, testing, data analysis, or other suitable engineering methods to generate and interpret evidence.
Verification	Establishing whether a developed system, component, model, or implementation satisfies specified requirements.
Validation	Establishing whether an engineering solution is appropriate and performs satisfactorily for its intended application.
Academic Integrity	Honest, responsible, and ethical conduct in research, analysis, design, documentation, presentation, assessment, use of sources, and use of digital or AI-based tools.
Plagiarism	Presenting another person's words, ideas, data, designs, code, results, or intellectual contribution as one's own without appropriate acknowledgement, in accordance with applicable University and HEC requirements.
Safety Compliance	Conformity with applicable University, laboratory, project, legal, regulatory, and professional health and safety requirements.

Term	Definition
AI-Assisted Work	Academic or technical work materially produced or assisted by an artificial-intelligence or generative-AI tool.
Expert Review	A formal technical and academic review conducted by a subject-matter expert appointed by the FYP Committee when a suspected plagiarism, academic-integrity, fabricated/falsified work, inappropriate AI use, or other academic-integrity concern requires specialist examination. Expert Review supports, but does not replace, the University's approved academic-integrity or disciplinary process.
Individual Contribution	The identifiable engineering work, analysis, design, investigation, implementation, decision-making, documentation, or other contribution attributable to an individual student.
Project Scope	The approved technical boundaries, objectives, deliverables, constraints, and activities of an FYP.
Continuous Quality Improvement (CQI)	A systematic process of reviewing FYP processes, assessment results, feedback, outcomes, and identified deficiencies to implement evidence-based improvements.

3. FYP STRUCTURE AND ACADEMIC REQUIREMENTS

3.1 Academic Structure

The Final Year Project (FYP) shall be completed through two sequential and academically integrated components:

Component	Semester	Credit Hours	Assessment Marks
FYP-I	7th	2	50
FYP-II	8th	4	150
Total FYP	7th–8th	6	200

FYP-I and FYP-II shall constitute one continuous Final Year Project. FYP-II shall normally build upon the project approved and developed during FYP-I. The approved credit-hour and

assessment structure shall be applied consistently throughout this policy and all associated FYP documents.

3.2 FYP-I: Project Foundation

FYP-I shall establish the academic, technical, and organizational foundation of the Final Year Project.

The student shall, as appropriate to the nature of the project:

1. identify and define an appropriate engineering problem;
2. establish its background, need, and significance;
3. identify relevant requirements, constraints, and stakeholders;
4. formulate clear project objectives;
5. review relevant literature, existing solutions, technologies, standards, and professional practices;
6. undertake appropriate preliminary engineering analysis;
7. establish an appropriate engineering approach or methodology;
8. undertake preliminary design and/or feasibility analysis, where applicable;
9. identify required resources, tools, equipment, software, and technologies;
10. identify relevant safety, ethical, environmental, economic, sustainability, and professional considerations;
11. prepare a realistic project plan and schedule; and
12. present and defend the proposed project before the designated Evaluation Committee.

At the completion of FYP-I, the project shall be sufficiently defined and justified to demonstrate that it is academically appropriate, technically feasible, appropriately scoped, and capable of completion during FYP-II.

FYP-I Assessment (50 Marks):

Assessment Component	Marks	Type	Assessed By
Proposal Defense	25	Individual	Evaluation Committee
Supervisor Assessment-I/Observation	25	Individual	Supervisor
Total	50		

3.3 FYP-II: Engineering Development and Completion

FYP-II shall constitute the principal engineering development and completion stage of the Final Year Project. Building upon the approved FYP-I work, the student shall, as appropriate to the nature of the project:

1. refine the project requirements, objectives, and technical specifications;
2. undertake detailed engineering analysis and/or design;
3. develop, implement, simulate, investigate, or otherwise realize the proposed engineering solution;
4. apply appropriate engineering principles, methods, standards, tools, equipment, software, and technologies;
5. conduct appropriate experiments, simulations, measurements, testing, or investigations;
6. analyze and interpret technical evidence and results;
7. validate the engineering solution against defined requirements and objectives;
8. evaluate relevant technical and non-technical implications;
9. identify limitations and potential improvements;
10. document the completed engineering work in the prescribed thesis;
11. demonstrate the completed project or other verifiable technical outcomes;
12. communicate the completed work through a formal presentation; and
13. defend the project through an individual viva voce.

At the completion of FYP-II, sufficient evidence shall be available to determine the student's achievement of the approved FYP ILOs.

FYP-II Assessment (150 Marks):

Assessment Component	Marks	Type	Assessed By
Progressive Seminar	25	Individual	Evaluation Committee
Thesis Submission	50	Group*	Evaluation Committee
Project Demonstration	25	Individual	Evaluation Committee
Final Presentation	10	Individual	Evaluation Committee
Viva Voce	15	Individual	Evaluation Committee
Supervisor Assessment-II/ Observation	25	Individual	Supervisor
Total	150		

*For an approved group project, the thesis may be assessed as a common project-level deliverable. Individual achievement shall nevertheless be established through the prescribed individual assessment instruments.

3.4 Continuity and Progression

FYP-I and FYP-II shall follow a continuous engineering-development process:

Problem Identification → Problem Analysis → Requirements and Constraints → Preliminary Engineering Work → Proposed Solution → Project Planning → Detailed Development → Implementation/Investigation → Testing and Validation → Evaluation → Documentation → Demonstration → Presentation → Viva Voce

FYP-II shall normally continue the project approved during FYP-I. Any substantial change to the approved project title, engineering problem, objectives, scope, methodology, or principal technical direction shall require approval through the Department's prescribed procedure. Work completed during FYP-I may be incorporated into FYP-II where academically appropriate.

However, FYP-I work shall not automatically be treated as evidence of achievement of FYP-II outcomes unless it is appropriately assessed.

3.5 Academic Requirements

The FYP shall provide an opportunity for students to integrate and apply knowledge and skills acquired throughout the undergraduate engineering program.

An approved FYP shall, as appropriate to its nature and scope, demonstrate:

1. a clearly defined engineering problem;
2. identifiable requirements and constraints;
3. application of relevant engineering knowledge and principles;
4. appropriate engineering analysis and/or design;
5. use of appropriate engineering tools, techniques, equipment, software, or technologies;
6. appropriate investigation, implementation, experimentation, testing, or validation;
7. analysis and evaluation of evidence and results;
8. consideration of relevant professional, ethical, safety, economic, environmental, and sustainability factors; and
9. effective technical communication.

The project scope shall be appropriate to the student's academic level and achievable within the approved duration, available resources, facilities, and supervision. Detailed criteria for project suitability, engineering complexity, feasibility, and approval shall be prescribed separately in the Project Selection and Approval section.

3.6 Outcome-Based Requirement

The FYP shall be designed and assessed using an outcome-based approach.

The approved FYP ILO framework shall ensure that:

1. each ILO is specific, measurable, and assessable;

2. each ILO corresponds to one PLO only;
3. each ILO is assigned one taxonomy domain and one taxonomy level;
4. each ILO has an approved mark allocation;
5. each ILO is supported by appropriate assessment evidence; and
6. the complete assessment system provides sufficient direct evidence of achievement of all approved FYP ILOs.

The detailed ILO statements, PLO alignment, taxonomy classification, marks, and assessment mapping shall be provided in the FYP ILO and Assessment Matrix.

3.7 Individual Achievement in Group Projects

An approved group project may produce common project outputs; however, group participation shall not by itself constitute evidence of individual achievement.

Each student shall demonstrate:

- an identifiable individual contribution;
- adequate understanding of the project;
- responsibility for assigned project work; and
- achievement of the applicable FYP ILOs.

Individual achievement shall be established through the approved individual assessment instruments, including supervisor assessments, seminars, project demonstration, final presentation, and viva voce, as applicable. The assessment process shall provide sufficient evidence to distinguish individual achievement from common group output.

3.8 Overall Assessment Structure (200 Marks Total)

Semester	Component	Marks
FYP-I 7th Semester	Proposal Defense	25
	Supervisor Assessment-I	25
	FYP-I Total	**50**

Semester	Component	Marks
FYP-II 8th Semester	Progressive Seminar	25
	Thesis Submission	50
	Project Demonstration	25
	Final Presentation	10
	Viva Voce	15
	Supervisor Assessment-II	25
	FYP-II Total	**150**
	GRAND TOTAL	200

3.9 Recommended Timeline

The following timeline is recommended for the FYP Committee to follow. The Committee may adjust dates as necessary.

Semester	Activity	Recommended Timeline
FYP-I 7th Semester	**Project Proposal Submission**	Week 3-4
	Proposal Defense	Week 5–6
	Student works on project with weekly supervisor meetings	Weeks 7–16
	Supervisor Assessment-I	Week 16
FYP-II 8th Semester	**Progressive Seminar**	Week 4–5
	Student works on project with weekly supervisor meetings	Weeks 6–14
	Final Presentation	Week 15–16

Semester	Activity	Recommended Timeline
	Project Demonstration	Week 15–16
	Viva Voce	Week 15–16
	Thesis Submission	Week 16
	Supervisor Assessment-II	Week 16

3.10 Meeting Log Template

Meeting No.	Date	Agenda Items	Discussion Summary	Action Items	Supervisor Comments
1					
2					
3					

4 COMPLEX ENGINEERING PROBLEM AND COMPLEX ENGINEERING ACTIVITY

The Final Year Project (FYP) is the culminating engineering activity of the B.E. Electronic Engineering program. It requires students to integrate and apply engineering knowledge, analysis, design, investigation, engineering tools, professional practices, and engineering judgement to address a Complex Engineering Problem through a Complex Engineering Activity. The complexity of an FYP shall be determined by the nature of the engineering problem and the engineering activity required to address it. The use of advanced technology, extensive programming, significant hardware implementation, a large number of components, project cost, or the amount of work involved shall not, by itself, establish that a project is a Complex Engineering FYP. The FYP Committee shall evaluate each proposed project against the applicable characteristics of Complex Engineering Problems and Complex Engineering Activities before granting final approval.

4.1 Complex Engineering Problem

For the purpose of FYP approval, a Complex Engineering Problem shall be understood in accordance with the applicable engineering framework and shall be evaluated using the characteristics WP1–WP7. A complex engineering problem requires an appropriate depth of engineering knowledge, analysis, judgement, and integration and cannot be adequately addressed through routine application of established procedures alone.

The relevant characteristics are:

Code	Characteristic	Application to FYP
WP1	**Depth of knowledge required**	The problem cannot be resolved without in-depth engineering knowledge at the level of one or more relevant knowledge areas, permitting a fundamentals-based and first-principles analytical approach.
WP2	**Range of conflicting requirements**	The problem involves wide-ranging and/or conflicting technical and non-technical issues, which may include ethical, sustainability, legal, economic, societal, safety, or future requirements.
WP3	**Depth of analysis required**	The problem has no obvious solution and requires abstract thinking, creativity, and/or originality in analysis to formulate appropriate models, approaches, or solutions.
WP4	**Familiarity of issues**	The problem involves infrequently encountered, unfamiliar, or novel engineering issues.
WP5	**Extent of applicable codes**	The problem is not fully encompassed by existing standards or codes of practice and requires engineering judgement beyond routine application of established requirements.
WP6	**Stakeholder involvement and conflicting requirements**	The problem may involve collaboration across engineering disciplines, other fields, and/or diverse stakeholder groups with differing or conflicting needs.
WP7	**Interdependence**	The problem involves multiple interdependent components or sub-problems requiring an integrated or systems approach.

The Committee shall consider WP1–WP7 collectively. An FYP problem is not required to demonstrate every characteristic to the same extent; however, the overall evidence shall

establish that the problem is genuinely complex and appropriate for a culminating engineering project.

4.2 Complex Engineering Activity

A Complex Engineering Activity refers to the engineering work undertaken to investigate and address the Complex Engineering Problem. The activity shall be evaluated using the characteristics EA1–EA5.

The relevant characteristics are:

Code	Characteristic	Application to FYP
EA1	**Range of resources**	The activity involves an appropriate combination of diverse resources, including people, data and information, financial and physical resources, engineering equipment, technologies, and analytical and/or design software.
EA2	**Level of interactions**	The activity requires resolution of interactions among wide-ranging and/or conflicting technical, non-technical, and engineering issues.
EA3	**Innovation**	The activity involves creative application of engineering principles, innovative solutions for a defined purpose, and/or appropriate use of research-based knowledge.
EA4	**Consequences to society and environment**	The activity involves consideration of relevant consequences to society and the environment and, where applicable, their prediction, evaluation, mitigation, and management.
EA5	**Familiarity**	The activity may extend beyond the student's previous experience and require principles-based approaches to unfamiliar, evolving, or non-routine engineering situations.

The Committee shall consider EA1–EA5 collectively. Not every characteristic must be demonstrated to the same degree in every FYP. The overall engineering activity, however, shall demonstrate an appropriate level of complexity for a final-year engineering project.

4.3 FYP Complexity Requirement

For approval as a Final Year Project, every FYP shall address a Complex Engineering Problem through a Complex Engineering Activity. The complexity of the proposed project shall be evaluated independently from both dimensions: the Complex Engineering Problem, based on

the relevant characteristics WP1–WP7, and the Complex Engineering Activity, based on the relevant characteristics EA1–EA5. The approved FYP shall require appropriate engineering analysis, design, investigation, and engineering judgement to develop and evaluate an appropriate engineering solution. Through this process, students shall demonstrate the approved FYP Intended Learning Outcomes (ILOs), which collectively support the attainment of the corresponding Program Learning Outcomes (PLOs). A project shall not qualify as a Complex Engineering FYP solely because it involves advanced technology, extensive programming, significant hardware implementation, a large number of components, or a substantial amount of work. The required complexity shall arise from the nature of the engineering problem and the engineering activity required to address it.

4.4 Relationship Between the Problem and Activity

The FYP Committee shall distinguish between the complexity of the engineering problem and the complexity of the engineering activity undertaken to address that problem. A project may involve sophisticated technology but still address a routine engineering problem. Similarly, a project may describe a difficult problem but propose only a predetermined or routine activity. Neither situation, by itself, is sufficient to establish the required FYP complexity.

The required relationship is therefore:

Complex Engineering Problem (WP1–WP7) → Complex Engineering Activity (EA1–EA5) → Engineering Analysis, Design, Investigation and Judgement → Engineering Solution → FYP ILO Achievement → PLO Attainment

The project shall demonstrate a meaningful connection between the identified problem, the proposed engineering activity, and the resulting engineering solution.

4.5 Distinction from Broadly-defined and Well-defined Problems and Activities

The engineering framework distinguishes among Complex Engineering Problems, Broadly-defined Engineering Problems, and Well-defined Engineering Problems, as well as among Complex Engineering Activities, Broadly-defined Engineering Activities, and Well-defined Engineering Activities. For the B.E. Electronic Engineering FYP, the required project level is Complex Engineering Problem and Complex Engineering Activity.

Problem	Activity	FYP Status
Complex	Complex	Meets FYP requirement
Complex	Broadly-defined	Revision/reconsideration required
Complex	Well-defined	Normally insufficient
Broadly-defined	Complex	Problem requires strengthening/reframing
Broadly-defined	Broadly-defined	Insufficient
Broadly-defined	Well-defined	Insufficient
Well-defined	Complex	Problem complexity insufficient
Well-defined	Broadly-defined	Insufficient
Well-defined	Well-defined	Not eligible

The Committee shall document the rationale where a proposal requires revision or is not approved.

4.6 Evidence Required to Establish Problem Complexity

The FYP proposal shall provide sufficient evidence to establish the complexity of the engineering problem. Depending on the nature of the project, this shall normally include:

- engineering context and background;
- clearly stated engineering problem;
- identified stakeholders and their relevant requirements;
- functional and technical requirements;
- technical and non-technical constraints;
- applicable engineering knowledge;
- assumptions and limitations;

- relevant uncertainty;
- applicable standards, codes, regulations, or professional requirements;
- interdependent components or sub-problems, where applicable;
- alternative approaches and associated trade-offs, where applicable; and
- justification identifying the relevant WP1–WP7 characteristics.

The proposal shall explain why the problem is complex, rather than merely stating that it is complex.

4.7 Evidence Required to Establish Activity Complexity

The proposal shall also demonstrate that solving the problem requires a Complex Engineering Activity. Depending on the nature of the FYP, this may include:

- engineering analysis;
- system or component design;
- modelling or simulation;
- experimentation or investigation;
- implementation or prototyping;
- measurement and testing;
- validation and performance evaluation;
- use of engineering software, tools, and equipment;
- integration of components, subsystems, or disciplines;
- evaluation of alternative solutions and trade-offs;
- consideration of safety, environmental, societal, and ethical factors;
- engineering risk assessment;
- appropriate use of research-based knowledge; and
- engineering decisions requiring professional judgement.

The proposal shall identify the relevant EA1–EA5 characteristics supporting the classification of the activity as complex.

4.8 FYP Complexity Assessment

The FYP Committee shall assess the proposed project using the following structured assessment.

A. Complex Engineering Problem

Characteristic	Demonstrated	Evidence / Comments
WP1 — Depth of knowledge	☐ Yes ☐ No	
WP2 — Conflicting requirements	☐ Yes ☐ No	
WP3 — Depth of analysis	☐ Yes ☐ No	
WP4 — Familiarity of issues	☐ Yes ☐ No	
WP5 — Standards/codes	☐ Yes ☐ No	
WP6 — Stakeholder involvement	☐ Yes ☐ No	
WP7 — Interdependence	☐ Yes ☐ No	

B. Complex Engineering Activity

Characteristic	Demonstrated	Evidence / Comments
EA1 — Range of resources	☐ Yes ☐ No	
EA2 — Level of interactions	☐ Yes ☐ No	
EA3 — Innovation	☐ Yes ☐ No	
EA4 — Consequences	☐ Yes ☐ No	
EA5 — Familiarity	☐ Yes ☐ No	

The Committee shall use holistic academic judgement when making the final classification. The checklist is intended to provide documented evidence and consistency in decision-making; it shall not be interpreted as requiring every WP or EA characteristic to be demonstrated.

4.9 Mandatory FYP Approval Requirements

Before final approval, the FYP Committee shall confirm that:

Requirement	Status
Genuine electronic engineering problem identified	☐ Yes ☐ No
Complex Engineering Problem demonstrated	☐ Yes ☐ No
Complex Engineering Activity demonstrated	☐ Yes ☐ No
Adequate depth of engineering knowledge required	☐ Yes ☐ No
Meaningful engineering analysis required	☐ Yes ☐ No
Meaningful engineering design/development required	☐ Yes ☐ No
Appropriate investigation and/or validation required	☐ Yes ☐ No
Engineering judgement required	☐ Yes ☐ No
Relevant technical and non-technical constraints identified	☐ Yes ☐ No
Relevant safety and professional considerations addressed	☐ Yes ☐ No
Adequate scope for achievement of FYP ILOs	☐ Yes ☐ No
Feasible within FYP-I and FYP-II	☐ Yes ☐ No
Required resources are available or reasonably accessible	☐ Yes ☐ No

A project shall not receive final approval unless the Committee is satisfied that the project meets the required complexity level and is academically and technically feasible.

4.10 FYP Eligibility Based on Complexity

An FYP shall be eligible for approval only when the proposed project demonstrates the characteristics of a Complex Engineering Problem (CEP) and requires a Complex Engineering Activity (CEA) as defined in this section. The Committee shall determine eligibility based on documented evidence of the relevant WP1–WP7 characteristics of the engineering problem and EA1–EA5 characteristics of the engineering activity. The evaluation shall consider the project as a whole, including the required engineering knowledge, problem analysis, design, investigation, engineering tools, engineering judgement, integration, constraints, stakeholder requirements, and validation of the proposed engineering solution. The project shall also provide sufficient scope for students to demonstrate the approved FYP Intended Learning Outcomes within the available FYP-I and FYP-II periods. Where a proposed project does not initially demonstrate the required level of complexity, the FYP Committee may require appropriate revision or re-scoping of the engineering problem and/or engineering activity before approval. Final approval shall be granted only when the Committee is satisfied that the project meets the required CEP and CEA level and is academically, technically, and practically feasible.

4.11 FYP Complexity Decision

Following evaluation, the FYP Committee shall record one of the following decisions:

Approved

The proposed project demonstrates a Complex Engineering Problem and requires a Complex Engineering Activity and satisfies the relevant academic and feasibility requirements.

Approved with Conditions

The project satisfies the required level in principle but requires specified modifications before or during implementation.

Revision Required

The proposal does not yet provide sufficient evidence of problem complexity, activity complexity, engineering scope, feasibility, or ILO coverage.

Not Approved

The proposed project does not meet the required FYP complexity level or cannot reasonably be modified to meet it.

The Committee shall document the basis for the decision.

5 GOVERNANCE, ROLES, AND SUPERVISION

5.1 FYP Committee

The FYP Committee shall:

1. implement this policy;
2. coordinate FYP schedules;
3. review and approve projects;
4. evaluate CEP and CEA;
5. approve project titles and scopes;
6. coordinate supervisor allocation;
7. constitute evaluation committees;
8. coordinate assessment activities;
9. monitor FYP implementation;
10. maintain official records;
11. address academic and administrative issues;
12. review assessment outcomes;
13. monitor ILO attainment; and
14. initiate CQI actions.

5.2 FYP Supervisor (University Supervisor)

The Supervisor shall:

1. provide academic and technical guidance;

2. guide refinement of the engineering problem;
3. review requirements and scope;
4. guide technical investigation;
5. guide engineering analysis and design;
6. advise on engineering tools;
7. monitor progress;
8. provide feedback;
9. monitor safety and risk considerations;
10. monitor individual contributions;
11. conduct Supervisor Assessment-I and Supervisor Assessment-II;
12. maintain appropriate supervision records;
13. report significant concerns to the FYP Committee; and
14. coordinate with the Industry Co-Supervisor (if applicable).

The Supervisor shall guide and evaluate the student but shall not perform the student's engineering work.

5.3 Industry Co-Supervisor (External Supervisor)

An Industry Co-Supervisor may be appointed for projects that are:

- Sponsored by an industry partner;
- Conducted at an industrial facility;
- Based on proprietary industrial data or systems; or
- Aligned with industry-specific requirements.

Appointment Requirements:

1 Hold a relevant engineering degree (B.E. minimum, M.S./Ph.D. preferred).

2 Have a minimum of 3 years of relevant industry experience.

3 Be formally nominated by the industry partner and approved by the Department.

4 Sign a Supervisor Agreement outlining roles, responsibilities, confidentiality, and intellectual property.

Responsibilities:

1. Provide technical guidance and domain expertise specific to the industrial context.
2. Ensure the project addresses a genuine industry-relevant problem.
3. Facilitate access to industrial resources, equipment, data, and facilities.
4. Provide feedback on the practical feasibility and applicability of the proposed solution.
5. Review and comment on the thesis from an industry perspective.
6. Assist in arranging industrial testing, validation, or demonstration.
7. Report any significant concerns to the University Supervisor and FYP Committee.

5.4 Student Responsibilities

Each student shall:

1. take primary responsibility for the FYP;
2. understand the approved engineering problem;
3. undertake the required engineering analysis;
4. complete the assigned design, development, and/or investigation;
5. maintain appropriate project records;
6. meet approved milestones;
7. report significant deviations from scope;
8. comply with academic-integrity requirements;
9. comply with safety requirements;
10. use resources responsibly;
11. protect confidential information;
12. make a meaningful individual contribution;

13. submit required deliverables; and

14. demonstrate and defend individual achievement.

15. coordinate with both University Supervisor and Industry Co-Supervisor (if applicable).

5.5 Project Evaluation Committee

The Project Evaluation Committee shall assess designated FYP components using approved criteria and rubrics.

It may assess:

- Proposal Defense;
- Progressive Seminar;
- Project Demonstration;
- Final Presentation; and
- Viva Voce.

Assessment shall be evidence-based and conducted according to the approved marking scheme.

5.6 Conflict of Interest

A person involved in approval, supervision, or assessment shall disclose any actual, potential, or perceived conflict of interest. A person shall not participate in the approval or assessment of a student/project where they have a personal, financial, professional, or other relationship that could reasonably affect impartiality. The FYP Committee Convener shall arrange an appropriate alternative reviewer, assessor, or decision-maker where necessary.

5.7 Supervisor Allocation and Change Process

Allocation:

1. The FYP Committee shall assign supervisors based on faculty expertise, student preferences, and workload balance.
2. Students shall submit their project topic and preferred supervisor(s) by Week 2 of the 7th Semester.

3. Final supervisor assignments shall be notified by Week 3 of the 7th Semester.

Change Procedure:

1. A student may request a change of supervisor by submitting a written request to the FYP Committee.
2. Approval shall be granted only if the new supervisor agrees and the project scope is compatible.
3. Changes must be approved before the Proposal Defense (Week 6-7) .

6 INTENDED LEARNING OUTCOME (ILOS) AND MAPPING WITH PLOS

6.1 ILOs and Mapping with PLOs

ILO	Intended Learning Outcome	Domain & Level	PLO	Marks
ILO1	**Apply** relevant mathematics, natural sciences, computing, and electronic engineering knowledge to address the technical requirements of the FYP problem.	**C3 – Apply**	**PLO1**	**15**
ILO2	**Analyze** the FYP problem by determining its requirements, constraints, relevant information, and technical criteria.	**C2 – Analyze**	**PLO2**	**25**
ILO3	**Create** an engineering solution that satisfies specified requirements and constraints using appropriate engineering principles, methods, and standards.	**C6 – Create**	**PLO3**	**30**
ILO4	**Analyze** results obtained through appropriate experiments, simulations, measurements, or tests to determine the performance of the engineering solution.	**C4 – Analyze**	**PLO4**	**25**
ILO5	**Use** appropriate engineering tools, software, equipment, techniques, and modern technologies in the development and validation of the engineering solution.	**P4 – Use**	**PLO5**	**20**

ILO	Intended Learning Outcome	Domain & Level	PLO	Marks
ILO6	**Evaluate** the environmental, social, economic, health and safety, and sustainability implications of the engineering solution.	**C5 – Evaluate**	**PLO6**	**15**
ILO7	**Demonstrate** ethical and professional conduct in accordance with academic integrity, applicable regulations, engineering standards, safety requirements, and professional practices.	**A5 – Characterize**	**PLO7**	**10**
ILO8	**Coordinate** individual contributions with team members to achieve shared FYP objectives.	**A4 – Organize**	**PLO8**	**15**
ILO9	**Communicate** the FYP problem, methodology, results, and conclusions effectively through technical documentation, presentations, and oral defense.	**P4 – Use**	**PLO9**	**20**
ILO10	**Apply** project-management and financial-management principles to plan, monitor, and control FYP activities, resources, budget, risks, and deliverables within defined project constraints.	**C3 – Apply**	**PLO10**	**15**
ILO11	**Demonstrate** independent learning by acquiring and applying new knowledge, technologies, standards, or professional practices required for the FYP.	**A5 – Characterize**	**PLO11**	**10**
TOTAL				200

6.2 ILO Marks Distribution Matrix

ILO	FYP-I		FYP-II						
	Proposal Defense 25	Supervisor Assessment-I 25	Progressive Seminar 25	Thesis 50	Project Demonstration 25	Final Presentation 10	Viva Voce 15	Supervisor Assessment-II 25	ILO Total
ILO1 – PLO1	4	2	1	5	1	–	1	1	**15**
ILO2 – PLO2	7	3	2	8	–	–	2	3	**25**
ILO3 – PLO3	6	4	4	8	5	1	1	1	**30**

ILO	FYP-I		FYP-II						
	Proposal Defense 25	Supervisor Assessment-I 25	Progressive Seminar 25	Thesis 50	Project Demonstration 25	Final Presentation 10	Viva Voce 15	Supervisor Assessment-II 25	ILO Total
ILO4 – PLO4	2	5	3	6	4	2	2	1	**25**
ILO5 – PLO5	1	2	2	5	3	–	3	4	**20**
ILO6 – PLO6	1	1	2	5	3	1	1	1	**15**
ILO7 – PLO7	1	2	1	2	1	1	–	2	**10**
ILO8 – PLO8	–	3	3	–	4	–	1	4	**15**
ILO9 – PLO9	–	1	5	6	2	3	1	2	**20**
ILO10 – PLO10	3	1	1	3	1	1	1	4	**15**
ILO11 – PLO11	–	1	1	2	1	1	2	2	**10**
TOTAL	**25**	**25**	**25**	**50**	**25**	**10**	**15**	**25**	**200**

7. ACADEMIC INTEGRITY AND SAFETY COMPLIANCE

7.1 Academic Integrity

Students shall maintain academic integrity throughout the FYP activity, including:

- Project proposal and planning;
- Engineering analysis, design, and investigation;
- Data collection and recording;
- Implementation and testing;
- Documentation and report writing;
- Presentation and defense;
- Use of sources and references; and
- Use of digital or AI-based tools.

Students shall not engage in plagiarism, fabrication, falsification, cheating, collusion, contract cheating, impersonation, or any other form of academic dishonesty. All submitted work shall represent the student's actual work and experience.

7.2 Responsible Use of Digital and AI-Based Tools

Digital and AI-based tools may be used only in accordance with applicable University requirements.

Students remain responsible for:

- The accuracy and originality of their submitted work;
- Verifying information generated or assisted by digital/AI tools;
- Protecting confidential or personal information;
- Appropriately acknowledging or disclosing AI-assisted work where required; and
- Ensuring that AI tools are not used to misrepresent work that the student did not perform or understand.

AI-detection results alone shall not be treated as conclusive evidence of academic misconduct. Any concern shall be reviewed in context in accordance with the applicable University/HEC procedure.

7.3 Plagiarism Policy

All submissions are subject to similarity checking and AI detection in accordance with the HEC Plagiarism Policy (2023).

Indicator	Threshold	Action
Overall Similarity Index	**≤ 19%**	Acceptable
Single Source Similarity	**≤ 5%**	Acceptable
Findings/Conclusion Similarity	**≤ 9%**	Acceptable
AI Detection Score	**≤ 20%**	Acceptable (with declaration)

Indicator	Threshold	Action
Turnitin Similarity Index	**≥ 20%**	Expert review required
Single Source Similarity	**> 5%**	Expert review required
AI Detection Score	≥ 20%	Expert review required

7.4 Expert Review Process

Where a significant academic-integrity concern is identified:

Step	Action
1	The FYP Supervisor shall document the concern and notify the student.
2	The matter shall be referred to the FYP Committee.
3	The FYP Committee shall determine the appropriate review route under applicable University/HEC procedures.
4	Where an expert academic review is required, the FYP Committee may appoint an appropriately qualified person who was not responsible for the original assessment.
5	The student shall be given an opportunity to provide an explanation where required by applicable procedures.
6	Any formal penalty shall be imposed by the competent authority under the applicable University regulations.

7.5 Safety Compliance

Students shall comply with:

- The University of Sindh EHS Policy (2023);
- Applicable laws and regulations;
- Laboratory and project site safety requirements;
- Approved risk-control measures;
- Required safety instructions; and
- Appropriate personal protective equipment (PPE), where applicable.

7.6 Safety Violations

Safety non-compliance shall be addressed according to its nature and seriousness.

Level	Examples	Action
Minor non-compliance	Failure to follow a routine instruction that does not create significant risk	Corrective instruction and documented warning
Repeated/serious non-compliance	Repeated disregard of safety instructions, inappropriate PPE use, or conduct creating significant risk	Referral to FYP Committee and appropriate corrective or disciplinary action
Confirmed Serious Safety Violation	Conduct resulting in, or creating a substantial risk of, serious injury, major harm, or serious breach of required safety controls	Action under applicable University EHS procedures and automatic fail consequences

8. PASS/FAIL CRITERIA

8.1 Passing Requirements

To successfully complete the FYP, a student must meet ALL of the following requirements simultaneously:

Requirement	**Threshold**	**Details**
Overall FYP Total	≥ 50%	Minimum 100 out of 200 marks
FYP-I Total	≥ 50%	Minimum 25 out of 50 marks
FYP-II Total	≥ 50%	Minimum 75 out of 150 marks
Proposal Defense	≥ 50%	Minimum 12.5 out of 25 marks
Academic Integrity	No Violations	No confirmed plagiarism, AI misuse, or fabrication
EHS Compliance	No Serious Violations	No confirmed serious safety violations

Failure in any single component results in an overall Fail (F) grade.

8.2 Reassessment and Retake Policy

Scenario	Action
FYP-I Fail (< 50%)	Student must repeat FYP-I in the next academic year.
FYP-II Fail (< 50%)	Student must repeat FYP-II in the next academic year.

9. GRADE DISPUTES AND APPEALS

9.1 Informal Clarification

A student who believes that an assessment has been recorded incorrectly or that the approved assessment criteria have not been applied may first seek clarification from the relevant assessor.

The student shall:

- Identify the specific assessment component or criterion in dispute;
- Provide the relevant evidence, where applicable; and
- Submit the request within 5 working days of receiving the assessment result.

9.2 Formal Grade Appeal

If the matter is not resolved through informal clarification, the student may submit a formal written appeal to the FYP Committee Convener within 10 working days of the assessor's response.

The appeal shall:

- Identify the assessment component being challenged;
- State the specific grounds for the appeal;
- Refer, where applicable, to the approved assessment rubric;
- Provide supporting evidence; and
- Clearly state the outcome being requested.

The appeal shall normally be considered only on grounds such as:

- Incorrect calculation or recording of marks;

- Failure to apply the approved assessment rubric;
- Procedural irregularity;
- Evidence that relevant submitted work was not considered; or
- Demonstrable conflict of interest or other assessment-related irregularity.

Disagreement with a mark alone, without an identifiable assessment or procedural ground, shall not normally constitute sufficient grounds for an appeal.

9.3 Review of Formal Appeal

Upon receiving a valid appeal, the FYP Committee shall:

- Review the grounds and supporting evidence;
- Obtain the relevant assessment records and rubric;
- Appoint two faculty members who were not involved in the original assessment, where an independent review is required;
- Ensure that the review is based on the approved assessment criteria; and
- Communicate the decision to the student in writing.

The review panel shall normally complete the review within 15 working days, subject to availability of the relevant records and applicable University procedures.

9.4 Final Appeal

If the student remains dissatisfied with the formal review decision, the student may submit a further appeal to the Departmental Chairman/competent University authority within 10 working days of receiving the FYP Committee decision.

9.5 Automatic Fail Situations

The following situations result in Automatic Fail (F) with no opportunity for reassessment:

Situation	**Reason**
Plagiarism confirmed by expert review	Academic integrity violation
AI misuse confirmed by expert review	Academic integrity violation

Situation	Reason
Fabrication or falsification of results confirmed	Academic integrity violation
Safety rules non-compliance confirmed	Safety violation

10. CONTINUOUS QUALITY IMPROVEMENT (CQI)

10.1 CQI Process

The FYP Committee shall periodically review the FYP program to ensure that it remains effective, academically appropriate, and aligned with program objectives and applicable requirements. The review shall follow the Plan–Do–Check–Act (PDCA) cycle.

Phase	Activity
Plan	Identify improvement needs using assessment results, student feedback, supervisor feedback, external examiner feedback, and safety/academic-integrity records.
Do	Implement approved improvement actions.
Check	Evaluate whether the implemented actions achieved the intended improvement.
Act	Retain effective practices and revise procedures, assessment tools, or policy provisions where required.

10.2 CQI Evidence

The FYP Committee shall consider, as applicable:

- ILO/PLO attainment results;
- Assessment performance;
- Student feedback;
- Supervisor feedback;
- External examiner feedback;
- Project completion and failure rates;

- CEP/CEA evaluation results;
- Safety incidents;
- Academic-integrity cases;
- Effectiveness and consistency of assessment rubrics; and
- Industry and stakeholder feedback.

10.3 Policy Review

The FYP Committee shall maintain records of CQI reviews and improvement actions. Major changes to the policy, ILOs, assessment framework, or other academic requirements shall be processed through the appropriate departmental and University approval mechanisms before implementation.

APPENDIX A — PROPOSAL DEFENSE RUBRIC
Total: 25 Marks

Name:	
Roll No.:	
Project Title:	
Supervisor:	
Co-supervisor:	
Assessor 1 Name:	

Rubric Performance Scale

Grade Level	Percentage Range	Descriptor
Excellent	80–100%	Consistently exceeds expectations; demonstrates strong, accurate, independent and well-justified achievement of the criterion.
Good	65–79%	Clearly meets expectations and demonstrates sound understanding, application and performance with minor limitations.
Satisfactory	50–64%	Meets minimum expectations and demonstrates adequate achievement with some limitations or guidance.
Unsatisfactory	Below 50%	Does not meet minimum expectations; demonstrates inadequate, incomplete or unsupported achievement.

Important: The percentage bands are applied within each criterion's allocated marks, not to the overall FYP.

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
ILO1	Application of Engineering Knowledge	Accurately applies relevant mathematics, science, computing and	Applies relevant knowledge appropriately with minor gaps.	Demonstrates basic relevant knowledge but requires some guidance.	Demonstrates inadequate or incorrect application of	/4

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
		engineering knowledge to establish the technical basis of the proposed FYP.			relevant knowledge.	
ILO2	Problem Analysis	Clearly defines the problem, requirements, constraints, technical criteria and relevant information using a systematic analytical approach.	Provides a clear analysis with minor omissions.	Identifies the main problem and requirements but analysis is limited.	Problem, requirements or constraints are unclear or inadequately analyzed.	/7
ILO3	Preliminary Design	Presents a technically sound preliminary design that addresses requirements and constraints and provides justification for major design decisions.	Presents an appropriate design with generally sound justification.	Presents a basic feasible design with limited justification.	Design is incomplete, infeasible or inadequately justified.	/6
ILO4	Investigation and Validation Plan	Proposes appropriate methods for experimentation, simulation, measurement, testing or validation of the proposed solution.	Proposes appropriate methods with minor limitations.	Provides a basic investigation or validation plan.	Investigation or validation approach is inappropriate or missing.	/2
ILO5	Engineering Tools and Technology	Selects and justifies appropriate engineering tools, software, equipment and technologies for the proposed work.	Selects appropriate tools with reasonable justification.	Identifies basic tools but provides limited justification.	Tools or technologies are inappropriate or inadequately identified.	/1

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
ILO6	Broader Engineering Considerations	Clearly identifies and evaluates relevant safety, environmental, social, economic and sustainability considerations.	Identifies most relevant considerations with sound discussion.	Identifies basic considerations with limited evaluation.	Relevant broader considerations are absent or inadequately addressed.	/1
ILO7	Ethical and Professional Conduct	Demonstrates clear awareness of academic integrity, ethics, safety, standards, regulations and professional responsibilities.	Demonstrates good awareness with minor omissions.	Demonstrates basic awareness.	Demonstrates inadequate awareness or proposes non-compliant practices.	/1
ILO10	Project and Financial Management	Presents a realistic schedule, resource plan, budget, risk plan and monitoring strategy appropriate to the FYP.	Presents a sound management plan with minor limitations.	Provides a basic plan but lacks detail or realism.	Management, financial or risk planning is inadequate or missing.	/3
	TOTAL					__/25

Signature of Assessor **Date**

Averaging Template – Appendix A

ILO	Max Marks	Assessor 1	Assessor 2	Assessor 3	Average
ILO1	4	__/4	__/4	__/4	__/4
ILO2	7	__/7	__/7	__/7	__/7
ILO3	6	__/6	__/6	__/6	__/6
ILO4	2	__/2	__/2	__/2	__/2
ILO5	1	__/1	__/1	__/1	__/1
ILO6	1	__/1	__/1	__/1	__/1
ILO7	1	__/1	__/1	__/1	__/1
ILO10	3	__/3	__/3	__/3	__/3
TOTAL	**25**	**__/25**	**__/25**	**__/25**	**__/25**

Final Average Total: _____ / 25

Certified by FYP Coordinator: _____

APPENDIX B — SUPERVISOR ASSESSMENT-I RUBRIC
Total: 25 Marks

Name:	
Roll No.:	
Project Title:	
Supervisor:	
Co-supervisor:	
Assessor 1 Name:	

Rubric Performance Scale

Grade Level	Percentage Range	Descriptor
Excellent	80–100%	Consistently exceeds expectations; demonstrates strong, accurate, independent and well-justified achievement of the criterion.
Good	65–79%	Clearly meets expectations and demonstrates sound understanding, application and performance with minor limitations.
Satisfactory	50–64%	Meets minimum expectations and demonstrates adequate achievement with some limitations or guidance.
Unsatisfactory	Below 50%	Does not meet minimum expectations; demonstrates inadequate, incomplete or unsupported achievement.

Important: The percentage bands are applied within each criterion's allocated marks, not to the overall FYP.

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
ILO1	Application of Engineering Knowledge	Independently applies relevant engineering knowledge accurately to FYP-I	Applies relevant knowledge effectively with minor guidance.	Applies basic knowledge adequately with guidance.	Demonstrates inadequate application of engineering knowledge.	/2

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
		tasks and technical decisions.				
ILO2	Problem Analysis	Systematically analyzes requirements, constraints, alternatives and technical issues during project development.	Provides sound analysis with minor limitations.	Provides basic analysis with guidance.	Analysis is inadequate or largely dependent on others.	/3
ILO3	Design Development	Develops and refines the proposed engineering design using appropriate principles and justified decisions.	Makes sound design decisions with minor limitations.	Makes basic design progress with guidance.	Design development is inadequate or unsupported.	/4
ILO4	Investigation	Conducts appropriate preliminary investigation, simulation, experimentation or testing and interprets evidence appropriately.	Performs investigation effectively with minor limitations.	Performs basic investigation with guidance.	Investigation is inadequate or poorly documented.	/5
ILO5	Tools and Technology	Effectively uses appropriate engineering tools, software, equipment and technologies required for FYP-I.	Uses appropriate tools effectively with minor limitations.	Uses basic tools with guidance.	Demonstrates inadequate or inappropriate tool use.	/2
ILO6	Safety and Broader Implications	Consistently identifies and addresses relevant safety, environmental, social, economic and sustainability considerations.	Addresses relevant considerations effectively.	Demonstrates basic consideration of relevant issues.	Fails to adequately consider relevant issues.	/1
ILO7	Professional Conduct	Demonstrates consistent academic integrity, ethical	Demonstrates good professional	Meets minimum professional expectations.	Demonstrates significant deficiencies.	/2

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
		conduct, safety compliance, responsibility and professional behavior.	conduct with minor limitations.			
ILO8	Team Coordination	Makes a reliable individual contribution and coordinates effectively with team members to achieve FYP-I objectives.	Makes a strong contribution and coordinates well.	Makes an adequate contribution with guidance.	Contribution or coordination is inadequate.	/3
ILO9	Technical Communication	Maintains clear technical records and communicates project progress, technical issues and decisions effectively.	Communicates effectively with minor limitations.	Communication is adequate but requires improvement.	Communication and documentation are inadequate.	/1
ILO10	Project and Financial Management	Effectively plans and monitors assigned activities, resources, schedule, risks and budget.	Manages assigned activities effectively with minor limitations.	Performs basic management tasks with guidance.	Fails to adequately manage assigned activities/resources.	/1
ILO11	Independent Learning	Independently identifies knowledge gaps, acquires relevant knowledge and applies it to FYP tasks.	Demonstrates good independent learning.	Demonstrates adequate learning with some guidance.	Shows little evidence of independent learning.	/1
	TOTAL					__/25

Signature of Assessor: _____ Date: _____

APPENDIX C — PROGRESSIVE SEMINAR RUBRIC
Total: 25 Marks

Name:	
Roll No.:	
Project Title:	
Supervisor:	
Co-supervisor:	
Assessor 1 Name:	

Rubric Performance Scale

Grade Level	Percentage Range	Descriptor
Excellent	80–100%	Consistently exceeds expectations; demonstrates strong, accurate, independent and well-justified achievement of the criterion.
Good	65–79%	Clearly meets expectations and demonstrates sound understanding, application and performance with minor limitations.
Satisfactory	50–64%	Meets minimum expectations and demonstrates adequate achievement with some limitations or guidance.
Unsatisfactory	Below 50%	Does not meet minimum expectations; demonstrates inadequate, incomplete or unsupported achievement.

Important: The percentage bands are applied within each criterion's allocated marks, not to the overall FYP.

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
ILO1	Engineering Knowledge	Demonstrates accurate and integrated application of relevant engineering knowledge to the	Demonstrates sound application with minor gaps.	Demonstrates basic application.	Demonstrates inadequate application.	/1

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
		current project stage.				
ILO2	Problem Analysis	Clearly explains current problem analysis, requirements, constraints and technical challenges.	Explains analysis effectively with minor omissions.	Provides basic analysis.	Analysis is unclear or inadequate.	/2
ILO3	Design Progress	Demonstrates substantial and technically justified progress toward the engineering solution.	Demonstrates good design progress.	Demonstrates basic progress with guidance.	Design progress is inadequate.	/4
ILO4	Investigation and Results	Presents appropriate investigation, testing, simulation or measurement results and interprets them correctly.	Presents and interprets results effectively.	Provides basic results and interpretation.	Results or interpretation are inadequate.	/3
ILO5	Tools and Technology	Demonstrates appropriate use of engineering tools and technologies in project development.	Uses tools effectively with minor limitations.	Demonstrates basic use with guidance.	Tool use is inadequate.	/2
ILO6	Broader Implications	Demonstrates consideration of relevant safety, environmental, social, economic and sustainability implications.	Provides good consideration.	Provides basic consideration.	Fails to address relevant implications.	/2
ILO7	Professional Conduct	Demonstrates ethical, professional and safety-compliant project conduct.	Demonstrates good conduct with minor limitations.	Meets minimum expectations.	Demonstrates inadequate conduct.	/1

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
ILO8	Team Contribution	Clearly demonstrates individual contribution and effective coordination with team members.	Demonstrates strong contribution and coordination.	Demonstrates adequate contribution.	Contribution or coordination is inadequate.	/3
ILO9	Seminar Communication	Presents technical progress clearly, logically and professionally and responds effectively to questions.	Communicates effectively with minor limitations.	Communicates adequately.	Communication is unclear or technically inadequate.	/5
ILO10	Project Management	Demonstrates effective monitoring of schedule, resources, risks, budget and deliverables.	Demonstrates good project monitoring.	Demonstrates basic monitoring.	Demonstrates inadequate monitoring.	/1
ILO11	Independent Learning	Demonstrates newly acquired knowledge and explains how it has been applied to project progress.	Demonstrates good independent learning.	Demonstrates basic evidence.	Provides little evidence of independent learning.	/1
	TOTAL					__/25

Signature of Assessor: _____ Date: _____

Averaging Template – Appendix C

ILO	Max Marks	Assessor 1	Assessor 2	Assessor 3	Average
ILO1	1	__/1	__/1	__/1	__/1
ILO2	2	__/2	__/2	__/2	__/2
ILO3	4	__/4	__/4	__/4	__/4
ILO4	3	__/3	__/3	__/3	__/3
ILO5	2	__/2	__/2	__/2	__/2
ILO6	2	__/2	__/2	__/2	__/2
ILO7	1	__/1	__/1	__/1	__/1
ILO8	3	__/3	__/3	__/3	__/3
ILO9	5	__/5	__/5	__/5	__/5
ILO10	1	__/1	__/1	__/1	__/1
ILO11	1	__/1	__/1	__/1	__/1
TOTAL	25	__/25	__/25	__/25	__/25

Final Average Total : _____ / 25

Certified by FYP Coordinator: _____

APPENDIX D — THESIS SUBMISSION RUBRIC
Total: 50 Marks

Name:	
Roll No.:	
Project Title:	
Supervisor:	
Co-supervisor:	
Assessor 1 Name:	

Rubric Performance Scale

Grade Level	Percentage Range	Descriptor
Excellent	80–100%	Consistently exceeds expectations; demonstrates strong, accurate, independent and well-justified achievement of the criterion.
Good	65–79%	Clearly meets expectations and demonstrates sound understanding, application and performance with minor limitations.
Satisfactory	50–64%	Meets minimum expectations and demonstrates adequate achievement with some limitations or guidance.
Unsatisfactory	Below 50%	Does not meet minimum expectations; demonstrates inadequate, incomplete or unsupported achievement.

Important: The percentage bands are applied within each criterion's allocated marks, not to the overall FYP.

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
ILO1	Engineering Knowledge	Demonstrates accurate, comprehensive and appropriately integrated engineering	Demonstrates sound engineering knowledge with minor gaps.	Demonstrates adequate knowledge with some limitations.	Knowledge is inadequate or frequently incorrect.	/5

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
		knowledge throughout the thesis.				
ILO2	Problem Analysis	Provides systematic and comprehensive analysis of the problem, requirements, constraints and technical criteria.	Provides sound analysis with minor omissions.	Provides adequate analysis but with limited depth.	Analysis is incomplete or inadequate.	/8
ILO3	Engineering Design	Presents a coherent, technically justified and well-developed engineering solution addressing specified requirements and constraints.	Presents a sound design with minor limitations.	Presents a feasible design with limited justification.	Design is incomplete, infeasible or inadequately justified.	/8
ILO4	Investigation and Validation	Provides rigorous analysis of experiments, simulations, measurements and tests and critically evaluates solution performance.	Provides sound investigation and evaluation.	Provides adequate investigation with limited depth.	Investigation or validation is inadequate.	/6
ILO5	Engineering Tools and Technology	Demonstrates appropriate and effective use of engineering tools, software, equipment and modern technologies.	Uses appropriate tools effectively.	Uses basic tools adequately.	Tool selection or application is inadequate.	/5
ILO6	Safety and Sustainability	Thoroughly evaluates relevant environmental, social, economic, health, safety and sustainability implications.	Provides good evaluation.	Provides basic evaluation.	Evaluation is inadequate or absent.	/5
ILO7	Ethics and Professional Practice	Demonstrates academic integrity, ethical practice, safety compliance, standards and professional	Demonstrates strong compliance with minor issues.	Meets basic requirements.	Demonstrates significant deficiencies.	/2

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
		responsibility throughout the thesis.				
ILO9	Technical Documentation	Presents methodology, results, discussion and conclusions in a clear, coherent and professionally structured technical document.	Documentation is clear and well structured.	Documentation is adequate with some weaknesses.	Documentation is unclear, incomplete or poorly structured.	/6
ILO10	Project and Financial Management	Documents effective planning, scheduling, resource utilization, budget control, risk management and project monitoring.	Documents sound management with minor limitations.	Provides basic evidence of management.	Evidence of management is inadequate.	/3
ILO11	Independent Learning	Demonstrates substantial evidence of independent acquisition and application of new knowledge, technologies or standards.	Demonstrates good independent learning.	Demonstrates adequate evidence.	Provides insufficient evidence.	/2
	TOTAL					__/50

Signature of Assessor: _____ Date: _____

Averaging Template – Appendix D

ILO	Max Marks	Assessor 1	Assessor 2	Assessor 3	Average
ILO1	5	__/5	__/5	__/5	__/5
ILO2	8	__/8	__/8	__/8	__/8
ILO3	8	__/8	__/8	__/8	__/8
ILO4	6	__/6	__/6	__/6	__/6
ILO5	5	__/5	__/5	__/5	__/5
ILO6	5	__/5	__/5	__/5	__/5
ILO7	2	__/2	__/2	__/2	__/2
ILO9	6	__/6	__/6	__/6	__/6
ILO10	3	__/3	__/3	__/3	__/3
ILO11	2	__/2	__/2	__/2	__/2
TOTAL	50	__/50	__/50	__/50	__/50

Final Average Total: _____ / 50

Certified by FYP Coordinator: _____

APPENDIX E — PROJECT DEMONSTRATION RUBRIC
Total: 25 Marks

Name:	
Roll No.:	
Project Title:	
Supervisor:	
Co-supervisor:	
Assessor 1 Name:	

Rubric Performance Scale

Grade Level	Percentage Range	Descriptor
Excellent	80–100%	Consistently exceeds expectations; demonstrates strong, accurate, independent and well-justified achievement of the criterion.
Good	65–79%	Clearly meets expectations and demonstrates sound understanding, application and performance with minor limitations.
Satisfactory	50–64%	Meets minimum expectations and demonstrates adequate achievement with some limitations or guidance.
Unsatisfactory	Below 50%	Does not meet minimum expectations; demonstrates inadequate, incomplete or unsupported achievement.

Important: The percentage bands are applied within each criterion's allocated marks, not to the overall FYP.

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
ILO1	Technical Implementation	Demonstrates accurate application of relevant engineering	Demonstrates sound application.	Demonstrates basic application.	Demonstrates inadequate application.	/1

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
		knowledge in the implemented solution.				
ILO3	Design Implementation	Demonstrates a functional engineering solution that effectively implements the approved design and satisfies requirements.	Solution is substantially functional with minor limitations.	Basic functionality is demonstrated.	Solution is substantially incomplete or non-functional.	/5
ILO4	Testing and Performance	Demonstrates systematic testing and provides convincing evidence of performance against defined requirements.	Demonstrates appropriate testing and performance.	Demonstrates basic testing.	Testing or performance evidence is inadequate.	/4
ILO5	Tools and Technology	Demonstrates effective use of appropriate engineering tools, equipment, software and technologies during implementation and validation.	Uses appropriate tools effectively.	Demonstrates basic tool use.	Tool use is inadequate.	/3
ILO6	Safety and Broader Implications	Demonstrates safe operation and clearly addresses environmental, social, economic, health and sustainability implications of the implemented solution.	Demonstrates good consideration and safe operation.	Meets basic safety and broader-impact requirements.	Demonstrates unsafe practice or fails to address relevant implications.	/3
ILO7	Ethical and Professional Practice	Demonstrates ethical, professional and safety-compliant	Demonstrates good conduct.	Meets minimum expectations.	Demonstrates significant deficiencies.	/1

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
		conduct during demonstration.				
ILO8	Individual Contribution	Clearly demonstrates the student's own technical contribution and effective coordination with the team.	Demonstrates strong individual contribution.	Demonstrates adequate contribution.	Individual contribution cannot be established.	/4
ILO9	Technical Explanation	Clearly explains the implemented system, methodology, results, limitations and operation during demonstration.	Provides clear technical explanation.	Provides adequate explanation.	Explanation is unclear or inadequate.	/2
ILO10	Project Management	Demonstrates effective execution according to project schedule, resources, risk controls and planned deliverables.	Demonstrates good project execution.	Demonstrates basic project control.	Project execution is poorly controlled.	/1
ILO11	Independent Learning	Demonstrates independently acquired knowledge required to operate, troubleshoot and explain the implemented solution.	Demonstrates good independent knowledge.	Demonstrates basic knowledge with guidance.	Demonstrates little evidence of independent learning.	/1
	TOTAL					__/25

Signature of Assessor: _____ Date: _____

Averaging Template – Appendix E

ILO	Max Marks	Assessor 1	Assessor 2	Assessor 3	Average
ILO1	1	__/1	__/1	__/1	__/1
ILO3	5	__/5	__/5	__/5	__/5
ILO4	4	__/4	__/4	__/4	__/4
ILO5	3	__/3	__/3	__/3	__/3
ILO6	3	__/3	__/3	__/3	__/3
ILO7	1	__/1	__/1	__/1	__/1
ILO8	4	__/4	__/4	__/4	__/4
ILO9	2	__/2	__/2	__/2	__/2
ILO10	1	__/1	__/1	__/1	__/1
ILO11	1	__/1	__/1	__/1	__/1
TOTAL	25	__/25	__/25	__/25	__/25

Final Average Total (to be transferred): _____ / 25

Certified by FYP Coordinator: _____

APPENDIX F — FINAL PRESENTATION RUBRIC
Total: 10 Marks

Name:	
Roll No.:	
Project Title:	
Supervisor:	
Co-supervisor:	
Assessor 1 Name:	

Rubric Performance Scale

Grade Level	Percentage Range	Descriptor
Excellent	80–100%	Consistently exceeds expectations; demonstrates strong, accurate, independent and well-justified achievement of the criterion.
Good	65–79%	Clearly meets expectations and demonstrates sound understanding, application and performance with minor limitations.
Satisfactory	50–64%	Meets minimum expectations and demonstrates adequate achievement with some limitations or guidance.
Unsatisfactory	Below 50%	Does not meet minimum expectations; demonstrates inadequate, incomplete or unsupported achievement.

Important: The percentage bands are applied within each criterion's allocated marks, not to the overall FYP.

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
ILO3	Solution and Design	Presents the engineering solution and major design decisions accurately and convincingly.	Presents solution clearly with minor limitations.	Provides basic explanation.	Explanation is inadequate.	/1

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
ILO4	Results	Clearly presents and interprets key results and performance evidence.	Presents results effectively.	Presents basic results.	Results are unclear or unsupported.	/2
ILO5	Technology	Clearly explains the engineering tools and technologies used.	Provides good explanation.	Provides basic explanation.	Explanation is inadequate.	/1
ILO6	Broader Implications	Clearly communicates important safety, environmental, social, economic and sustainability considerations.	Communicates relevant considerations effectively.	Provides basic discussion.	Relevant implications are absent.	/1
ILO7	Professional Conduct	Demonstrates professional, ethical and academically responsible presentation practices.	Demonstrates good professional conduct.	Meets minimum expectations.	Demonstrates inadequate conduct.	/1
ILO8	Team Coordination	Demonstrates coordinated presentation and clear understanding of individual and team roles.	Demonstrates good coordination.	Demonstrates adequate coordination.	Coordination is inadequate.	/0
ILO9	Communication	Communicates technical information clearly, logically, concisely and professionally using appropriate visual material.	Communicates effectively with minor limitations.	Communication is adequate.	Communication is unclear or ineffective.	/3
ILO10	Project Management	Clearly communicates project schedule, resource, risk, budget and deliverable status where relevant.	Communicates management information effectively.	Provides basic information.	Management information is inadequate.	/1
	TOTAL					__/10

Signature of Assessor: _____ Date: _____

Averaging Template – Appendix F

ILO	Max Marks	Assessor 1	Assessor 2	Assessor 3	Average
ILO3	1	__/1	__/1	__/1	__/1
ILO4	2	__/2	__/2	__/2	__/2
ILO5	1	__/1	__/1	__/1	__/1
ILO6	1	__/1	__/1	__/1	__/1
ILO7	1	__/1	__/1	__/1	__/1
ILO8	0	__/0	__/0	__/0	__/0
ILO9	3	__/3	__/3	__/3	__/3
ILO10	1	__/1	__/1	__/1	__/1
TOTAL	10	__/10	__/10	__/10	__/10

Final Average Total : _____ / 10

Certified by FYP Coordinator: _____

APPENDIX G — VIVA VOCE RUBRIC
Total: 15 Marks

Name:	
Roll No.:	
Project Title:	
Supervisor:	
Co-supervisor:	
Assessor 1 Name:	

Rubric Performance Scale

Grade Level	Percentage Range	Descriptor
Excellent	80–100%	Consistently exceeds expectations; demonstrates strong, accurate, independent and well-justified achievement of the criterion.
Good	65–79%	Clearly meets expectations and demonstrates sound understanding, application and performance with minor limitations.
Satisfactory	50–64%	Meets minimum expectations and demonstrates adequate achievement with some limitations or guidance.
Unsatisfactory	Below 50%	Does not meet minimum expectations; demonstrates inadequate, incomplete or unsupported achievement.

Important: The percentage bands are applied within each criterion's allocated marks, not to the overall FYP.

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
ILO1	Engineering Knowledge	Demonstrates comprehensive and accurate individual understanding of	Demonstrates strong understanding with minor gaps.	Demonstrates basic understanding.	Demonstrates inadequate understanding.	/1

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
		relevant engineering principles.				
ILO2	Problem Analysis	Clearly explains and defends problem analysis, requirements, constraints and technical decisions.	Provides sound explanations.	Provides basic explanations.	Cannot adequately explain the analysis.	/2
ILO3	Design Judgement	Clearly justifies design decisions, alternatives, trade-offs and limitations using engineering judgement.	Provides good technical justification.	Provides basic justification.	Cannot adequately justify decisions.	/1
ILO4	Results and Evaluation	Critically interprets results, testing, limitations and performance.	Provides good interpretation.	Provides basic interpretation.	Interpretation is inadequate.	/2
ILO5	Tools and Technology	Demonstrates comprehensive individual understanding of the engineering tools, software, equipment and technologies used.	Demonstrates good understanding.	Demonstrates basic understanding.	Demonstrates inadequate understanding.	/3
ILO6	Broader Engineering Implications	Demonstrates sound understanding of safety, environmental, social, economic and sustainability implications.	Demonstrates good understanding.	Demonstrates basic understanding.	Demonstrates inadequate understanding.	/1
ILO8	Individual Contribution	Clearly explains the student's own contribution and	Clearly explains individual contribution.	Provides basic evidence.	Cannot establish meaningful contribution.	/1

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
		its integration within the team project.				
ILO9	Oral Technical Communication	Responds clearly, logically and professionally and explains technical matters accurately under questioning.	Communicates effectively.	Communicates adequately.	Responses are unclear or technically inadequate.	/1
ILO10	Project and Financial Management	Clearly explains project-management and financial decisions concerning schedule, resources, budget, risks and deliverables.	Provides sound explanations.	Provides basic explanations.	Cannot adequately explain management decisions.	/1
ILO11	Independent Learning	Demonstrates clear evidence of independently acquired knowledge and its application to the FYP.	Demonstrates good independent learning.	Demonstrates basic evidence.	Provides little evidence.	/2
	TOTAL					__/15

Signature of Assessor: _____ Date: _____

Averaging Template – Appendix G

ILO	Max Marks	Assessor 1	Assessor 2	Assessor 3	Average
ILO1	1	__/1	__/1	__/1	__/1
ILO2	2	__/2	__/2	__/2	__/2
ILO3	1	__/1	__/1	__/1	__/1
ILO4	2	__/2	__/2	__/2	__/2
ILO5	3	__/3	__/3	__/3	__/3
ILO6	1	__/1	__/1	__/1	__/1
ILO8	1	__/1	__/1	__/1	__/1
ILO9	1	__/1	__/1	__/1	__/1
ILO10	1	__/1	__/1	__/1	__/1
ILO11	2	__/2	__/2	__/2	__/2
TOTAL	15	__/15	__/15	__/15	__/15

Final Average Total: _____ / 15

Certified by FYP Coordinator: _____

APPENDIX H — SUPERVISOR ASSESSMENT-II RUBRIC
Total: 25 Marks

Name:	
Roll No.:	
Project Title:	
Supervisor:	
Co-supervisor:	
Assessor 1 Name:	

Rubric Performance Scale

Grade Level	Percentage Range	Descriptor
Excellent	80–100%	Consistently exceeds expectations; demonstrates strong, accurate, independent and well-justified achievement of the criterion.
Good	65–79%	Clearly meets expectations and demonstrates sound understanding, application and performance with minor limitations.
Satisfactory	50–64%	Meets minimum expectations and demonstrates adequate achievement with some limitations or guidance.
Unsatisfactory	Below 50%	Does not meet minimum expectations; demonstrates inadequate, incomplete or unsupported achievement.

Important: The percentage bands are applied within each criterion's allocated marks, not to the overall FYP.

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
ILO1	Application of Engineering Knowledge	Independently and consistently applies relevant engineering knowledge to	Applies knowledge effectively with minor guidance.	Applies basic knowledge adequately.	Demonstrates inadequate application.	/1

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
		resolve FYP-II technical issues.				
ILO2	Problem Analysis	Systematically identifies, analyzes and resolves technical problems and constraints arising during FYP-II.	Provides good analysis and problem solving.	Provides basic analysis with guidance.	Fails to adequately analyze or resolve problems.	/3
ILO3	Design Refinement	Independently evaluates and refines the engineering solution using requirements, evidence and engineering judgement.	Makes effective refinements.	Makes basic refinements with guidance.	Makes inadequate or unjustified refinements.	/1
ILO4	Technical Investigation	Performs appropriate testing, investigation, analysis and validation activities with technical discipline.	Performs investigation effectively.	Performs basic investigation with guidance.	Investigation is inadequate.	/1
ILO5	Engineering Tools and Technology	Independently and effectively selects and applies appropriate engineering tools, software, equipment and technologies.	Applies appropriate tools effectively.	Applies basic tools adequately.	Demonstrates poor or inappropriate tool use.	/4
ILO6	Safety and Broader Considerations	Consistently demonstrates safety compliance and considers environmental, social, economic	Demonstrates good compliance and consideration.	Meets basic requirements.	Demonstrates significant deficiencies.	/1

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
		and sustainability implications.				
ILO7	Ethical and Professional Conduct	Consistently demonstrates academic integrity, ethical behavior, professional responsibility, safety compliance and adherence to standards and regulations.	Demonstrates good professional conduct.	Meets minimum professional expectations.	Demonstrates significant deficiencies.	/2
ILO8	Individual Contribution and Team Coordination	Makes a sustained and substantial individual contribution and effectively coordinates with team members.	Makes a strong and reliable contribution.	Makes an adequate contribution with some guidance.	Contribution or coordination is inadequate.	/4
ILO9	Technical Communication	Consistently communicates technical information clearly and maintains accurate professional records and documentation.	Communicates effectively.	Communication is adequate.	Communication or documentation is inadequate.	/2
ILO10	Project and Financial Management	Independently plans, schedules, monitors and controls activities, resources, budget, risks and deliverables and takes corrective action when required.	Effectively manages activities, resources, budget and risks.	Performs basic management with guidance.	Fails to adequately manage project activities or resources.	/4
ILO11	Independent Learning	Consistently identifies	Demonstrates good	Demonstrates adequate	Shows little evidence of	/2

ILO	Criterion	Excellent	Good	Satisfactory	Unsatisfactory	Obtained Marks
		knowledge gaps, acquires relevant knowledge and applies it independently to project challenges.	independent learning.	evidence with some guidance.	independent learning.	
	TOTAL					__/25

Signature of Assessor: _____ Date: _____

Averaging Template – Appendix H

ILO	Max Marks	Assessor 1	Assessor 2	Assessor 3	Average
ILO1	1	__/1	__/1	__/1	__/1
ILO2	3	__/3	__/3	__/3	__/3
ILO3	1	__/1	__/1	__/1	__/1
ILO4	1	__/1	__/1	__/1	__/1
ILO5	4	__/4	__/4	__/4	__/4
ILO6	1	__/1	__/1	__/1	__/1
ILO7	2	__/2	__/2	__/2	__/2
ILO8	4	__/4	__/4	__/4	__/4
ILO9	2	__/2	__/2	__/2	__/2
ILO10	4	__/4	__/4	__/4	__/4
ILO11	2	__/2	__/2	__/2	__/2
TOTAL	25	__/25	__/25	__/25	__/25

Final Average Total: _____ / 25

Certified by FYP Coordinator: _____

APPENDIX I — FINAL YEAR PROJECT PROPOSAL TEMPLATE
Applicable from Batch 2K25 onwards

1. Project Identification

Item	Details
Student Name(s)	
Enrollment/Roll No.(s)	
Batch	2K25 onwards
Program	B.E. Electronic Engineering
Proposed FYP Title	
Supervisor	
Co-Supervisor, if applicable	
Project Area/Specialization	
Date of Submission	

2. Project Abstract

Provide a concise summary of the proposed project covering:

- engineering context;
- engineering problem;
- principal requirements and constraints;
- Complex Engineering Problem (CEP);
- Complex Engineering Activity (CEA);
- proposed engineering approach;
- expected engineering solution; and
- proposed investigation and validation.

Recommended length: 200–300 words.

3. Engineering Background and Context

Describe the engineering context in which the problem exists.
The background should establish:

- the existing system, process, technology, or application;
- current practice or operating condition;
- existing limitations or deficiencies;

- relevant engineering context;
- affected stakeholders; and
- the need for an engineering intervention.

_____
_____
_____

4. Literature and Technical Review

The review shall critically examine:

- relevant previous research and engineering work;
- existing systems, products, technologies, and solutions;
- established engineering methods and approaches;
- strengths and limitations of existing solutions;
- relevant engineering standards, codes, and practices;
- applicable technologies, tools, and techniques;
- unresolved technical issues or engineering gaps; and
- the rationale for undertaking the proposed FYP.

The review shall be analytical rather than merely descriptive. The student shall compare relevant existing approaches and explain how their limitations, gaps, or contextual constraints lead to the engineering problem addressed by the proposed FYP.

4.1 Existing Engineering Solutions

4.2 Comparative Analysis of Existing Approaches

Existing Approach/Solution	Main Features	Advantages	Limitations	Relevance to Proposed FYP

4.3 Engineering Gap or Unresolved Issue

Clearly identify the technical or engineering gap that remains after reviewing existing solutions.

_____
_____
_____

4.4 Rationale for the Proposed FYP

Explain how the identified engineering gap leads to the proposed project and why an engineering solution is required.

5. Engineering Problem Definition

5.1 Problem Statement

Clearly define the engineering problem to be addressed. The problem statement shall identify, where applicable:

- existing condition;
- engineering deficiency or challenge;
- system/process involved;
- affected stakeholders;
- technical requirements;
- major constraints; and
- intended engineering improvement or outcome.

5.2 Significance of the Problem

Explain why the problem is important and why it requires an engineering solution.

5.3 Scope of the Problem

Included in the Project	Excluded from the Project

The scope shall be sufficiently clear to prevent uncontrolled expansion of the project.

6. Stakeholders, Requirements and Constraints

6.1 Stakeholder Identification

Stakeholder	Role/Interest	Need/Expectation

6.2 Engineering Requirements

No.	Engineering Requirement	Type	Verification Method
1			
2			
3			
4			

Requirements should be measurable or objectively verifiable wherever possible.

6.3 Engineering Constraints

Constraint	Effect on Project	Proposed Response
Technical		
Economic		
Time		
Resource		
Safety		
Environmental		
Legal/Regulatory		
Other		

7. Complex Engineering Problem and Complex Engineering Activity

The proposed FYP shall address a Complex Engineering Problem through a Complex Engineering Activity.

7.1 Complex Engineering Problem (CEP)

The student shall demonstrate that the identified engineering problem possesses the characteristics of a Complex Engineering Problem using the applicable WP1–WP7 criteria.

CEP Characteristic	Project-Specific Evidence
WP1 – Depth of Knowledge Required	
WP2 – Range of Conflicting Requirements	
WP3 – Depth of Analysis Required	
WP4 – Familiarity of Issues	
WP5 – Extent of Applicable Codes	
WP6 – Stakeholder Involvement and Conflicting Requirements	
WP7 – Interdependence	

Overall CEP Justification

Explain specifically why the identified engineering problem qualifies as a Complex Engineering Problem.

_____
_____
_____

7.2 Complex Engineering Activity (CEA)

The proposed engineering activity for addressing the CEP shall be evaluated against the EA1–EA5 characteristics.

CEA Characteristic	Project-Specific Evidence
EA1 – Range of Resources	
EA2 – Level of Interactions	
EA3 – Innovation	

CEA Characteristic	Project-Specific Evidence
EA4 – Consequences to Society and Environment	
EA5 – Familiarity	

Overall CEA Justification

Explain specifically why the proposed engineering activity qualifies as a Complex Engineering Activity.

_____
_____
_____

8. Project Objectives

Note: Objectives should be specific, technically meaningful, and reasonably measurable.

No.	Project Objective
1	
2	
3	

9. Engineering Knowledge and Problem Analysis

9.1 Engineering Knowledge Required

Knowledge Area	Required Knowledge	Application in Project
Mathematics		
Natural Sciences		
Computing		
Electronic Engineering		

Knowledge Area	Required Knowledge	Application in Project
Specialized Engineering Knowledge		

9.2 Engineering Problem Analysis

Explain how the CEP will be analyzed using appropriate engineering principles, models, calculations, assumptions, requirements, constraints, and analytical methods.

Preliminary Engineering Analysis:

Key Assumptions:

Engineering Criteria:

10. Alternative Solutions and Engineering Decision

Identify reasonable engineering alternatives for addressing the CEP.

Alternative	Advantages	Limitations	Engineering Evaluation
Alternative 1			
Alternative 2			
Alternative 3			

10.1 Selected Engineering Approach

Explain why the selected approach is preferred considering:

- technical performance;
- engineering requirements;
- constraints;
- safety;
- sustainability;
- cost;
- available resources; and
- feasibility.

11. Proposed Engineering Design

Present the proposed engineering design that will address the CEP through the identified CEA. Where applicable, include:

- system architecture;

- block diagram;
- subsystem structure;
- interfaces;
- design specifications;
- preliminary calculations;
- mathematical models;
- algorithms;
- hardware/software architecture;
- design parameters; and
- design decisions.

11.1 Proposed System Architecture

[Insert diagram]

11.2 Design Justification

Explain how the proposed design satisfies the identified engineering requirements and constraints.

12. Proposed Investigation, Testing and Validation

Explain how the proposed engineering solution will be investigated, verified, tested, and validated.

Requirement/Parameter	Investigation/Test Method	Measurement/Output	Acceptance Criterion

Proposed Investigation Methods

☐ Simulation
☐ Experimental investigation
☐ Measurement
☐ Prototype testing
☐ Field testing
☐ Comparative evaluation
☐ Other: _____

Verification and Validation Strategy:

13. Engineering Tools and Technologies

Tool/Technology	Purpose	Proposed Application

The student shall explain the engineering justification for the selection of major tools and technologies

14. Safety, Sustainability and Societal Considerations

Consideration	Project-Specific Issue	Proposed Control/Response
Health and Safety		
Environmental Impact		
Sustainability		
Societal Impact		
Economic Considerations		

Relevant safety risks shall be identified for the proposed engineering activity.

15. Ethics, Standards and Professional Requirements

Identify applicable:

- engineering standards;
- codes of practice;
- professional ethics;
- legal/regulatory requirements;
- safety requirements;
- intellectual-property requirements;
- data/privacy requirements, where applicable; and
- other professional requirements.

Requirement/Standard	Relevance to Project	Proposed Compliance

16. Project Management and Finance

16.1 Work Breakdown Structure (✓)

Major Activity	FYP-I	FYP-II
Problem analysis		
Technical/Literature Review		
Requirements analysis		
Preliminary design		
Detailed design		
Implementation/Investigation		
Testing and validation		
Evaluation		
Thesis preparation		

16.2 Project Schedule

[Insert Gantt Chart]

16.3 Resource Plan

Resource	Requirement	Availability/Source
Laboratory		
Equipment		
Software		
Components		
Data		

16.4 Preliminary Budget

Item	Estimated Cost
Components/Materials	
Fabrication	
Equipment/Services	
Software/Other	
Total	

16.5 Project Risk Management

Risk	Likelihood	Impact	Mitigation
Technical			
Resource			
Schedule			
Financial			
Safety			

17. Sustainable Development Goals (SDGs)

Identify only SDGs having a direct and demonstrable relationship with the project.

SDG	Relevant Area/Target	Specific Project Contribution

Note: SDG alignment supports the relevance and societal context of the project but does not, by itself, establish CEP or CEA.

18. Expected Engineering Outcomes

The expected outcomes shall be directly related to the identified problem, objectives, design, and validation strategy.

No.	Expected Engineering Outcome	Evidence/Measurement
1		
2		
3		
4		

19. FYP-I and FYP-II Deliverables

The proposal shall clearly distinguish the work expected in FYP-I and FYP-II (✓).

Deliverable	FYP-I	FYP-II
Problem definition		
CEP justification		
CEA justification		
Requirements		
Preliminary analysis		
Preliminary design		
Detailed design		
Implementation/Investigation		
Testing and validation		
Final evaluation		
Thesis		

20. References

All sources shall be properly cited and listed using the approved academic referencing style.

21. Student Declaration

We certify that:

- the information provided in this proposal is accurate;
- the proposed project represents our intended FYP work;
- all sources and prior work have been appropriately acknowledged;
- the proposal complies with applicable academic-integrity requirements;
- relevant safety, ethical, legal, and professional requirements have been considered; and
- we understand that final approval of the FYP rests with the FYP Committee.

Student Name and Roll No	Signature	Date

22. Supervisor Review

Criterion	Yes	No	Remarks
Engineering problem clearly defined	☐	☐	
Requirements and constraints identified	☐	☐	
CEP adequately demonstrated	☐	☐	
CEA adequately demonstrated	☐	☐	
CEP–CEA relationship clearly established	☐	☐	
Objectives are appropriate	☐	☐	
Proposed engineering approach is feasible	☐	☐	
Investigation/validation is appropriate	☐	☐	
Resources are available/feasible	☐	☐	
Safety and ethical issues addressed	☐	☐	

Criterion	Yes	No	Remarks
Schedule is feasible	☐	☐	

Supervisor Recommendation

☐ Recommended for Proposal Defense
☐ Recommended subject to revision
☐ Not Recommended

Supervisor Signature **Date :**

23. FYP Committee CEP–CEA Eligibility Review

This section shall be completed by the FYP Committee, not by the student.

Complex Engineering Problem

☐ **Satisfied**
☐ **Revision Required**
☐ **Not Satisfied**

Complex Engineering Activity

☐ Satisfied
☐ Revision Required
☐ Not Satisfied

Overall FYP Eligibility

☐ Eligible for FYP
☐ Eligible Subject to Modifications
☐ Not Eligible

Required Modifications:

FYP Coordinator Signature **Date**:

APPENDIX J – FYP THESIS TEMPLATE
B.E. Electronic Engineering
Applicable from Batch 2K25 onwards

QUICK REFERENCE CARD

Question	Answer
Thesis marks	50 marks (group deliverable, per Section 3.3)
Individual accountability	Consolidated Declaration & CRediT (Section 2.2) + USB folder (Section 1.8)
Page limit	60–80 pages (Chapters 1–16); Appendices ≤30 pages
Referencing	IEEE. Minimum 25 references; 70% peer-reviewed
Novelty statement	Mandatory in Chapter 1.2
Plagiarism thresholds	Overall <19%; Single Source <5%; AI <20% (per Section 7.3)
EHS Policy	University of Sindh EHS Policy (2023) – Risk Assessment mandatory (Section 20.4)
Turnitin Report	Mandatory attachment (Section 16.2)

PREFACE

P.1 Purpose

This Appendix provides the mandatory structure for the FYP thesis, aligned with international engineering academic standards (ABET, Washington Accord, IEEE) and the University of Sindh EHS Policy (2023).

P.2 Cross-Reference to Thesis Rubric (Appendix D)

Criterion	Marks	Evidence Required
ILO1 – Engineering Knowledge	5	Correct application of mathematics, science, core EE theory
ILO2 – Problem Analysis	8	Systematic definition of requirements, constraints, technical criteria
ILO3 – Engineering Design	8	Justified design decisions; ≥2 alternatives per decision

Criterion	Marks	Evidence Required
ILO4 – Investigation & Validation	6	Systematic testing, measurement, critical evaluation
ILO5 – Engineering Tools	5	Appropriate use of software, hardware, equipment
ILO6 – Safety & Sustainability	5	EHS compliance, Risk Assessment, environmental/social implications
ILO7 – Ethics & Professional Practice	2	Academic integrity, standard compliance, AI disclosure
ILO9 – Technical Documentation	6	Clear, coherent, professional writing (see Section 1.7)
ILO10 – Project Management	3	Budget, schedule, risk management, resource tracking
ILO11 – Independent Learning	2	Self-acquired knowledge beyond curriculum

1. GENERAL REQUIREMENTS

1.1 Document Specifications

Parameter	Specification
Font	Times New Roman, 12pt (main); 10pt (captions/tables)
Spacing	1.5 (text); Single (tables, references, appendices)
Margins	Left: 1.5"; Top/Right/Bottom: 1"
Page Limit	60–80 pages (Chapters 1–16); Appendices ≤30 pages
Citation	IEEE (e.g., [1], [2]). No footnotes.
Binding	Hardbound + USB drive (PDF/A)
Language	UK English (analyse, colour, centre)

1.2 Professional Formatting – SI Units, Variables, Equations, Figures

Element	Requirement	Example
Variables	Italicized	V, I, R
Units	Roman, space before	5 V, 100 mA, 50 Ω
Equations	Right-aligned	V = I × R (1)
Significant Figures	3 significant figures	4.72 V, 2.10 A
Scientific Notation	× 10^3	4.72 × 10^3 Hz
Figures	≥300 DPI; 8pt min font; grayscale-compatible; axes labelled	

1.3 Page Numbering

Section	Format
Front Matter (Title → TOC)	Roman numerals: i, ii, iii...
Main Body (Ch 1–16)	Arabic numerals: 1, 2, 3...
Appendices	Continue Arabic

1.4 Figure, Table, Equation Numbering

Element	Format	Example
Figures	Figure X.Y	Figure 3.1
Tables	Table X.Y	Table 5.2
Equations	(X.Y)	(4.1)

All must be referenced in the text before they appear.

1.5 Group vs. Individual Authorship

- Thesis receives single group mark (50).
- Consolidated Declaration & CRediT (Section 2.2) ensures individual accountability.
- Examiners use this declaration during Viva to verify individual contributions.

1.6 Academic Integrity, AI, Similarity, and EHS Compliance

1.6.1 Thresholds

Indicator	Threshold	Action
Overall Similarity	< 19%	Acceptable
Single Source	< 5%	Acceptable
Findings/Conclusion	< 9%	Acceptable
AI Detection	< 20%	Acceptable (declared)
≥20% (any)	≥20%	Expert Review Required (penalties up to automatic failure)

IMPORTANT SUBMISSION REQUIREMENT: The official Turnitin Summary Page showing the Overall Similarity Index, Single Source Similarity, and AI Detection Score must be attached as the final page of the thesis (Section 16.2). Submission without this attachment is incomplete and will not be accepted for assessment.

1.6.2 EHS Compliance – University of Sindh EHS Policy (2023)

Requirement	**Evidence**
Risk Assessment	Conduct and document (Section 20.4)
PPE	Safety goggles, gloves, lab coats
Waste Disposal	Follow university guidelines
Incident Reporting	Report near-misses immediately
Emergency Procedures	Know exits, extinguishers, first-aid

Confirmed Non-compliance = automatic failure per Section 7.6.

1.7 Technical Writing Style Guide

Rule	**Explanation**
Voice	Active preferred ("We designed...")
Tense	Present for established facts; Past for experiments
Colloquialisms	Avoid ("pretty good" → "within ±2%")

Rule	Explanation
Sentence Length	Under 25 words
Acronyms	Define at first use
Spelling	UK English
Paragraphing	One idea per paragraph; topic sentence first

1.8 Digital Asset Submission – USB Folder Structure (Mandatory)

```
\Thesis_Group_XX\
├── \PDF\ (Thesis PDF/A)
├── \StudentA_RollNo_XXX\
│   ├── \Code\
│   ├── \Schematics\
│   └── \Simulations\
├── \StudentB_RollNo_YYY\
│   ├── \Code\
│   └── \Data\
└── \StudentC_RollNo_ZZZ\
```

README.txt must explain contents. Discrepancies referred to FYP Committee.

2. CONSOLIDATED FRONT MATTER

2.1 Title Page

University logo, Department, Program, Title, Student Names, Roll Nos., Supervisor, Batch, Year.

2.2 Consolidated Declaration, IP, CRediT, COI, and EHS

DECLARATION AND CONTRIBUTION STATEMENT

A. Academic Integrity Declaration (Individual)

We certify this is our original work. All sources acknowledged. We confirm Overall Similarity < 19%, Single Source < 5%, AI Detection < 20% (or duly declared).

B. Intellectual Property & Copyright

Designs, code, schematics, models are joint IP of students and University of Sindh. Department may archive and reproduce. Students may publish with University acknowledgement.

C. CRediT (Contributor Roles Taxonomy) – Group Contribution

Student	Roll No.	CRediT Role(s)	Specific Contributions	Sections
[A]	XXX	Methodology; Investigation	Power stage, PCB layout	Ch. 8.2, 10.3

Student	Roll No.	CRediT Role(s)	Specific Contributions	Sections
[B]	YYY	Software; Validation	PID control, MATLAB analysis	Ch. 8.3, 10.4
[C]	ZZZ	Hardware; Data Curation	Sensor interface, I2C	Ch. 8.4, 10.5

CRediT: Conceptualization, Methodology, Software, Validation, Formal Analysis, Investigation, Data Curation, Writing.

D. Conflict of Interest

☐ No conflict. ☐ Conflict declared: [specify].

E. EHS Compliance Declaration

We confirm compliance with University of Sindh EHS Policy (2023). Risk Assessment completed (Appendix A). PPE used. Waste disposed per guidelines. Incidents reported.

Signatures: _____ (A), _____ (B), _____ (C)

2.3 Data & Code Availability Statement

Source code, simulation files, test data, PCB files available on USB (Section 1.8). Raw logs in Appendices. Data and code available upon reasonable request to Department, ensuring reproducibility per IEEE Code of Ethics (2023).

2.4 Structured Abstract (≤250 words, Single Paragraph)

Component	Content
Background	1 sentence – context and why it matters
Aim	1 sentence – objective
Methodology	1-2 sentences – approach, tools, methods
Key Results	1-2 sentences – quantitative metrics
Conclusion	1 sentence – novelty/significance

2.5 Nomenclature and Acronyms

Nomenclature		Acronyms	
V	Voltage (V)	PID	Proportional-Integral-Derivative

Nomenclature		Acronyms	
I	Current (A)	FPGA	Field-Programmable Gate Array
R	Resistance (Ω)	PWM	Pulse-Width Modulation

3. RECOMMENDED THESIS STRUCTURE

Chapter	Title	ILO
1	INTRODUCTION, CONTEXT, AND NOVELTY	ILO1, ILO9
2	PROBLEM STATEMENT	ILO2
3	REFLECTIVE CEP ANALYSIS	ILO1, ILO2
4	REFLECTIVE CEA ANALYSIS	ILO1, ILO2
5	AIM AND OBJECTIVES	ILO2, ILO10
6	LITERATURE REVIEW	ILO1, ILO11
7	REQUIREMENTS AND CONSTRAINTS MATRIX	ILO2
8	ENGINEERING ANALYSIS AND DESIGN JUSTIFICATION	ILO1, ILO3
9	METHODOLOGY AND IMPLEMENTATION	ILO5
10	RESULTS, ANALYSIS, AND VALIDATION	ILO4, ILO6
11	SAFETY, SUSTAINABILITY, EHS, AND ETHICS	ILO6, ILO7
12	PROJECT MANAGEMENT, BOM, AND RISK LOG	ILO10
13	SUSTAINABLE DEVELOPMENT GOALS	ILO6
14	LIMITATIONS OF THE WORK	ILO4
15	CONCLUSIONS, CONTRIBUTIONS, AND FUTURE WORK	ILO9, ILO3
16	REFERENCES	ILO11

Chapter	Title	ILO
—	APPENDICES	ILO5, ILO10, ILO6

CHAPTER 1: INTRODUCTION, CONTEXT, AND NOVELTY

1.1 Engineering Context

Describe the broader engineering field, existing technology, current practice, deficiencies, and stakeholders.

1.2 Novelty and Engineering Contribution Statement

Explicitly state what is new about your work. Address:
"This project contributes a [novel algorithm / new circuit topology / improved control method]. Unlike existing approaches [citation], this work achieves [specific metric improvement]. To the best of our knowledge, this is the first implementation of [X] in [Y] context."

1.3 Thesis Roadmap

Provide a paragraph outlining the flow of remaining chapters:
"This thesis is organized as follows. Chapter 2 defines the engineering problem. Chapters 3 and 4 provide a reflective analysis of complexity. Chapter 5 sets the aim and objectives. Chapter 6 reviews the literature. Chapter 7 documents requirements. Chapter 8 presents engineering analysis and design. Chapter 9 describes methodology and implementation. Chapter 10 integrates results, analysis, and validation. Chapter 11 addresses safety, sustainability, and ethics. Chapter 12 covers project management. Chapter 13 discusses SDGs. Chapter 14 presents limitations. Chapter 15 concludes with contributions and future work."

CHAPTER 2: PROBLEM STATEMENT

2.1 Problem Statement

Clearly state:

- Existing condition and engineering deficiency
- System/process involved
- Affected stakeholders/users
- Technical requirements and major constraints
- Intended engineering improvement

CHAPTER 3: REFLECTIVE CEP ANALYSIS

3.1 Expected Complexity (from Proposal)

Summarize WP1–WP7 characteristics from your approved proposal (2-3 sentences each).

3.2 Actual Complexity Encountered

WP Code	What Was Proposed	What Was Actually Encountered	How It Differed
WP1	[Your text]	[Your text]	[Your text]
WP2	[Your text]	[Your text]	[Your text]
WP3	[Your text]	[Your text]	[Your text]
WP4	[Your text]	[Your text]	[Your text]
WP5	[Your text]	[Your text]	[Your text]
WP6	[Your text]	[Your text]	[Your text]
WP7	[Your text]	[Your text]	[Your text]

Address probing questions: What assumptions broke? Which mathematical models had to change? Was an unexpected subsystem required?

3.3 Overall CEP Justification

Conclude with a statement confirming the project addressed a Complex Engineering Problem.

CHAPTER 4: REFLECTIVE CEA ANALYSIS

4.1 Expected Activity (from Proposal)

Summarize EA1–EA5 characteristics from your approved proposal (2-3 sentences each).

4.2 Actual Activity Performed

EA Code	What Was Proposed	What Was Actually Performed	How It Differed
EA1	[Your text]	[Your text]	[Your text]
EA2	[Your text]	[Your text]	[Your text]
EA3	[Your text]	[Your text]	[Your text]
EA4	[Your text]	[Your text]	[Your text]
EA5	[Your text]	[Your text]	[Your text]

Address probing questions: What additional resources were required? Which software tools were abandoned? What unexpected integration challenges occurred?

4.3 Overall CEA Justification

Conclude with a statement confirming the activity undertaken qualified as a Complex Engineering Activity.

CHAPTER 5: AIM AND OBJECTIVES

5.1 Aim

State the overall aim of the project (1 sentence).

5.2 Objectives and Self-Assessment

Objective No.	Objective Description	Evidence/Result	Achievement Status	Remarks
1	[Your text]	[Your text]	Fully / Partially / Not	[Your text]
2	[Your text]	[Your text]	Fully / Partially / Not	[Your text]
3	[Your text]	[Your text]	Fully / Partially / Not	[Your text]

CHAPTER 6: LITERATURE REVIEW

INSTRUCTION: Choose one structure: Thematic (topic-based), Chronological (time-based), or Methodological (approach-based).

6.1 Introduction to Literature Review

Brief paragraph on the scope and approach of the review.

6.2 [Thematic / Chronological / Methodological] Review of Existing Work

Write the actual review content organized by your chosen framework.

Source Quality Requirement:

- Minimum 25 references total
- ≥70% (≥17) from peer-reviewed journals (IEEE, IET, Elsevier, Springer)
- No Wikipedia, random blogs, or unverified websites

6.3 Comparative Analysis and Identification of Research Gap

Complete the following table and write a synthesis commentary.

Author/Year	Core Methodology	Key Finding / Performance	Limitation / Gap	Relevance to This FYP
[Author] [1]	[Method]	[Finding]	[Limitation]	[Relevance]
[Author] [2]	[Method]	[Finding]	[Limitation]	[Relevance]
[Author] [3]	[Method]	[Finding]	[Limitation]	[Relevance]

Synthesis Commentary:
"Based on the matrix above, the key unresolved gap is [identify gap]. This FYP addresses this gap by [explain unique contribution]."

CHAPTER 7: REQUIREMENTS AND CONSTRAINTS MATRIX

7.1 Requirements and Constraints Matrix

Category	Requirement / Constraint	Target / Specification	Design Implication
Functional	[Your text]	[Your text]	[Your text]
Technical	[Your text]	[Your text]	[Your text]
Performance	[Your text]	[Your text]	[Your text]
Hardware	[Your text]	[Your text]	[Your text]
Software	[Your text]	[Your text]	[Your text]
Cost	[Your text]	[Your text]	[Your text]
Time	[Your text]	[Your text]	[Your text]
Safety	[Your text]	[Your text]	[Your text]
Environmental	[Your text]	[Your text]	[Your text]
Ethical/Legal	[Your text]	[Your text]	[Your text]
Standards/Codes	[Your text]	[Your text]	[Your text]

CHAPTER 8: ENGINEERING ANALYSIS AND DESIGN JUSTIFICATION

8.1 Engineering Analysis

Present core analysis: mathematical modelling, simulations, architecture, algorithms, control systems, etc.

8.2 Design Alternatives and Justification

For each major design decision:

1. **List alternatives (≥2)**
2. **State comparison criteria** (cost, power, speed, complexity)
3. **Justify selection** (calculations/simulations/standards)

Alternative	Advantages	Limitations	Score
Alternative 1 (Selected)	[Your text]	[Your text]	[Score]
Alternative 2	[Your text]	[Your text]	[Score]
Alternative 3	[Your text]	[Your text]	[Score]

Justification: *[Explain why the selected alternative was chosen based on the comparison criteria.]*

CHAPTER 9: METHODOLOGY AND IMPLEMENTATION

9.1 Development Procedure

Describe: procedures, tools (with version numbers), experimental setup, data collection, integration, calibration.

CHAPTER 10: RESULTS, ANALYSIS, AND VALIDATION

Note: This chapter merges Results, Discussion, and Validation into one narrative.

10.1 Test Setup and Conditions

Describe equipment (model numbers), measurement conditions, and assumptions.

10.2 Results

Present each figure/table with technical interpretation immediately following.

10.3 Quantitative Validation – Compliance Matrix

Every major requirement from Chapter 7 MUST have a row.

Req. ID	Description	Target	Actual	Tolerance	Status	Evidence
REQ-01	[Description]	[Target]	[Actual]	[Tolerance]	(PASS) / (FAIL)	Fig X.X
REQ-02	[Description]	[Target]	[Actual]	[Tolerance]	(PASS) / (FAIL)	Table X.X
REQ-03	[Description]	[Target]	[Actual]	[Tolerance]	(PASS) / (FAIL)	Fig X.X

10.4 Discussion of Unexpected Results
Explain deviations, root causes, and lessons learned.

CHAPTER 11: SAFETY, SUSTAINABILITY, EHS, AND ETHICS
11.1 Environmental, Health, and Safety (EHS)
Document compliance with University of Sindh EHS Policy (2023):
- Risk Assessment conducted (see Appendix)
- PPE used (safety goggles, gloves, lab coats)
- Waste disposed per guidelines
- Incidents reported

Example: "Full risk assessment completed prior to testing (Appendix A). High-voltage points insulated; safety goggles and ESD wrist straps used per University of Sindh EHS Policy (2023). No incidents occurred."

11.2 Sustainability
Energy efficiency, environmental impact, resource utilization, economic sustainability.

11.3 Ethics and Professional Practice
Academic integrity, AI disclosure, IEEE/PEC compliance, plagiarism.

11.4 Institutional Clearance / NOC
Reference NOC/Ethics approval in Appendices if applicable.

CHAPTER 12: PROJECT MANAGEMENT, BOM, AND RISK LOG
12.1 Project Schedule and Milestone Tracking

Milestone	Target Date	Deliverable	Status
M1: [Milestone]	Wk X	[Deliverable]	(COMPLETE) / (DELAYED)
M2: [Milestone]	Wk X	[Deliverable]	(COMPLETE) / (DELAYED)
M3: [Milestone]	Wk X	[Deliverable]	(COMPLETE) / (DELAYED)

Design Iteration Log (≥3 entries):

Iteration	Date	Component/Module Changed	Technical Reason	Supervisor Approval
V1.0	[Date]	Initial design	Baseline	Signed
V1.1	[Date]	[Change]	[Reason]	Signed

Iteration	Date	Component/Module Changed	Technical Reason	Supervisor Approval
V1.2	[Date]	[Change]	[Reason]	Signed

12.2 Budget and Bill of Materials (BOM)
Budget Summary:

Item	Estimated (PKR)	Actual (PKR)	Variance
Components/Materials			
PCB Fabrication			
Equipment Rental			
Software Licenses			
Total			

Bill of Materials (BOM):

Component	Part Number	Manufacturer	Qty	Unit Cost	Total Cost	Supplier
[Component]	[Part No.]	[Manufacturer]	[Qty]	[Cost]	[Total]	[Supplier
[Component]	[Part No.]	[Manufacturer]	[Qty]	[Cost]	[Total]	[Supplier

12.3 Risk Management Log

Risk ID	Description	Did it Occur?	Actual Impact	Mitigation Action	Effectiveness
R-01	[Description]	Yes / No	[Impact]	[Action]	[Effectiveness]
R-02	[Description]	Yes / No	[Impact]	[Action]	[Effectiveness]
R-03	[Description]	Yes / No	[Impact]	[Action]	[Effectiveness]

12.4 Supervisor Feedback and Revision History

Date	Supervisor Feedback	Action Taken	Status
[Date]	[Feedback]	[Action]	(RESOLVED) / (PENDING)
[Date]	[Feedback]	[Action]	(RESOLVED) / (PENDING)

CHAPTER 13: SUSTAINABLE DEVELOPMENT GOALS

13.1 SDG Contributions

SDG	Relevant Area/Target	Specific Project Contribution
SDG [No.]	[Area]	[Contribution]
SDG [No.]	[Area]	[Contribution]

CHAPTER 14: LIMITATIONS OF THE WORK

14.1 Limitations

State objectively:

- Technical limitations (temperature, frequency)
- Hardware/software constraints (memory, speed)
- Testing limitations (sample size, duration)
- Assumptions affecting validity

CHAPTER 15: CONCLUSIONS, CONTRIBUTIONS, AND FUTURE WORK

15.1 Summary of Contributions

Restate the novelty from Chapter 1. Summarize problem, approach, and principal outcome with quantifiable metrics.

15.2 Conclusions

Summarize outcomes, extent to which objectives were achieved, and relation to original requirements.

15.3 Future Work

Recommendations must arise logically from limitations (Chapter 14) and failed objectives (Chapter 5):

- Design improvements
- Additional testing
- Scalability and industrial deployment
- Further research directions

CHAPTER 16: REFERENCES

16.1 References

List all references in IEEE format (e.g., [1], [2], [3]).

Minimum Requirements:

- Total references: ≥25
- Peer-reviewed (IEEE/IET/Elsevier): ≥17 (70%)
- Textbooks/datasheets: ≤6 (30%)

Examples:

[1] B. P. Lathi and Z. Ding, *Modern Digital and Analog Communication Systems*, 5th ed. Oxford University Press, 2018.
[2] J. Smith and A. Kumar, "Design of a low-power IoT sensor node," *IEEE Trans. Ind. Electron.*, vol. 68, no. 4, pp. 3210-3218, Apr. 2021.
[3] "ATmega328P Datasheet," Microchip Technology Inc., 2020.

16.2 Turnitin Similarity Report Attachment (Mandatory)

Attached is the official Turnitin Summary Page for this thesis.

Indicator	Threshold	Result
Overall Similarity Index	< 19%	___%
Single Source Similarity	< 5%	___%
AI Detection Score	< 20%	___%

We confirm that all thresholds are within acceptable limits per Section 7.3 of the FYDP Policy and Section 1.6.1 of Appendix J.

Student Signatures: _____ (A), _____ (B), _____ (C)

APPENDICES

Appendix A: [Descriptive Title]
Example: Appendix A: PCB Layout Diagrams

Appendix B: [Descriptive Title]
Example: Appendix B: Source Code

Appendix C: [Descriptive Title]
Example: Appendix C: Raw Test Data Logs

Guidelines:

- Total appendix pages ≤30
- Each appendix must have a descriptive title
- Reference each appendix in the main text: *"See Appendix A for..."*
- Permitted content: Schematics, commented source code, raw test data, datasheets (relevant pages), risk assessments, NOC/Ethics letters
- Prohibited content: Irrelevant photos, uncommented raw code, full datasheets, content not referenced

Risk Assessment Form Template

Activity/Hazard	Risk Description	Likelihood (1-5)	Severity (1-5)	Risk Level (L/M/H)	Control Measures	Residual Risk (L/M/H)	Responsible Person	Supervisor signature
[Activity]	[Description]							
[Activity]	[Description]							
[Activity]	[Description]							

Supervisor signature confirms control measures implemented and residual risks acceptable per University of Sindh EHS Policy (2023).

SUPERVISOR PRE-SUBMISSION ENDORSEMENT

I have reviewed the final version of this thesis and confirm:

- Compliance with formatting and structural requirements of Appendix J
- All EHS and Risk Assessment requirements met
- Academic integrity thresholds checked and within acceptable limits
- Student(s) addressed all feedback provided during supervision

Supervisor Name: _____

Supervisor Signature: _____

Date: _____

APPENDIX K – FYDP FINAL COMPILATION MARKS SHEET

For FYP Committee Use

PART A: STUDENT INFORMATION

Field	Details
Student Name	
Roll No.	
Batch	2K25
Project Title	
University Supervisor	
Industry Co-Supervisor (if applicable)	
Project Type	☐ Individual ☐ Group (Group Size: ____)

PART B: ASSESSMENT SUMMARY

Semester	Component	Max Marks	Obtained Marks
FYP-I (7th Semester)	Proposal Defense	25	
	Supervisor Assessment-I	25	
	FYP-I Total	50	
FYP-II (8th Semester)	Progressive Seminar	25	
	Thesis Submission	50	
	Project Demonstration	25	
	Final Presentation	10	
	Viva Voce	15	
	Supervisor Assessment-II	25	

Semester	Component	Max Marks	Obtained Marks
	FYP-II Total	150	
	GRAND TOTAL	200	

PART C: ILO-WISE MARKS

ILO	Proposal Defense (25)	Supervisor Assessment-I (25)	Progressive Seminar (25)	Thesis Submission (50)	Project Demonstration (25)	Final Presentation (10)	Viva Voce (15)	Supervisor Assessment-II (15)	Total
ILO1	_____ / 4	_____ / 2	_____ / 1	_____ / 5	_____ / 1	_____ / –	_____ / 1	_____ / 1	
ILO2	_____ / 7	_____ / 3	_____ / 2	_____ / 8	_____ / –	_____ / –	_____ / 2	_____ / 3	
ILO3	_____ / 6	_____ / 4	_____ / 4	_____ / 8	_____ / 5	_____ / 1	_____ / 1	_____ / 1	
ILO4	_____ / 2	_____ / 5	_____ / 3	_____ / 6	_____ / 4	_____ / 2	_____ / 2	_____ / 1	
ILO5	_____ / 1	_____ / 2	_____ / 2	_____ / 5	_____ / 3	_____ / –	_____ / 3	_____ / 4	
ILO6	_____ / 1	_____ / 1	_____ / 2	_____ / 5	_____ / 3	_____ / 1	_____ / 1	_____ / 1	
ILO7	_____ / 1	_____ / 2	_____ / 1	_____ / 2	_____ / 1	_____ / 1	_____ / –	_____ / 2	
ILO8	_____ / –	_____ / 3	_____ / 3	_____ / –	_____ / 4	_____ / –	_____ / 1	_____ / 4	
ILO9	_____ / –	_____ / 1	_____ / 5	_____ / 6	_____ / 2	_____ / 3	_____ / 1	_____ / 2	
ILO10	_____ / 3	_____ / 1	_____ / 1	_____ / 3	_____ / 1	_____ / 1	_____ / 1	_____ / 4	
ILO11	_____ / –	_____ / 1	_____ / 1	_____ / 2	_____ / 1	_____ / 1	_____ / 2	_____ / 2	
TOTAL	25	25	25	50	25	10	15	25	

PART D: PASS/FAIL VERIFICATION

Requirement	Threshold	Student's Score	Status
Overall FYP Total	≥ 50% (100/200)	_____ / 200 (_____%)	☐ Pass ☐ Fail
FYP-I Total	≥ 50% (25/50)	_____ / 50 (_____%)	☐ Pass ☐ Fail

Requirement	Threshold	Student's Score	Status
FYP-II Total	≥ 50% (75/150)	_____ / 150 (_____%)	☐ Pass ☐ Fail
Academic Integrity	No violations	☐ Clear ☐ Violation	☐ Pass ☐ Fail
EHS Compliance	No serious violations	☐ Clear ☐ Violation	☐ Pass ☐ Fail
Supervisor Endorsement	Signed	☐ Yes ☐ No	☐ Pass ☐ Fail

PART E: OVERALL VERDICT

☐ PASS	Grade: _____
☐ FAIL	Reason: _____

PART F: COMMITTEE SIGN-OFF

Committee Member	Name	Signature	Date
FYP Coordinator			
University Supervisor			
Industry Co-Supervisor (if applicable)			
FYP Committee Member 1			
FYP Committee Member 2			

PART G: REMARKS / RECOMMENDATIONS
Strengths:

Areas for Improvement:

Fail Justification (if applicable):

Reason	**Evidence Reference**

Recommended Actions:

FYP Coordinator Signature: _____ Date: _____