LUMS
A Not-for-Profit University

Learning Without Borders

MS POWER ENGINEERING AND SMART GRIDS

SYED BABAR ALI
SCHOOL OF SCIENCE AND ENGINEERING

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Founded in 1985 as a not-for-profit, LUMS has pioneered innovative educational trends. The expanse of research and teaching at LUMS offers its community 'Learning Without Borders' by breaking academic, geographic, and socio-economic barriers to enhance students' academic exposure and make education accessible to all.

The Syed Babar Ali School of Science and Engineering (SBASSE) at LUMS is at the forefront of research and teaching in Pakistan. The MS programmes at SBASSE are rigorous and designed to impart specialised professional and research-oriented training to students. All SBASSE departments offer at least two options to choose from: MS-by-Coursework or MS-by-Thesis.

WHY MS POWER ENGINEERING AND SMART GRIDS AT LUMS?

LUMS AND SBASSE FOSTER A DYNAMIC LEARNING ENVIRONMENT

QS WORLD UNIVERSITY RANKINGS BY SUBJECT

- #401-450
  Computer Science and Information Systems
- #351-400
  Engineering – Electrical and Electronics
- #401-450
  Engineering and Technology

The MS Power Engineering and Smart Grids (PESG) programme's primary objective is to impart engineering design skills in power and smart grids, and to prepare graduates for electricity market transition in Pakistan. Graduates of the programme will be able to respond quickly to changes in the power sector and strategically build solutions for evolving power systems, smart grids, and related applications to allow better organisational decision-making.

PROGRAMME **HIGHLIGHTS**

- Merit scholarships
- Multidisciplinary environment
- Rigorous curriculum
- World-class facilities
- Top-quality research
- Modern teaching methodology

The evening programme is designed for recent Electrical Engineering graduates, as well as seasoned industry professionals in power systems engineering and/or smart grids. The curriculum offers a number of opportunities in a variety of dynamic, rewarding, and demanding industries that are frequently in need of experts:

- Power distribution companies
- Power generation companies
- Renewable energy sector
- Smart grid sector
- Government sector (NTDC, NEPRA)
- Power engineering companies
- Central Power Purchasing Agency (CPPA-G)

PROGRAMME STRUCTURE

Students pursuing the MS PESG degree are required to complete 30 credit hours by taking core courses and major electives, as listed below:

CORE COURSES

- Renewable Energy Systems
- Power Systems Operation and Control
- Power Systems Protection and Stability
- Smart Grid Technology and Applications
- Electricity Markets

MAJOR ELECTIVE COURSES

- Battery Energy Storage Systems
- Power Electronics
- Digital Control Systems
- Modelling and Control of Electric Machine Drives
- Convex Optimisation
- Software Engineering for Smart Grids
- Machine Learning
- Advanced Power Systems
- Socio-Ecological Systems and Sustainability

Students are required to select one of three options to complete the degree:

- MS with Coursework option: 5 core courses (15 credit hours) and 5 major elective courses (15 credit hours)
- MS with Project option: 5 core courses (15 credit hours), 4 major elective courses (12 credit hours), and MS project (3 credit hours)
- MS with Thesis option: 5 core courses (15 credit hours), 3 major elective courses (9 credit hours), and Thesis (6 credit hours, spread across at least two semesters)

Note: MS PESG is an evening programme, with core courses and most elective classes scheduled after 3 pm.

ACADEMIC BACKGROUND

A minimum of 16 years of education is required for applying to the MS Power Engineering and Smart Grids programme. Applicants are expected to have obtained their Bachelor's (or Master's) degree from national or foreign institutions accredited or recognised by the Higher Education Commission (HEC), Pakistan.

Applicants who have obtained their degrees from institutions not listed with the HEC, Pakistan, will be required to obtain an Equivalence Certificate from the HEC. As a minimum academic performance, all applicants must have a CGPA of at least 2.4 (on a scale of 4) or at least 60% marks in all university-level degrees (i.e., 4-year Bachelor's degree, or 2-year BSc degree and 2-year MSc degree).

Applicants must have their Bachelor's (or Master's) degree in any one of the following areas:

- Electrical Engineering
- Power Engineering
- Electronics Engineering or Electronics
- Engineering/Applied Physics
- Mechatronics Engineering
- Computer Engineering
- Other engineering disciplines peripherally related to Power, Electronics, or Electrical Engineering

ADMISSION TEST

LOCAL APPLICANTS

Applicants are required to take the following two admission tests in order to be considered for Fall 2025 admission:

- LUMS Graduate Admission Test (LGAT)
- LUMS SBASSE Subject Test (related to Electrical Engineering and Power and Energy Systems subjects)

INTERNATIONAL APPLICANTS

Applicants residing outside Pakistan are required to take the GRE General Test through the Educational Testing Service (ETS), USA.

For further information, please visit www.ets.org. International applicants will be assessed based on their GRE General Test score only.

ADMISSION CRITERIA

Admission is purely merit-based and rests solely on the following criteria:

- Academic Record
- Performance in Admission Tests
- Online Application Submission
- Online Submission of Supporting Documents and Fee Payment
- Application Review
- Interview Performance (if shortlisted)

Note: These are the minimum criteria applicants must fulfil to be eligible to apply. Meeting these criteria does not guarantee admission to LUMS.

Scan for more information

GULL RUKH

MS PESG Student

“As a student in the MS PESG programme, my journey has been both enlightening and transformative. Although I initially lacked academic confidence, the programme’s supportive faculty and meticulously designed curriculum have empowered me to build a strong foundation in sustainable energy systems. This nurturing environment has inspired me to overcome my initial challenges and unlock my full potential. I aspire to leverage the knowledge and skills gained through this programme to address pressing energy challenges, develop innovative sustainable solutions, and contribute to a greener, more equitable future for society. This experience is truly shaping me into a catalyst for positive change.”

FINANCIAL **SUPPORT**

- Merit scholarships
- LUMS Financial Aid (for local applicants only) aims to reduce financial barriers to higher education, nurturing an inclusive and vibrant community where academically distinguished students can realise their full potential and achieve their professional aspirations. At the graduate level, financial aid is provided in the form of an interest-free loan.

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DHA, LAHORE CANTT. 54792, LAHORE, PAKISTAN
+92-42 111-11-LUMS (5867) Ext: 2177
admissions@lums.edu.pk
www.lums.edu.pk

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