M.Sc. in Power Electronics and Drives Engineering
Department of Electrical Engineering
Pulchwok Campus

1. Program Overview

The MSc program in Power Electronics and Drives is an exciting opportunity for students looking to specialize in electrical engineering. The program provides a comprehensive understanding of the subject, covering topics such as power semiconductor devices, electric machines and drives, and renewable energy systems. With an emphasis on hands-on experience and practical knowledge, students gain the skills and expertise needed to design, analyze, and optimize power electronics and drives systems.

As a graduate of this program, you will be highly sought after in industries such as renewable energy, electric vehicles, aerospace, and industrial automation. With the growing demand for professionals in this field, a degree in Power Electronics and Drives can open doors to rewarding and challenging career opportunities. Join us to become an electrical engineering expert and help shape the future of sustainable energy. Apply today and take the first step towards an exciting and fulfilling career in Power Electronics and Drives.

2. Program Structure:

The program is a two-year course of study, consisting of 4 semesters. The curriculum includes core courses, electives, project and a thesis. Students will also have the opportunity to participate in industrial internships and research projects. The total credit for the master's program will be 60 credits including credits for core and elective courses, credits for projects and a thesis.

Year : I Part I

Teaching Schedule				Examination Scheme			Total	Remark
SN	Course Code	Course Title	Credit	Assessment Marks	Final Exam			
					Duration Hours	Marks		
1	EE	Optimization Techniques	4	40	3	60	100	**Core**
2	EE	Analysis of Electrical Machines	4	40	3	60	100	**Core**
3	EE	Advanced Power Electronics	4	40	3	60	100	**Core**
4	EE	Advanced Power System Analysis	4	40	3	60	100	**Core**
		Total	16	160		240	400	

Year : I Part II

Teaching Schedule				Examination Scheme			Total	Remark
SN	Course Code	Course Title	Credit	Assessment Marks	Final Exam			
					Duration Hours	Marks		
1	EE	Modelling and Control of Renewable Energy	4	40	3	60	100	**Core**
2	EE	Modelling and Control of Electric Drives	4	40	3	60	100	**Core**
3	EE	Elective-I	4	40	3	60	100	
4	EE	Elective-II	4	40	3	60	100	
		Total	16	160		240	400	

Year: II Part I

Teaching Schedule				Examination Scheme			Total	Remark
S. N.	Course Code	Course Title	Credit	Assessment Marks	Final Exam			
					Duration Hours	Marks		
1	EE	Elective -III	4	40	3	60	100	
2	EE	Elective -IV	4	40	3	60	100	
3	EE	Project	4	100	-	-	100	
		Total	12	180		120	300	

Year: II Part II

Teaching Schedule				Examination Scheme			Total	Remark
S. N.	Course Code	Course Title	Credit	Assessment Marks	Final Exam			
					Duration Hours	Marks		
1	EE	Thesis	16	100	-	-	100	

Elective I:

- **i.** Electro-Magnetic Field Computation and Modelling
- **ii.** Distribution Generation Technology and Microgrid
- **iii.** Advanced Power Semiconductor Devices

Elective II:

- **i.** Special Electrical Machines
- **ii.** Solid State Power Controllers
- **iii.** Reliability in Power Electronics and Drives

Elective III:

i. Electric Vehicle and Power Management
ii. Microcontroller and FPGA-Based Power Electronics Controller
iii. High Voltage DC System
iv. Non-Linear Dynamics for Power Electronic Circuits

Elective III:

i. Industrial Automation
ii. Artificial Intelligence (AI)
iii. Railway Power Supply System and Traction
iv. Power Quality

3. Scope and Opportunities of PED:

i. Renewable Energy: Graduates can work on designing and optimizing renewable energy systems such as solar and wind power plants.
ii. Electric Vehicle Industry: Power electronics and drives experts are in demand to design and optimize electric vehicle powertrain systems.
iii. Power Generation: Power electronics and drives are essential components in power generation systems, including thermal power plants, hydroelectric power plants, and wind power plants.
iv. Industrial Automation: Graduates can work in a variety of industrial automation applications, including factory automation, process control, and robotics.
v. Aerospace: Power electronics and drives play a critical role in aerospace applications, such as spacecraft power systems, avionics, and flight control systems.
vi. Research and Development: Graduates can work on cutting-edge technologies in the field, including developing new materials and advanced control algorithms.
vii. Further Education: Graduates can pursue further studies, such as a Ph.D. in the field, to advance their knowledge and expertise in power electronics and drives.
viii. International Opportunities: Power electronics and drives are global industries, and graduates can expect to find employment opportunities in various countries worldwide, providing the opportunity to work in diverse cultural and professional environments.

4. Laboratory:

i. Power Electronics and Drives Lab
ii. Computer Simulation Lab
iii. Real-time Simulation Lab

5. Contact Information:

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