نموذج وصف المقرر

1. Course name :					
Power Electronics					
2. Course code :					
Power Electronics					
3. Semester / year :					
Third Year					
4. Description Preparation Date :					
2024-9-16					
5. Available Attendance Forms: weekly-lecture					
Weekly Lecture					
6. Number of Credit Hours (Total) / Number of Units (Total)					
6 unit, 2 theoretical, 2 practical per week- 120hour					
7. Course administrator's name (mention all, if more than one name)					
Rawia Moaazer Esmail					
8. Course Objectives					
Course Objectives •	To teach students the fundamental principles of power electronics, which is concerned with converting and controlling electrical energy efficiently to meet different needs. They conver current between AC and DC, change voltage levels, control motors, and support renewable energy sources. The goal is to reduce energy loss and increase efficiency.				
9. Teaching and Learning Strategies					
Direct Instruction	Interactive Teaching	Problem-Based Learning	Collaborative Teaching	Active Learning	Adaptive Learning

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1^{st}	2 theoretical, practical per week	The student understands subject	Introduction to Power Electronics	Theoretical , Practical	Quiz
2^{nd}, 3^{rd}	2 theoretical, practical per week	The student understands subject	Switching devices , power&control device	Theoretical , Practical	Quiz
, 5^{th}, 4^{th}	2 theoretical, 2 practical per week	The student understands subject	Types characteristics, rat (diode, transistor .	Theoretical , Practical	Quiz
, 7^{th}, $8^{th}6^{th}$	2 theoretical, practical per week	The student understands subject	Methode of turnin -on & turing -off	Theoretical , Practical	Quiz
, $9^{th}10^{th}$	2 theoretical, 2 practical per week	The student understands subject	Protection of powe devices	Theoretical , Practical	Quiz
, 11^{th}, 12^{th}	2 theoretical, 2 practical per week	The student understands subject	Triggering &b drive circuits	Theoretical , Practical	Quiz
, 14^{th}, 15^{th},13^{th}	2 theoretical, 2 practical per week	The student understands subject	Controlled rectifie 1-phase& 3-ph circuits	Theoretical , Practical	Quiz
, 18^{th}, $16^{th}17^{th}$	2 theoretical, 2 practical per week	The student understands subject	Half-wave &f wave circuits	Theoretical , Practical	Quiz
, 19^{th}, $20^{th}21^{st}$	2 theoretical, 2 practical per week	The student understands subject	D.C choppers	Theoretical , Practical	Quiz
, $22^{tndh}23^{rd}$	2 theoretical, 2 practical per week	The student understands subject	A.C phase controll	Theoretical , Practical	Quiz
, $24^{th}25^{th}$, 26^{th}	2 theoretical, 2 practical per week	The student understands subject	Invertors	Theoretical , Practical	Quiz
, 28^{th}, 27^{th}	2 theoretical, 2 practical per week	The student understands subject	Some applications -uninterruptible power supply	Theoretical , Practical	Quiz
, 29^{th}, 30^{th}	2 theoretical, practical per week	The student understands subject	(UPS) b- switch mode power sup (SMP)	Theoretical , Practical	Quiz

11. Course Evaluation

1- Periodic and final theoretical exams

2- Periodic and final practical exams
3- Quizzes
4-Homework assignments

12. Learning and Teaching Resources

Theoretical Lectures	er Electronics Introduction: Basic concepts of power electronics, es of converters, and applications - Reference: Muhammad H. Rashid, "Power Electronics: Circ Devices and Applications", Pearson
Practical Lectures and Laboratory	Practical labs using simulation of electronic circuits for converters as (inverters, AC to DC converters, DC to DC converters, and to AC converters) - Power control and efficiency measurement.
Group Discussions	1- Active Participation: Discussing real-life applications of power electronics 2- Sharing Knowledge: Students share insights on renewable energy and power conversion 3- Exchange of Ideas: How to improve efficiency in power systems 4- Problem-Solving: Solving issues related to heat dissipation and switching losses 5– Interaction: Group-based interactive sessions for troubleshooting circuits
Case Study	1- Background Information: Overview of a po electronics applications 2- Problem Identification: Identifying challenges power conversion and control 3- Analysis: Analyzing efficiency and power qua issues 4- Solutions/Recommendations: Proposing methods enhance performance. 5– Conclusion: Conclusion: Summarizing the findi and potential future improvments