SEMESTER: JULY, 2021

PROJECT: ECEG-5704 POWER ELECTRONICS (PE)

This project must be carried out in a **group of 2 (max) students**. Make sure that it is really a **group work**. There will be both ***group*** and ***individual*** evaluations. Since it carries ***30%*** of your course work, you should put extra effort to deliver a decent output.

Objective

The objective of this project is to demonstrate your understanding, knowledge and skills in applying Power Electronic Design Techniques and tools in circuit simulator platforms to investigate design responses, verify functionality and analyze performances. It also gives students chance to improve their literature review abilities, technical report writing and referencing in a professional format. This project further attests students' ability to work in groups improving their critical thinking, soft skills, cooperation, time management, teamwork, and communication skills.

Task

Your team's task for the project is to design and simulate ***SMPS (Switched Mode Power Supply*** with a ***proper protection system*** for the purpose of multiple load application. The SMPS should have a multiple voltage output of 5V, 12V and 24V. The 5V output will be used for remote control car battery charger. This application needs 2A of current while for 12V output, it will be used for CCTV and the current rating is 5A. For 24V output, it will be used for a 24V spotlight with a current of 3.75A to light up the spotlight. You are also expected to carry out an in-depth literature review, detailed simulation, analysis and write full technical report (group based). In your work, you have to refer at least 15 literatures and list them under references, in standard ***IEEE*** format. There will be also

project presentation and demonstration, ***1 week*** before your final examination. The deadline for the project's technical report submission is ***1 week*** before the ***final examination period***. Late submission will ***NOT*** be considered at all.

As final year students, you are expected to apply your highly developed thought processes to demonstrate good understanding and insight to generate fine output. Use and write your own words in your report. A severe penalty awaits those who **plagiarize**.

The project report outline should ***at least*** include:

1. Abstract
2. Introduction
3. Literature review
4. Description on the operation of the circuit
5. Application of the circuit – Give as many real applications as possible and detail.
6. Simulation & Results – **Extra work** will get **extra mark**.
7. Discussions –A detailed discussion of principles and topics is expected.
8. Conclusion
9. References
10. Each member contribution

You have full freedom on how to arrange and deliver your report provided all the information above is included. However, remember that the report must be ***neatly and systematically arranged***. Limit your pages to a maximum of ***20 pages*.**

Project deliverables

1. Full report: Both hard and soft copy
2. Simulation demonstration.
3. Project presentation.