

MS DIGITAL & EMBEDDED SYSTEMS

Syed Babar Ali School of Science and Engineering

SAMI ULLAH SAQIB

MS DIGITAL & EMBEDDED SYSTEMS STUDENT

“The MS DES programme at LUMS has been a transformative journey, blending cutting-edge courses with exceptional facilities and expert faculty. It's a perfect combination of theory and practical application, equipping me with advanced skills in digital and embedded systems. Students are held in high esteem, and their genuine concerns are efficiently addressed. This programme is shaping me into a proficient professional, aligning perfectly with my career goals in high-tech industries.”

THEMES AND COURSES

The Department of Electrical Engineering has gradually grown to 21 full-time PhD faculty members who teach and direct research. The programme comprises core and major elective courses from the Digital IC Design and Embedded Systems Design domain. The 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 Test
- Application Review
- Submission of complete online application, application processing fee and supporting documents by the stipulated deadline
- Interview Performance (if shortlisted)
- Letters of Recommendation

Note: This is the minimum criteria that applicants need to fulfil in order to be eligible to apply. Fulfilment of this criteria does not guarantee admission to LUMS.

Scan for more information



FINANCIAL SUPPORT

- Merit scholarships
- LUMS interest-free loan that covers partial to full tuition fee expense (only for local applicants)
- External scholarships: Semiconductor Industry Fellowship (SIF) sponsored by 10xEngineers (support and eligibility for these scholarships vary depending on the donor)
- Options to work as Research or Teaching Assistants (subject to availability)



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#LearningWithoutBorders



وہی جہاں ہے تیرا جس کو تو کرے پیدا
علامہ اقبال

WHY MS DIGITAL & EMBEDDED SYSTEMS AT LUMS?

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.

Syed Babar Ali School of Science and Engineering (SBASSE) at LUMS is making significant strides in the experimentation of teaching and learning, and making impactful contributions to science and technology. 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.

LUMS AND SBASSE FOSTER A DYNAMIC LEARNING ENVIRONMENT

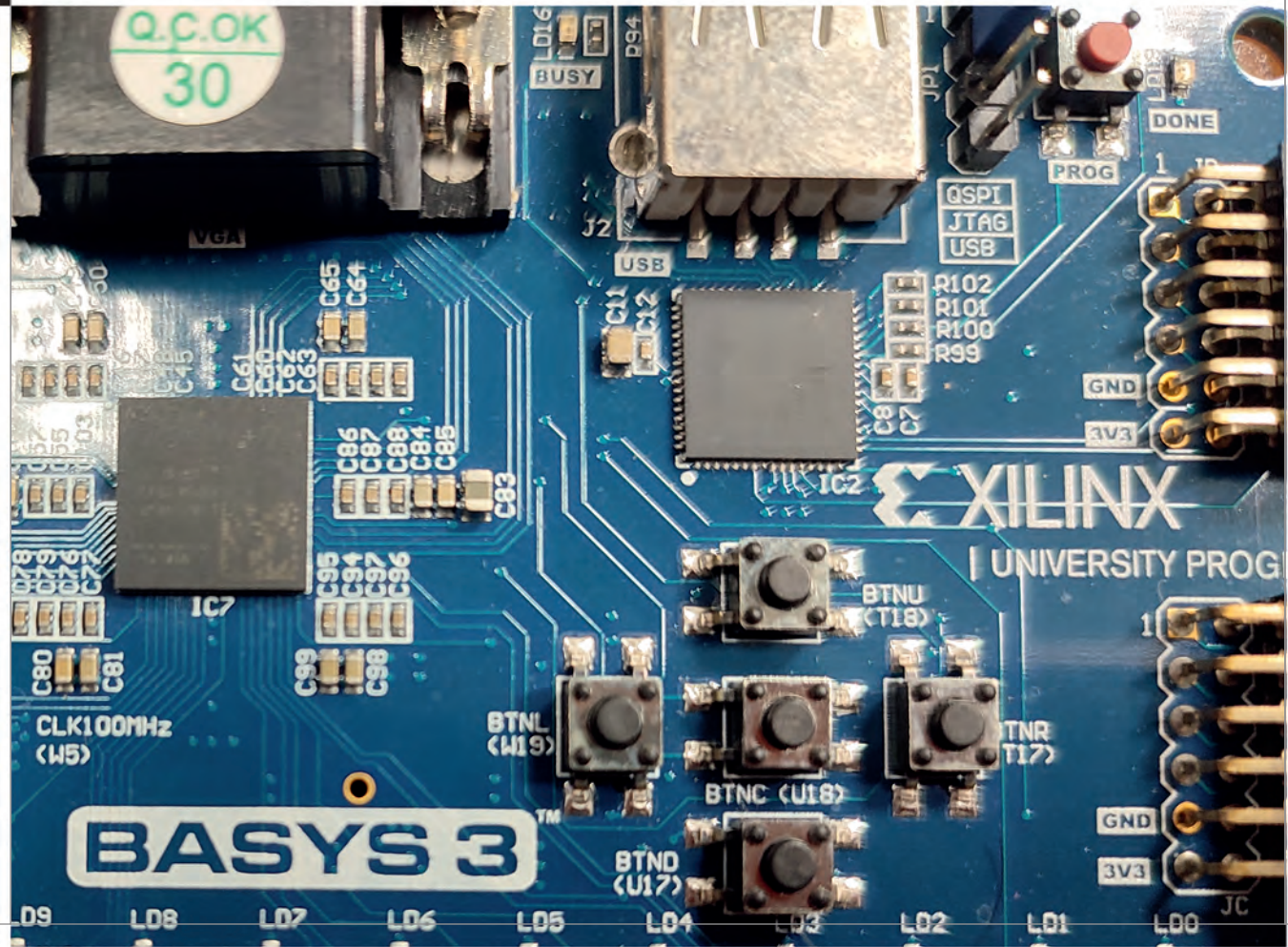
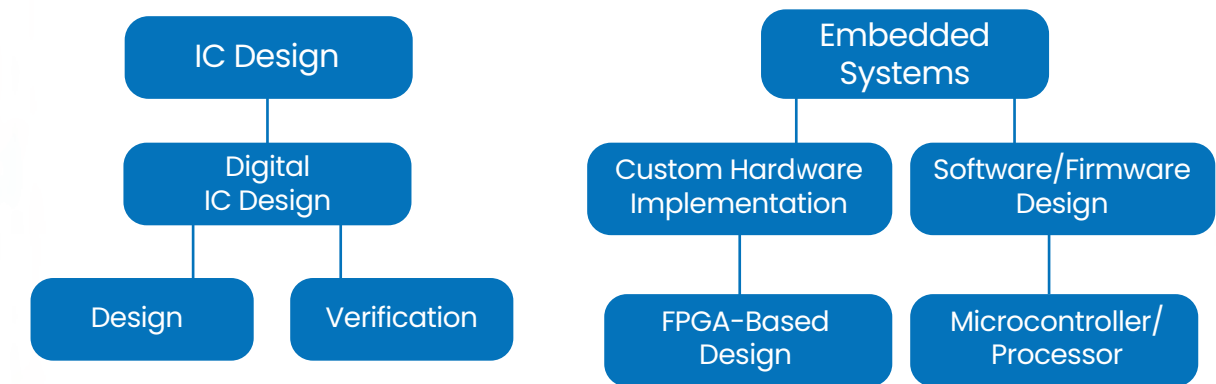
QS WORLD UNIVERSITY RANKINGS BY SUBJECT

- #301-350 Computer Science and Information Systems
- #351-400 Engineering – Electrical and Electronics
- #401-450 Engineering and Technology
- #501-550 Physics and Astronomy

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

PROGRAMME CONCENTRATIONS

The Digital and Embedded Systems programme has been built around two major concentrations that correspond to digital integrated circuits (IC) design and embedded systems in general. The figure below shows the major thematic components that will be covered in this specialised programme:



PROGRAMME STRUCTURE

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

CORE COURSES

- Computer Architecture
- Digital System 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

Other major elective courses recommended by the departmental Graduate Programme Committee (GPC)

*2-3 courses (6-9 credit hours) should be taken

APPLICATION ELECTIVES*

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

Other application elective courses recommended by the departmental GPC

*2-3 courses (6-9 credit hours) should be taken

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