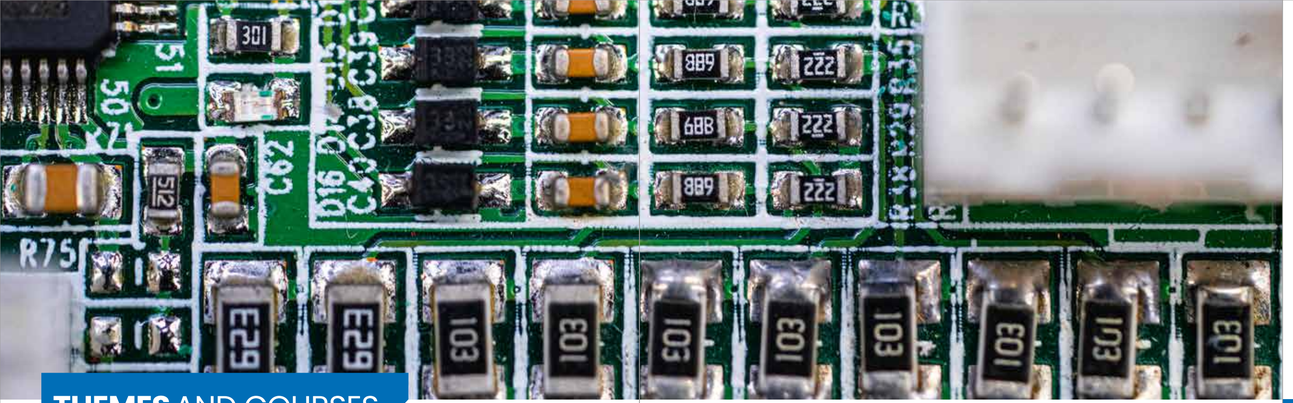

THEMES AND COURSES

The Department of Electrical Engineering has gradually grown to having 21 full-time PhD faculty members who teach and direct research. The MS DES programme comprises core and major elective courses from the Digital IC Design and Embedded Systems Design domains. Students may expand their fundamental domain knowledge in an application area of their choice from different research labs and clusters, such as:

- **DATA (AI HARDWARE AND THEORETICAL FOUNDATIONS)**
  - Electronics and Embedded Systems Lab
  - Smart Data, Systems, and Applications (SDSA) Lab
  - Signal, Image, and Video Lab
  - Cyber Physical Networks (CyPhyNet) Lab
  - Clinical and Translational Imaging Lab
  - Networks and Communications Lab
- **LIFE (BIOMEDICAL DEVICES AND POINT-OF-CARE HEALTHCARE)**
  - Semiconductor and Nanoelectronics Devices Lab
  - Clinical and Translational Imaging Lab
  - Signal, Image, and Video Lab
  - Bio-Agri Photonics Lab
- **SUSTAINABILITY (SYSTEMS VIEW OF THE WATER-ENERGY-FOOD NEXUS)**
  - Semiconductor and Nanoelectronics Devices Lab
  - Centre for Water Informatics and Technology (WIT)
  - CyPhyNet Lab
  - Energy and Power Systems Lab
  - Advanced Communications (AdCom) Research Lab

ADMISSION **CRITERIA**

Admission is purely merit-based and rests 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

MUHAMMAD MUDASSER LATIF MINHAS

MS DES Student

"The MS DES programme at LUMS has been an incredible journey, filled with challenges and rewards. The campus houses state-of-the-art facilities, and the professors, recognised experts in their fields, are deeply committed to their responsibilities. The curriculum strikes a perfect balance between theoretical knowledge and practical application. Each course is thoughtfully designed to bridge the gap between academic concepts and real-world practices, aligning seamlessly with my professional goals. LUMS is providing me with the essential skills and knowledge to thrive in the rapidly evolving tech industry."

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.
- External scholarships: Semiconductor Industry Fellowship (SIF) sponsored by 10xEngineers (support and eligibility for these vary depending on the donor)
- Options to work as Research or Teaching Assistants (subject to availability)

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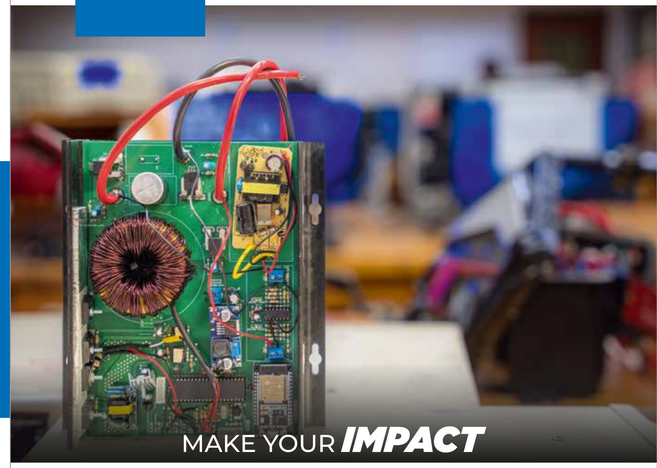
Learning Without Borders

MS DIGITAL AND EMBEDDED SYSTEMS



SYED BABAR ALI SCHOOL OF SCIENCE AND ENGINEERING

SYED BABAR ALI SCHOOL OF SCIENCE AND ENGINEERING

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 DIGITAL AND EMBEDDED SYSTEMS AT LUMS?

LUMS AND SBASSE FOSTER A DYNAMIC LEARNING ENVIRONMENT

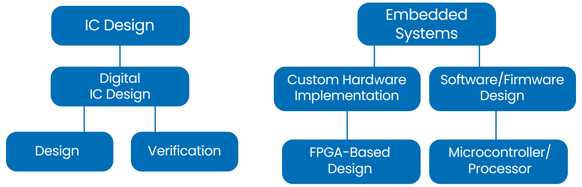
QS WORLD UNIVERSITY RANKINGS BY SUBJECT

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

The MS Digital and Embedded Systems (DES) evening programme has been designed to address local rising industry needs and train students in designing digital integrated circuits (IC) using industry-standard IC design tools and methodologies. Additionally, it aims to enable students to develop themselves to keep up with the ever-evolving field of embedded systems.

PROGRAMME CONCENTRATIONS

The DES programme has been built around two major concentrations that correspond to IC design and embedded systems in general. The figure below shows the major thematic components that are covered in this specialised programme:



PROGRAMME STRUCTURE

Students must fulfil 30 credit hours of MS degree requirements. The overall course structure and details are as follows:

CORE COURSES

- Computer Architecture
- Digital Systems Design and Lab
- VLSI Design
- Embedded Systems

MAJOR ELECTIVES*

- Advanced VLSI Design
- Design Verification
- Mixed Signal Design
- VLSI for DSP Algorithms
- High Level Synthesis
- Custom IC Design

APPLICATION ELECTIVES*

- Deep Learning
- Machine Learning
- Mobile Robotics
- Image and Video Coding
- Digital Image Processing
- Intelligent Systems
- Advanced Operating Systems
- Internet of Things

*2-3 courses (6-9 credit hours) should be taken from these, as well as other elective courses recommended by the departmental Graduate Programme Committee.

PROJECT/THESIS/NON-THESIS

Any one of the following options may be selected:

- Two-semester-long MS Thesis
- One-semester-long MS Project
- MS-by-Coursework

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