University of Engineering & Technology, Mardan

Final Year Project (FYP)
Manual

Foreword

This is the Final Year Project (FYP) handbook for the teaching Departments of University of Engineering & Technology Mardan. It contains standard operating procedures and guidelines for the conception, preparation, implementation, and completion of Final Year Projects.

The intention of this handbook is to develop a uniform structure and outline for faculty & undergraduate students of UET Mardan. It serves as an instructional manual for the expected contents, deliverables, quality, and the required quantity of the FYP for students, supervisors and evaluators.

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ACRONYMS

FYP	Final Year Project
PLO	Program Learning Outcome
GA	Graduate Attribute
PEC	Pakistan Engineering Council
CEP	Complex Engineering Problem
SDG	Sustainable Development Goals
UN	United Nations

1.1. Introduction

The Final Year Project (FYP) is the culmination of students' degree program. The main purpose of FYP is to encourage students to apply the knowledge acquired during their studies. It allows them to work on a substantial problem for an extended period and allows them to work on real world problems. It brings them a sound opportunity to demonstrate their competence as professionals and to apply what they have learnt in the other components of the degree. Besides, they get a chance to improve their technical and communication skills by integrating writing, presentation and learn how to work in teams. With a real-world problem at hand, they get to learn professional practice and a variety of non-technical issues such as management, finance, safety, reliability, environment, and social impacts. Moreover, it provides an integrated assessment of the progress of the students toward the training they went through during their academic tenure at the college.

FYP course is different from other courses because it demands independent objective formulation, planning, management, and self-motivation. It is, therefore, essential to design fair and comprehensive operating procedures & guidelines for the students, supervisors, and the evaluators. A structured manual and lifecycle process is therefore essential to help stude1nts conform to the required quality standards, outline general expectations from the supervisors and sketch assessment criteria for the evaluators. Hence, it contributes to a fundamental underpinning to achieve high quality learning outcomes of the projects.

1.2. Standard Operating Procedures (SOP's) for FYP

a) Final Year Project (FYP) is a two-semester, 6 credit hour-based course taken by maximum 4 students (2-3 recommended) supervised by a project supervisor preferably a faculty member of the same department.
b) FYP shall include complex engineering problems and design of systems, components, or processes integrating core areas and meeting specified needs with appropriate consideration for public health and safety along with cultural, societal, and environmental considerations encompassing Sustainable Development Goals (SDGs) (see **Annex-H Sustainable Development Goals**).
c) Each FYP shall result either in a hardware/ software product, problem solution or simulation results based on extensive research work.
d) Each FYP shall encompass all the Graduate Attributes (GAs) given in **Annex-F Degree Program Learning Outcomes** as approved by the concerned program.
e) Each FYP must satisfy the mandatory attributes of a Complex Engineering Problem (CEP) tabulated in **Annex-G Range of Complex Problem Solving** and shall have appropriate consideration to fulfil the SDGs given in **Annex-H Sustainable Development Goals**. Students shall map their FYPs to CEPs as well as to SDGs as a compulsory part of every project proposal and FYP report document.
f) All the FYP's will be assessed as per the approved assessment mechanism given in the Section 1.5 FYP Milestones and Assessment Stages.

g) For evaluating all the FYP's proposals, progress presentations & final defense as per approved mechanism, a departmental FYP Committee shall be constituted annually, notified by the Chairman having the following members for each batch undertaking FYP:

Chairman	Convener
FYP Coordinator	Secretary
Concerned Supervisor	Member
Internal Examiner	Member
External Examiner	Member
Career Liaison Officer	Industry Representative Member

h) A list of proposed FYP's from each faculty member of the department relevant to his/ her specialized field shall be shared by the supervisors to the FYP Coordinator. FYP Coordinator will share the list onwards with students.

i) Each FYP Group shall submit the FYP group & title approval form given in **Annex-A FYP Group & Title Approval Form** to the FYP Coordinator at the start of summer semester.

j) Each FYP group shall prepare the project proposal accordingly as per the official template given in **Annex-D FYP Proposal Document Template** to FYP Coordinator at the mid of summer semester.

k) FYP Committee will evaluate the submitted proposals and shortlist the selected FYPs for joint supervision with the industry through Career Liaison Officer. The finalized groups with respective supervisors/ joint industry supervisors will be notified by the Chairman. Any change by the students in the supervisor/ groups/ FYP title shall not be allowed after proposal submission.

l) Proposal defence shall be evaluated by the FYP Committee through designated rubric for FYP proposal defence to ensure proposal completion as per standard guidelines.

m) FYP supervision shall be ensured by the respective supervisor through regular weekly meetings. The weekly meetings shall be evaluated by FYP Supervisors through designated rubric for supervisor assessment & evaluation.

n) Progress#1 presentation shall be evaluated by the FYP Committee through designated rubrics for progress#1 presentation.

o) Progress#2 presentation shall be evaluated by the FYP Committee through designated rubrics for progress#2 presentation.

p) An FYP Open House is recommended for the final exhibition of the FYPs after the final defence. Each FYP group shall prepare a Poster for the Open House Exhibition.

q) The poster dimensions shall be 4ft * 3ft. Poster shall contain the University logo & title of FYP at the top. It shall have sub-sections of Introduction, Objectives, Methodology, Results & Discussions, Conclusion & Future Work, Acknowledgements (if any).

r) The posters shall be submitted by the students through supervisors to the FYP Committee via the FYP

Coordinator for review & approval.

s) The Open House / Poster Exhibition shall be assessed by the FYP Committee through designated rubrics.

t) The FYP report document shall adhere to the guidelines available in **Annex-E FYP Report Document Template** ensured by the FYP supervisors.

u) The FYP report document shall be assessed by the respective supervisor through designated rubrics. To recommend an FYP group for final defence, each FYP Supervisor shall submit **Annex-B FYP Approval Performa for Final Viva Examination** duly signed along with the supplementary documents (signed report document, rubrics assessment and plagiarism report) to the FYP Committee through FYP Coordinator. The maximum allowed similarity index limit in the FYP report is 19% with not more than 5% from a single source.

v) The FYP Defence shall be assessed by the FYP Committee through designated rubrics.

w) Each supervisor shall maintain a separate FYP Record book given in **Annex-C: FYP Record Book Template** for each FYP group demonstrating evidence of weekly FYP meetings of the advisor with the students.

x) The FYP Record books of jointly supervised FYPs with industries shall also contain a record of meetings with industry co-supervisor along with the rubrics assessment records signed by the joint co-supervisor from the industry. This shall be ensured by the FYP Committee through Career Liaison Office.

y) All the FYP Record Books shall be provided to the FYP Committee for review process at various intervals during 7th & 8th Semester.

z) For each evaluation, score from different evaluators will be averaged for each student. Score of an evaluator will be included in averaging process provided he/she asses all FYP groups during a particular assessment. In case of unavailability during an assessment process, an evaluator shall nominate & authorize (upon approval of the Chairman) any other faculty member to assess the FYP groups on his/her behalf.

aa) It is the responsibility of each FYP group to ensure that they complete milestones of each semester and submit deliverables by the cut-off submission date.

bb) At the end of 8th Semester, the overall result of FYP (Conventional + OBE) as per approved marks distribution given in Section 1.5 FYP Milestones & Assessment Stages shall be prepared and displayed by the FYP Coordinator.

aa) In the project proposal/ report, for instance, if students have taken ideas or referencing other work as part of the proposed project, then, it must be cited, and reference should be clearly specified. Same is the case while implementing the proposed solution. If students are found plagiarizing either in project proposal report or in the project implementation solution/code, immediate strict action will be taken as per the university policy.

1.3. FYP Guidelines for Students

The students undergoing an FYP shall adhere to the following guidelines:

a) Assessment of the FYP shall be carried out by the FYP supervisor & the FYP Committee (constituted by the department's Chairman at the start of the 7th semester) through various FYP Rubrics approved by the department.

b) The students must choose a project and define the objectives of the project under the supervision of a faculty member. FYP shall include complex engineering problems and design of systems, components, or processes integrating core areas and meeting specified needs with appropriate consideration for public health and safety along with cultural, societal, and environmental considerations encompassing SDGs (see **Annex-H Sustainable Development Goals**).

c) Each FYP must satisfy the mandatory attributes of a Complex Engineering Problem (CEP) tabulated in **Annex-G Range of Complex Problem Solving** and shall have appropriate consideration to fulfil the Sustainable Development Goals (SDGs) given in **Annex-H Sustainable Development Goals**. They shall submit FYP to CEP mapping as well as FYP to SDGs mapping as a compulsory part of every project proposal and FYP report document.

d) Each FYP Group shall submit the FYP group & title approval form given in **Annex-A FYP Group & Title Approval Form** to the FYP Coordinator by the 2nd Week of the summer semester.

e) Each FYP group shall prepare the project proposal accordingly as per the department's official template & submit it to the FYP Coordinator through the FYP Supervisor by the 5th week of the summer semester. Proposal defence, assessed by FYP Committee, will be conducted in the 1st & 2nd week of the 7th semester.

f) FYP group students must meet regularly with the FYP supervisor for the design & implementation of their project. Meetings with the supervisor shall continue throughout the year completing 3 hours of supervision guidance per week. The meetings' progress will be evaluated by the supervisors through respective rubrics and the meeting attendance along with allocated task details will be recorded via the FYP Record Book given in the **Annex-C of FYP Manual**.

g) The progress of the FYPs will be observed by the FYP Committee through progress presentations conducted as per the Timeline of the FYP given in the FYP manual UETM. The progress presentations will be assessed through the respective rubrics.

h) Each FYP must be the original work of the student groups. At the end of each semester, students will be required to present their project proposal and implementation outcomes as per the provided deliverables guidelines and the original work undertaken throughout each semester.

i) FYPs will be evaluated by the industry members through an Open House Exhibition conducted before the Final Defence. The FYP Design Expo Poster shall be prepared by the students as per the guidelines of the departmental FYP Manual.

j) FYP groups will submit a final report to the respective Supervisor complying with the departmental FYP

Manual's report template guidelines. The report shall adhere to the guidelines in the manual and shall fulfil the minimum requirement of plagiarism maintained by the department.

k) Each FYP group after FYP report and plagiarism report submission through supervisor via FYP approval Performa shall defend their FYP in the final viva examination defence. The defence will be examined by the FYP Committee through respective rubrics.

l) Prospective FYP students are encouraged to start discussions about their projects with the faculty members & senior students in 6th semester for timely submission of the research proposals. They are also encouraged to attend the FYP presentations of their senior fellows to get an insight of the assessment processes.

m) To have an opportunity for external funding & conversion of an FYP into a start-up, students are encouraged to target the local industry problems/needs through their FYP.

1.4.FYP Guidelines for Supervisors

Guidelines for the Final Year Project (FYP) Supervisors are as follows:

a) The supervisor is responsible to communicate the FYP manual handbook to the respective FYP students along with all the included instructions and regulations.

b) Each FYP group shall be supervised by a supervisor being a faculty member of the same department during the complete final year (semester 7 & 8).

c) FYP shall include complex engineering problems and design of systems, components, or processes integrating core areas and meeting specified needs with appropriate consideration for public health and safety along with cultural, societal, and environmental considerations encompassing SDGs (see **Annex-H Sustainable Development Goals**).

d) Each FYP shall encompass all the Graduate Attributes (GAs) given in **Annex-F Degree Program Learning Outcomes** as approved by the concerned program.

e) Each FYP must satisfy the mandatory attributes of a Complex Engineering Problem (CEP) tabulated in **Annex-G Range of Complex Problem Solving** and shall have appropriate consideration to fulfil the Sustainable Development Goals (SDGs) given in **Annex-H Sustainable Development Goals**. They shall submit FYP to CEP mapping as well as FYP to SDGs mapping as a compulsory part of every project proposal and FYP report document.

f) Supervisors shall carry out FYP progress meetings on weekly basis completing 3 contact hours of supervision per week. The meeting evidence shall be recorded by the supervisor through Final Year Project Record Book given in the manual as Annex-B. The student's progress shall be evaluated in weekly meetings via designated rubrics.

g) Depending on students' requirements and the supervisor's availability, supervisors may also arrange additional meetings (physical/online) as requested.

h) Each FYP supervisor will conduct FYP Progress meetings with his/her respective FYP group & submit

the averaged evaluations to the FYP coordinator via the FYP record book at the time of final defence.

i) Signed FYP report document, plagiarism report along with the filled FYP Approval Performa will also be submitted by each supervisor to the FYP Committee before the time of final defence. The FYP supervisor shall evaluate the final FYP report of his/her FYP group through respective rubrics.

j) Supervisors might also arrange communication with student groups via email or other means to advise project groups.

k) It is the responsibility of FYP Supervisor to inform students about the FYP Manual of UETM.

1.5. FYP Milestones and Assessment Stages

The FYP milestones, deliverables, assessment stages along with their timelines is given the Table 1.

Table 1: Milestones & Marks Distribution

S#	Assessment Activity	Evaluators	Key Milestone	Recommended Percentage
1.	Proposal Defense (Project Proposal Document + Presentation)	FYP Committee	• Project Proposal Completeness	10%
2.	Weekly Meetings with Supervisor	Supervisor	• Punctuality & Participation in Meetings • Completion of assigned task(s)	15%
3.	Progress Presentation (1st)	FYP Committee	• Software Design Implementation (Hardware Based Projects) • Progress in Software Design (Software Based Projects)	10%
4.	Progress Presentation (2nd)	FYP Committee	• Hardware Design Implementation/Prototype functionality • Software Design Implementation	10%
5.	Open House/Poster Exhibition	FYP Committee *Members from Industry	• Professionalism in Poster Design	10%
6.	FYP Report Write Up	Supervisor	• FYP Report Completeness	5%
7.	Project Defense	FYP Committee	• Project Completeness	40%
	Total			100 %

* Evaluation from industry members will be used in indirect assessment of PLO's & will not be included in direct FYP assessment percentage.

1.6.FYP Schedule

The timeline & deadlines for various activities/stages of FYP are given in Table 2 below:

Table 2: FYP Timeline & Deadlines

S.No	Activity	Deadline	Semester	Responsible Body
1.	Call for FYP Titles	Week 13-14	6th semester	FYP Coordinator
2.	Communication of FYP's List to Students	Week 15-16	6th semester	FYP Coordinator
3.	Project Selection /Formation of FYP Groups & Submission of Approval From	Week 1-2	Summer Semester	Concerned Students ensured by FYP Coordinator
4.	Notification of FYP Groups	Week 3	Summer Semester	Chairman
4.	Call for FYP Proposals	Week 4-5	Summer Semester	FYP Coordinator
5.	Notification of FYP Committee	Week 6	Summer Semester	Chairman
6.	Scrutiny of FYP Proposals	Week 7	Summer Semester	FYP Committee
7.	Selection of FYPs for joint supervision by Industry	Week 8	Summer Semester	Career Liaison Officer
8.	Proposal Defense	Week 1-2	7th semester	FYP Committee
9.	Notification of Final FYP Group List & Display of Proposal Defense Marks	Week 3	7th semester	Chairman/FYP Coordinator
10.	1st Progress Presentation	Week 14	7th semester	FYP Committee
11.	Display of 1st Progress Presentation Marks	Week 15	7th semester	FYP Coordinator
12.	2nd Progress Presentation	Week 7	8th semester	FYP Committee
13.	Display of 2nd Progress Presentation Marks	Week 8	8th Semester	FYP Coordinator
14.	Final FYP Report Submission to Supervisors	Week 15	8th semester	Concerned Students ensured by Supervisor
15.	Submission of FYP Report Marks & Final Defense Approval Form	Week 16	8th semester	Concerned Supervisor ensured by FYP Coordinator

S.No	Activity	Deadline	Semester	Responsible Body
16.	Display of FYP Report Evaluation Marks	Week 16	8th semester	FYP Coordinator
17.	Final Project Defense	1st Week following Final Exam	8th semester	FYP Committee through FYP Coordinator
18.	Display of Overall FYP Result (Conventional + OBE)	2nd Week following Final Exam	8th semester	FYP Coordinator

*Open House will be arranged by the departments before the display of overall FYP Result.

1.7. FYP Annexures

The annexures required for various FYP activities/stages are attached with this handbook. Each department shall have department specific rubrics for various FYP activities. Such rubrics shall be approved by the department and will constitute an integral part of the departments' specific FYP Manual.

Annexure-A:

FYP Group & Title Approval Performa

Department of Electrical Engineering, UET Mardan

FYP Group & Title Approval Form

(To be filled by FYP Students & Concerned Supervisor, submitted to FYP Coordinator & Approved by Chairman)

FYP Title	

Brief Description of the Project at least 200 Words

Group Members

M1: [Name] (Reg # 18MDELE**)**
M2: [Name] (Reg # 18MDELE**)**
M3: [Name] (Reg # 18MDELE**)**

Proposed Supervisor:

Name:_____

Signature: _____

Co-Supervisor (If any):

Name:_____

Signature: _____

Approval of Chairman:

Name:_____

Signature: _____

Annexure-B:

FYP Approval Performa for Final Viva Examination

Department of ……. Engineering, UET Mardan

FYP APPROVAL PERFORMA FOR FINAL VIVA EXAMINATION

(To be filled by FYP Supervisors, submitted to FYP Coordinator & evaluated by FYP Committee)

Section 1: To be filled by FYP Supervisor

FYP Title			
Group Members	M1:	M2:	M3:
Supervisor			

Attachments:

1. FYP Plagiarism Report Yes ☐ No☐
2. FYP Document submitted and checked Yes ☐ No☐
3. Supervisor FYP Rubrics Evaluation Yes ☐ No☐

Comments:

_____

☐ Recommended for Final Defence ☐ Not Recommended for Final Defence

Supervisor Name_____Signature with date _____

Section 2: Approval of FYP for Final Defense:

Comments:

_____

☐ Recommended for Final Defence ☐ Not Recommended for Final

Defence Name & Signature of FYP Coordinator_____

Name & Signature of Chairman_____

Annexure-C:

FYP Record Book Template

FYP RECORD BOOK

Project Title

_____

_____

_____

Department: ……..

Year:…….

University of Engineering & Technology Mardan

Project Members

S. No	Student's Registration No	Student's Name	Signature

Supervisor Detail

S. No	Supervisor's Name	From Date	To Date

Co-Supervisor Detail

S. No	Co-Supervisor Name	From Data	To Date

FYP Project Proposal

(Attach Approved FYP Project Proposal here)

Record of Weekly Meeting with Project Advisor

Section A: To be filled by project supervisor

Week No:	
Date:	
Details of Meeting/Meeting Discussions	
Next Task:	

Supervisor's Signature

_____

Section B: To be filled by project members

Meeting Attendance

Reg No#	Student's Name	Signature

Annexure-D:

FYP Proposal Document Template

UNIVERSITY OF ENGINEERING & TECHNOLOGYMARDAN
DEPARTMENT OF ENGINEERING

FINAL YEAR PROJECT PROPOSAL

TITLE OF THE PROJECT:
(September-2020)

FYP Group No.:

Group Members
[name 1] (Reg # **)**
[email:]
[name 2] (Reg # **)**
[email:]
[name 3] (Reg # **)**
[email:]

Proposed Supervisor:

Name: _____

Signature: _____

Co-Supervisor (If any):

Name:_____

Signature: _____

Contact Number: (for correspondence only)

Table of Contents

Please note that you don’t have to type the List of Figures/ Tables / Contents – after you are done with all of your document, add table of contents from the References Tab of word document

1. Introduction

Write at least half a page about the background for your choice of project topic. Should explain the motivation for selecting the project and how your project will contribute to society. Discus the basic principle and importance of the problem area and the challenges in that area.

2. Problem Statement

A clear and concise description of the issues that need to be addressed. What is the specific problem the FYP is aiming to solve.

3. Objectives of Project

Write down aims and objectives of your project. You may write here what you actually expect to achieve. Objective(s) shall be in the form of list and each objective shall start with an action word, e.g., "***To*** solve…"

4. Literature Review

Describe the literature review, which you have done for the selection of the proposed project. This does not mean references. You may write here that you have gained sufficient ideas, material, studies, to do the project. In general, this section deals with why you want to do it, do you find yourself smart enough to do the task. In addition to this, you may write about your subjects which can help you in implementing the project. In case of a research problem, literature review of the state-of-the-art should be included.

5. Methodology for Implementation of Project

This section means that how you will do you project. What are the working concepts that can be implemented and how it will be implemented? How your project will be assembled to achieve the project goals. Write about theoretical studies, experimental set up required, method of analysis and expected outcome of project here. Write here the methods that you will use to achieve your project goals using hardware or software simulations, include block diagram & flow chart.

6. Budget Details

State the expected cost of your project. Mention cost of sub modules.

7. Project Implementation Schedule

State the project milestones with time Schedule. A Sample is given below.

Activity	**Month Year**	**Month Year**	**Month Year**	**Month Year**	**Month Year**	**Month Year**
Collection of Literature	√					
Study of Literature	√					

Analysis of Proposed Scheme			√
Preparation of Schemes / Model			√
Implementation of Schemes/Model			√
Analysis & Simulation, Hardware Testing			√
Result Formulation			√
Final Write-up & FYP Report Submission			√

8. Utilization of Project Results

(State here how your FYP will fit in solving real industrial design problems, where you can see your project will help the general public or where it can be utilized effectively)

9. FYP to CEP Mapping

S#	Attribute	Complex Problem	Targeted (Yes/No)	Justification
1.	Preamble	*Engineering problems which cannot be resolved without in-depth engineering knowledge. And have some or all of the characteristics listed below:		
2.	Range of conflicting requirements	Involve wide-ranging or conflicting technical, engineering and other issues.		
3.	Depth of Analysis required	Have no obvious solution and require abstract thinking, originality in analysis to formulate suitable models.		
4.	Depth of Knowledge required	Requires research-based knowledge much of which is at, or informed by, the forefront of the professional discipline and which allows a fundamentals-based, first principles analytical approach.		

5.	Familiarity of issues	Involve infrequently encountered issues		
6.	Extent of application codes	Are outside problems encompassed by standards and codes of practice for professional engineering.		
7.	Extent of stake-holder involved	Involve diverse groups of stakeholders with widely varying needs.		
8.	Consequences	Have significant consequences in a range of contexts.		
9.	interdependence	Are high level problems including many component parts or sub problems.		

* Prime Attribute

10. FYP to SDGs Mapping

Sustainable Development Goals (SDGs)		
Goal#	**Description**	**Justification**
Goal 1	**NO POVERTY** End poverty in all its forms everywhere	
Goal 2	**ZERO HUNGER** End hunger, achieve food security and improved nutrition and promote sustainable agriculture	
Goal 3	**GOOD HEALTH & WELL-BEING** Ensure healthy lives and promote well-being for all at all ages	
Goal 4	**QUALITY EDUCATION** Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	
Goal 5	**GENDER EQUALITY** Achieve gender equality and empower all women and girls	
Goal 6	**CLEAN WATER AND SANITATION** Ensure availability and sustainable management of water and sanitation for all	
Goal 7	**AFFORDABLE AND CLEAN ENERGY** Ensure access to affordable, reliable, sustainable, and modern energy for all	
Goal 8	**DECENT WORK AND ECONOMIC GROWTH**	

	Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all	
Goal 9	**INDUSTRY, INNOVATION, AND INFRASTRUCTURE** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.	
Goal 10	**REDUCED INEQUALITIES** Reduce inequality within and among countries	
Goal 11	**SUSTAINABLE CITIES AND COMMUNITIES** Make cities and human settlements inclusive, safe, resilient and sustainable	
Goal 12	**RESPONSIBLE CONSUMPTION AND PRODUCTION** Ensure sustainable consumption and production patterns	
Goal 13	**CLIMATE ACTION** Take urgent action to combat climate change and its impacts	
Goal 14	**LIFE BELOW WATER** Conserve and sustainably use the oceans, sea and marine resources for sustainable development	
Goal 15	**LIFE ON LAND** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	
Goal 16	**PEACE, JUSTICE AND STRONG INSTITUTIONS** Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	
Goal 17	**PARTNERSHIPS** Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development	

11. Undertaking

This is to certify that to the best of my knowledge; the content of this project proposal is my own work. This proposal has not been submitted for any degree or other purposes. I certify that the intellectual content of this project is the product of my own work and that all the assistance received in preparing this proposal and sources have been acknowledged.

Signature of Students
Name of Students
Registration Numbers

12. Proposed Supervisor's Comments

Take recommendation of your supervisor for your project work here. Please note the proposed supervisor may be changed on the recommendation of FYP Committee and final approval of Chairman.

Signature of Supervisor
Name of Supervisor
Designation of Supervisor

13. Comments of FYP Coordinator

Comments of FYP Coordinator in accordance with recommendations of FYP Committee.

Signature of FYP Coordinator: _____ Dated: _____

14. Approval by the Chairman of Department

Signature: _____ Dated: _____

15. References

Write down references used for the proposal here. Write down the references in order of citation in the text. Use the following format for references.

Example Journal Paper:

[1] Didier Le Gall, "MPEG: A video compression standard for multimedia applications," *Communications ACM*, vol. 34, no. 4, pp. 46–58, April 1991.

Example Conference Paper:

[2] Gulistan Raja and M. J. Mirza, "Performance comparison of advanced video coding H.264 standard with baseline H.263 and H.263+ standards," in *Proc. 4th IEEE International Symposium on Communications & Information Technologies, ISCIT 04*, Sapporo, Japan, 2004, pp. 743–746.2016

Example Book:

[3] Iain E.G. Richardson, *Video Codec Design*, Great Britain, John Wiley & Sons, ISBN: xx-yyyy-zzzz.2003

Example Web Link:

[4] MPEG Software Simulation Group, "The MSSG homepage", available on-line at http://www.mpeg.org/MPEG/ MSSG, 2004.

Example Standard:

[5] ITU-T "Video Coding for low bit rate communication," ITU-T Recommendation H.263; version 1, Nov 1995; version 2, Jan. 1998; version 3, Nov. 2000.

16. Other Important Instructions

Proposal Format:

Font: Arial 14 for headings and Arial 12 for rest of text (except title page)
Line spacing: Double
Margins: 1 inch on all sides
Justify Paragraphs: Align text to both right and left margins
Paper Size: A4
Binding information: Single Side Printing and use spiral binding for hard copies.

Other Important Information:

1. Proposals which are submitted after **1st Week of 7th Semester** will be rejected.
2. The students will discuss their proposals with concerned proposed supervisors. Only hard copies duly signed by the concerned Supervisor / Teacher will be accepted.
3. Any group having more than THREE members will be rejected.

Annexure-E:

FYP Report Document Template

Title of the Project

Report submitted in the partial fulfilment of the requirements for the degree of B.Sc.
XYZ Engineering

Submitted by:

1. Mr. ABC Reg #_____
2. Mr. XYZ Reg #_____
3. Mr. RST Reg #_____

Supervised by:

Department of XYZ Engineering

University of Engineering & Technology, Mardan

Declaration

We hereby declare that this project report/thesis entitled “TITLE” submitted to the “DEPARTMENT NAME”, is a record of an original work done by us under the guidance of Supervisor “NAME” and that no part has been plagiarized without citations. Also, this project work is submitted in the partial fulfillment of the requirements for the degree of Bachelor of “Discipline Name”.

Team Members	**Signature**
Name	_____
Name	_____
Name	_____
Name	_____

Supervisor

Supervisor Name

Signature:_____

Date:_____

FYP Report Approval

The Department of …….. Engineering, University of Engineering & Technology Mardan accepts the report in the present form and it satisfies the entire requirements of the Final Year Project (FYP).

Approval of FYP Coordinator:

Name:

Signature:_____

Approval of Chairman:

Name:

Signature:_____

Plagiarism Check Report

You are required to attach the plagiarism check report **dully verified and signed by your supervisor**. In case of **similarity score above 19%** you need to clarify the reasons. This report and your justification should not be on more than 2 pages.

Name of Supervisor: | | Signature: | |

Acknowledgement

List of Abbreviations

Abbreviation	Expansion

List of Symbols

[This list should include all the symbols that you will use in various equations in your report. Each of the symbols should be explained in the line in front **along with the units which should be in bold text**. The list of symbols should be sorted in a way as the symbols appear in the report document. The symbol should be in italics bold while the explanation should only be in regular italics]

Symbols	Meaning

Table of Contents

Please note that you don't have to type the List of Figures – after you are done with all of your document, right click on your table of contents and click on Update option

List of Figures

Please note that you don't have to type the List of Figures – after you are done with all of your document, right click on your table of contents and click on Update option

List of Tables

Please note that you don't have to type the table of contents – after you are done with all of your document, right click on your table of contents and click on Update option.

Fonts, Type Styles (Formatting)

a. Typeface

Space of the text should be 1.5, Font. 12 Times New Roman, text must be justified. The first line of the paragraph should be indented.

b. Margins

Left 1.5 inches

Right, Top, Lower 1.2 inches

c. Headings

Chapter Number 14 Times (Bold, Justified to the left, first letter in capital i.e. "C")

Chapter Heading 14 Times (First letter in capital, bold, Justified to the left)

The following headings should all be left aligned, and text should begin from the next line with indentation.

First Level Heading 13 Times (First letter in capital, bold)

Second Level Heading 12 Times (Bold, First letter of each main word in capital)

d. Tables and Figures

Every table must bear a title and table number which should be written on the top of the table (Table 1: Abc)

Titles of the figures should be written under the figures, along with the figure number (Figure 1: Xyz)

e. References

All factual material that is not original with you must be accompanied by a reference to its source. Please use IEEE guideline on reference and citation style. The information for writing a reference for a Conference paper, Paper published in a Journal, Book, Book Chapter, Website and any other source. You should use the same citation style as given below.

f. Journals

Author Name/s (Surname, initial), year of publication in-parenthesis, title of the article, name of the journal, volume number, issue number (in parenthesis) followed by a colon and page numbers

g. Books

Author Name/s (Surname, initial), year of publication in-parenthesis, title of the book, publisher's name, place of publication, page numbers

h. Reference from Internet

Name of the Author/s (If Known), Title of the topic followed by complete web address.

Chapter-1: Introduction

Introduction is mostly written for non-specialists so that they can get an overview of the project without technical details. It should provide a brief overview of the project aims and structure of the solution. It should also specify what unmet need or problem the FYP caters for and who needs it. At the end of chapter, provide a summary of the report organization, chapter outlining what has been covered in this chapter and explain what comes in the following chapters.

Chapter-2: Literature Review

Related literature review about the topic shall be discussed here in detail. At least 10 relevant and papers of good journals and conferences should be cited to support your project.

Chapter-3: Project Methodology & Implementation

The methods, approaches, tools, techniques, algorithms, or other aspects of the solution are sufficiently discussed with sufficient details and supporting figures. Include detailed analysis & design of project.

Chapter-4: Results and Discussion

A comprehensive evaluation of the solution is presented with supporting figures and graphics. System testing is performed through a strong testing strategy and the test cases cover all the use cases.

Chapter-5: Conclusion and Future Work

Include a brief summary of how the proposed solution is going to/has addressed the problem statement specified in the introduction section. Provide an overview of what kind of evaluations were undertaken in order to prove that the solution really solves the problem with evidence on results findings.

Provide an overview of the recommendations and include a future direction which is required as part of the future work.

FYP to CEP Mapping

S#	Attribute	Complex Problem	Targeted (Yes/ No)	Justification
1.	Preamble	*Engineering problems which cannot be resolved without in-depth engineering knowledge. And have some or all of the characteristics listed below:		
2.	Range of conflicting requirements	Involve wide-ranging or conflicting technical, engineering and other issues.		
3.	Depth of Analysis required	Have no obvious solution and require abstract thinking,		

		originality in analysis to formulate suitable models.		
4.	Depth of Knowledge required	Requires research-based knowledge much of which is at, or informed by, the forefront of the professional discipline and which allows a fundamentals-based, first principles analytical approach.		
5.	Familiarity of issues	Involve infrequently encountered issues		
6.	Extent of application codes	Are outside problems encompassed by standards and codes of practice for professional engineering.		
7.	Extent of stake-holder involved	Involve diverse groups of stakeholders with widely varying needs.		
8.	Consequences	Have significant consequences in a range of contexts.		
9.	interdependence	Are high level problems including many component parts or sub problems.		

* Prime Attribute

FYP to SDGs Mapping

Sustainable Development Goals (SDGs)		
Goal#	**Description**	**Justification**
Goal 1	**NO POVERTY** End poverty in all its forms everywhere	
Goal 2	**ZERO HUNGER** End hunger, achieve food security and improved nutrition and promote sustainable agriculture	
Goal 3	**GOOD HEALTH & WELL-BEING** Ensure healthy lives and promote well-being for all at all ages	
Goal 4	**QUALITY EDUCATION** Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	
Goal 5	**GENDER EQUALITY** Achieve gender equality and empower all women and girls	
Goal 6	**CLEAN WATER AND SANITATION**	

	Ensure availability and sustainable management of water and sanitation for all	
Goal 7	**AFFORDABLE AND CLEAN ENERGY** Ensure access to affordable, reliable, sustainable, and modern energy for all	
Goal 8	**DECENT WORK AND ECONOMIC GROWTH** Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all	
Goal 9	**INDUSTRY, INNOVATION, AND INFRASTRUCTURE** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.	
Goal 10	**REDUCED INEQUALITIES** Reduce inequality within and among countries	
Goal 11	**SUSTAINABLE CITIES AND COMMUNITIES** Make cities and human settlements inclusive, safe, resilient and sustainable	
Goal 12	**RESPONSIBLE CONSUMPTION AND PRODUCTION** Ensure sustainable consumption and production patterns	
Goal 13	**CLIMATE ACTION** Take urgent action to combat climate change and its impacts	
Goal 14	**LIFE BELOW WATER** Conserve and sustainably use the oceans, sea and marine resources for sustainable development	
Goal 15	**LIFE ON LAND** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	
Goal 16	**PEACE, JUSTICE AND STRONG INSTITUTIONS** Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	
Goal 17	**PARTNERSHIPS** Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development	

References

A comprehensive list of references shall be cited using standard format.

Annexure-F:

Degree Program Learning Outcomes (PLOs)

As per requirements of Pakistan Engineering Council (PEC), an FYP shall encompass all the twelve program learning outcomes (PLO's) or graduate attributes (GA's). These PLO's or GAs are the narrower statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills and attitude that the students acquire while progressing through the program. The program must demonstrate that by the time of graduation the students have attained a certain set of knowledge, skills and behavioral traits, at least to some acceptable minimum level.

i. **Engineering Knowledge:** An ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

ii. **Problem Analysis**: An ability to identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

iii. **Design/Development of Solutions**: An ability to design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

iv. **Investigation**: An ability to investigate complex engineering problems in a methodical way including literature survey, design and conduct of experiments, analysis and interpretation of experimental data, and synthesis of information to derive valid conclusions.

v. **Modern Tool Usage**: An ability to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, to complex engineering activities, with an understanding of the limitations.

vi. **The Engineer and Society**: An ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solution to complex engineering problems.

vii. **Environment and Sustainability**: An ability to understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.

viii. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

ix. **Individual and Teamwork**: An ability to work effectively, as an individual or in a team, on multifaceted and /or multidisciplinary settings.

x. **Communication**: An ability to communicate effectively, orally as well as in writing, on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

xi. **Project Management:** An ability to demonstrate management skills and apply engineering principles to one's own work, as a member and/or leader in a team, to manage projects in a multidisciplinary environment.

xii. **Lifelong Learning**: An ability to recognize importance of, and pursue lifelong learning in the broader context of innovation and technological developments.

Annexure-G:

Range of Complex Problem Solving

S#	Attribute	Complex Problems
1	Preamble	Engineering problems which cannot be resolved without in-depth engineering knowledge, and have some or all of the characteristics listed below:
2	Range of conflicting requirements	Involve wide-ranging or conflicting technical, engineering and other issues.
3	Depth of analysis required	Have no obvious solution and require abstract thinking, originality in analysis to formulate suitable models.
4	Depth of knowledge required	Requires research-based knowledge much of which is at, or informed by, the forefront of the professional discipline and which allows a fundamentals-based, first principles analytical approach.
5	Familiarity of issues	Involve infrequently encountered issues
6	Extent of applicable codes	Are outside problems encompassed by standards and codes of practice for professional engineering.
7	Extent of stakeholder involvement and level of conflicting requirements	Involve diverse groups of stakeholders with widely varying needs.
8	Consequences	Have significant consequences in a range of contexts.
9	Interdependence	Are high level problems including many component parts or sub-problems.

Annexure-H:

Sustainable Development Goals (SDGs)

The Sustainable Development Goals are a universal call to action to end poverty, protect the planet and improve the lives and prospects of everyone, everywhere. The 17 Goals were adopted by all UN Member States in 2015, as part of the 2030 Agenda for Sustainable Development which set out a 15-year plan to achieve the Goals. The Sustainable Development Goals are vital for a recovery that leads to greener, more inclusive economies, and stronger, more resilient societies. The following highlights the details of all 17 SDGs:

Figure: The list of 17 SDGs adopted by United Nations UN 2015

Table: The list of 17 SDGs adopted by United Nations UN 2015

Sustainable Development Goals (SDGs)		
Goal#	**Description**	**Engineering solutions to achieve the SDG**
Goal 1	**NO POVERTY** End poverty in all its forms everywhere	Innovative approaches for sustainable development include developing technologies that improve access to basic services such as clean water and sanitation, reliable energy, and clean cooking fuels. Also includes frugal innovation enabling the development of affordable and reliable technologies that can be accessed by low-income users
Goal 2	**ZERO HUNGER** End hunger, achieve food security and improved nutrition and promote sustainable agriculture	Innovations for sustainable development includes mechanized agriculture and food production, technologies to aid agricultural land condition and productivity monitoring against environmental hazards. It may provide cost effective agriculture devices or services for low-income countries.
Goal 3	**GOOD HEALTH & WELL-BEING** Ensure healthy lives and promote well-being for all at all ages	Innovation for sustainable development by improvement in the quality of life with improved medical and health services. It may provide cost effective medical services to low-income communities.
Goal 4	**QUALITY EDUCATION** Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	Innovations for sustainable development by facilitating the delivery of education through creation of new technologies. It may provide cost effective services to deliver education to remote and low-income communities.

Goal 5	**GENDER EQUALITY** Achieve gender equality and empower all women and girls	Innovations for sustainable development that facilitate women towards better health, education, childcare, personal safety, empowering them in leadership roles and owning land and assets for becoming active in financial systems.
Goal 6	**CLEAN WATER AND SANITATION** Ensure availability and sustainable management of water and sanitation for all	Innovations for sustainable development that provide clean water, water treatment and recycling to ensure clean water even in arid zones.
Goal 7	**AFFORDABLE AND CLEAN ENERGY** Ensure access to affordable, reliable, sustainable, and modern energy for all	Innovations for sustainable development for development of low-cost renewable energy solutions, including wind, solar, wave and geothermal energy enabling remote access while mitigating the impacts of climate change.
Goal 8	**DECENT WORK AND ECONOMIC GROWTH** Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all	Innovations for sustainable development includes engineering solutions for industrial development and creating job opportunities in industrial sector while managing resource consumption.
Goal 9	**INDUSTRY, INNOVATION, AND INFRASTRUCTURE** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.	Innovations for sustainable development includes development of sustainable, resilient, and inclusive infrastructure, new industries and investment in research and development. Furthermore, innovations in emerging technologies that will drive future economic growth.
Goal 10	**REDUCED INEQUALITIES** Reduce inequality within and among countries	Innovations for sustainable development includes improving infrastructure, creating jobs and opportunities and latest cost-effective innovations for low-income countries.
Goal 11	**SUSTAINABLE CITIES AND COMMUNITIES** Make cities and human settlements inclusive, safe, resilient and sustainable	Innovations for sustainable development includes development of safe, inclusive, and resilient cities. Also includes low-cost, low-energy, sustainable solution that improves safety and security for citizens
Goal 12	**RESPONSIBLE CONSUMPTION AND PRODUCTION** Ensure sustainable consumption and production patterns	Innovations for sustainable development includes developing solutions for resource management and responsible consumption through the concept of the circular economy where outputs and products can become inputs into other processes and products, thereby conserving the Earth's resources.
Goal 13	**CLIMATE ACTION** Take urgent action to combat climate change and its impacts	Innovations for sustainable development includes development of a wide range of technologies to reduce greenhouse gas emissions especially from energy generation, to remove greenhouse gases from the atmosphere, and to mitigate the impacts of climate change through the development of resilient infrastructure.
Goal 14	**LIFE BELOW WATER** Conserve and sustainably use the oceans, sea and marine resources for sustainable development	Innovations for sustainable development includes implement solutions to address the degradation of fisheries, the pollution of oceans and the use of resources, including wave energy and oil and gas exploration.
Goal 15	**LIFE ON LAND** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	Innovations for sustainable development includes managing biodiversity through the responsible use of forestry resources and the preservation of habitats to mitigate the impacts of hazardous industries. Also includes agricultural monitoring, the design of infrastructure and predicting natural disasters such as earthquakes.
Goal 16	**PEACE, JUSTICE AND STRONG INSTITUTIONS** Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	Innovations for sustainable development includes delivering safe, sustainable engineering solutions for embracing the values of diversity and inclusion, sustainable practices and ethical engineering.
Goal 17	**PARTNERSHIPS** Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development	Innovations for sustainable development includes developing innovative solutions to address the issues of today and the future and providing roadmaps for the implementation of technologies for sustainable development to build capacity and knowledge transfer mechanisms forinclusive approaches to sustainable development.