

**FACULTY OF ELECTRICAL ENGINEERING  
UNIVERSITY TEKNOLOGI MARA  
PULAU PINANG**

**FINAL REPORT:  
BICYCLE USB CHARGER**

**NASUHA BINTI ISKANDAR**

**2014288462**

**NURUL AMILA ASYIKIN BINTI AZAMI**

**2014464182**

**SUPERVISOR:**

**MADAM AIZA MAHYUNI BINTI MOZI**

## ACKNOWLEDGEMENT

*In the name of Allah, the most Gracious, the most Merciful*

First of all, our highest attitude and thank to the almighty and the most merciful Allah S.W.T for giving us the big opportunity and chance to settle down this project. Without His help, for sure we cannot do this project successfully. Our effort in this project was also supported by many people around us especially our family, friends and also our lecturers. We also want to thank to our supervisors, Madam Aiza Mahyuni Binti Mozi. She had encouraged us to do well and completed this project. She also gave us so many valuable advices and supports us to the end.

Besides, we would thank the authority of Universiti Teknologi Mara Pulau Pinang (UITMPP) for providing us with good equipments to make this project. Without the given equipments, maybe this project is quite difficult to be done. We also want to give our appreciation to our beloved parents for their non-stop supports and also their encouragements. In addition, we also want to give our special gratitude to our friends for their opinions and critics in our project.

Our acknowledgement also goes to our lecturers for their abilities in order to help us to complete this project. The guidance and support received from all the members are the main character to finish our project.

## TABLE OF CONTENTS

ACKNOWLEDGEMENT.....	i
TABLE OF CONTENTS .....	ii
LIST OF FIGURES .....	iv
LIST OF TABLES .....	vi
LIST OF ABBREVIATIONS .....	vii
ABSTRACT .....	viii
CHAPTER 1 INTRODUCTION .....	1
1.1 Background of Study .....	1
1.2 Problem Statement.....	3
1.3 Objectives of Research.....	4
1.4 Scope of Study.....	5
CHAPTER 2 MATERIALS AND METHODS .....	6
2.1 Methodology.....	6
2.1.1 Design Flowchart.....	8
2.1.2 Flowchart of the Project .....	10
2.1.3 Block Diagram of the Project.....	11
2.2 Equipment and Component .....	12
2.3 Experiment Setup.....	22
CHAPTER 3 CIRCUIT DESIGN AND OPERATIONS .....	24
3.1 Schematic Diagram.....	24
3.1.1 Software Development.....	25
3.2 Circuit Operations.....	29
3.3 PCB Designs.....	30
CHAPTER 4 RESULT AND DISCUSSION.....	41
4.1 Software Simulation Result.....	41

## **ABSTRACT**

The bicycle USB charger is an environmental friendly project, as the bicycle peddles the output of the project will produce a steady 5v. Living expenses for transportation has been increasing and it shows no signs that it is going to decrease, this project is for those who would like to save some money and save the environment. The project was first tested in the simulation to determine whether the circuit is working properly. After the simulation was running properly, the next step is fabrication, drilling and soldering.

The objective of the final year project is all archive, the project went well, and the project produces a voltage even though there would be a few things that could change in the project to make it better and more reliable to the user.

# CHAPTER 1

## INTRODUCTION

### 1.1 Background of Study

Cycling is a healthy lifestyle. Many years ago, there were very few people that used car for their transportation, most of them will walk or cycle to their destination, even when the destination was quite a distance. The good side effect in that era was people are much healthier even though the journey took twice the time to arrive; they have their daily need of exercise. Unlike now, technologies are advancing whereby people can afford a lavish lifestyle such as owning a car and some people will use the car even when they wanted to go to a place that is in a walking distance. But lately, it has been a popular alternative for people to go around nearby places to do their daily activities. This is due to the price of petroleum being too expensive, common traffic congestion and realization to protect nature. It is not surprising that in the future, cycling will be use as the main transportation once again.

By making a full use of the situation, it is better to have a power supply on the go. It is rare to see a dynamo on a bike even though the dynamo itself is quite cheap to buy. This is because cyclers are unlikely to cycle before the sun rises because of safety reasons, which is a waste because cycling for a day can produce a lot of electricity with the help of dynamo. Rather than to use dynamo for having a light source, why not use it as a charger? Dynamo is a generator that can generate electricity [1]. Therefore, it is very convenient to cycle while being able to charge a mobile phone. It is also an environmental friendly as it only needs to pedal to produce currents. Humanity can save a lot of energy if they use bicycle USB charger [2].

The bicycle USB charger can make the daily life much more efficient especially to the people who cycle often which also let them feel the accomplishment of feeling healthy after a long day of cycle and you having a full battery. It can also help to decrease the living expenses as it can only produce currents by peddling. It is in fact a renewable energy to those who want to save on electricity.