A Final Year Design Project (FYDP) submitted to the Department of [Type your department name here] in partial fulfillment of the requirements for the degree of
[Type your degree name here]

Type Your Title Here

[Type In Word Caps]

By

Student Full Name

Student ID

Student Full Name

Student ID

Student Full Name

Student ID

Student Full Name

Student ID

[Type your department name here]
Brac University
[Month] [Year]

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By

Student Full Name

Student ID

Student Full Name

Student ID

Student Full Name

Student ID

Student Full Name

Student ID

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**Academic Technical Committee (ATC) Panel Member:**[Write your ATC information with proper designations.

Dr. X (Chair)

Professor, Department of EEE, BRAC University

Dr. Y (Member)

Associate Professor, Professor, Department of EEE, BRAC University

Mr. Z (Member)

Lecturer, Department of EEE, BRAC University

[Type your department name here]
Brac University
[Month] [Year]

Type Your Title Here

[Type In Word Caps]

A Final Year Design Project (FYDP) submitted to the Department of [Type your department name here] in partial fulfillment of the requirements for the degree of
[Type your degree name here]

Declaration

It is hereby declared that

1. The Final Year Design Project (FYDP) submitted is my/our own original work while completing degree at Brac University.
2. The Final Year Design Project (FYDP) does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The Final Year Design Project (FYDP) does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I/We have acknowledged all main sources of help.

|  |
| --- |
| **Student’s Full Name & Signature:** |
| **[Student Full Name]**[Student ID] | **[Student Full Name]**[Student ID] |
| **[Student Full Name]**[Student ID] | **[Student Full Name]**]Student ID] |

Approval

|  |
| --- |
| The Final Year Design Project (FYDP) titled “[Final Year Design Project Title]” submitted by 1. [Student-Name (Student ID)]
2. [Student-Name (Student ID)]
3. [Student-Name (Student ID)]
4. [Student-Name (Student ID)]

of [Semester], [Year] has been accepted as satisfactory in partial fulfillment of the requirement for the degree of [Degree Name] on [Date-of-Defense].  |
| **Examining Committee:** |
| Academic Technical Committee (ATC):(Chair) | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Full NameDesignation, DepartmentInstitution |
| Final Year Design Project Coordination Committee:(Chair) | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Full NameDesignation, DepartmentInstitution |
| Department Chair: | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Full NameDesignation, DepartmentInstitution |

Ethics Statement

[Students who submit their project must check the plagiarism and maintain the similarity index below 35%.]

Abstract/ Executive Summary

[Abstract or executive summary paragraphs should be unintended. Abstracts are limited to 150 words. Abstract text must fit on a single page. Keywords may appear alone on the same page or a second page.

Your choice of paragraph style for text on this page]

**Keywords:** You may include up to six keywords or phrases. Keywords should be separated with semicolons.

[All instructions given in the square bracket must be deleted while submitting the report]

[Throughout the proposal, use Page Size: A4, Margin: 1 inch (all sides), Font name: Times New Roman, Font size: 12 (For tables, image caption, bibliography, use font size: 10), 14 (for chapter heading), Line spacing: 1.15]

Dedication (Optional)

[A dedication is the expression of friendly connection or thanks by the author towards another person. It can occupy one or multiple lines depending on its importance.

You can remove this page if you want.]

Acknowledgement

[This is an optional page. Use your choice of paragraph style for text on this page (1\_Para shown here).]

**Table of Contents**

[Provide a table of contents mentioning heading, sub heading and corresponding page numbers.]

Chapter 1: Introduction [CO1, CO2, CO3, CO10]

Chapter 2: Project Design Approach [CO5, CO6]

Chapter 3: Use of Modern Engineering and IT Tool [CO9]

Chapter 4: Optimization of Multiple Design and Finding the Optimal Solution [CO5, CO6, CO7]

Chapter 5: Completion of Final Design and Validation [CO8]

Chapter 6: Impact Analysis and Project Sustainability [CO3, CO4]

Chapter 7: Engineering Project Management [CO11, CO14]

Chapter 8: Economical Analysis [CO12]

Chapter 9: Ethics and Professional Responsibilities [CO13, CO2]

Chapter 10: Conclusion and Future Work.

Chapter 11: Identification of Complex Engineering Problems and Activities.

References

Appendix

# **Chapter 1: Introduction- [CO1, CO2, CO10]**

**[Note: Students can arrange each of the Chapter with relevant sub topics/sub-headings based on the mentioned CO’s. Some of the CO’s have already been assessed in the previous semesters, however, the new CO’s will only be assessed in FYDP-C. Each of the Chapter will start from a new page. The Chapter Sub-heading can be numbered as 1.1, 3.2, 1.2.1 etc. Sample heading/sub-heading names have been given for your reference. You can adjust/modify consulting with your ATC. The related CO and KPI has been also shown for your reference. You can delete the yellow marked instructional text in your final report.]**

1.1 Introduction

1.1.1 Problem Statement

1.1.2 Background Study

1.1.3 Literature Gap

1.1.4 Relevance to current and future Industry

1.2 Objectives, Requirements, Specification and constant

1.2.1. Objectives

1.2.2 Functional and Nonfunctional Requirements

1.2.2 Specifications

1.2.3 Technical and Non-technical consideration and constraint in design process

1.2.4 Applicable compliance, standards, and codes

1.3 Systematic Overview/summary of the proposed project

1.4 Conclusion

[Related CO and KPI

CO1

Identify a solvable complex engineering problem preferably relevant to the current and future industry through appropriate research

PO(l) Performance Criteria-

l1.      Perform research and gather information on engineering topics by reviewing relevant technical literature, documents etc. and make reporting on papers or presentations

CO2

Identify the objectives, specifications, functional and non-functional requirements, and constraints as well as applicable compliance, standards and codes of practice to the solution of the engineering problem

PO(c) Performance Criteria-

c1.  Define specifications, analyze technical requirements and constraints of the system/subsystem, component or process for the solutions of complex engineering problem

c3.  Consider non-technical considerations and constraints such as environmental, societal, cultural, political, ethical, health and safety, and sustainability in the design process.

c5.  Consider any applicable standards/codes in the design

**CO10 [Will be assessed for FYDP-C]**

Conduct independent research, literature survey and learning of new technologies and concepts as appropriate to design, develop and validate the solution

Required Knowledge, Skills & Resources: CO (10)

[Conduct independent research, literature survey and learning of new technologies and concepts as appropriate to design, develop and validate the solution.]

PO(l) Performance Criteria

l1. Perform research and gather information on engineering topics by reviewing relevant technical literature, documents etc. and make reporting on papers or presentations

l2. Recognize the need for independent and continuing learning on subject matters

Activities:

-Find out appropriate knowledge information, skill, materials, and resources as needed to develop and validate the final prototype

-Use the learned knowledge and skills as needed]

[All instructions given in the square bracket must be deleted while submitting the report]

# **Chapter 2: Project Design Approach [CO5, CO6]**

* 1. Introduction
	2. Identify multiple design approach
	3. Describe multiple design approach
	4. Analysis of multiple design approach
	5. Conclusion

[Related CO and KPI

CO5

Design multiple engineering solutions of the problem to meet the desired objectives, need and requirements within the given constraints

PO(c) Performance Criteria-

c2.  Consider alternative designs and choose the optimal solution

CO6

Analyze alternative design solutions of engineering problem in order to find the most appropriate one considering cost, efficiency, usability, manufacturability, impact, sustainability, maintainability etc.

PO(b) Performance Criteria

b1. Identify the key issues, variables, requirements and domain of the complex engineering problem and formulate the problem statement

b2. Research and identify the required knowledge related to problem

b3. Analyze complex engineering problem using relevant analytical skills and fundamental knowledge of mathematics, natural sciences and engineering sciences and reach substantiated conclusion]

[All instructions given in the square bracket must be deleted while submitting the report]

# **Chapter 3: Use of Modern Engineering and IT Tool. [CO9]**

* 1. Introduction
	2. Select appropriate engineering and IT tools
	3. Use of modern engineering and IT tools
	4. Conclusion

[Related CO and KPI

Usage of Modern Engineering & IT Tools: CO (09) **[Will be assessed for FYDP-C)]**

[Use modern engineering and IT tools to design, develop and validate the solution.]

PO(e) Performance Criteria:

e1. Select appropriate techniques, resources, modern engineering and IT tools to solve complex engineering problems

e2. Identify the appropriate predictions and modelling tools for the solutions of complex engineering problems with an understanding of the limitation

e3. Use appropriate modern engineering, IT including modelling and simulation tools and techniques to develop and evaluate the solution of complex engineering problems

e4. Create appropriate techniques, resources and tools as required to develop the solutions of complex engineering problems

Activities:

• Selection of appropriate tools to develop, and validate the selected solution and final prototype

• Usage of tools as necessary.]

[All instructions given in the square bracket must be deleted while submitting the report]

# **Chapter 4: Optimization of Multiple Design and Finding the Optimal Solution. [CO7]**

4.1 Introduction

4.2 Optimization of multiple design approach

4.3 Identify optimal design approach

4.4 Performance evaluation of developed solution

4.5 Conclusion

[Related CO and KPI

Related CO and KPI

CO5

Design multiple engineering solutions of the problem to meet the desired objectives, need and requirements within the given constraints

PO(c) Performance Criteria-

c2.  Consider alternative designs and choose the optimal solution

CO6

Analyze alternative design solutions of engineering problem in order to find the most appropriate one considering cost, efficiency, usability, manufacturability, impact, sustainability, maintainability etc.

PO(b) Performance Criteria

b1. Identify the key issues, variables, requirements and domain of the complex engineering problem and formulate the problem statement

b2. Research and identify the required knowledge related to problem

b3. Analyze complex engineering problem using relevant analytical skills and fundamental knowledge of mathematics, natural sciences and engineering sciences and reach substantiated conclusion

Performance Evaluation of the Developed Solution: CO (07) [**Will be assessed for FYDP-C)]**

[Evaluate the performance of the developed solution with respect to the given specifications, requirements and standards]

PO(d) Performance Criteria:

d1. Design and set up experiments.

d2. Conduct experiments and perform measurements.

d3. Detect the experimental faults and troubleshoot them

d4. Analyze and Interpret data, graph, charts etc.

d5. Synthesize the information and findings obtained through research and/or experiments to reach valid conclusions

Activities:

• Implement the selected design solution

• Perform testing of the Implemented solution

• Evaluate the performance of the implemented solution]

[All instructions given in the square bracket must be deleted while submitting the report]

# **Chapter 5: Completion of Final Design and Validation. [CO8]**

* 1. Introduction
	2. Completion of final design
	3. Evaluate the solution to meet desired need
	4. Conclusion

[Related CO and KPI

Completion of the Design and Solution: CO (08) [**Will be assessed for FYDP-C)]**

[Complete the final design and development of the solution with necessary adjustment based on performance evaluation.]

PO (c) Performance Criteria:

c4. Evaluate whether the design solutions meet the desired need

c6. Maintain the systematic and logical design approach to complete the project

Activities:

• Obtain the final design by make necessary adjustment to the selected design as per performance evaluation result

• Develop the solution as per final design]

[All instructions given in the square bracket must be deleted while submitting the report]

# **Chapter 6: Impact Analysis and Project Sustainability. [CO3, CO4]**

* 1. Introduction
	2. Assess the impact of solution
	3. Evaluate the sustainability
	4. Conclusion

# [Related CO and KPI

CO3

Assess the impact of the solution of the engineering project in terms of societal, health, safety, legal and cultural context

PO (f) Performance Criteria:

f1.   Demonstrate the contextual knowledge of assessing the societal, health, safety, legal and cultural issues in engineering solutions and professional practice.

f2.     Value the consideration of technical and non-technical issues related to societal, health, safety, legal and culture in developing the solution of complex engineering problem

CO4

Evaluate the sustainability and impact of solution of the proposed project in terms of environmental consideration

PO (g) Performance Criteria:

g1. Understand and evaluate the impact of engineering solutions to the environment and society

g2. Understand the need for sustainable solutions of an engineering problem

g3. Validate the sustainability of an engineering solution]

[All instructions given in the square bracket must be deleted while submitting the report]

# **Chapter 7: Engineering Project Management. [CO11, CO14]**

* 1. Introduction
	2. Define, plan and manage engineering project
	3. Evaluate project progress
	4. Conclusion

# [Related CO and KPI

 Project Management: **CO (11)** [**Will be assessed for FYDP-C)]**

[Demonstrate project management skill in various stages of developing the solution of an engineering design project.]

PO(k) Performance Criteria:

k1. Demonstrate knowledge and understanding of engineering project management principles

k2. Define, plan and manage an engineering project within a given timeframe

Activities:

• Evaluate project progress as per schedule

**[CO14]** [**Will be assessed for FYDP-C)]**

Perform effectively as an individual and as a team member for successfully completion of the project

PO(i) Performance Criteria:

i1.    Fulfil duties as an individual, a team member or leader in a multidisciplinary environment

i2.   Communicate effectively with other team members.

i3.   Share responsibilities by performing research and information gathering activities, participating in report writing and team presentations etc.

Activities:

-Active participation in team activities

-Complete peer-evaluation form]

[All instructions given in the square bracket must be deleted while submitting the report]

# **Chapter 8: Economical Analysis. [CO12]**

* 1. Introduction
	2. Economic analysis
	3. Cost benefit analysis
	4. Evaluate economic and financial aspects
	5. Conclusion

[Related CO and KPI

Cost-benefit and Economic Analysis: CO (12) [**Will be assessed for FYDP-C)]**

[Perform cost-benefit and economic analysis of the solution]

PO(k) Performance Criteria

k3. Evaluate economic and financial aspects of engineering project

Activities:

• Conduct economic analysis

• Conduct cost-benefit estimation]

[All instructions given in the square bracket must be deleted while submitting the report]

# **Chapter 9: Ethics and Professional Responsibilities CO13, CO2**

* 1. Introduction
	2. Identify ethical issues and professional responsibility
	3. Apply ethical issues and professional responsibility
	4. Conclusion

[Related CO and KPI

Ethical Considerations & Professional Responsibilities: **CO (13**) [**Will be assessed for FYDP-C)]**

[Apply ethical considerations and professional responsibilities in designing the solution and throughout the project development phases]

PO(h) Performance Criteria

h1. Maintain ethical standards in writing reports, preparing assignments, homework, exams etc.

h2. Recognize and respect the professional ethics and responsibilities related to engineering practice

h3. Apply the ethical principles related to the solution of an engineering problem

Activities:

• Identify ethical issues and professional responsibility related to design solution

CO2

Identify the applicable compliance, standards and codes of practice to the solution of the engineering problem

-Review of applicable standards, professional codes, practice and regulatory requirements]

[All instructions given in the square bracket must be deleted while submitting the report]

# **Chapter 10: Conclusion and Future Work.**

10.1 Project summary/Conclusion

10.2 Future work

[All instructions given in the square bracket must be deleted while submitting the report]

# **Chapter 11: Identification of Complex Engineering Problems and Activities.**

11.1: Identify the attribute of complex engineering problem (EP)

11.2: Provide reasoning how the project address selected attribute (EP)

11.3 Identify the attribute of complex engineering activities (EA)

11.4 Provide reasoning how the project address selected attribute (EA)

# **Attributes of Complex Engineering Problems (EP)**

|  |  |  |
| --- | --- | --- |
|  | **Attributes** | **Put tick (√) as appropriate** |
| P1 | Depth of knowledge required |  |
| P2 | Range of conflicting requirements |  |
| P3 | Depth of analysis required |  |
| P4 | Familiarity of issues |  |
| P5 | Extent of applicable codes |  |
| P6 | Extent of stakeholder involvement and needs |  |
| P7 | Interdependence |  |

Note: Project must have P1, and some or all from P2-P7

#  **Attributes of Complex Engineering Activities (EA)**

|  |  |  |
| --- | --- | --- |
|  | **Attributes** | **Put tick (√) as appropriate** |
| A1 | Range of resource |  |
| A2 | Level of interaction |  |
| A3 | Innovation |  |
| A4 | Consequences for society and the environment |  |
| A5 | Familiarity |  |

Note: Project must have some or all of the characteristics from attributes A1 to A5

# **References**

[Format your bibliographies according to IEEE styles. Some sample references for different scenarios are mentioned here:

1. G. Eason, B. Noble, and I. N. Sneddon, “On certain integrals of Lipschitz-Hankel type involving products of Bessel functions,” Phil. Trans. Roy. Soc. London, vol. A247, pp. 529–551, April 1955. *(references)*
2. J. Clerk Maxwell, A Treatise on Electricity and Magnetism, 3rd ed., vol. 2. Oxford: Clarendon, 1892, pp.68–73.
3. I. S. Jacobs and C. P. Bean, “Fine particles, thin films and exchange anisotropy,” in Magnetism, vol. III, G. T. Rado and H. Suhl, Eds. New York: Academic, 1963, pp. 271–350.
4. K. Elissa, “Title of paper if known,” unpublished.
5. R. Nicole, “Title of paper with only first word capitalized,” J. Name Stand. Abbrev., in press.
6. Y. Yorozu, M. Hirano, K. Oka, and Y. Tagawa, “Electron spectroscopy studies on magneto-optical media and plastic substrate interface,” IEEE Transl. J. Magn. Japan, vol. 2, pp. 740–741, August 1987 [Digests 9th Annual Conf. Magnetics Japan, p. 301, 1982].
7. M. Young, The Technical Writer’s Handbook. Mill Valley, CA: University Science, 1989.

Note: All references mentioned here should appear within the text as in-text citation, for example, you may write: the work done by [1] has the following shortcomings…

Additional guidelines that may be required within the proposal:

Format tables like:

 Table 1: A Very Good Table Caption

|  |  |
| --- | --- |
| **Table Head** | **Table Column Head** |
| ***Table column subhead*** | ***Subhead*** | ***Subhead*** |
| copy | More table copy |  |  |
|  |  |  |  |

Give caption to below every figures like:



**Figure 1:** An extraordinary figure caption

If any guidelines that you need is not available in this template, you are suggested to utilize IEEE conference template (<https://www.ieee.org/conferences/publishing/templates.html>)

# **Appendix**

Logbook

Related code/theory

**[While submitting, include logbook. Logbook covers CO15.**

**CO14 will be covered from the team activities and peer-evaluation form.**

**CO15 will be covered from the following materials:**

●Verbal and written communication within the team and appropriate stakeholders

●Logbook, notes, journals

●Design reports

●Progress presentations

●Deliver Oral Presentation]

[All instructions given in the square bracket must be deleted while submitting the report]

**Assessment Guideline for Faculty**

[The following assessment guideline is for faculty ONLY. **This portion is not applicable for students**.]

**Assessment Tools and CO Assessment Guideline**

|  |  |
| --- | --- |
|  | **Distribution of assessment points among various COs assessed in different semesters** |
| PO | l | c | f | g | c | b | d | c | e | l | k | k | h | i | j |
| CO | CO 1 | CO 2 | CO 3 | CO 4 | CO 5 | CO 6 | CO 7 | CO 8 | CO 9 | CO 10 | CO 11 | CO 12 | CO 13 | CO 14 | CO 15 |
| EEE 400C/ ECE 402C (Out of 100) |  |  |  |  |  |  | 30 | 24 | 6 | 4 | 4 | 6 | 7 | 7 | 12 |
| Project Final Report/ Project Progress Report |  |  |  |  |  |  | x | x | x | x | x | x | x |  | x |
| Demonstration of working prototype |  |  |  |  |  |  | x |  |  |  |  |  |  |  | x |
| Progress Presentation/ Final Presentation |  |  |  |  |  |  |  | x |  |  | x |  |  |  |  |
| Peer-evaluation\* |  |  |  |  |  |  |  |  |  |  |  |  | x | x |  |
| Instructor’s Assessment\* |  |  |  |  |  |  |  |  |  |  |  |  | x | x |  |
| Demonstration at FYDP Showcase  |  |  |  |  |  |  |  | x |  |  |  |  |  |  | x |

Note: The star (\*) marked deliverables/skills will be evaluated at various stages of the project.

**Mapping of CO-PO-Taxonomy Domain & Level- Delivery-Assessment Tool**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sl.** | **CO Description** | **PO** | **Bloom’s Taxonomy Domain/Level** | **Assessment Tools** |
| CO7 | **Evaluate** the performance of the developed solution with respect to the given specifications, requirements and standards | d | Cognitive/ Evaluate | * Demonstration of working prototype
* Project Progress Report on working prototype
 |
| CO8 | **Complete** the final design and development of the solution with necessary adjustment based on performance evaluation  | c | Cognitive/ Create | * Project Final Report
* Final Presentation
* Demonstration at FYDP Showcase
 |
| CO9 | **Use** modern engineering and IT tools to design, develop and validate the solution | e | Cognitive/ Understand, Psychomotor/ Precision | * Project Final Report
 |
| CO10 | **Conduct** independent research, literature survey and learning of new technologies and concepts as appropriate to design, develop and validate the solution | l | Cognitive/ Apply | * Project Final Report
 |
| CO11\*\* | **Demonstrate** project management skill in various stages of developing the solution of engineering design project | k | Cognitive/ ApplyAffective/ Valuing | * Project Final Report
* Project Progress presentation at various stages
 |
| CO12 | **Perform** cost-benefit and economic analysis of the solution  | k | Cognitive/ Apply | * Project Final Report
 |
| CO13 | **Apply** ethical considerations and professional responsibilities in designing the solution and throughout the project development phases | h | Cognitive/ ApplyAffective/ Valuing | * Peer-evaluation,
* Instructor’s Assessment
* Final Report
 |
| CO14\*\* | **Perform** effectively as an individual and as a team member for successfully completion of the project | i | Affective/ Characterization | * Peer-evaluation
* Instructor’s Assessment
 |
| CO15\*\* | **Communicate** effectively through writings, journals, technical reports, deliverables, presentations and verbal communication as appropriate at various stages of project development | j | Cognitive/ UnderstandPsychomotor/ PrecisionAffective/ Valuing | * Project Final Report
* Progress Presentations,
* Final Presentation
* Demonstration at FYDP Showcase
 |

Note: The double star (\*\*) marked CO will be assessed at various stages of the project through indirect deliverables.