



**SZABIST**

Discover  
Yourself

# MECHATRONICS ENGINEERING

FALL 2021

PEC Accredited  
Under Washington Accord  
Level-II (OBE)



**KARACHI CAMPUS**

**BE (MECHATRONIC ENGINEERING)**  
**MS (MECHATRONIC ENGINEERING)**

Inventing the Future...

# About SZABIST

Discover  
Yourself

Shaheed Zulfikar Ali Bhutto Institute of Science and Technology (SZABIST) is highly ranked and fully chartered institute of Pakistan established through a Legislative Act of Sindh Assembly (Sindh Act No. XI of 1995). It is approved and recognized by the Higher Education Commission (HEC) Pakistan as a degree awarding institution. All the programs offered at SZABIST are consistent with the guidelines laid by HEC and other regulatory bodies, for example, National Business Education Accreditation Council (NBEAC), National Computing Education Accreditation Council (NCEAC), National Accreditation Council for Teacher Education (NACTE), and Pakistan Engineering Council (PEC).

## Vision

SZABIST aims to be a globally recognized institute for excellence in education, research, development, and distinction in service.

## Mission

SZABIST is committed to produce highly qualified professionals to:

- Meet national and global contemporary needs;
- Conduct cutting edge research and development;
- Provide hi-tech scientific and technological expertise;
- Meet current and future socio-economic challenges;
- Meet global citizenship responsibility.

## HEC & CIEC Ranking

SZABIST is ranked as one of the most reputed university by Higher Education Commission (HEC) and Chartered Inspection and Evaluation Committee (CIEC) Sindh. All programs of SZABIST are conducted under strict compliance of the relevant regulator bodies such as NBEAC, NCEAC, NACTE, PEC and KHDA Dubai. Since 2012, the SZABIST-QEC has been awarded more than 91% in the quantitative assessment by Quality Assurance Agency (QAA) HEC, Pakistan.

## International Linkages

SZABIST is a registered member of the following international and national associations:

International Association of Universities (IAU), Paris; Association of Commonwealth Universities (ACU), London; The Association to Advance Collegiate School of Business (AACSB), Singapore; Asia University Federation (AUF), Seoul; Asia-Pacific Quality Network (APQN), People's Republic of China; Association of Quality Assurance Agencies of the Islamic World (AQAAIW), Malaysia; The Talloires Network, USA; The Chartered Institute of Logistics and Transport (CILT), UK; Management Association of Pakistan (MAP), Karachi; Marketing Association of Pakistan (MAP), Karachi; Human Resource Development Network (HRDN), Islamabad.

## Research

SZABIST strongly encourages research. SZABIST published research journals in various disciplines including Computing i.e. the Journal of Independent Studies and Research (JISR-C). SZABIST also conducts various conferences and seminars our academic year.

## BE Mechatronics Program Objectives

The objectives of the program are to provide a broad and basic education in multiple disciplines comprised of Mechanical, Electronics, and Computer Engineering, to ensure that students in the program are exposed to a wide spectrum of engineering knowledge and practice. Upon completion of their degree, the Bachelor of Engineering (Mechatronics) graduates will be able to:

1. Be competent mechatronic engineers who are knowledgeable, skillful and able to solve emerging problems within their organization and society at large.
2. Have inclination towards research and lifelong learning and be able to promote entrepreneurial ideas.
3. Be effective engineers with leadership qualities and high morals & professional ethics.

## MS Mechatronics Program Objectives

The broad objectives of the Master's program in Mechatronics Engineering are to instill in its students a solid foundation of mathematical, scientific and engineering knowledge in addition to developing the intellectual skills essential for prosperity and success in their careers. The program is structured in such a manner that the students are provided a firm theoretical foundation with opportunity to strengthen their knowledge through research assignments, practical training and projects. The objectives of Masters in Mechatronics Engineering program are to:

- Enable students to pursue a rigorous post doctorate / research program in Mechatronics Engineering.
- Improve the marketability of our students in the local industry, public sector and R&D organizations.
- Provide technical confidence and financial guidance needed to start a small-scale industry to graduates interested in self-employment.

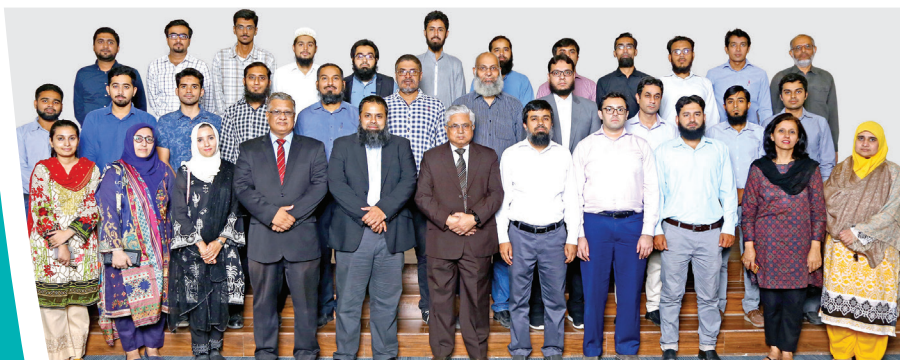
## Employment Opportunities

Graduates with a Mechatronic degree can take up careers in a wide spectrum of industries including:

- Robotics
- Aerospace
- Chemical
- Defense
- Automotive and Manufacturing
- Health, Medical and many more

As well as in businesses that requires extensive computer support, such as banking and commerce.

Contributions can be made to these industries in a variety of roles including design engineer, software engineer, project planner, product designer and project manager.





# BE & MS (Mechatronic Engineering)

## BE (Mechatronic Engineering)

SZABIST offers a four-year (eight semesters) BE-Mechatronics Engineering degree program which is accredited Under Level-II (i.e. OBE- Outcome Based Education) by Pakistan Engineering Council. This program has received 7-Stars i.e., World Class rating by Chartered Inspection & Evaluation Committee (CIEC) Sindh. SZABIST is a pioneer university to offer this program at undergraduate level in the province of Sindh. The program is essentially a day program and consists of 49 courses with a total of 140 credit hours (all electives and certain courses may be offered in the evening). The program is supported through well-equipped state-of-the-art laboratories. Internship opportunities are provided to meet degree requirement. The maximum time limit to complete the BE-ME degree program is six years.

## Admission Criteria

The candidate must have completed Intermediate/A-levels (minimum 3 subjects) or equivalent with a combination of (Physics, Chemistry and Mathematics) in Pre-Engineering and Matric/O-Levels (minimum 8 subjects including 5 compulsory subjects; English, Urdu, Maths, Islamiat & Pakistan Studies) in Science group with minimum 60% marks (those waiting for result can also apply). Equivalency of grades for the candidates having Cambridge High School Certificate with Mathematics, Physics and Chemistry subjects are obtained as follows:

A-Level Grade	A	B	C	D	E
Equivalent Intermediate %	85	75	65	55	45

- Candidates with DAE (Mechanical/Electronics/Electrical/ Instrumentation/ Automation) having at least 60% aggregate marks from an institute recognized by the Government can also apply.
- Minimum 60% aggregate marks each in matriculation and in Intermediate / equivalent exams.
- Please note that no deviation in this regard is allowed.
- Inter Board Committee of Chairmen (IBCC) equivalency is required for O & A Levels / IB Diploma/High School Diploma or equivalent.
- General Paper (A Levels) will not be counted.

## Fee

	Pakistani Nationals	Foreign Nationals
Admission Fees:	Rs. 20,000	US\$ 500
Security Deposit (refundable):	Rs. 10,000	US\$ 330
Student Activity Charges:	Rs. 1000	US\$ 30
Tuition Fees per Course (BE-Mechatronics)*:	Rs. 18,300	US\$ 405

Note: \*\*SZABIST reserves the rights to revise the fee/withdraw of scholarship without any prior notice. \*3 Credit Hour fee.

## MS (Mechatronic Engineering)

SZABIST offers MS (Mechatronic Engineering) degree with two specializations namely: Robotics & Industrial automation and Smart Electromechanical Systems. The program is of 2-year duration and is offered in the evening. In addition to five core courses, students are required to complete 3 elective courses of their choice of specialization. Although students are encouraged to undertake Thesis/Research Project of 6 credit hours but they also have an option to undertake two elective courses in lieu of the Thesis/Research Project in their choice of specialization. The maximum time limit to complete the MS degree is four years.

## Admission Criteria

For admissions in the MS Mechatronic Engineering program, candidates must possess BE in Mechatronics / Mechanical / Electronics / Electrical / Telecommunication / Industrial / Manufacturing / Automotive /Aerospace / Avionics with minimum 55% marks / 2.0 CGPA from a university recognized by HEC. Bachelor of Engineering Degree must be accredited by PEC. GAT (General) or HAT relevant is mandatory for MS students with minimum 50% score. Last degree verification from HEC is required.

## Scholarships and Financial Assistance

- SZABIST Merit-Based Scholarship
- SZABIST Need-Based Scholarship
- SZABIST Sindh Police-Shaheed Quota Scholarship
- Orange Tree Foundation Scholarship
- Hilton Pharma Scholarship
- Baluchistan Education Endowment Fund Scholarship (Partial\Full)
- Sindh Education Endowment Fund Scholarship
- Ihsan Trust's Qarz-e-Hasna Facility

## Fee

	Pakistani Nationals	Foreign Nationals
Admission Fees:	Rs. 20,000	US\$ 500
Security Deposit (refundable):	Rs. 10,000	US\$ 330
Student Activity Charges:	Rs. 1000	US\$ 30
Tuition Fees per Course (MS-Mechatronics)*:	Rs. 23,250 (after 20% Subsidy 1,665)	US\$ 555 (US\$ 444)

Note: \*\*SZABIST reserves the rights to revise the fee/withdraw of scholarship without any prior notice. \*3 Credit Hour fee.





# Achievement of Mechatronics Graduates



I **Ms. Nain Tara** studied Mechatronics Engineering from SZABIST from 2010 to 2014. The contents of the degree were comprehensive and challenging and hence I was prepared for the professional world. After my bachelors from SZABIST, I attended the University of Leeds for a masters degree in Mechatronics and Robotics. The one year masters degree was a realisable feat because of my strong background from SZABIST.

I have been working professionally for a multinational consultancy firm "**Segula Technologies**" for over three years. In these three years I have consulted for world class companies like **Jaguar Land Rover, Dyson, PSA** and **Bombardier**. I have been able to excel in such diverse range of companies because of the nature of the degrees that I completed. SZABIST prepared me well for the world of engineering. I have found myself going back to my lessons that I learnt in my four years at SZABIST for overcoming any challenges that come my way, and to achieve my career goals. I remain grateful that I was given the opportunity to undertake the degree and be part of SZABIST's mechatronics department.



My name is **Anas Niaz** (CEO Bioniks) and **Ovais Hussain Qureshi** (CEO Viscous.co) graduated from BE Mechatronics program from SZABIST Karachi in 2017. During our stay at SZABIST, the institution not only taught us field relevant engineering concepts but also, invaluable life lessons. The degree program equipped us to take the challenges of engineering head on and become an able minded

professional, abreast with the latest developments of the field. The institute helped us transform into a sound engineer and groomed my personality and communication skills, enabling us to demonstrate our mental prowess and field related successes at the highest stage. By the grace of Almighty Allah and through our undying passion during our final year, we started a company named as **Viscous.co** as an Entrepreneur. SZABIST enables its students to become true pillars of society. We now become the world-renowned entrepreneurs (**Bioniks**) in the field of developing the upper limbs by using the latest technologies.



## ASME Szabist Student Section (2020-21)

**ASME**  
SZABIST STUDENT SECTION  
2020-2021  
*ASME Innovation Challenge*

**Countries That Participated In The Challenge**

Kazakhstan	Tunisia	India	Sri Lanka	Kenya	Latvia
Chile	El Salvador	Botswana	Nigeria	Namibia	Nepal



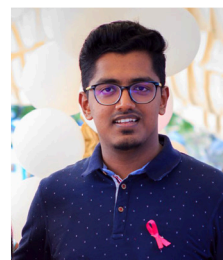
**ASME**  
SZABIST STUDENT SECTION  
2020-2021

Presents,  
A Session On,

**Effective Presentation Skills**

By  
**Hafsah Mir**

## Employers of our Alumni



I **Saud Sattar** studied Mechatronics Engineering from SZABIST, graduated in 2019 and had extremely supportive professors throughout, who maximized my full potential and helped me get to where I am today for which I will forever be grateful to them. My time at SZABIST was not just focused on academic learning but also involved in taking part in student-related activities where I developed skills like leadership, decision making and critical thinking. I was elected as the Vice President of the SZABIST Performing Arts Society & ZAB Engineering Fest, both of which were awarded the best society & departmental event of the year during my tenure along with several other prestigious awards. Towards the end of my bachelors' journey with SZABIST, I was admitted to the **University of York, England, for MSc in Electronics Engineering Management** which was the 85th ranked university in the world at that time. I am currently working for FEV UK Ltd., a German based company based in United Kingdom and doing my **PhD in Advanced Battery Diagnostics as a fully sponsored PhD Scholar from Coventry University, UK**. My time at SZABIST will always be a very important chapter of my life which has taught me much more than just academics and given me some wonderful memories that I will forever cherish.

## ZAB E-FEST

ZAB-E-FEST is an event organized by the Mechatronics Department of SZABIST. ZAB E Fest aims at providing keen individuals with a platform to create, innovate and excel their skills.



# Alumni Mechatronic Engineering SZABIST



**Mujtaba Rafique Ghoto**  
(Alumnus SZABIST 2019)  
Assistant Manager  
Ministry of Defense Production



**Mashal Baloch**  
(Alumna Szabist 2017)  
Mechatronics Engineer  
Soorty Enterprises Ltd.



**Marium Feeeroze Alvi**  
(Alumna SZABIST 2017)  
Assistant Manager Logistics,  
Supply Chain  
Unilever Pakistan Limited



**Yasir Ali**  
(Alumnus SZABIST 2016)  
Embedded Software Developer,  
I.C. Lercher GmbH & Co. KG,  
IM Sägenloh, Stockach, Germany



**Danish Abdul Razzak**  
(Alumnus SZABIST 2015)  
Assistant Manager,  
Indus Motor Company



**Syed Hasham Hatim**  
(Alumnus Szabist 2016)  
Assistant Manager  
Control Systems  
Mec-yokogawa Pakistan



**Musfira Zamir**  
Alumna Szabist 2018)  
Associate Data Analyst  
Afiniti



**Sharyar Naseem**  
(Alumnus Szabist 2016)  
Integration Engineer  
E.Solutions GmbH,  
Germany

**Shaheed Zulfikar Ali Bhutto Institute of Science & Technology**

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for queries: [mechatronics@szabist.edu.pk](mailto:mechatronics@szabist.edu.pk)



# Shaheed Zulfikar Ali Bhutto Institute of Science & Technology

90 & 100 Clifton, Karachi, Pakistan, Tel: (021)111 922 478, Fax: (021) 35830446, E-mail: info@szabist.edu.pk, www.szabist.edu.pk

## Faculty

### Dean (Computing & Engineering Sciences)

Dr. M Altaf Mukati  
Ph.D (Computer Engg.),  
Boston/Hamdard University.

### Head of Department

Dr. Faraz Junejo  
Ph.D (Mechatronics Engg.),  
Loughborough University, UK.

### Assistant Professor

Dr. Saim Ahmed  
PhD (Control Science & Engineering)  
Nanjing University of China.

### Assistant Professor

Dr. Muhammad Umar Siddiqui  
PhD (Thermo-fluids, Renewable Energy)  
King Fahd University of Petroleum & Minerals, KSA.

### Assistant Professor

Engr. Humera Rafique  
MS (Telecommunication Engg.),  
SSUET, Karachi.

### Assistant Professor/Program Manager

Engr. Aneel Ahmed  
MS (Telecommunication Engg.),  
NUCES-FAST Lahore

### Assistant Professor

Engr. Abdul Hussain Saeed  
MS (Electrical Engg.),  
Texas Tech University, USA

### Assistant Professor

Engr. Tanzila Younas  
MS (Industrial Manufacturing Engineering &  
Management), NUST, Karachi.

### Assistant Professor

Engr. Azeem Anwer  
ENSAE / Sup'Aero Toulouse, France  
M.S. (Aerospace Engineering)

### Assistant Professor

Engr. Nasreen Bano  
ME (Micro System Design),  
NED University, Karachi.

### Engr. Sarmad Hameed

MS (Industrial Control & Automation),  
UIT, Karachi.

### Lecturer

Engr. M. Atif Saeed  
ME (Mechanical Design & Fabrication),  
NED University, Karachi.

### Lecturer

Engr. Hafsa Mir  
MS (Industrial Manufacturing Engineering &  
Management), NUST, Karachi.

### Lecturer

Engr. Syed Najiullah Hussaini  
MS Automotive Engineering  
RMIT University, Melbourne, Australia

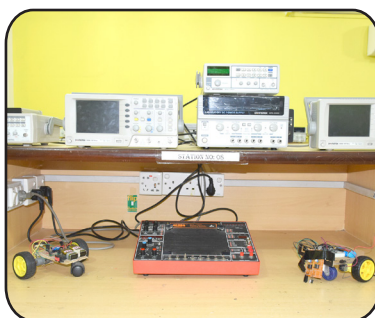
### Lecturer (On Study Leave)

Engr. Farhan Mumtaz  
MS (Hamdard University)  
Industrial Control & Automation

## Departmental Labs: <http://khi.szabist.edu.pk/facilities.html>



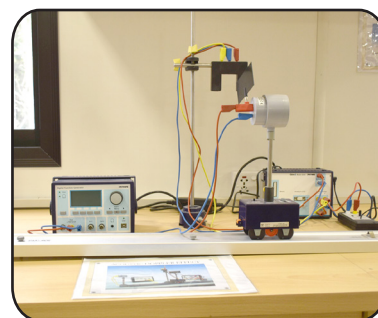
**Industrial Automation Lab**  
(Engr. Muhammad Nabeel)



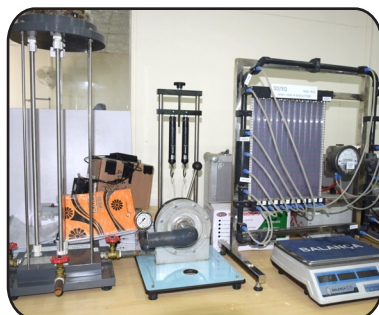
**Electronics Lab**  
(Engr. Tulsi Kumar)



**Robotics & Control Lab**  
(Engr. Ismail Manssor)



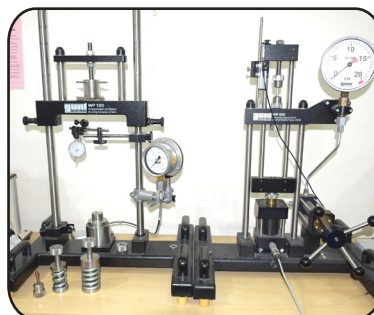
**Physics Lab**  
(Engr. Abdul Basit Aftab)



**Thermo Fluids Lab**  
(Engr. Muhammad Adeel)



**Engineering Workshop**  
(Engr. Hamza Ahmed)



**Mechanics Lab**  
(Engr. Abbas Shabbir)



**Drawing Studio**  
(Engr. Uzair Ahmed Khan)

Admissions Start	: April 19, 2021
Last date to apply	: June 10, 2021
Oral Test & Interview	: June 21 - July 10, 2021
Orientation	: September 2-4, 2021

## APPLY ONLINE:

Log on to: <http://admissions.szabist.edu.pk>

For further information please contact:

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Tel: 021-35823433 (Ext # 333, 334, 304). Fax: 021-358 21537. [www.szabist.edu.pk](http://www.szabist.edu.pk)