IMPACT THE WORLD WITH
RESEARCH & INNOVATION
For over a decade, the Syed Babar Ali School of Science and Engineering (SBASSE) at LUMS has been imparting top-quality education with an aim to produce future leaders that can make innovative and impactful contributions to science and technology—a key to the success of any nation.

SBASSE offers undergraduate, graduate and doctoral degrees in a wide range of disciplines. The MS programmes at SBASSE are rigorous and designed to impart specialised professional and research-oriented training to students. To graduate, students must accumulate a total of 30 credit hours either entirely from coursework, or by collecting 24 credit hours from coursework and 6 from research work/thesis. Hence, all SBASSE departments offer two options to choose from: MS-by-Coursework or MS-by-Thesis.

The SBASSE PhD programmes prepare students to think scientifically and conduct high-quality research independently. To graduate, students must earn a total of 42 credit hours from which 18 must be from coursework and 24 from research work/thesis. Major milestones that must be achieved for the successful completion of the PhD degree include the Comprehensive (Qualifying) Examination, Thesis Proposal Defense, at least one peer-reviewed journal article and PhD Thesis Defense.

During the course of study, student learning takes place through lectures, tutorials, laboratories, problem-solving exercises, research projects and frequent interaction with experienced and world-class faculty members.
WHY CHOOSE SBASSE

MULTIDISCIPLINARY EDUCATION
The rigorous curriculum of the graduate programmes at SBASSE offers a multidisciplinary learning environment. It provides students with the opportunity to work with knowledge drawn from all six disciplines being offered at SBASSE as a part of the free elective requirement.

LEARNING WITHOUT BORDERS
Research and teaching at LUMS truly offers its community ‘Learning Without Borders’ by breaking academic, geographic and socio-economic barriers to make education accessible to all. The University continues to be an intellectual hub, rich with varying perspectives and transformative ideas. With an environment brimming with inclusion, unity, and boundless knowledge, learning continues in and beyond the campus walls with the aim to develop innovators, leaders and change-makers who can contribute to the community and build strong borderless networks.

INTERNATIONAL AND NATIONAL EXCHANGE PROGRAMMES
MS and PhD students at SBASSE participate in various exchange programmes and research opportunities sponsored by National ICT R&D Fund, HEC, Commonwealth, Erasmus-Mundus, DAAD etc.

OUR PLACEMENTS
- Top academic placements (Massachusetts Institute of Technology, University of Warwick, London School of Economics, University of Oxford, University of Cambridge etc.)
- Our graduates are hired by top local and international organisations (Engro Corporation, Nestle Pakistan, Systems Ltd., Microsoft, Google, Facebook etc.)
- MS and PhD students work alongside faculty members at SBASSE as Teaching Assistants and Research Assistants.

COLLABORATIONS WITH NATIONAL AND INTERNATIONAL INSTITUTES
- Singapore University of Technology and Design, Singapore
- Centrale Supélec, France
- Australian National University, Australia
- University of Kaiserlautern, Germany
- King Abdullah University of Science and Technology, Saudi Arabia
- University of Colorado Boulder, USA
- Koç University, Turkey
- University of Maryland, USA
- Umm Al-Qura University, Saudi Arabia
- Massachusetts Institute of Technology, USA
- Ecole polytechnique fédérale de Lausanne (EPFL), Switzerland

IEEE Journals
- IEEE Transactions on Signal Processing
- IEEE Transactions on Wireless Communications
- IEEE Transactions on Vehicular Technology
- IEEE Transactions on Intelligent Transportation Systems
- IEEE Transactions on Instrumentation and Measurement
- IEEE Transactions on Network Science and Engineering
- IEEE Transactions on Control of Network Systems
- IEEE Transactions on Sustainable Energy
- IEEE Transactions on Power Electronics
- IEEE Transactions on Power Systems
- IEEE Communication Letters
- IEEE Signal Processing Letters
- IEEE Systems Journal
- IEEE Wireless Communications
- IEEE Industrial Electronics Magazine
- IEEE Internet of Things Journal
- IEEE Transactions on Electron Devices
- IEEE Journal of Photovoltaics
- IEEE Transactions on Biomedical Circuits and Systems
- IEEE Transactions on Neural Systems and Rehabilitation Engineering
- IEEE Microwave Magazine
- IEEE Photonics Technology Letters
- IEEE Access

Other Journals
- Applied Energy
- Renewable Energy
- Solar Energy
- IET Smart Grid
- Energy and Buildings
- Information Fusion
- Journal of Energy Storage
- ACM Transactions on Embedded Computing Systems
- Journal of the Optical Society of America B
- Journal of Field Robotics
- ACM Surveys and Tutorials

85+ HIGHLY QUALIFIED FACULTY MEMBERS

TOP-QUALITY PUBLICATIONS
We involve our graduate students in impactful research. Their work has been published in top-quality, renowned journals including:
The Electrical Engineering graduate programmes provide students a strong foundation and specialisation, in contemporary areas of Electrical Engineering including Communication Systems, Computer Networks, Embedded Systems, Nanoelectronics, VLSI Design Signal Processing, Control Systems, Robotics, Renewable Energy Systems and Optoelectronics. The research conducted by the faculty can be broadly classified into three broad themes—Data (AI Hardware and Theoretical Foundations); Life (Biomedical Devices and Point-of-Care Healthcare); and Sustainability (Systems View of the Water-Energy-Food Nexus).

Students are strongly encouraged to collaborate with other disciplines at SBASSE and with other schools at LUMS. They are taught how to identify, formulate and solve complex engineering problems and assess the impact of their area of specialisation on engineering solutions in a global economic, environmental, and societal context.

**WHAT WILL YOUR NEW WORLD INVENT?**

The Electrical Engineering department has gradually grown to 22, full-time PhD faculty members who teach and direct research. The following table maps different labs/clusters, and faculty on the themes discussed above:

<table>
<thead>
<tr>
<th>Themes</th>
<th>Labs/Clusters</th>
<th>Associated Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data (AI Hardware and Theoretical Foundations)</td>
<td>Electronics and Embedded Systems Lab</td>
<td>Dr. Muhammad Adil, Dr. Muhammad Jahangir Iqbal, Dr. Shahid Misrati, Dr. Wali Saleem Mustafa Sadiq</td>
</tr>
<tr>
<td></td>
<td>Smart Data, Systems, and Applications</td>
<td>Dr. Zubeir Khatri, Dr. Muhammad Yahiya, Dr. Momin Ayub Uppal, Dr. Nadeem Ahmed Khan</td>
</tr>
<tr>
<td></td>
<td>Signal Image and Video (SIV) Lab</td>
<td>Dr. Momin Ayub Uppal, Dr. Nadeem Ahmed Khan</td>
</tr>
<tr>
<td></td>
<td>Advanced Communications (AdCom) Research Lab</td>
<td>Dr. Ijaz Haider Naqvi, Dr. Naveed Ul Hassan, Dr. Momin Ayub Uppal</td>
</tr>
<tr>
<td></td>
<td>Cyber Physical Networks (CyPhyNet) Lab</td>
<td>Dr. Momin Ayub Uppal, Dr. Nadeem Ahmed Khan</td>
</tr>
<tr>
<td></td>
<td>Clinical and Translational Imaging Lab</td>
<td>Dr. Hassan Mohy ud Din</td>
</tr>
<tr>
<td></td>
<td>Networks and Communications Lab</td>
<td>Dr. Zafar Ali, Dr. Tariq Jadoon</td>
</tr>
<tr>
<td></td>
<td>Semiconductors and Nanoelectronics Devices Lab</td>
<td>Dr. Nauman Zafar Butt, Dr. Wali Saleem Mustafa Sadiq</td>
</tr>
<tr>
<td></td>
<td>Electronics and Embedded Systems Lab</td>
<td>Dr. Awais bin Altaf, Dr. Wali Saleem Mustafa Sadiq</td>
</tr>
<tr>
<td></td>
<td>Clinical and Translational Imaging Lab</td>
<td>Dr. Hassan Mohy ud Din, Dr. Nadeem Ahmed Khan</td>
</tr>
<tr>
<td></td>
<td>Signal Image and Video (SIV) Lab</td>
<td>Dr. Nadeem Ahmed Khan</td>
</tr>
<tr>
<td></td>
<td>Bio-Agi Photonic Lab</td>
<td>Dr. Muhammad Imran Cheema</td>
</tr>
<tr>
<td></td>
<td>RAMCASP Research Lab</td>
<td>Dr. Wasif Tanveer</td>
</tr>
<tr>
<td>Life (Biomedical Devices and Point-of-Care Healthcare)</td>
<td>Semiconductors and Nanoelectronics Devices Lab</td>
<td>Dr. Nauman Zafar Butt, Dr. Abubakr Muhammad</td>
</tr>
<tr>
<td></td>
<td>Centre for Water Informatics and Technology (WIT)</td>
<td>Dr. Abubakr Muhammad, Dr. Hassan Jadoon</td>
</tr>
<tr>
<td></td>
<td>CyPhyNet Lab</td>
<td>Dr. Abubakr Muhammad, Dr. Hassan Jadoon</td>
</tr>
<tr>
<td></td>
<td>Energy and Power Systems Lab</td>
<td>Dr. Hassan Abbas Khan, Prof. Nauman Ahmad Zafar</td>
</tr>
<tr>
<td></td>
<td>Centre for Water Informatics and Technology (WIT)</td>
<td>Dr. Abubakr Muhammad, Dr. Hassan Jadoon</td>
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<tr>
<td></td>
<td>Advanced Communications (AdCom) Research Lab</td>
<td>Dr. Naveed Ul Hassan, Dr. Ijaz Haider Naqvi</td>
</tr>
</tbody>
</table>

**QUICK FACTS**

- The department has the highest share of the school's publications, mostly with graduate students as co-authors.
- More than 85% of graduates have been placed in industry or gone for higher studies.
HOW WILL ELECTRICAL ENGINEERING HELP YOU REALISE YOUR AMBITION?

The Electrical Engineering MS and PhD programmes are internationally reputed, providing a research environment supported by international collaborations, and taught by faculty from leading universities around the world. Currently, research programmes are being pursued in the following fields:

- Signals, Communications and Intelligent Systems
- Electronics and Embedded Systems
- Photonics and Semiconductor Devices
- Electrical Power and Energy Systems

EMBRACE THE ELECTRICAL ENGINEERING EXPERIENCE

- The Electrical Engineering department provides an excellent opportunity for graduate research; together faculty and students have published 293 journal papers from 2017-2020, the highest number across LUMS.
- Competing with students from other departments, PhD students from the department won 3 out of 4 prestigious Syed Babar Ali Research Awards.
- Dr. Naveed Ul Hassan’s PhD student joined Stanford University as a post-doctoral researcher.
- Students under the supervision of Dr. Momin Uppal got into MIT for the second year running.
- Dr. Ijaz Naqvi’s PhD students are pursuing fellowships at the National Institute of Standards and Technology (NIST) lab in Maryland, USA.
- The department’s PhD graduates have been placed at renowned places in Pakistan and abroad:

<table>
<thead>
<tr>
<th>Student</th>
<th>Area of Research</th>
<th>Advisor(s)</th>
<th>Current Placement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Talha Manzoor (2018)</td>
<td>Systems and Control</td>
<td>Dr. Abubakr Muhammad</td>
<td>Assistant Professor Research, Centre for Water Informatics and Technology (WIT), LUMS, Pakistan</td>
</tr>
<tr>
<td>Dr. Tariq S. Khwaja (2018)</td>
<td>Optics</td>
<td>Dr. Azer Raza</td>
<td>Postdoctoral Researcher, Korea University, Korea</td>
</tr>
<tr>
<td>Dr. Jawad N Chattha (2018)</td>
<td>Communications</td>
<td>Dr. Momin Uppal</td>
<td>Assistant Professor, University of Management and Technology (UMT), Pakistan</td>
</tr>
<tr>
<td>Dr. Mashood Nasir (2018)</td>
<td>Energy and Power</td>
<td>Dr. Hassan A Khan and Prof. Nauman Zafar</td>
<td>Postdoctoral Researcher, Aalborg University, Denmark</td>
</tr>
<tr>
<td>Dr. Aqsa Naeem (2019)</td>
<td>Smart (Electrical) Grids</td>
<td>Dr. Naveed ul Hassan</td>
<td>Postdoctoral Researcher, Stanford University, USA</td>
</tr>
<tr>
<td>Dr. Faran A Butt (2019)</td>
<td>Communications</td>
<td>Dr. Ijaz Naqvi</td>
<td>Assistant Professor, UMT, Pakistan</td>
</tr>
</tbody>
</table>

Dr. MUHAMMAD SABIEH ANWAR
Dean and Professor, Syed Babar Ali School of Science and Engineering

"The graduate programmes in science and engineering at SBASSE, LUMS are poised to make an impact. Our deepest impact as an institution would truly be made by the research that emanates from our graduate education and the research that it propels. We are committed to providing a collegial, rigorous and progressive research milieu that triggers the thirst for knowing more and seeking the truth, and in the process, creating tools, gadgets, machines and ideas that address the human condition and global issues. We promise that our graduate programmes will make you ride through the two extremes of the microcosm and the macrocosm, the ideal and the practical, the abstract and the tangible. Welcome to the Syed Babar Ali School of Science and Engineering!"
YOUR JOURNEY BEGINS HERE!

Admission Criteria for Local and International Students

Applicants must meet the minimum eligibility criteria in order to be considered for admission to the Graduate Programmes.

MS Programme

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

- Academic Record
- Performance in Admission Tests*
- Application Review
- Interview Performance (if shortlisted)
- Submission of complete online application, application processing fee and online supporting documents by the stipulated deadline

PhD Programme

- Academic Record
- Performance in Admission Tests*
- Application Review
- Research Statement
- Submission of complete online application, application processing fee and online supporting documents by the stipulated deadline
- Interview Performance (If shortlisted)

Note:

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

*We are aware that the current COVID-19 crisis poses difficulties for applicants to submit GRE test scores. Under the circumstances, you may apply to the MS/PhD Electrical Engineering Programme without the test scores being submitted (if you have not taken the test yet). You may submit your applications without the GRE scores provided all other application components are complete upon submission.

If no GRE is scheduled due to the closure of test centres by March 30, 2021, LUMS will process applications using the available information. If shortlisted, you may then be asked to appear for an interview followed by a conditional acceptance if you are successful. Once test centres are functioning, you will need to sit for the test and attain the minimum test score required by the University.

Performance in Admission Tests

Applicants to the MS/PhD Programme in Electrical Engineering are required to take the LUMS Graduate Admission Test (LGAT), which is comprised of quantitative, verbal, and analytical sections. In addition, applicants are required to take the SBASSE Subject Test in Electrical Engineering.

Dr. MUHAMMAD ABUBAKR
Associate Professor and Chair, Department of Electrical Engineering

"The Department of Electrical Engineering is the largest and most complex operation at SBASSE comprising the biggest group of faculty, numerous labs and facilities, a large body of hard-working students and dedicated staff members. Electrical Engineering is the engine that drives the information and intelligence revolutions; it is the inspiration for synthetic biology and neuroscience; it is the instrument of scientific discovery in Physics and Chemistry; it is the user and generator of the deepest results in Mathematics. Our faculty and students build advanced communication systems, design hardware for intelligent systems, conceive renewable energy solutions, study biomedical devices and invent smart systems for the manufacturing industry and agriculture."
Exemption for Applicants Who Have Taken Graduate Record Examination (GRE) Test

- Applicants who have taken the Graduate Record Examination (GRE) General Test through the Educational Testing Service (ETS), USA during the last two years (i.e. after April 11, 2019) and obtained an aggregate score of 300 in the quantitative and verbal sections may choose not to take the LGAT.

International Applicants

Applicants residing outside Pakistan are required to take the GRE General Test through the ETS, USA. For further information, please visit www.ets.org

Due to the unavailability of a GRE Subject Test in Electrical Engineering, these applicants will be assessed based on their GRE General Test score only.

Note:

LGAT and SBASSE Subject Test Scores will be valid only for one academic year. The LGAT and SBASSE Subject Test scores will be used for application evaluation hence will not be disclosed to the applicants.

International Students

In order to study at LUMS, foreign nationals must obtain a 'Study Visa' from the Pakistani Embassy/Consulate working in their country. The Pakistani Embassy/Consulate will only issue a Study Visa for students’ stay at LUMS upon receipt of Higher Education Commission (HEC), Pakistan’s ‘No Objection Certificate’ and clearance from the Ministry of Interior, Pakistan.

For the issuance of Visa, students must submit relevant documents to the LUMS Admissions Office through postal mail/courier service by the stipulated deadline.
For details, please visit international.lums.edu.pk

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Dr. SAAD ZIA SHEIKH
PhD Electrical Engineering 2020

"Having completed my Masters overseas, I had to come back, but I wasn’t very optimistic about PhD programmes in Pakistan. I chose LUMS as it was the most convenient option for me but still with mediocre expectations. However, I was absolutely amazed by the quality of education and level of research being conducted here, particularly at the EE Department. State-of-the-art research facilities, world-class, passionate and compassionate faculty, top-notch and friendly staff, and quality students all contribute in making LUMS comparable to top-ranking universities abroad."
DATES TO REMEMBER

DEADLINE TO APPLY
MARCH 30, 2021
5:00 PM (PKT)

DEADLINE TO SUBMIT ONLINE SUPPORTING DOCUMENTS
APRIL 02, 2021

LGAT & SBASSE SUBJECT TEST
APRIL 11, 2021

DEADLINE TO APPLY FOR LUMS CONTINUING STUDENTS
MARCH 30, 2021
5:00 PM (PKT)

DEADLINE TO TAKE GRE
APRIL 11, 2021

ADMISSION DECISIONS
JUNE 15 - JULY 31, 2021

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Ph: +92 42 111 11 LUMS (5867) Ext. 2177
Email: admissions@lums.edu.pk
Website: www.lums.edu.pk

#LearningWithoutBorders
#MeritMatters