جامعة فهد بن سلطان
FAHAD BIN SULTAN UNIVERSITY
كلية الحاسب الآلي
College of Computing

FINAL YEAR PROJECT POLICY
College of Computing

The Bridge to the Real World

History of updating the Policy

Date	Description	Name
October, 2008	*Creation*	*Prof. Ahmad Smaili, Dr. Nael Hirzallah*
June, 2009	*1st Draft*	*Dr. Nezar Elfadel*
March, 2012	*The final version*	*Dr. Mohammad A. Mezher, Dr. May Haider*
April, 2014	*Update the policy*	*CS Chair, CEN chair*
February, 2020	*Reviewing the policy*	*Dr. Mohammad A. Mezher*
February, 2024	*Reviewing the policy*	*CS Chair, CEN chair*

College of Computing Goals and Objectives

The College of Computing (CC), the first to be established at FBSU in 2005, offers programs in the two major venues of informatics: Computer Science and Computer Engineering. The CC is structured around the two departments:

1. The Computer Science Department offers two programs of 4 years duration:
   a) A Bachelor of Computer Science with one track:
   1. Computer Science in Cybersecurity
   b) A Bachelor of Science in Information Technology with two tracks:
   2. An Artificial Intelligence and Machine Learning track
   3. A Data Science and Analytics track
2. The Computer Engineering Department offers one program of 5 years duration:
   a) Bachelor of Sciences in Computer Engineering.

Through its intensive undergraduate programs that emphasize the actual implementation of theories and real-world environments and problems, the CC graduates experts in all walks of Computing.

Mission

The College of Computing at Fahad Bin Sultan University is committed to excellence in computing education, aligning with national and international standards. The college integrates advanced technology and diverse pedagogical methods to enhance scientific research and creative problem-solving. The college aims to develop graduates proficient in computing and dedicated to community service and global betterment. The college strives to foster continuous learning and leadership in the students, preparing them to excel in a dynamic digital landscape. The college focuses on efficiently utilizing and diversifying educational resources to contribute to the community through technology.

Core Values

- Reinforcement of national identity and cultural authenticity
- The uncompromising pursuit of quality educational services to students in ways that cognitive skills, cultivate personality and help the development of character
- Integrity and adherence to ethical behavior in all ways at all levels
- Life-long learning and investment in self-renewal
- Critical thinking and board exposure to major global currents
- Community spirit and commitment to social service

Objectives

1. Provide students with basic foundations in computing to enable them to identify, formulate, and solve computing problems,
2. Equip students with basic principles in software and hardware and the necessary tools to be able to implement computing solutions,
3. Enable students to communicate effectively, think critically, and be life-long learners,
4. Instill in students an appreciation of the ethical, social and professional issues in an increasingly diverse and technological society, and
5. Prepare students to undertake higher studies in computing or related fields.

FYP in Context

As students embark on college education, a new phase in their life starts in which they increasingly begin to view themselves as part of the world around them. They grow more sensitive to the needs and aspirations of the community in which they live. While knowledge is being acquired, awareness of the ramifications of their learning develops and motivation to contribute to a better life is seeded.

The bachelor project provides students with a transitional experience from the academic world to the professional world, sort of a bridge the "student" crosses in search of a positive role in the professional

world of engineering. It is designed to serve as a platform to engage students in a team-oriented comprehensive, integrative, meaningful design experience requiring the solution of open-ended problems that draw from knowledge acquired in the lead-up courses to better prepare them to enter the real world of engineering practice. In a world characterized by stiff competition, a global market economy, rapid technological advancement, and customer-driven engineering, this bachelor project experience is a must.

Students in groups of normally three to four will be required to select a project in the first week of the Fall semester of their graduation year. Teams are actively supervised to work on the project and complete it by the end of the following spring semester.

FYP Goals and Objectives

The project activity is a culmination of your past learning experience. The project is designed to serve as a platform in which FBSU students engage in a meaningful experience that draws from knowledge acquired in the lead-up courses to better prepare them to enter the real world of engineering practice.

Goals

The goal of the bachelor project is to provide students with a comprehensive, integrated experience in which students apply what they learned in the lead-up courses in situations requiring the solution of open-ended problems. The goals of the project are twofold: technical and non-technical.

- *Knowledge and Skills Areas*: To enhance students' ability to creatively solve open-ended real-world problems, engage in computer-integrated engineering, acquire hands-on experience, and integrate modern tools and technologies to produce novel designs.

- *Attitudes and Awareness Areas*: To improve communications and teamwork skills, understand and manage group dynamics, shoulder responsibility, the importance of planning and efficiency on project activities, social implications of engineering, professionalism and ethical practices.

Objectives

The project objective is to engage FBSU students, by simulating a real-world experience, in many aspects of future professions, to the extent possible, from the inception of an idea to the realization and product testing of an artifact for a specific application. Those objectives are:

1. Acquire knowledge and learn to conduct a wide range of independent research,
2. Participate in a complete product cycle from inception to prototype testing;
3. Apply fundamentals to creatively and critically solve open-ended real-world problems;
4. Use modern tools and technologies to produce novel systems;
5. Translate customer requirements into practical constraints;
6. Apply a multi-disciplinary approach to solving problems;
7. Work with other technical and nontechnical professionals in small teams,
8. Appreciate and consider nontechnical constraints (ethical, political, aesthetic, environmental, economic, cultural, etc.) in their work;
9. Develop client relations (whenever possible);
10. Enhance oral and written communication skills.

Final Year Project Committee

The committee tasks are as follows:

1. Propose Project Titles
2. Collect and Study initial proposals for approval
3. Assign teams from individuals who failed to group themselves
4. Assign supervisors
5. Collect Log Files
6. Create a timetable for defense by assigning juries and halls
7. Collect reports and advisors' evaluation forms
8. Announce Project Abstract for the public
9. Collect Jury evaluation forms
10. Compose and submit Grade sheets

The Final year project committee is composed of the following members:

1. Dr. Mohammad Hujoj (Chair of the committee)
2. Dr. Osama Ghaleb (CS chairperson)
3. Dr. Mutasem Aljarajrah (CEN representative)
4. Mr. Abdullah Nabhan (Students representative)

Who can register?

The Final Year Project is split into two semesters under the name Final Year Project I, and Final Year Project II, respectively. These courses are marked in the study plans to be taken in the last two semesters. Project I is supposed to focus on defining the problem to be addressed and proposing the solution and work to be done in Project II. Although no implementation is needed for Project I, a prototype enriches the work and gives it an edge.

Project II cannot be taken if the student did not pass Project I, while Project I cannot be taken if the student is left with more than 50 credit hours to finish.

Project Team

Consider that you are a team of engineers in a brave new world who is embarked on fulfilling a very important task. Your team may have been formed in one of two ways. But either way, it is a “do or die” world where failure is not an option and the success of this project defines your career outlook.

1. You are a team that has an entrepreneurial spirit and is about to engage in the most exciting endeavor of your lives. You have an innovative idea that you want to realize and in doing so you will be rich in ways more than one. This idea is to design, develop, manufacture, assemble, and test a device that is needed in a specific application. So you want to start up a new company, *Unlimited Horizons'*, to realize and market your product.
2. You are a team that works for the *Innovative Solutions* start-up consulting firm. *Smart Systems Inc.* is soliciting your expertise to design, develop, manufacture, assemble, and test a product. *Smart Systems Inc.* needs this product in four months.

Students’ Responsibilities

The section is an introspective look at your project's journey. Reflect on the design and implementation decisions made, the challenges encountered, and the lessons learned. A meaningful and successful FYP experience requires students to shoulder responsibilities to achieve the stated goals and objectives. Evaluate the project's outcomes, discussing successes and areas for improvement. Guidance for Students: Your appraisal should:

- Reflect on key decisions and their outcomes.
- Discuss challenges faced and how they were overcome.
- Evaluate the project's success and areas for future improvement.

However, Students' responsibilities are different for Project I and Project II.

Final Year Project I Responsibilities:

1. Form a team and submit a proposal
   All students who have registered for "Final Year Projects I" must submit their proposals by the second week after the Add/Drop period to the Final Year Project Committee. Consequently, project supervisors will be assigned and announced after which each team will have to visit their assigned supervisor within a week of the announcement to agree on a weekly time to meet.

   The proposals of a few pages must include the following sections:
   - Team members ' names and IDs (3 or 4 Students)
   - Problem to tackle proposed by the team or selected from a list of projects if offered by the Final Year Project committee.
   - Major functions and Features to offer.
   - Platform to use, if any (Programming language, Database, etc…)
   - Expected tasks and their durations.

   Failing to submit a proposal before the deadline, will result in course cancellation.

2. Meet with the project supervisor at least once a week.

3. Deliver three softcover copies of the final detailed proposal along with a CD that includes the documentation as well as the demo, if any, 18 days before the final exams according to the Template in Appendix B. The detailed proposal should include:
   - Objectives and a summary of the proposed project,
   - Exhaustive literature/patent/personal contact searches as well as brainstorming sessions to understand, define objectives, and properly size the scope of work
   - Preliminary project/product specification & requirements
   - Possible solutions and a concept that would satisfy the project specification,
   - Sketch of the final concept stating its DFD, ERD, Case Studies, State diagrams, and a preliminary Part's List or bill-of-materials (BOM) and necessary tools to realize the concept.
   - Subsystems definitions
   - Timeline indicating milestones

4. Prepare a presentation and be ready to defend your proposal during an assigned time within two weeks before the final exams.
5. During the presentation, take notes and suggestions from the Jury to incorporate in your project for the second part of it.

Final Year Project II Responsibilities:

1. Start meeting with your supervisor at least once per week as soon as the semester starts, and note any announcement on possible changes in the supervisors within the first two weeks of the semester. The team must seek the supervisor's approval on the work, as well as any documentation

to be submitted.

2. Email a softcopy of a 200 words abstract of their project to the supervisor three weeks before the final exams
3. Deliver three copies of the final report along with a source code (if applicable) that includes the documentation as well as all related items in its source form, three weeks before the final exams (one hardcover and two softcovers) according to the Template in Appendix F to the supervisor. The detailed report should include:
    - Objectives and a summary of the proposed project,
    - Exhaustive literature/patent/personal contact searches as well as brainstorming sessions to understand, define objectives, and properly size the scope of work
    - Project/product specification & requirements
    - Timeline indicating milestones
    - Sketch of the concept that would satisfy the project specification and experiments
    - Results.
    - Analysis.
    - Conclusion

4. Prepare a presentation and be ready to defend your project during an assigned time within two weeks before the final exams.

Note that the team is strongly urged to secure sponsorship/funding from private institutions and agencies. Also, note that the project submitted along with the report must include all source code as well as the report and the presentation slides.

Defending your project: The presentation

Each presentation is expected to be performed by all members of the team and not to exceed a total of 10 minutes for Project II and 15 minutes for Project I. A demo is a must for non-research-type projects in Project II for a duration of 10 minutes. The discussion and Q&A session is allowed to continue for an extra 25 minutes.

The presentation is preferred to be in presentation slides. Both the slides and reports must be in English. Students are to make sure all needed software and hardware are available in the lab, or they are advised to bring their equipment. If that is the case, the students must get permission to enter any device into the university from the committee chair before the presentation day.

Advisor's Responsibilities

The role of the advisor is to mentor the project team throughout by providing guidance, holding regular weekly meetings, setting weekly targets, offering technical help, ensuring that students remain on course, and helping mitigate team troubles.
The following is a list of tasks that the advisor should consider

1. Meet with the students at least once per week
2. Fill in the Log File (Appendix C) after each meeting and submit it to the FYProject Committee Chair
3. Verify the work of the team and their documentation
4. Email the abstract of Project II to the FYProject Committee chair three weeks before the final

exams

5. Fill in the Advisor evaluation form (Appendix A) and submit it to the committee three weeks before the final exams.
6. Among the three copies of the report submitted to you, you need to pass a copy to each member of the Jury including the committee. For convenience, the advisor may pass all three to the committee at least two days before the presentation date.

Note that failing to submit the evaluation form filled and signed on time will mean that the supervisor is not satisfied with the work, thus the team will get an F. The advisor may select one of the following options within the evaluation form:

1. recommend this group to present their work (in that case detailed marks need to be set)
2. I recommend a fail status (F)
3. I recommend an incomplete status (IP)

In case of an IP grade, the team will be required to submit a modified final report and be ready to present it within the first two weeks of the following semester. Failing to submit a report or failing the presentation will result in failing the course. Otherwise, a 60% grade will be granted to the student.

Note that no grade leakage will be allowed.

Jury Responsibilities

Each presentation is expected to be performed by **all** members of the project and not to exceed a total of 10 minutes for Project II and 15 minutes for Project I. A demo is a must for non-research-type projects in Project II for a duration of 10 minutes. The discussion and Q&A session should start immediately after the presentation and demo and is allowed to continue for an extra 25 minutes. The objectives of these examinations vary whether Project I or II.

For Project I the objectives include, but are not limited to:

1. Approve the functional list provided by the group
2. Introduce a sense of seriousness
3. Report Quality
4. Help the students prepare for the Project II presentation
5. Offer suggestions for improvements

For Project I the objectives include, but are not limited to:

1. Report Quality
2. Completion of work
3. Level of analysis of the problem and the solutions
4. Quality of visual aids, use of charts, graphics and figures
5. Student knowledge concerning the overall project
6. Effectiveness of response to questions and comments

The jury will be provided with the appropriate evaluation forms (Appendix D) and projects at least a day before the presentation. All forms completed by the jury and the reports handed to them must be returned to the committee within a day after the presentations…

The Jury must note the following issues:

1. It is preferred that the jury allows the students to present their work first before they start the rounds of questions.

2. The jury must adhere to time constraints.
3. No grade leakage will be allowed.
4. Language issues must receive less weight than technical issues.

Q & A

Below are some common questions that may arise with the students, supervisors, or Jury.

Q: Is the advisor or other students allowed to attend the group presentation?

5. A: Yes, but not to interfere. The presentations will be open to the public, thus, students are allowed to invite their families or friends. However, the jury reserves the right to ask them to leave at the beginning of the Q&A session.

Q: Will the jury see the advisor evaluation?
A: No.

Q: Does the report for Project I need to be hardcover?
A: Unlike Project II, this Project I report need not be a hardcover.

Q: Does the report for Project I need to fully cover all suggested sections in the template?
A: No. For instance, the prototype is not a must, thus, the group who did not do any prototype need not write anything in this section.

Q: Who will write the abstract that Dr. Nael needs?
A: Usually the group writes the abstract and the supervisor verifies it before sending it to the committee.

Q: Can the group get an extension to submit the report?
A: They have a hard deadline which is a full day before their presentation that cannot be broken.

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PRESENTATION TIPS

(This is a copy of an ASME publication)

The ideas you implemented in your project will enjoy acceptance by the public first from their quality and second by how well you present them. Uphold the standard of excellence of your project by preparing an interesting and informative presentation. You, the team, control the reaction of the audience. Maintain a favorable reaction by following the suggestions outlined below.

PREPARE A SUCCESSFUL PRESENTATION

Here are some pointers to help you prepare a concise and interesting presentation:

- **Do NOT Read Your Report!**

The written word is for the eye, not the ear. Your audience wants to hear you talk, not listen to you read.

- **Make Notes**

Use index cards. Use one card for each item. When you have followed the advice given below, organize your cards and number them clearly according to the order in which you will use them.

- **Secure the Attention of Your Audience**

1. Make a statement of the purpose of your presentation. Confine it to one simple, declarative sentence. Example: "I want to tell you about a new design for a solar tracker which has resulted in considerable improvement in solar tracking."
2. State a compelling thing about your project. Make it sharp and short. Use a question if possible. Example: "Is it possible to generate enough solar energy to drive a personal transporter?" This will be your opening sentence. Join it to your statement of purpose with a connecting sentence or phrase. Example: "We have made an investigation and _____."

- **Divide Your Project into Main Ideas**

1. State each one in a short sentence on its index card.
2. Arrange them in the most logical order for your listeners to grasp.
3. Add to each a series of keywords or phrases to remind you of what you need to tell your audience about each idea.

- **Use Connective Sentences and Phrases**

The ear cannot check back nor jump ahead as can the eye. Therefore, you must remind your audience of what it has just heard and prepare it for what it is about to hear whenever you go from one idea to another. Example: "Now that you have a clear idea of the benefits of solar energy, it is time to look into the advantages of personal transporter."

- **Summarize**

1. State your subordinate conclusions. Confine them to one sentence if possible, or to a small series of very short sentences. Example: "I think you will agree, then, that poor sealing is a result of self-induced growth of tiny initial leaks. In addition, you will agree that high-pressure steam sealing depends upon…
    1._____
    2._____
    3. _____
2. State your main conclusion. Confine it to one simple sentence. Example: "And I believe you will

conclude with me, that better sealing can be obtained through the use of this new design for valve seals."

- **Time Your Talk**
  Rehearse your speech. Learn to handle your index cards naturally. If you are using slides, allow no more than one minute for any one slide. If you exceed your allotted time limit, cut down on your explanations. Continue to condense until you are within the limit. This will ensure adequate time in the session for discussion.

THINGS TO REMEMBER

- Talk To Your Audience.
- Use Short, Simple Sentences.
- Speak Clearly and With Vitality.
- Speak into the Microphone at All Times.

IT'S UP TO YOU TO MAKE YOUR PRESENTATION A SUCCESS!

APPENDIX A: Final Year Project Advisor Evaluation

Fahad Bin Sultan University
College of Computing

Final Year Project Advisor Evaluation

Project Title: _____ year: _____ Term:_____

Student name (st_1):_____ Student ID_____
Student name (st_2):_____ Student ID_____
Student name (st_3):_____ Student ID_____
Student name (st_4):_____ Student ID_____

No.	Per project		St1	St2	St3	St4
1	1. Identification and formulation of the problem (0-4)	4%				
	2. Level of analysis of the problem and the solutions (0-4)	4%				
	3. Scope and complexity level of the implemented project (0-4)	4%				
	4. Completion of the proposed work (0-4)	4%				
	5. Consideration of health, safety, environment, social, cultural ethical, political, legal, manufacturability, and economics issues (0-4)	4%				
	6. Continuous assessment and attendance for weekly meetings (0-10)	10%				
	Total Marks (30%)					
	Overall recommendation: 4. I recommend this group to present their work ☐ 5. I recommend a fail status (F) ☐ 6. I recommend an incomplete status (IC) ☐					

Advisor name: _____ Signature: _____

APPENDIX B: Final Year Project I Report Template

<table>
<tr><td rowspan="5">Cover Page
font size 16, Times New Roman. 2 line spacing</td><td>Project Title:
font size 20</td></tr>
<tr><td>Date, Semester and Year</td></tr>
<tr><td>Department, College and University:</td></tr>
<tr><td>Supervisors</td></tr>
<tr><td>Students Names and numbers
font size 18</td></tr>
<tr><td>Second Page</td><td>Nature of the project (Design/Simulation):</td></tr>
<tr><td>Third Page</td><td>Abstract
Maximum 300 words; font size 12, Times New Roman. 1.5 line spacing.</td></tr>
<tr><td>Fourth Page</td><td>Pre-requisites (if any): for example C programming

Hardware/Software items to be purchased/learned (if any):
For example Matlab.

Final Product (if any): for example software or hardware product</td></tr>
<tr><td><u>Following Pages</u></td><td><u>Each of the following must be discussed and supported with figures whenever applicable</u>

1. Problem statement/definition.
2. Project scope.
3. Literature / related work review.
4. Functional List
5. Project I plan.
6. System requirements.
7. Analyzed the collected data and system requirements.
8. Database ER and / or Screen Design
9. Data Flow Diagrams
10. Prototype
11. The objectives of Project II
12. Project II plan.
13. Risks
Font size 12, Times New Roman. 1.5 line spacing.</td></tr>
</table>

APPENDIX C: LOG FILE

Fahad Bin Sultan University

مشـــاريـــع السنة الهائية

LOG FILE
Final Year Project

Year: 20--
Date: ---- --, 20--
Term: 1st
Supervisor: Dr. Mohammad A. Mezher

St Name	St ID	Dept	Absentees	Grade/4
			☒	
			☒	
			☒	

Last week tasks

Tasks for next week:

Date of next week's meeting: Next week

Supervisor signature: _____

APPENDIX D: Jury Evaluation Form

Fahad Bin Sultan University
College of Computing

Final Year Project Jury Evaluation

Project Title: _____ Date: _____

Student name (st_1):_____ Student ID_____
Student name (st_2):_____ Student ID_____
Student name (st_3):_____ Student ID_____
Student name (st_4):_____ Student ID_____

Report Evaluation Criteria

No.	Report preparation	5 %	Comments and remarks
1	1. Organization and format 2. Typographical errors 3. Clarity and readability 4. Number of pages and references		
	Total		
2	Report Quality	5%	
	1. Literature survey 2. Project objectives 3. Method of work 4. Conclusions		
	Total		
3	Completion of work	5%	
	Total		
4	**Total Report Mark (15%)**		

Evaluators' Initial _____ _____

Project Presentation Evaluation Criteria

No.	Per project	30%	Comments or remarks			
1	1. Identification and formulation of the problem 2. Level of analysis of the problem and the solutions 3. Scope and complexity level of the implemented project 4. Completion of the proposed work 5. Consideration of health, safety, environment, social, cultural ethical, political, legal, manufacturability, and economic issues					
	Total					
	Sub Total (45%)					
2	Per student		St1	St2	St3	St4
	1. Quality of visual aids, use of charts, graphics and figures.	5%				
	2. Language usage, vocabulary, clarity, and volume of speech.	5%				
	3. Presenter's appearance, eye contact & ability to address audience.	5%				
	4. Effectiveness of response to questions and comments.	5%				
	5. Student knowledge with regard to the overall project	5%				
	Total	25%				
3	**Total Marks (70%)**					
4	General comments:					

Evaluator 1 name: _____ Signature: _____

Evaluator 2 name: _____ Signature: _____

APPENDIX E: Report Cover Page

Fahad Bin Sultan University
College of Computing

Final Year Projects Report

TITLE

Prepared by:
Students' Names and numbers

Supervised by:
Supervisor's Name

June 2024

TITLE Times Font-size 18

FINAL YEAR PROJECT

DATE

Students Names

Supervisor's Name

FAHAD BIN SULTAN UNIVERSITY

TABLE OF CONTENTS

A report on the project should be submitted (electronically with a hard copy) after the project presentation. The report must be produced using a word processor, spreadsheet, or any other software package. All Figures should be drawn using a computer-based graphics package, e.g., AutoCAD. The report must include all essential ideas and concepts used in the development of the project as indicated below.

1. Defining the Problem and Objective

This pivotal section of your FYP report, "Defining the Problem and Objectives," serves as the foundation of your project. Begin by presenting the problem in a manner that highlights its importance and relevance to your field of study or the broader community. Following this, delineate the objectives of your project, providing clear, measurable goals. This ensures that your project's scope is well-defined and its intended impact is understood. Guidance for Students: When writing this section, consider the following:

- State the problem clearly and justify why it is worth solving.
- List the objectives of your project, making sure they are specific, measurable, achievable, relevant, and time-bound (SMART).

2. Introduction

This section summarizes the existing literature on the problem at hand. It should include descriptions and specifications of related products and patents, a summary of related journal articles and books, etc. This section should also include a brief description on the chapters to follow.

3. Literature Review and Contextual Investigation

Section Introduction: The "Literature Review and Contextual Investigation" section is your opportunity to showcase the depth of your research and understanding of the project's domain. Conduct a thorough review of existing literature, including academic papers, industry reports, and relevant theoretical models. Critically analyze these sources to identify gaps that your project aims to address. This section should also explore similar products or solutions, offering a comparative analysis. Guidance for Students: Your literature review should:

- Summarize and synthesize key findings from existing research.
- Highlight the current state of knowledge and any gaps or challenges.
- Discuss similar projects or products, providing a critical comparison.

4. System Description

This section should include a brief description of all subsystems (mechanical, electrical, etc.) of which the system consists, including all pertinent relations and calculations, operation of the various components,

and a flowchart with brief description of the developed algorithm as applicable. It should also include schematic diagrams of all circuits used in the system showing proper connection between circuit elements with all elements drawn and labeled according to standard symbols and labels used for electronic components. Refer in the text to the circuit components as labeled on the circuit diagram. For example: "The 555 timer (U4)…" For labels use:

D1, D2, …..	for diodes;
Q1, Q2, …..	for transistors;
RY1, RY2, …	for relays;
R1, R2, …..	for resistors;
A1, A2, ….	for amplifiers;
B1, B2, ….	for batteries;
LED1, LED2..	for light emitting diodes;
L1, L2,..	for lamps;
C1, C2,..	for capacitors;
U1, U2,…	for ICs;
T1, T2,..	for transformers
F1, F2, ..	for fuses
S1, S2, ..	for switches
BR1, BR2,.	for bridge rectifiers
SCR1, SCR, …	for silicon controlled rectifier
M1, M2, ..	for motors

5. Table of parts list (Bill of Materials BOM)

This table should include all components used in the device, including part number and manufacturer, quantity used, etc.

6. Discussion of major subsystems used

This section elaborates on the specific subsystems that were used, the operation of a dedicated IC, important features that were implemented, and so on.

7. Individual Contributions and Teamworks

This section is essential for recognizing each team member's efforts. Detail the roles, responsibilities, and contributions of each member, highlighting how collaborative efforts were orchestrated to achieve the project goals.

Guidance for Students: Ensure to:

- Clearly define each member's role and contributions.
- Reflect on the team dynamics and how they influenced the project.

8. Research Hypothesis and Investigations

For projects with a research component, this section is where you articulate your research question or hypothesis and describe the methodology used to explore it. Present your findings and analyze them in the context of the hypothesis.

Guidance for Students: This section should:

- Clearly state the research hypothesis.
- Detail the methodology and present the findings.
- Analyze the results in relation to the hypothesis.

9. Utilization of Development Tools

This section should enumerate the software, hardware, frameworks, or methodologies utilized throughout your project. Justify the selection of each tool and discuss how it facilitated the project's development process, enhancing efficiency, accuracy, or productivity. Guidance for Students: Include:

- A list of tools and technologies used in the project.
- A rationale for each tool's selection and its impact on the project.

10. Verification and Validation Processes

These are crucial for ensuring the quality and success of your project. Describe the methods and techniques used for verifying the project's outputs and validating them against the defined requirements and objectives. This might include testing, peer review, and feedback from stakeholders.Guidance for Students: Discuss the following:

- Describe the verification and validation techniques used.
- Explain how these processes contributed to meeting the project's objectives.

11. Project Lifecycle Documentation

This section is essential for understanding the progression of your project from inception to completion. Describe each stage of the project lifecycle, including conception, planning, execution, monitoring, and closure. Detail the methodologies and approaches used, alongside a timeline of milestones and deliverables.Guidance for Students: For this section, ensure you:

- Outline the project's lifecycle stages and the methodologies applied.
- Provide a timeline, including key milestones and deliverables.

12. NARRATIVE

The narrative may include as many sections as deemed relevant to the work done. The following are examples of sections that may be included.

13. PROJECT SUMMARY

This section should include a summary of the overall project, methodologies used, and project outcome.

14. RECOMENDATIONS FOR FUTURE ENHANCEMENT

In this section, provide your thoughts on improving the system and the requirements to make it a reality.

15. REFERENCES AND CITATIONS

This section is fundamental to academic integrity and must adhere to a standardized citation style. This ensures that all sources of information, data, or theoretical frameworks used throughout your project are properly acknowledged. List the books, websites, magazine articles, etc. that were used to obtain information cited in the report. When compiling your references:

- Use a consistent, recognized academic citation style (e.g., APA, MLA, IEEE).
- Ensure every source mentioned in the report is included in this section.

16. APPENDICES

This section should include reference materials such as component specs, computer code, detailed drawings, photos, etc.