MS & PhD
CHEMISTRY
FALL 2021

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 Oxford, University of Cambridge, University of Chicago, John Hopkins University, Princeton University, University of Warwick, London School of Economics)
- 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

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:
- Advanced Functional Materials
- ACS Applied Materials & Interfaces
- Small
- ACS Energy Materials
- Organic Letters
- Langmuir
- Chemical Society Reviews
- Journal of Material Chemistry A & B
- Chemistry - A European Journal
- Angewandte Chemie International Edition

COLLABORATIONS WITH NATIONAL AND INTERNATIONAL INSTITUTES
- University of Southampton, UK
- University of Liverpool, UK
- University of Cambridge, UK
- University of Wisconsin-Madison, USA
- University of Massachusetts Amherst, USA
- Huazhong University of Science and Technology, China
- King Abdullah University of Science and Technology, Saudi Arabia
- Khalifa University, UAE
- University of Saarland, Germany
HOW WILL YOU LAUNCH YOUR NEW WORLD?

The Department of Chemistry and Chemical Engineering offers MS and PhD programmes for those who wish to contribute effectively to the development of science by taking advantage of the Department’s conducive and thriving research environment. It aspires to establish itself as an internationally recognised and globally competitive centre for graduate teaching and research in a wide variety of chemical disciplines that include Nanoscience and Nanotechnology, Materials Chemistry, Catalysis, Drug Discovery/Medicinal Chemistry and Environment.

QUICK FACTS

- MOST MS CHEMISTRY GRADUATES HAVE SECURED FULLY FUNDED INTERNATIONAL PHD SCHOLARSHIPS
- PHD CHEMISTRY GRADUATES ARE EMPLOYED ACROSS ACADEMIA AND INDUSTRY

WHAT WILL YOUR NEW WORLD INVENT?

The Department of Chemistry and Chemical Engineering comprises a diverse group of research active faculty members. In addition to the traditional areas of Chemical Sciences, they work on interdisciplinary research projects interfacing Chemistry with other Science and Engineering disciplines. Faculty members and their research interests are listed below:

**BIOORGANIC AND MEDICINAL CHEMISTRY**
DR. MUHAMMAD SAEED

**CATALYSIS AND GREEN CHEMISTRY**
DR. GHAYOOR ABBAS

**CATALYST DESIGN**
DR. MUHAMMAD ZAHEER

**DRUG DISCOVERY**
DR. RAHMAN SHAH ZAIB SALEEM

**ENERGY MATERIALS**
DR. ALI RAUF

**ENERGY SYSTEM SIMULATIONS**
DR. MUHAMMAD SHOAIB

**FUNCTIONAL NANOMATERIALS**
DR. IRSHAD HUSSAIN

**MULTIFUNCTIONAL NANOCOMPOSITES**
DR. SALMAN NOSHEAR ARSHAD

**POLYMERS AND NANOCOMPOSITES**
DR. HABIB-UR-REHM AN

**SOFT MATTER AND INTERFACES**
DR. BASIT YAMEEN

**SOLID STATE CHEMISTRY**
DR. FALAK SHER

**SUSTAINABLE ENVIRONMENTAL SOLUTIONS**
DR. QASIM IMTIAZ
HOW WILL CHEMISTRY HELP YOU REALISE YOUR AMBITION?

Students benefit from the excellent research facilities at the Department of Chemistry and Chemical Engineering and extensive research programmes in the following areas:

- Nanoscience and Nanomedicine
- Cancer Therapeutics
- Drug Discovery and Delivery
- Synthetic Organic Chemistry
- Green Chemistry and Catalysis
- Renewable Energy
- Polymers and Nanocomposites
- Organometallic Chemistry
- Electronic Materials
- Natural Product Chemistry
- Biomass Conversion
- Environmental Chemistry

The Chemistry faculty has developed impactful international collaborations with prominent national and international research groups in the USA, UK, Germany, Switzerland, Turkey, China and Saudi Arabia. These collaborations are instrumental in keeping the faculty abreast of the latest developments in the field and to use advanced technology platforms and high-tech equipment currently not available anywhere in Pakistan.

Chemistry teaching and research labs are well equipped with state-of-the-art experimental facilities and equipment. There is a fine collection of supplies and equipment including spectroscopic, structural and materials characterisation tools.


EMBRACE THE CHEMISTRY EXPERIENCE

- Dr. Rahman Shah Zaib Saleem, Assistant Professor, Department of Chemistry and Chemical Engineering, has been awarded the German Academic Exchange Service (DAAD) Fellowship for Research Stays for University Academics and Scientists.
- PhD Chemistry graduate, Dr. Uzma Hira has joined University of the Punjab, Lahore as an Assistant Professor. Additionally, Dr. Akhtar Munir and Dr. Sharon Riaz have accepted positions of Assistant Professor.
- PhD graduate, Dr. Soneela Asghar has accepted a position of postdoctoral research assistant at Drug Discovery Unit, School of Life Sciences, University of Dundee, UK.

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 criteria 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 Chemistry 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 Chemistry 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 Chemistry.

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**Dr. Falak Sher**

Associate Professor and Chair, Department of Chemistry and Chemical Engineering

“The goal of the MS and PhD Chemistry Programmes is to educate innovators and future leaders in chemical sciences. The interdisciplinary approach envisaged in the vision of SBASSE and the transdisciplinary spaces available across LUMS in conjunction with international collaborations, synergistically create a unique research environment that instills in our students a capability of performing original scientific work related to the emerging complex opportunities and challenges of the 21st century. Our highly qualified and research-active faculty is engaged in research endeavours that cut across multiple disciplines and are focused on understanding as well as solving the intricate challenges related to health, energy, environment, and industry.”
Exemption for Applicants Who Have Taken Graduate Record Examination (GRE) Tests

- 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.

- Applicants who have taken the GRE Subject Test in Chemistry through ETS, USA during the last two years (i.e. after April 11, 2019) and obtained a score at the 60th percentile or above may choose not to take the SBASSE Subject Test in Chemistry.

International Applicants

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

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

FARWA BATOOL
Student, PhD Chemistry

“My experience at LUMS has been life-changing. A challenging yet rewarding and intellectually inspiring environment has increased my passion towards science and enabled me to avail the prestigious Split-site Scholarship 2019. This tremendous international exposure provided me with an opportunity to work at top-notch labs under the supervision of pragmatic scientists and paved the way towards fulfilling my dreams.”

FINANCIAL SUPPORT FOR LOCAL AND INTERNATIONAL STUDENTS

Admission to all LUMS programmes is purely on merit and independent of students’ ability to pay the related tuition fees. Once a student has been admitted to a programme, there are several mechanisms in place to provide financial support based on need and merit. All awards are reassessed each academic year based on performance, need, available resources and prevailing University policies. LUMS is committed to providing as much financial assistance as possible within the limits of its available resources. Nevertheless, the University may not be able to meet all requests for financial assistance, and it is strongly recommended that applicants secure as much of their own funding as possible. Several funding opportunities are available to deserving MS and PhD students. These include:

- Merit Scholarships for MS programmes
- Partial tuition fee waivers for all MS Basic Sciences and Mathematics students
- LUMS Interest Free Loan (only for local applicants)
- External Scholarships (support and eligibility for these scholarships vary depending on the donor)
- 100% Scholarships (tuition, registration, admission, and a stipend) for PhD students for 4 years
- HEC Research Grants
- Options to work as Research or Teaching Assistants (subject to availability)

For details, please visit https://financial-aid.lums.edu.pk/graduate-financial-aid
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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#LearningWithoutBorders
#MeritMatters