



PAK-AUSTRIA FACHHOCHSCHULE: INSTITUTE OF APPLIED SCIENCES AND TECHNOLOGY

PROSPECTUS 2020

*Transforming Higher Education Sector in Pakistan with
World Class Technology Based Education System*



MANG KHANPUR ROAD, HARIPUR - 22621 KPK

Disclaimer

The undergraduate prospectus 2020 provides requisite information to prospective undergraduate students aspiring to apply for admission to their desired program during Fall 2020. It describes briefly various programs and the facilities available at the institute. Due effort has been made to ensure that the information contained in the prospectus is accurate and up-to-date. We, however, do not accept liability for any inaccuracy or change outside reasonable control of the institute. PAF-IAST intends to offer the programs and facilities mentioned in the prospectus but reserves the right to withdraw or make alterations to these programs or facilities, if deemed necessary, without any prior notice. Moreover, the fees for the programs starting in 2020 are provisional, and are subject to change.



Message from Chairman Advisory Board



Prof. Dr. Atta -ur- Rahman
FRS NI, HI, SI, TI

Pakistan gravely lacks in adequately trained and skilled workforce in the production sector. This has been a major factor contributing to in our low exports and poor economic growth. The situation has seen only marginal improvement in recent years. While our National Education Policy recognizes the importance of technical education at tertiary level for providing technical skills towards fulfilment of industry requirements, much remains to be done to enable Pakistan to realize its true potential. The secret to developing a strong knowledge economy lies in the ability of nations to be able to manufacture and export high technology goods. For this, we must have top class engineering universities that can produce students that can meet the new challenges posed by the 4th industrial revolution with the accompanying emerging and disruptive technologies such as artificial intelligence, next generation genomics, industrial biotechnology, energy storage systems, 3D printing, new materials and others.

“Skilling Pakistan” is the most pressing need of the hour. Human resource development and skill training in tandem are the essential elements to boost the key growth sectors such as manufacturing, information and communication technologies, medical technologies, core engineering areas, as well as the construction field.

Pak-Austria Fachhochschule: Institute of Applied Science and Technology is a leap forward to assist the government of Pakistan in acquiring the much-needed pool of quality human resource in order to enhance the prosperity of Pakistan through developing a knowledge economy. This institute is a collaborative public sector venture in partnership with premier Austrian and Chinese universities for quality education, academic excellence, technology transfer, research accomplishments, and for developing a state-of-the-art technology park where new products for commercial use will be developed.

PAF-IAST offers unique opportunities to Pakistani youth to study at an emerging center of excellence on their way to become leaders and entrepreneurs in various growth sectors. From the very outset of their academic career at this institute, they will be exposed to first-hand rewarding industry experience. This, in turn, will enable them to contribute significantly to the national economy and prosperity of the society at large.

TABLE OF CONTENTS

Message from Chairman Board	3
Skilling Pakistan	5
Why to study at PAF-IAST?	8
Facilities	10
Centers of Excellence (COE)s	12
Faculty of Electrical, Computer, IT and Design	19
Department of Electrical & Computer Engineering	20
Bachelor of Engineering in Electrical Engineering	20
Labs	23
Department of IT & Computer Science	25
Bachelor of Science in Software Engineering	26
Bachelor of Science in Computer Sciences	29
Labs	32
Members of Faculty	34
Faculty of Mechanical, Chemical, Materials & Mining Engineering	36
Department of Chemical Engineering & Energy	37
Bachelor of Engineering in Chemical Engineering	37
Labs	40
Members of Faculty	44
Faculty of Biomedical Sciences and Engineering	46
Department of Biomedical Sciences	47
Bachelor of Science in Biomedical Sciences	47
Labs	50
Members of Faculty	52
Admissions	53
Eligibility Criteria for Bachelor Programs	55
Fee Structure	58
Scholarship	60
Examination	61



SKILLING PAKISTAN

1.

Providing relevant skills
for industrial and economic
development

2.

Improving access, equity
and employability

3.

Assuring high standards
in skills development

These objectives are consistent with the policy of government of Khyber Pakhtunkhwa towards poverty alleviation through skill training and human resource development. Underpinning these prime objectives is our prime focus on meeting workforce demands in key growth sectors such as industry, IT, information and communication technologies, medical technologies, electrical and mechanical as well as mineral resource development, extractive metallurgy and construction fields.

Placed in a rapidly changing and fiercely competitive global environment, Pakistan has to make bold strategic choices in order to achieve sustainable growth in the manufacturing sector. This calls for massive structural changes and a major paradigm shift in the sphere of production. The answer lies in achieving technology and knowledge-based industrialization with a view to creating a sound base for promoting an integrated and competitive industry culture in the private sector.

In view of the extensively altered canvass of knowledge economy and its concomitant impact on our economic and social existence, it is imperative for policy makers, private sector executives and knowledge workers at all levels to think out of box and augment efforts towards innovation and technology-led development. All efforts must be converged on to forging a competitive edge in global market. Hence, the service technology and higher education sectors will need to play a critical role in the course of demanding transition towards a knowledge economy.

The Pak-Austria Fachhochschule: Institute of Applied Sciences and Technology (PAF-IAST) is our collaborative venture with select Austrian and Chinese Universities

Pak-Austria Fachhochschule: Institute of Applied Sciences and Technology (PAF-IAST) is unique in its concept, approach and methodology. The project concept stems from the slogan "Skilling Pakistan" and envisages to create highly credible technical education infrastructure both at tertiary and hi-tech industry levels. With this twin-aim concept, the project is a quantum leap forward in the fast burgeoning knowledge-based economy, far beyond a mere educational program.

Our aim is to raise the quality of technical education in Pakistan at par with those of most advanced industrial nations, notwithstanding the problems con-

fronting developing countries in trying to achieve standards in advanced countries: standards that are constantly on the rise at a pace much faster than the economic capacity of a developing nation. At the same time, we are fully conscious of and alive to the need of linking employment with education by harnessing highly skilled manpower produced by such projects to induce, not only an inward flow of technology investment into Pakistan but also enable generation of local hi-tech industry. The technology park integrated into the scheme of Pak-Austria Fachhochschule is a cardinal feature of this holistic concept.

Fulfilment of this novel concept, however, will remain an elusive dream without creating a critical mass of capable engineers and hi-tech industry base. The whole spectrum of hi-tech industrial base in the country therefore needs to grow fast in order to develop an industrial infrastructure capable of supporting progress and diversity of growing industrial companies.

From this perspective, this unprecedented initiative in Pakistan supported by several universities based in Austria and China for awarding degrees to our students assumes enormous importance of its own kind. The institute will comprise academic departments and research centers covering the areas of process engineering, design and media technologies, applied computer sciences, medical technologies, energy and environment engineering, electrical engineering, civil engineering, transportation engineering, mineral resource engineering, extraction metallurgy, and agriculture and forestry.

Pak-Austria Fachhochschule: Institute of Applied Sciences and Technology

boasts latest teaching and practical laboratories equipped at par with partner universities. Effective plans are in hand to keep pace, through a process of monitoring by international accreditation bodies, with the highest standards of the curricula, teaching resources and the learning outcomes adopted by the foreign partners. On conclusion of the initial

establishment phase, the quality and output will be gauged, and programs accredited, using internationally-recognized criteria.

Achieving International Standards in Training

Selection and hiring of teaching faculty is taking place through a highly competitive process, with the help of active professional evaluation by partner universities abroad. To achieve effectively Fachhochschule model of education, faculty members holding PhDs from premier foreign universities, will be trained on specific pedagogical and managerial skills at the partner universities in Austria and China.

The Technology Park

PAF-IASST programs are closely integrated with a parallel program for the development of technology-driven enterprises. For holistic achievement of the concept, it is necessary to dovetail the institute's educational infrastructure with a corresponding and compatible growth in high-technology industry in tandem. To meet this critical need, PAF-IASST has a sound plan in place to build on its state-of-the-art campus an Innovation Technology Park. To boost innovation through the technology Park, every faculty member, trained in Austria and China, will be offered an average grant of USD 50,000 for developing new projects. A sum of 10 million USD has already been set aside for this purpose. The new projects, to be implemented largely in collaboration with scientists of Austrian and Chinese partner universities, could potentially lead to joint patenting and industrial production.

Equivalence with International Standards

To ensure quality, subject to the approval of ac-

creditation bodies of Pakistan and the partner universities in Austria and China, double degrees will be awarded to students. The collaborator universities will be responsible to ensure that the teaching and research programs at PAF-IASST, in all essentials, are equivalent to theirs. Equivalence will be achieved by following identical syllabi, laboratory experiments and assessment mechanisms. To maintain requisite standards, the accreditation agency of the partner country shall be involved to assess at regular intervals the quality of instruction at PAF-IASST. Equivalent degrees will be the key determinant that the graduates of PAF-IASST have acquired education of international standards comparable to that of the graduates from the foreign collaborator universities. In other words, there shall be no quality gap between the Pakistani graduate engineers and the engineers graduating from the partner universities. Eventually, equivalence will be demonstrated, recognized and accepted by all stakeholders in that degrees of the collaborator institutions will be awardable to all such graduates as are able to qualify the academic standards set forth by the relevant accreditation councils.

Faculty Development

Under HRD program, during phases 1, 2 and 3, around 200 faculty members will be trained in Austria/China for periods up to 6 months. Those holding MS/MPhil or equivalent degrees will be sent to technical universities in Austria and China on 4-year PhD programs in relevant disciplines.

WHY STUDY AT PAF-IAST?

Location and Ambience

PAF-IAST is nestled in natural mountains that flank its campus from all sides, offering one even the ravishing view of snow-capped peaks of Nathiagali and natural winding trails. To its north-west is Tarbela Lake, a journey of only a few kilometers from the campus. Set in middle of the campus is natural lake, fed by the springs of surrounding mountains. The campus is just a 3-kilometer drive from the Hazara Motorway. The ideal setting equally conducive to academic activity and aesthetic sensibilities of human eye is a serene island of its own kind, far from the chaos, congestion and cacophony of metropolitan culture. The major cities like Islamabad, Abbottabad, are just an hour's drive, while small towns like Wah, Hasanabadal, Taxila and Swabi can be reached in just half an hour.

Technology Advancement and Foreign Partnership

This institute is an emerging center of excellences, with its own technology park. All faculty members hold PhD degrees in appropriate disciplines. By virtue of its wide array of facilities and the facilitation for its students to learn and benefit both from classroom teaching and faculty trained at premier Austrian universities/institutions, the institution is ideally cut out for imparting state-of-the-art engineering and allied education in Pakistan. The institute enjoys close linkages with top ranking universities in Austria and China. We have already concluded with them formal agreements regarding student and faculty exchange programs, provision of dual degrees in certain areas, and the training support from foreign faculty. cities like Islamabad, Abbottabad, are just an hour's drive, while small towns like Wah, Hasanabadal, Taxila and Swabi can be reached in just half an hour.

Academia-Industry Relationship

There is a strong synergetic relationship between academia and industry which paves the way for job opportunities for students even in the midst of their studies. PAF-IAST will serve as a welcome platform for industry to share their requirements for skilled workforce. This will enable the institute to incorporate their valuable inputs in practical vocational training and expose the students to industrial perspectives.

On-Spot Industry Internship

It will be a mandatory requirement for every student to do internship every semester at an appropriate industry. This will garner for them practical experience related to their respective degree programs. A To crown it all, Technology Park will afford them rare opportunities to apply themselves innovatively and become promising entrepreneurs.

Need and Merit-based Scholarships

Different types of local and foreign scholarships opportunities are available on need and merit base.

Vision

To emerge as an outstanding leader in imparting sound skill-oriented education and producing capable, diligent and career-ready graduates to succeed in a globally interdependent society.

Our Core Values

Innovation: Foster creativity and propel progress

Quality: Whatever we do, we do it well

Integrity: Be real, uphold the highest ethical standards and promote trust and respect

Excellence: Exceed expectations and be proud with a head high

Leadership: The courage to shape a better future

Collaboration: Leverage collective genius

Passion: Committed to the core in heart and mind

Diversity: As inclusive and expansive as our dreams

Our Goals

- To contribute to the development of sound industrial economy in Pakistan.
- To strive and achieve the goals of effective higher education in engineering, science, and technology,
- To pave the way and promote hi-tech industry in Pakistan
- To establish an integrated Technology Park comprising Business
- Incubation Center and Shell units for small and medium-sized enterprises
- To engage world-class faculty, well-versed in applied research



Academic Blocks

Each faculty has its own dedicated Academic block comprising well-ventilated smart classrooms, and state-of-the-art labs equipped with latest equipment. Ubiquitous Wi-Fi facility is available to faculty, students and staff alike. Faculty has decent rooms to work in while spacious open areas are reserved for students.

Library

The campus has a high standard library, well provided with course textbooks along, reference books, and a good number of necessary research journals for each area of specialization. The library complex also comprises a few cubicles with smart boards installed for research group discussions and presentations.

Labs

Essential labs are an integral adjunct of each Academic block. The labs are equipped with state-of-the-art local and imported machines, scopes, tools and gadgetry.

Hostels

Fully furnished shared accommodation is available for resident students. Boarding facilities are exclusively meant for students hailing from remote cities. Boarding facilities include comfortable rooms, fully functional dining halls, anteroom, Wi-Fi facility, indoor games, vending machines and laundry.

Transport Facility

Suitable arrangements at affordable cost have been made to commute students, both ways, in comfortable coaches from cities like Islamabad, Rawalpindi, Wah, Taxila, Haripur and Abbottabad.

Sports

Besides jogging tracks, two large grounds are reserved for cricket and soccer. Apart from indoor game facilities at each Academic block, badminton and volleyball courts also have been made available.

Student Activity Center

A custom-built Student Activity Center is established for recreational and socializing purposes. The facilities include: a state-of-the-art cafeteria, stationary shop, tuckshop, Wi-Fi facility, photocopiers, and printers.



Banking & ATM Facility

A branch of National Bank with ATM facility is fully operational at the Student Activity Center.

Auditoriums

Each academic block has its own independent auditorium with a seating capacity for 100 persons. All auditoriums are equipped with internet connectivity and have the provision to record talks/ lectures.

Internet Facility

Every building of PAF-IAST is provided with wireless network internet connectivity facilitating all employees, faculty members and students. Special provision has been made to provide access to guests and visitors. Proper monitoring system has been instituted to avoid an untoward situation and exercise control on sites banned in Pakistan or on the campus. The Campus Computing Services (CCS) @ PAF-IAST offers world-class technology to facilitate academic & research activities at the campus & beyond.

Biometric Attendance and RFID system

An RFID system has been installed to monitor biometric attendance of for students, faculty members, administrative staff, & employees. To monitor the movement of staff from one building to another, RFID cards will be issued to all employees as a ready mechanism for security checks.

School

A separate building has been erected for an on-campus school facility from kindergarten to intermediate level along with daycare facility for the children of faculty and administrative officials. The school being managed by a highly experienced administrator and well-trained teachers.

Ancillary Facilities

PAF-IAST Campus offers ample ancillary services to ensure conducive academic and working environment for all. These facilities include automated vending machines to readily provide students at fair price snacks, beverages, essential commodities 24/7, especially during short breaks without having them to rush to cafeteria now and then. Considering the needs of students, faculty, and staff, multiple vending machines are being installed at various places across the campus. Gradually, these machines will be made compatible for integration with Smart Campus One Card Solution which PAF-IAST plans to deploy in the days ahead to promote cashless campus culture.





Centers of Excellence

(COE)_s



Artificial Intelligence (AI)

PAF-IAST has already obtained approval to create from Public Sector Development funds Sino-Pak Center of Artificial Intelligence. The core objective of the center is to build national capacity for R&D in the emerging field of artificial intelligence and gain expertise in this area through MS/PhD programs in collaboration with Chinese and Austrian universities. Besides providing high-value services to industrial partners, we seek to achieve the capability to solve local problems using AI and market those indigenous solutions through the technology park. We are equally focused on preparing an advanced workforce in AI and Data Science through training and applied work. Our roadmap also includes efforts to help create ecosystem for startups and spin-off companies to make Islamabad a hub for software companies/businesses, and eventually lead, by managing and sharing the infrastructure and trained human resource, other Pakistani universities, institutes, and industries into the realm of artificial intelligence.

Railway Engineering

China-Pakistan Economic Corridor (CPEC), a comprehensive, integrated infrastructure-based project, is a major component China's One Belt One Road (OBOR) global initiative. Railway continues to be one of the most important means of human and freight transportation. Construction work on \$8 billion Pakistan Railways upgrade on Main Line, ML-1, and project of China Pakistan Economic Corridor project is likely to start this year.

PAF-IAST intends to set up a center of excellence in railway engineering, and happily the institute is already located along the ML-1 route. The core areas will be signaling, and communication engineering.

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Nano-Technology Center

The Nanotechnology Center for Socio-Economic Development (NCSED) is going to be geared to emerge as the leading hub of innovation, scientific research, and knowledge transfer to local researchers. The center will cater to training needs in the area of high-resolution imaging and spectroscopic techniques for in-depth analysis, and understanding of new (Nano) materials.

The main objective of the center is to develop and upgrade the facilities for characterization and evaluation of (nano) materials and devices with the aim of making it a focal point for major research, development and commercialization activities in Pakistan. This center's objectives will be closely linked and synergized with the priority areas of the Higher Education Commission, S&T Sector and Ministry of Science & Technology, Pakistan.



Mineral Resource Engineering

Pakistan has rich reservoirs of minerals resources, including clays (china clay and fire clay), copper, dolomite, gypsum, iron ore, limestone, marble (onyx), salt, sand and gravel, silica sand, as well as energy resources like coal, natural gas, oil; and precious and novel stones.

Considering the significance of mineral resources, PAF-IAST has set up a Centre of excellence with the co-operation of Chinese universities. The center is solely geared to impart skills related to Mineral Resources Engineering in the following disciplines:

- Mineral Resources Engineering;
- Raw Material Engineering;
- Petroleum Engineering;
- Advanced Mineral Resources Development

Agriculture Food Technologies

Agriculture has remained the lifeline of Pakistan's economy since its birth. It significantly contributes to national economy and poverty alleviation by providing food security to the masses, besides supplying cheap raw material to several value-added industries.

PAF-IAST plans to establish a center of excellence in Agriculture Food Technology with the help of Chinese universities in such critical areas:

- Food Processing Technology
- Packaging Technology
- Seed Technology



International Collaboration

PAF-IAST puts very high premium on establishing mutually beneficial with premier international institutes in order to benefit from them in terms of human resource, technology transfer, research collaboration, and support and assistance in building various centers of excellence, including the technology park.

We are signatories to several meaningful agreements with the following institutes:

- FHI JOANNEUM University of Applied Sciences, Graz, Austria
- Johannes Kepler University Linz, Austria
- China University of Mining and Technology, Jiangsu
- Guangdong University of Technology, China
- University of Science and Technology, Beijing
- Beijing Jiaotong University
- Software Competence Centre Hagenberg, Austria
- China University of Mining and Technology, Jiangsu
- Shanghai University China
- Shenzhen Institute of Advanced Technology, China
- Jiangsu University (JSU), China
- MCI, Management Center Innsbruck
- Die Unternehmerische Hochschule GmbH



Areas of Cooperation

- Exploration of collaborative research projects.
- Exchange of teaching and research staff.
- Organization of joint academic activities including degree programs, seminars, lectures, work shops, and conferences.
- Advancement and exchange of students.
- Short faculty visits.
- Training of PAF-IAST faculty & administrative staff.

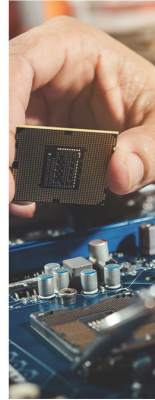






OUR FACULTIES

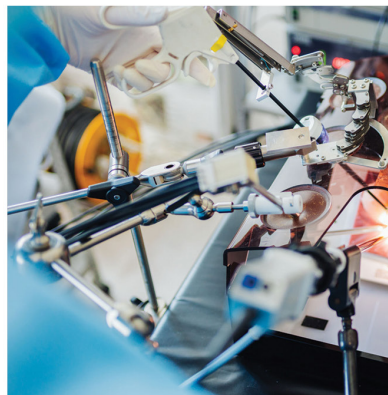
Electrical, Computer, IT and Design



Mechanical, Chemical, Materials & Mining Engineering



Biomedical Sciences and Engineering





Faculty of Electrical, Computer, IT and Design

Faculty of Electrical, Computer, IT, and Design (FECID) is engaged in preparing and equipping students to harness the benefits of advanced technology into service of human lives. Electrical component largely involves the use of computing systems and information technology. It acquires required design from the possible set of information and latest technology to meet the critical demands of modern society. It helps our students and faculty to work and understand the complexity of modernization, and gives them the insight to develop such technologies that can alleviate human sufferings by simplifying complex systems. The FECID seeks to produce well-educated and well-equipped students with sound sets of practical skills to cope with emerging technological challenges through international collaboration in areas like electrical, computing, circuits, signals, microprocessors, digital design, and communications. This eventually enables generation to become capable professionals and successful leaders in the digital era.

DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING

has been established under the PAF-IASST's exclusive vision "Skilling Pakistan". E&CE is committed to expanding and enhancing the quality engineering education in electrical, computer, and allied disciplines with the concomitant task of stimulating hi-tech industry in Pakistan. E&CE endeavours to promote sound engineering education in Pakistan comparable to the standards of advanced countries. The department is engaged in preparing its students for lifelong learning and successful professional careers. It seeks to produce professionals equipped with credible engineering knowledge, sound managerial and technical skills like essential mathematical tools and basic scientific concepts to be able to navigate in sectors like communications, electrical energy, computers, robotics, artificial intelligence, automation, and national and international market trends. Our degree program courses adhere to international standards with a good blend of hands-on experience needed for the cutting-edge research and product development. The department is housed in academic block A-2 on the lush green premises of PAF-IASST. It has well-equipped and well-furnished lecture theaters, smart classrooms, and labs. It has excellent arrangements and full range of facilities to impart highly credible engineering education of international standard. We create new knowledge, improve technologies, and are committed to producing technology leaders with the vision and abilities to solve with passion the challenges of today and tomorrow.

- Bachelor of Engineering in Electrical Engineering

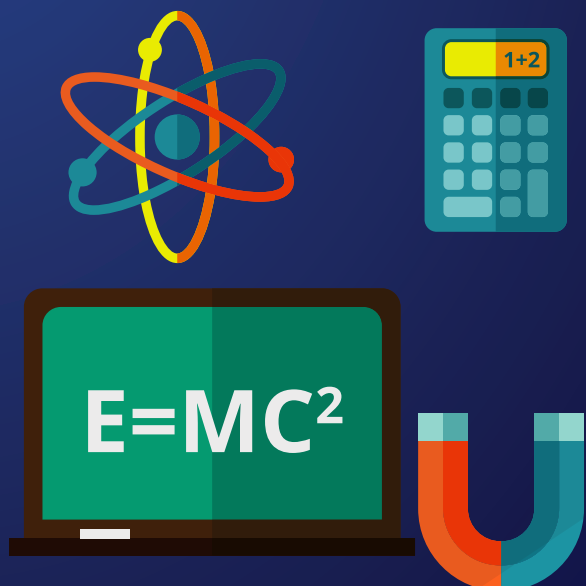
Program Description

Electrical and electronic systems are ubiquitous in modern society. Specialized in various fields, electrical engineers have transformed the technological landscape of the 21st century with marvels in electric power systems, television, wireless radio, cell-phones and medical imaging, to name just a few. Noted names in this journey of excellence include luminaries like Nikola Tesla, Thomas Edison, Jack Kilby, Marcian Hoff (inventor of the microprocessor) and Martin Cooper (inventor of the mobile phone). PAF-IASST's electrical engineering programs are de-

signed to equip students with sound operating knowledge of electrical and electronic systems, besides honing their engineering skills to design, assess and improve electrical and electronic systems. In other words, the prime focus of our bachelor program in electrical engineering is on imparting practical skills with an exclusive emphasis on hands-on experience in design and testing of electrical and electronic systems.

- Associated Careers

The new solutions emerging from electrical engineering support a wide array of technological systems and make them work better and faster. An electrical engineer may become anything from an electrician to the designer of electrical systems for cars, ships or spaceships, and work on any electricity operated device or product. Electrical engineers handle proper functionality of refineries and power plants and are instrumental in advancements in medicines and healthcare like development of prosthetic devices for disabled people. It may not be an overstatement to say that electrical engineers are the linchpin of modern era of 5G and future mobile communication systems.



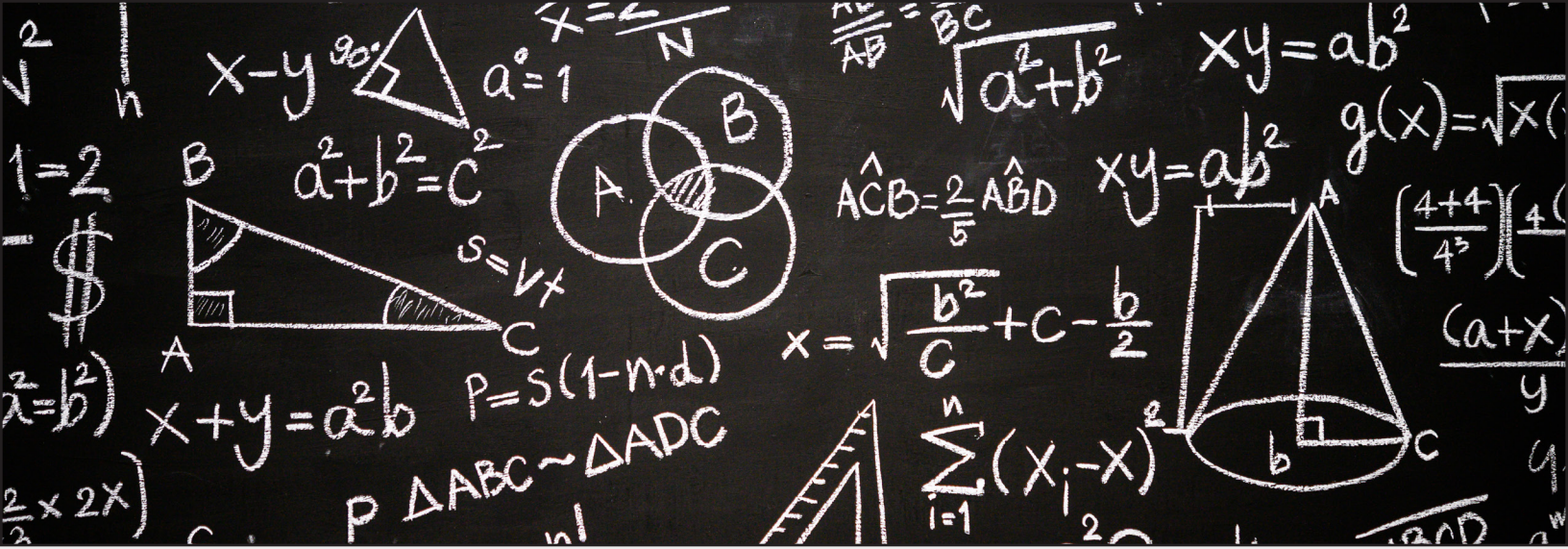
Semester 1			Semester 2		
Code	Course Name	Credits	Code	Course Name	Credits
SS-101	Functional English	2	MTH-102	Linear Algebra and Differential Equations	3
MTH-101	Calculus and Analytical Geometry	3	EE-102	Linear Circuit Analysis	3
SS-112	Pak Studies	2	EE-102L	Linear Circuit Analysis Lab	1
COMP-111	Programming Fundamentals	3	ME-101L	Workshop Practice	1
COMP-111L	Programming Fundamentals Lab	1	COMP-112	Object Oriented Programming	3
SS-111	Islamic Studies	2	COMP-112L	Object-Oriented Programming Lab	1
PHY-101	Applied Physics	3	EE-101	Digital Logic Design	3
PHY-101L	Applied Physics Lab	1	EE-101L	Digital Logic Design Lab	1
			ME-102L	Engineering Drawing	1
	Total Credit Hours	17		Total Credit Hours	17
Semester 3			Semester 4		
Code	Course Name	Credits	Code	Course Name	Credits
MTH-205	Complex Variables and Transforms	3	EE-207	Signals and Systems	3
EE-203	Electrical Network Analysis	3	EE-207L	Signals and Systems Lab	1
EE-203L	Electrical Network Analysis Lab	1	SS-203	Technical and Business Writing	3
EE-204	Electronic Devices and Circuits	3	EE-211	Introduction to Embedded Systems	3
EE-204L	Electronic Devices and Circuits Lab	1	EE-211L	Introduction to Embedded Systems Lab	1
COMP-201	Data Structures and Algorithms	3	MTH-206	Probability and Statistics	3
COMP-201L	Data Structures and Algorithms Lab	1	EE-205	Electronic Circuit Design	3
SS-102	Communication Skills	2	EE-205L	Electronic Circuit Design Lab	1
	Total Credit Hours	17		Total Credit Hours	18
Semester 5			Semester 6		
Code	Course Name	Credits	Code	Course Name	Credits
EE-306	Electrical Machines	3	Code	Course Name	Credits
EE-306L	Electrical Machines Lab	1	EE-351	Linear Control Systems	3
EE-308	Electromagnetic Field Theory	3	EE-351L	Linear Control Systems Lab	1
EE-331	Communication Systems	3	EE-309	Instrumentation and Measurements	3
EE-331L	Communication Systems Lab	1	EE-309L	Instrumentation and Measurements Lab	1
EE-333	Digital Signal Processing	3	ME-103	Thermodynamics	3
EE-333L	Digital Signal Processing Lab	1	MGT-345	Engineering Project Management	3
MTH-307	Numerical Computations	2	SS-322	Professional Ethics	3
MTH-307L	Numerical Computations Lab	1		Total Credit Hours	17
	Total Credit Hours	18			
Semester 7			Semester 8		
Code	Course Name	Credits	Code	Course Name	Credits
SS-221	Organizational Behavior	3	MGT-262	Entrepreneurship	3
EE-4##/ COMP-4##	Depth Elective I	3	EE-4##	Depth Elective IV	3
EE-4##L/ COMP-4##L	Depth Elective I Lab	1	EE-4##L	Depth Elective IV Lab	1
EE-4##	Depth Elective II	3	EE-4##	Depth Elective V	3
EE-4##L	Depth Elective II Lab	1	EE-4##L	Depth Elective V Lab	1
EE-4##	Depth Elective III	3	EE-492	Final Year Project – II	4
EE-4##L	Depth Elective III Lab	1	SS-331	Community Services	2 (NC)
EE-491	Final Year Project – I	2			
	Total Credit Hours	17		Total Credit Hours	15

ELECTIVE COURSES

Code	Course Name	Credits
EE-412	Digital Systems Design	3
EE-412L	Digital Systems Design Lab	1
EE-413	Computer Architecture and Organization	3
EE-413L	Computer Architecture and Organization Lab	1
EE-414	Internet of Things	3
EE-414L	Internet of Things Lab	1
COMP-340	Artificial Intelligence	3
COMP-340L	Artificial Intelligence Lab	1
EE-421	Power Electronics and Drives	3
EE-421L	Power Electronics and Drives Lab	1
EE-422	Digital Integrated Circuit Design	3
EE-422L	Digital Integrated Circuit Design Lab	1
EE-423	Analog Integrated Circuit Design	3
EE-423L	Analog Integrated Circuit Design Lab	1
EE-432	Digital Communication	3
EE-432L	Digital Communication Lab	1
EE-434	Wireless and Mobile Communication	3
EE-434L	Wireless and Mobile Communication Lab	1
EE-434L	Wireless and Mobile Communication Lab	1

ELECTIVE COURSES

Code	Course Name	Credits
EE-436	Computer Communication Networks	3
EE-436L	Computer Communication Networks Lab	1
EE-441	Power Generation, Transmission and Distribution	3
EE-441L	Power Generation, Transmission and Distribution Lab	1
EE-442	Power Distribution and Utilization	3
EE-442L	Power Distribution and Utilization Lab	1
EE-443	Power Generation	3
EE-443L	Power Generation Lab	1
EE-444	Electrical Power Transmission	3
EE-448	Power System Protection	3
EE-448L	Power System Protection Lab	1
EE461	RF and Microwave Engineering	3
EE461L	RF and Microwave Engineering Lab	1
EE-462	Antennas and Wave Propagation	3
EE-462L	Antennas and Wave Propagation Lab	1
EE-444L	Electrical Power Transmission Lab	1
EE-445	Power System Analysis	3
EE-445L	Power System Analysis Lab	1



Lab Facilities

Physics Laboratory

Physics Laboratory is fully geared to impart experimental training in classical and modern physics to undergraduate students of various science and engineering disciplines. The lab is amply stocked with demonstration kits / apparatus to explain and illustrate principles of physics. It is a great resource to enable students to relate effectively their theoretical knowledge with practical work.

Equipment

- Faraday's Law Apparatus
- LRC Circuit Apparatus
- Specific Heat Apparatus
- Newton's Laws Apparatus
- Projectile Motion Apparatus
- General Purpose Digital Multimeter
- Inverse Square Law
- Coulomb's Law demonstrator
- Universal Digital Multimeter
- Inverse Square Law Demonstrator with 1 Required Interface
- Universal Interface 850
- Airlink
- USB Bluetooth Adapter
- Capston Software Site License

Electronics and Circuits Laboratory

Equipped with modern measurement apparatus, this laboratory is dedicated to providing hands-on training to the undergraduate engineering students in all courses dealing with electric and electronic circuits. This state-of-the-art facility helps students to see beyond the theory and serves as a foundation for the students to grasp better the subjects to be taught during advanced semesters.

Equipment

- Digital Storage Oscilloscope
- Digital Multimeter
- Dual DC Power Supply
- Bread Board Module
- Function Generator
- SMD Rework Soldering Station
- Handheld LCR Meter

Computer Laboratory

Our dedicated Computer lab meets adequately computing needs of all undergraduate students of Electrical and Computer Engineering department. On its inventory are high-performance modern com-

Equipment Software List

- Desktop All in one Computers (Core i7) – 9th Generation
- AutoCAD license
- MatLab License
- Microsoft Office 365 License
- Microsoft Windows 10 License
- Spice and IC layout

DLD and Embedded Systems Laboratory

This lab is meant to cover fundamentals of Digital Logic design, Digital Systems Design, Embedded Systems and IoT applications. The experiments starting from the very basic digital concepts culminate into advanced digital systems. Based on FPGA training kits with Verilog/VHDL as the HDL, for IoT and sensors interfacing, the lab is equipped with latest Aduino and Raspberry Pi kits.

Equipment

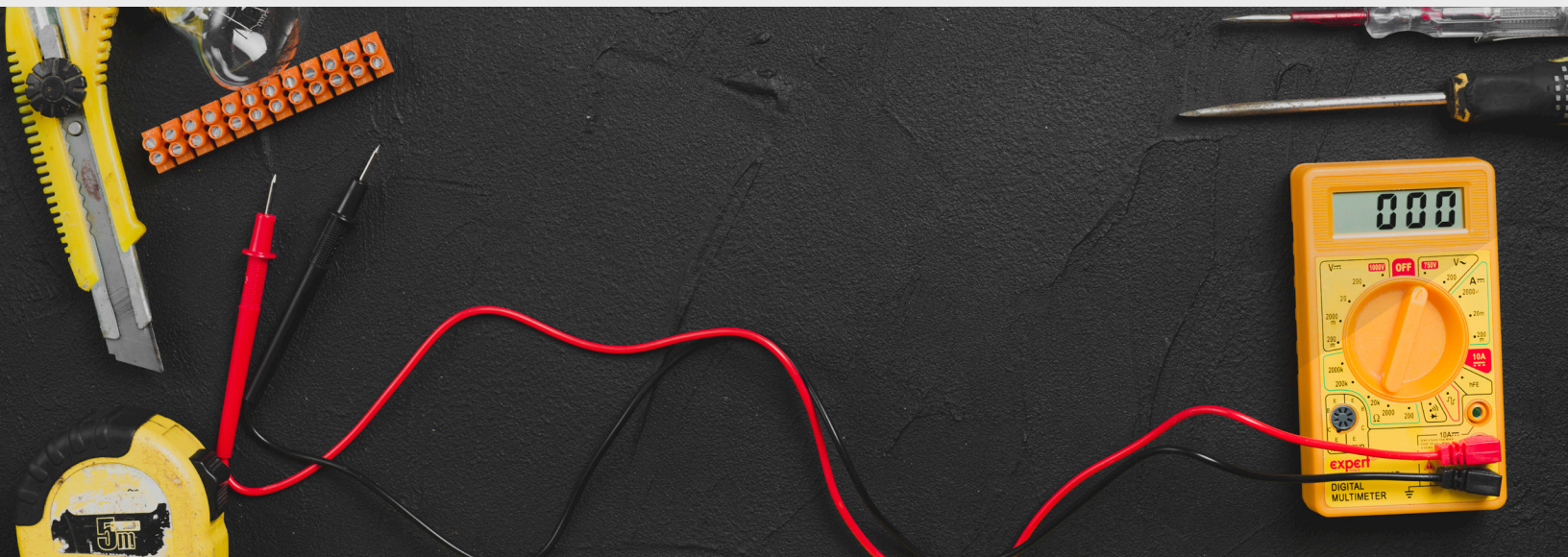
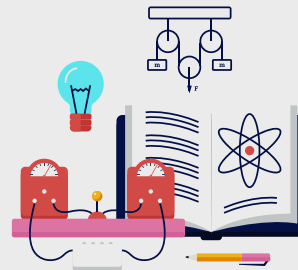
- Digital Logic Training System
- Arduino Starter Kit
- Basys 3 Artix-7 FPGA Trainer Board
- 8086 MicroPro Training System
- Raspberry Pi 3 B+ Starter Kit
- Desktop All in one Computers (Core i7) – 9th Generation
- Digital Storage Oscilloscope
- Dual DC Power Supply
- Digital Multimeter

Power Systems Laboratory

The electric Power System Laboratory is dedicated to training undergraduate students for safe, reliable and optimum generation, distribution, conversion, measurement and control of electric energy. Work in Laboratory consists of laboratory experiments, testing, and computer simulation of electric power apparatus, equipment, structures, materials and systems.

DSP and Communication Laboratory

DSP and Communication Lab is a specialized teaching facility to enhance students' conceptual understanding regarding digital signal processing and telecommunications fields. This lab comprises modern equipment to help students to carry out lab experiments and conduct projects in the areas of Obvnc digital and wireless communications, RF and microwave engineering, Antennas and DSP.



DEPARTMENT OF IT AND COMPUTER SCIENCE

Information Technology and Computer Science serve as the brain and nervous systems of our department. It is ideally designed and equipped to expose students to high-tech customized systems. Our highly qualified faculty in diverse computing fields is committed to prepare students for national and international service by raising their skills to secure placements around the globe. We plan to engage our students in and facilitate their interaction professors of international repute.

Promising students are encouraged to take courses of the partner Austrian universities after having gained basic German language proficiency. The students fulfilling requisite qualification criteria would be entitled to receive dual degrees, certified by HEC Pakistan as well as Higher Education of Austria. PAF-IASST are the pioneers to set up "Sino-Pak Center for Artificial Intelligence", a skyline technology park" with a view to affording students a platform for business incubation and development of software houses.



- Degree Programs Offered

We are proud to offer exciting and challenging degree programs, initially catering to only undergraduate students, followed by graduate (MS and PhD programs) in the near future.

- Software Engineering - Computer Science

The undergraduate degree program in Computer Science involves partnership of FH JOANNEUM University of Applied Sciences, Department of Applied Computer Science, Graz, Austria.

The program is fully responsive to demands underlying the vision of "Skilling Pakistan", and is designed to equip students with practical problem-solving skills. Besides acquainting the students with diverse computing domains, the department is equally geared to train and groom them to cultivate a keen insight into ethical, professional, social, and legal issues germane to computing.



Bachelor of Science in Software Engineering

Program Description

Software Engineering (SE) program is exclusive designed to enable quality development and maintenance of various software systems to be evolved with the help of software engineering principles. To achieve sustainable software infrastructure, we have hired well qualified faculty and commissioned high-tech lab tools. Students will also have the opportunity to enrich their multinational software-houses experience through PAF-IAST Technology Park. In a nutshell, PAF-IAST, aided by collaborator Austrian Universities, is committed to raising a capable breed of qualified software engineers with the capacity to deal with the challenges of complex and dynamical environment. We also target at capturing the emerging software market by incorporating SE curriculum multi-lingual diverse-business avenues. This will help our students to attain leadership positions both at academic and industrial levels.

- Associated Careers

Software engineering students able to reach world-class software companies e.g. Google, Ericsson, Spotify, or many others. The most desired job areas for SE students are including but not limited to: web developer, problem modeling and analyst, software designers, parallel and Multimedia programmers, software debuggers, software quality testers, software verification and validation inspectors, software management managers/consultants, software technical support officers, software sales professionals, as well as sound designers.



Semester 1			Semester 2		
Code	Course Name	Credits	Code	Course Name	Credits
COMP-102	Introduction to ICT	2	COMP-112	Object -Oriented Programming	3
COMP-102L	Introduction to ICT Lab	1	COMP-112L	Object Oriented Programming Lab	1
COMP-111	Programming Fundamentals	3	SS-102	Communication Skills	2
COMP-111L	Programming Fundamentals Lab	1	COMP-121	Discrete Structures	3
SS-101	Functional English	2	COMP-171	Software Engineering	3
MTH-101	Calculus and Analytical Geometry	3	PHY-101	Applied Physics	3
SS-111	Islamic Studies	2	PHY-101L	Applied Physics Lab	1
SS-112	Pak Studies	2	SS-331	Community Service (University Elective-I)	2
Total Credit Hours		16	Total Credit Hours		18
Semester 3			Semester 4		
Code	Course Name	Credits	Code	Course Name	Credits
COMP-201	Data Structures and Algorithms	3	COMP-262	Operating Systems	3
COMP-201L	Data Structures and Algorithms Lab	1	COMP-262L	Operating Systems Lab	1
COMP-271	Software Requirement Engineering	3	COMP-231	Database Systems	3
COMP-272	Human Computer Interaction	3	COMP-231L	Database Systems Lab	1
MTH-204	Linear Algebra	3	COMP-273	Software Design and Architecture	2
SS-203	Technical and Business Writing	3	COMP-273L	Software Design and Architecture Lab	1
Total Credit Hours		16	MTH-206	Probability and Statistics	3
			SS-221	Organizational Behavior (University Elective-II)	3
			Total Credit Hours		17
Semester 5			Semester 6		
Code	Course Name	Credits	Code	Course Name	Credits
COMP-371	Software Construction and Development	2	COMP-381	Software Quality Engineering	3
COMP-371L	Software Construction and Development Lab	1	COMP-391	Information Security	3
COMP-353	Computer Networks	3	SS-322	Professional Ethics	3
COMP-353L	Computer Networks Lab	1	COMP-352	Web Engineering	2
COMP-333	Management Information System (University Elective-III)	2	COMP-352L	Web Engineering Lab	1
COMP-333L	Management Information System Lab	1	COMP-3##	SE Elective-I	3
COMP-3##	SE Supporting-I	3	COMP-3##	SE Supporting-III	3
COMP-3##	SE Supporting-II	3	Total Credit Hours		18
MTH-307L	Numerical Computations Lab	1			
Total Credit Hours		13			
Semester 7			Semester 8		
Code	Course Name	Credits	Code	Course Name	Credits
COMP-471	Software Project Management	3	COMP-4##	SE Elective-IV	3
COMP-472	Software Re-Engineering	3	COMP-4##	SE Elective-V	3
COMP-4##	SE Elective-II	3	COMP-4##	SE Elective-VI	3
COMP-4##	SE Elective-III	3	COMP-498	Final Year Project II	3
COMP-497	Final Year Project I	3	MGT-262	Entrepreneurship (University Elective-IV)	3
Total Credit Hours		15	Total Credit Hours		15

ELECTIVE COURSES OF BS IN SOFTWARE ENGINEERING

Code	Course Name	Credits
COMP-311	Visual Programming	3
COMP-321	Computer Graphics	3
COMP-430	Big Data Analytics	3
COMP-433	E-Commerce	3
COMP-443	Agent Based Software Engineering	3
COMP-462	Cloud Computing	3
COMP-481	Global Software Development	3
COMP-312	Mobile Application Development	3
COMP-372	Software Engineering Economics	3
COMP-381	Software Metrics	3
COMP-431	Management Information Systems	3
COMP-441	Natural Language Processing	3
COMP-442	Semantic Web	3
COMP-461	Systems Programming	3





Bachelor of Science in Computer Science

- Program Description

Computer Science embraces the wide spectrum of computing. It is the culmination of design theory of computing based on conceptual information. Custom-built smart classrooms are globally connected globally for exchange of novel ideas. It offers, talented and interested students to start their research career from Sino Pak Center. Such opportunities are ideally suited to enhance students' creative and innovative talents. Principal domains incorporate computer systems, artificial intelligence, database systems, networks, numerical analysis, security, computer vision, and bioinformatics.

- Associated Careers

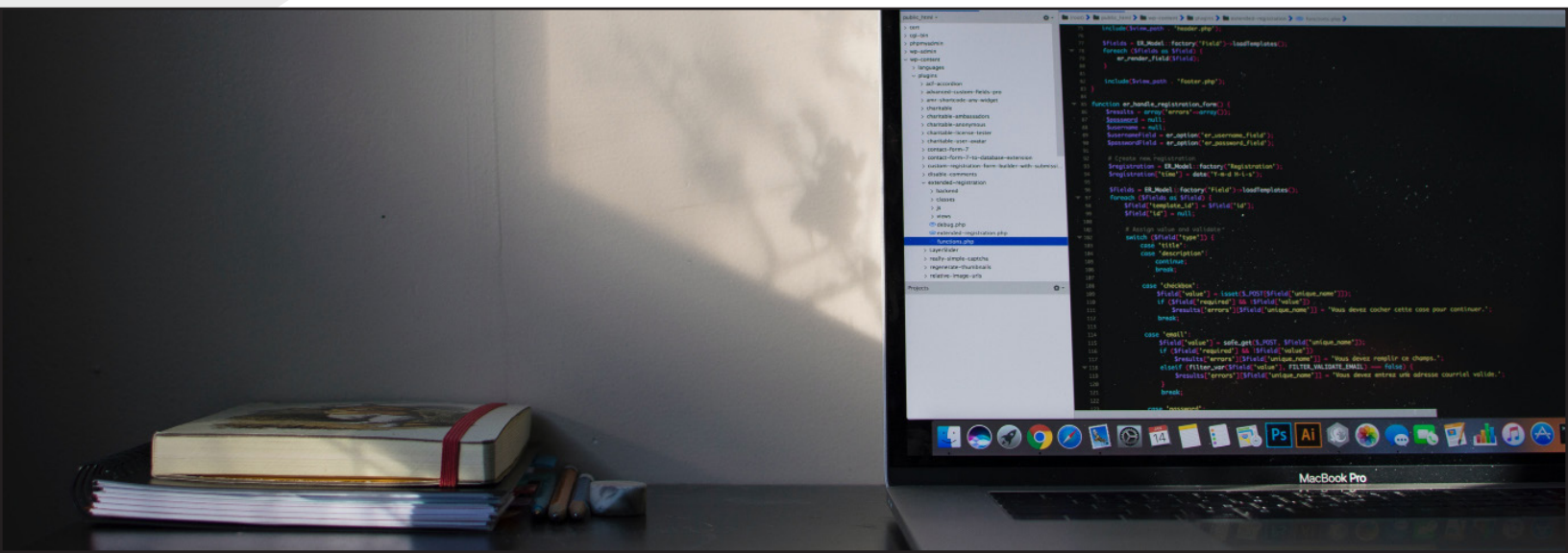
Computer science students can find work globally with employers in various emerging fields: database administrators, systems operators, software developers, network administrators, computer systems analysts, and information researchers.



Semester 1			Semester 2		
Code	Course Name	Credits	Code	Course Name	Credits
COMP-102	Introduction to ICT	2	COMP-112	Object Oriented Programming	3
COMP-102L	Introduction to ICT Lab	1	COMP-112L	Object Oriented Programming Lab	1
COMP-111	Programming Fundamentals	3	COMP-121	Discrete Structures	3
COMP-111L	Programming Fundamentals Lab	1	SS-102	Communication Skills	2
SS-101	Functional English	2	SS-112	Pak Studies	2
MTH-101	Calculus and Analytical Geometry	3	SS-111	Islamic Studies	2
PHY-101	Applied Physics	3	EE-101	Digital Logic Design	3
PHY-101L	Applied Physics Lab	1	EE-101L	Digital Logic Design Lab	1
Total Credit Hours		16	Total Credit Hours		17
Semester 3			Semester 4		
Code	Course Name	Credits	Code	Course Name	Credits
COMP-201	Data Structures and Algorithms	3	COMP-222	Design and Analysis of Algorithms	3
COMP-201L	Data Structures and Algorithms Lab	1	COMP-221	Theory of Automata	3
COMP-261	Comp. Organization and Assembly Lang.	3	COMP-231	Database Systems	3
COMP-261L	Comp. Organization and Assembly Lang. Lab	1	COMP-231L	Database Systems Lab	1
MTH-203	Differential Equations (CS Supporting-I)	3	MTH-206	Probability and Statistics	3
MTH-204	Linear Algebra	3	SS-221	Organizational Behavior (University Elective-II)	3
SS-203	Technical and Business Writing	3	SS-221	Organizational Behavior (University Elective-II)	3
Total Credit Hours		17	SS-331	Community Service (University Elective-I)	2
			Total Credit Hours		18
Semester 5			Semester 6		
Code	Course Name	Credits	Code	Course Name	Credits
COMP-262	Operating Systems	3	COMP-342	Artificial Intelligence	3
COMP-262L	Operating Systems Lab	1	COMP-342L	Artificial Intelligence Lab	1
COMP-321	Compiler Construction	3	COMP-353	Computer Networks	3
MTH-307	Numerical Computations (CS Supportive-II)	2	COMP-353L	Computer Networks Lab	1
MTH-307L	Numerical Computations Lab	1	COMP-3##	CS Elective-I	3
COMP-171	Software Engineering	3	COMP-314	Theory of Programming Languages (CS Supporting-III)	2
COMP-333	Management Information System (University Elective-III)	2	COMP-314L	Theory of Programming Languages Lab (CS Supporting-III)	1
COMP-333L	Management Information System Lab	1	SS-322	Professional Ethics	3
Total Credit Hours		16	Total Credit Hours		17
Semester 7			Semester 8		
Code	Course Name	Credits	Code	Course Name	Credits
COMP-460	Parallel and Distributed Computing	3	COMP-4##	CS Elective-V	3
COMP-3##	CS Elective-II	3	COMP-4##	CS Elective-VI	3
COMP-4##	CS Elective-III	3	COMP-498	Final Year Project II	3
COMP-4##	CS Elective-IV	3	MGT-262	Entrepreneurship (University Elective-IV)	3
COMP-497	Final Year Project I	3	COMP-391	Information Security	3
Total Credit Hours		15	Total Credit Hours		15

ELECTIVES COURSE FOR BS IN COMPUTER SCIENCE

Code	Course Name	Credits
COMP-232	Advanced Database Systems	3
COMP-313	Mobile Application Development	3
COMP-315	Game Programming	3
COMP-322	Computer Graphics	3
COMP-323	Simulation and Modeling	3
COMP-331	Data Warehousing	3
COMP-332	Data Mining	3
COMP-341	Machine Learning	3
COMP-343	Digital Image Processing	3
COMP-351	Web Technologies	3
COMP-354	Data Communication and Networks	3
COMP-431	Information Retrieval	3
COMP-433	Management Information Systems	3
COMP-441	Computer Vision	3
COMP-442	Natural Language Processing	3
COMP-451	Wireless Networks	3
COMP-453	Wireless and Mobile Computing	3
COMP-461	Parallel and Distributed Computing	3
COMP-462	Distributed Computing	3
COMP-463	System Programming	3
COMP-464	Cloud Computing	3
COMP-492	Computer Forensics	3





Lab Facilities

The department provides a variety of facilities to students, faculty, and researchers to work in an innovation-friendly environment. Our labs stand out in terms of latest in hardware and software technology, thus engendering an environment conducive to promotion of teamwork, interactive learning, and professional education of very high standards. Our instructional and experiment facilities induce students to undertake projects in lucrative industry-oriented technologies like Software Engineering, Big Data, Cloud, Machine Learning, Artificial Intelligence, Data Ware Housing and Mining, Networking, and application-oriented software.

Besides state-of-the-art smart classrooms, is equipped with latest high performance computers. More importantly, the department the department's fiber optic network communications offering high speed Internet connectivity around the clock.

There are several computing labs in the Department that are available for student use. Some of these well-equipped and specialized laboratories are:

Dennis Ritchie Lab

This Lab is named after Dennis MacAlistair Ritchie (September 9, 1941 – c. October 12, 2011), an American computer scientist. He is credited with creation of C programming language while developing UNIX operating system and B programming with his longtime colleague Ken Thompson.

Denis Ritchie Lab is known for its good range of computer programming facilities. Linked with high-speed Internet (Ethernet and Wi-Fi Both), this lab comprises Corei5/i7 All-in-One networked Desktop Computers running Windows as well as Linux oper-

ating systems. The additional lab features include state-of-the-art smart boards and Programming Display Units (PDUs) for 360 views of the instructor's screen. With its ergonomically set layout, it is furnished with modern custom-built furniture. It is ideally suited to conduct students' workshops and software competitions. Its equipment inventory comprises:

- Desktop/All-in-one Computers
- Liebert UPS 650VA/ 390W PSA SOHO AVR Universal Sockets with Soft
- VIRTUAL DESKTOP INTERFACE (VDI)
- Smart Boards
- Programming Display Units (PDUs)

Augusta Ada Lab

This lab commemorates an English mathematician and writer Augusta Ada Lovelace, the first ever Software Developer (10 December 1815 – 27 November 1852). She is chiefly known for her work on Charles Babbage's proposed mechanical general-purpose computer, the Analytical Engine. She has been celebrated as the world's first computer programmer, being the maiden developer of the world's first software for an early computing machine.

The Augusta Ada Lab specifically caters to a host of Software Engineering activities and provides facilities for courses such as Software Engineering, Language, and Compilation Techniques. It aids students a great deal through high-speed Internet (both Ethernet and Wi-Fi) and computing nodes. Its equipment inventory consists of VIRTUAL DESKTOP INTERFACE (VDI): thin-client machines, networked machines running Windows as well as Linux operating systems. In addition, it is fitted with state-of-the-art smart boards and Programming

nux operating systems. In addition, it is fitted with state-of-the-art smart boards and Programming Display Units (PDUs) for 360 views of the instructor's screen. Laid out ergonomically, it is furnished with modern furniture and fixtures. The Augusta Ada Lab is also available for students' workshops and software competitions. Its equipment inventory chiefly comprises:

- VIRTUAL DESKTOP INTERFACE (VDI)
- Smart Boards
- Programming Display Units (PDUs)

Alan Turing Lab

This lab is named as such in recognition of revolutionary contributions made by Alan Mathison Turing, a British mathematician and logician (23 June 1912 – 7 June 1954), in the fields of mathematics, cryptanalysis, logic, philosophy, and mathematical biology, as well as the subsequent new areas like computer science, cognitive science, artificial intelligence, and artificial life.

Alan Turing Lab is a state-of-the-art facility for students studying Database, Artificial Intelligence, and Operating Systems. Equipped with high-speed Internet (Ethernet and Wi-Fi Both) and computing nodes, it comprises VIRTUAL DESKTOP INTERFACE (VDI): thin-client machines, networked machines running Windows as well as Linux operating systems. The lab is fitted with Smart Boards and Programming Display Units (PDUs) for 360 view of the instructor's screen. It is ergonomically laid out with appropriate modern furniture. The lab has the provisions to conduct students' workshops and software competitions. Its main equipment inventory comprises:

- VIRTUAL DESKTOP INTERFACE (VDI)
- Smart Boards
- Programming Display Units (PDUs)

Arfa Karim Lab

Arfa Abdul Karim Randhawa (2 February 1995 – 14 January 2012), Pakistani computer prodigy surprised the world by becoming the youngest Microsoft Certified Professional (MCP) in 2004. Her Achievement is recorded in the Guinness Book of World Records. This lab commemorates her world fame in the realm of computational sciences.

Arfa Karim Lab is a state-of-the-art lab where students can work with ease, peace and full concentra-

tion. Ergonomically designed, the lab prides on its all-in-one PCs (Corei5/i7) and comfortable focused seating area for laptop users. Students have ready access to high-speed Internet (Ethernet and Wi-Fi Both) and computing nodes. The lab is equipped with:

- Desktop/ All-in-One Computers
- Liebert UPS 650VA/ 390W PSA SOHO AVR Universal Sockets with Soft
- Tabletop Sliding Smart Switches with HDMI, USB, POWER Sockets, and Wireless charger.

SKYNET LAB

The SKYNET Lab has ample state-of-the-art networking equipment to prepare students to cope with current and future demands of IT industry besides affording them adequate hands-on networking experience with real equipment. Housed in 30 x 42 square feet area, the lab is managed by Department of IT & CS.

Al-Khwarizmi Lab

This lab is named after Muḥammad ibn Mūsā al-Khwārizmī (780-850), Arabized as al-Khwarizmi, (formerly Latinized as Algorithmi). Al-Khwarizmi was a Persian polymath who is credited with producing vastly influential works in mathematics, astronomy, and geography. He also developed the concept of the algorithm in mathematics which brought him the fame as the grandfather of computer science. The lab is a tribute to his pioneering contributions in the domain of computational sciences.

Al-Khwarizmi Lab is mainly dedicated to the Final Year Projects and research activities. It also caters to general-purpose computer usage. It is a great resource for students needing high-speed Internet (Ethernet and Wi-Fi both) and computing nodes. It features VDI machines for computational processes, state of the art Smart Boards and Programming Display Units (PDUs) for 360 view of the instructor's screen. It is furnished with high quality furniture in an ergonomically built setting. The Lab is also a venue for students' workshops and software competitions. Its equipment inventory comprises:

- VIRTUAL DESKTOP INTERFACE (VDI)
- Smart Boards
- Programming Display Units (PDUs)

MEMBERS OF FACULTY

DR. SHARIFULLAH KHAN (TI)

Professor & Dean

PhD in Computer Science (University of Leeds, Leeds) UK
Databases, Information Retrieval, Data Mining, Ontology Engineering



DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING



DR. ZAHID ULLAH

Assistant Professor & Head of the Department

PhD(Electronic Eng), City University of Hong Kong, Hong Kong
FPGA-based CAM design, Embedded Systems, Pattern Recognition, Image Processing, Reconfigurable Computing, and Artificial Intelligence

DR. ARBAB WAHEED AHMAD

Assistant Professor & Head of Electrical Engineering

PhD (Electronics & Communications Engineering), Hanyang University, South Korea
Databases, Information Retrieval, Data Mining, Ontology Engineering



DR. MUHAMMAD AAMIR

Assistant Professor

PhD (Electrical Engineering), University of Malaya, Malaysia
Power Electronics & Control, Renewable Energy integration in Microgrid, Power System operation and control

DR. SAAD QAYYUM

Assistant Professor

PhD (Electrical Engineering), RWTH Aachen University, Germany
RF, microwave & millimeter-wave IC design, Graphene-based Flexible Electronics, Circuit design



ENGR. ZEESHAN ALI

Lab Engineer

MS (Electrical Engineering), COMSATS University, Abbottabad
Wide Area Power System and High Voltage Engineering

ENGR. KHURRAM KHAN

Lab Engineer

MS (Electrical Engineering), U.E.T Taxila
Power Electronics & Control, Renewable Energy, Digital System Design



ENGR. ADNAN KHAN

Lab Engineer

MS (Electronic Engineering), C.U.S.T Islamabad
Signal Processing, Non-linear Adaptive Filters, Control systems and design

DEPARTMENT OF IT AND COMPUTER SCIENCE



DR. SAIMA JABEEN

Assistant Professor & HoD

PhD in Computer and Control Engineering (Politecnico di Torino, Torino) Italy
Data Mining, Machine Learning, Natural Language Processing, Social Network Analysis

DR. BABAR NAZIR

Associate Professor

PhD in Computer Science (Universiti Teknologi Petronas) Malaysia
Distributed Computing, Cloud/Grid/Cluster Computing, WSN, Mobile Edge Computing



DR. NAZEER MUHAMMAD

Assistant Professor

PhD in Applied Mathematics (Hanyang University, Seoul) South Korea
Digital signal/image processing, Mathematical Modelling, Digital Holography, OFDM

DR. GHUFRAN ULLAH

Assistant Professor

PhD in Computer Science (Universiti Teknologi Malaysia, Johor) Malaysia
Wireless Sensor Networks, Ubiquitous Computing, Internet of Things



DR. RASHID NASEEM

Assistant Professor

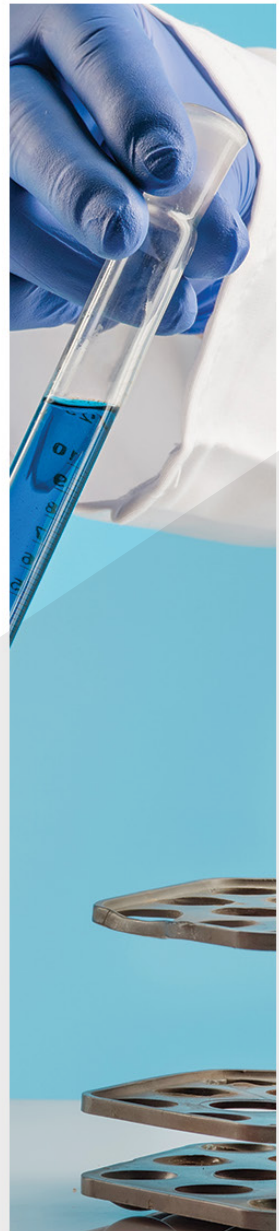
PhD in Information Technology (Universiti Tun Hussein Onn Malaysia, BatuPahat) Malaysia
Software Engineering, Software Modularization, Data Mining, Soft Computing

DR. MUHAMMAD ARIF SHAH

Assistant Professor

PhD in Computer Science (Universiti Teknologi Malaysia, Johor) Malaysia
Software Engineering, Data Sciences, Human Computer Interaction, Project Management





Faculty of Mechanical, Chemical, Materials & Mining Engineering

Faculty of Mechanical, Chemical, Materials, and Mining Engineering (FCM3) is fully geared to launch career programs related to chemical process industry, petrochemicals, oil and gas sector, fertilizers, renewable energy, high-performance materials, design, and manufacturing. Our faculty is committed to enhancing development of human capital and achieving the goals of national prosperity through product commercialization, technology application, training, international collaboration, and community service. To meet technological challenges, students are encouraged to employ new techniques in their scientific work. All our efforts are synced to prepare graduates capable of embarking on their professional careers with sound leadership qualities, entrepreneurship skills and a deep sense of social responsibilities.

DEPARTMENT OF CHEMICAL & ENERGY ENGINEERING

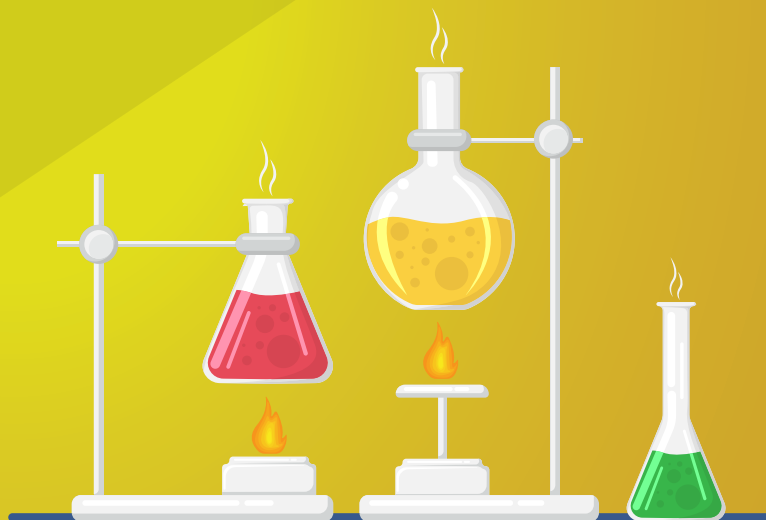
Department of Chemical and Energy Engineering is offering an undergraduate degree program in the discipline of Chemical Engineering from fall 2020. The program provides an excellent opportunity for students to engage and interact with relevant industries and organizations. Our faculty enjoys sound international credentials of having participated in several cutting-edge research projects. The presence of state-of-the-art labs, ample learning resources, smart classrooms, and well-equipped lecture halls, make our environment all the more conducive to quality education of a very high order. The classrooms are virtually linked to facilitate lectures and seminars by foreign faculty. Through our integral collaboration with Management Centre Innsbruck (MCI), Austria, our selected will be able spend their final year at MCI. After approval from the accreditation bodies of Pakistan and Partner University in Austria, they will be awarded dual degrees, one from PAF-IAST Pakistan and the other from MCI Austria. We have plans to start in the future other programs at Bachelors, MS, and PhD levels.

- Bachelor of Engineering in Chemical Engineering Program Description

Presently, we are offering only a bachelor's program in Chemical Engineering. This will be potentially a unique program blending in right proportions internships and practical experience. In sync with PAF-IAST vision, "Skilling Pakistan", the program is tailored to incorporate industrial training, industrial design project, and international collaboration, with main thrust on process engineering.

- Associated Careers

Chemical engineers are required to design, execute and maintain industrial processes in order to produce food, chemicals, fuels, pharmaceuticals and biological commodities. This entails for them to work with state-of-the-art technologies with a view to contributing to areas like energy, environment, chemical processes, as well as resource management. Their main responsibilities consist in maximizing productivity and quality at minimal costs, conducting research, design and optimizing equipment. Fair job opportunities exist for chemical engineering graduates to work in oil and gas sector, cement industry, renewable energy, water treatment, nuclear facilities, environmental agencies, food industry, pulp and paper industry, and in the domain of manufacturing industry.



Semester 1			Semester 2		
Code	Course Name	Credits	Code	Course Name	Credits
SS-101	Functional English	2	CHE-101	Chemical Process Principles-I	3
COMP-101	Introduction to Computing	1	MTH-202	Linear Algebra and Differential Equations	3
COMP-101L	Introduction to Computing Lab	1	ME-101L	Workshop Practice	1
SS-112	Pakistan Studies	2	COMP-111	Programming Fundamentals	3
CH-102	Inorganic and Organic Chemistry	3	COMP-111L	Programming Fundamentals Lab	1
CH-102L	Inorganic and Organic Chemistry Lab	1	SS-102	Communication Skills	2
MTH-101	Calculus and Analytical Geometry	3	PHY-101	Applied Physics	3
CHE-131	Fundamentals of Engineering Materials	3	PHY-101L	Applied Physics Lab	1
Total Credit Hours		16	Total Credit Hours		17
Semester 3			Semester 4		
Code	Course Name	Credits	Code	Course Name	Credits
CH-202	Physical and Analytical Chemistry	3	CHE-203	Chemical Process Technology	3
CH-202L	Physical and Analytical Chemistry Lab	1	CHE-203L	Chemical Process Technology Lab	1
CHE-202	Chemical Process Principles-II	3	CHE-213	Fluid Mechanics –II	2
CHE-211	Fluid Mechanics-I	2	CHE-213L	Fluid Mechanics -II Lab	1
SS-111	Islamic Studies	2	CHE-214	Mass Transfer	2
ME-102L	Engineering Drawing	1	CHE-215	Heat Transfer	3
CHE-212	Chemical Engineering Thermodynamics-I	3	CHE-215L	Heat Transfer Lab	1
SS-203	Technical and Business Writing	3	EE-104	Applied Electrical Engineering	2
Total Credit Hours		18	EE-104L	Applied Electrical Engineering Lab	1
			ECO-202	Engineering Economics	2
			Total Credit Hours		18
Semester 5			Semester 6		
Code	Course Name	Credits	Code	Course Name	Credits
CHE-316	Particulate Technology	3	CHE-321	Chemical Reaction Engineering	3
CHE-316L	Particulate Technology Lab	1	CHE-321L	Chemical Reaction Engineering Lab	1
CHE-341	Energy Engineering	3	CHE-361	Maintenance and Process Safety	2
CHE-341L	Energy Engineering Lab	1	CHE-318	Separation Processes-I	3
MTH-307	Numerical Computations	2	CHE-318L	Separation Processes-I Lab	1
MTH-307L	Numerical Computations Lab	1	MGT-355	Production & Operational Management	2
CHE-317	Chemical Engineering Thermodynamics-II	3	CHE-322	Chemical Process Design and Simulation	2
CHE-317L	Chemical Engineering Thermodynamics-II Lab	1	CHE-322L	Chemical Process Design & Simulation Lab	1
CHE-362	Statistics and Experimental Design	2	MGT-262	Entrepreneurship	3
Total Credit Hours		17	Total Credit Hours		18
Semester 7			Semester 8		
Code	Course Name	Credits	Code	Course Name	Credits
CHE-423	Instrumentation and Process Control	3	SS-322	Professional Ethics	3
CHE-423L	Instrumentation and Process Control Lab	1	CHE-426	Transport Phenomena	3
CHE-464	Chemical Engineering Plant Design	3	CHE-469	Plant Design Project-II	3
CHE-468	Plant Design Project-I	3	CHE-445	Environmental Engineering	2
XXX-###	Elective – I (Technical)	3	CHE-445L	Environmental Engineering Lab	1
CHE-419	Separation Processes-II	3	XXX-###	Elective-II (Technical)	3
CHE-419L	Separation Processes-II Lab	1	SS-331L	Community Services Field Work (Non-Credit Compulsory Course)	2
Total Credit Hours		17	Total Credit Hours		15

ELECTIVE COURSES

Code	Course Name	Credits
Environment		
CHE-434	Membrane Technology	3
CHE-446	Solid Waste Management	3
BIO-447	Biological Process Engineering	3
Energy		
CHE-443	Hydropower	3
CHE-427	Computational Fluid Dynamics (CFD)	3
CHE-451	Gas Dynamics	3
CHE-442	Renewable Energy Resources	3
CHE-444	Industrial Energy Systems	3
CHE-447	Fuel Cell	3
CHE-453	Petrochemicals	3
CHE-452	Petroleum Refinery Processes	3





Lab Facilities Inorganic and Organic Lab

The students will learn basic techniques of the chemistry. The students will become familiar with basic skills, techniques and apparatus. The experiments related to spectroscopy, chromatography, organic chemical reactions, salt analysis, elemental analysis and catalysis will be demonstrated and conducted.

Equipment List

- UV/Visible Spectrophotometer
- Abbes Refractometer
- Oil bath
- Melting Point Apparatus
- Hot plate with magnetic stirrer
- Analytical Electronic Balance (100g)
- Analytical Electronic Balance (3000g)
- Desiccator with Vacuum Pump
- Rotary Evaporator Including Vacuum Pump
- Furnace
- Water Distillation Assembly
- Bomb Calorimeter
- Mechanical Shaker
- Water bath 4 & 6 holes
- UV Lamp
- Oven

Analytical & Physical Chemistry Lab

The analytical and physical chemistry lab offers students an introduction to physical and analytical chemistry techniques. The application of principles

learned in class is reinforced by performing experiments in the lab. The students will be enlightened and educated to broad range of basic analytical and other techniques used in chemistry and chemical engineering.

Equipment List

- Table Top Centrifuge
- UV/Visible Spectrophotometer
- Conductivity meter
- Flame photometer
- Hot plate with magnetic stirrer
- Analytical Electronic Balance (100g)
- Analytical Electronic Balance (3000g)
- Glass viscometer
- Ultrasonic Bath
- PH Meter
- Furnace
- Autoclave
- Water Distillation Assembly
- Heating Mantle
- Bomb Calorimeter
- Water BATH
- UV lamp
- Melting point Apparatus
- Dessicator with vacuum pump
- Oven
- Mechanical shaker
- Abbes Refractometer

- Heat Transfer Lab

In chemical industries, various operations are assisted with heat addition and rejection by using a variety of heat exchangers and reactors whose performance is highly affected through heat transfer. Therefore, heat transfer lab is designed to familiarize the students with the various modes of heat transfer by applying its fundamentals through equipment.

Equipment List

- Concentric Double Pipe Heat Exchanger
- Heat Exchanger Service unit with DAQ
- Shell and Tube Heat Exchanger
- Radiation Heat Transfer Unit
- Film & Drop wise Condensation Unit,
- Flow Boiling Demonstration Unit Free and force convection unit Heat conduction Unit
- Thermal conductivity apparatus
- Plate and frame heat exchanger

Fluid Mechanics Lab

In fluid mechanics lab, fluids and their flow behaviors are studied and observed. Pressure variations are calculated through gauges for compressible fluids when they flow through convergent-divergent nozzles. Various theoretical demonstrations of different laws of fluid mechanics are checked through lab equipment.

Equipment List

- Flow Meter Trainer
- Fluid Statics and Manometry Hydraulics Bench
- Osborne- Reynold's Demonstration unit
- Multi-Pump Test Rig
- Flexible Impeller Pump
- Plunger Pump or Reciprocating Pump, Diaphragm Pump
- Fixed and Fluidized Bed Equipment
- Centrifugal Fan Demonstration Unit
- Centrifugal Pump Demonstration Unit
- Drag Coefficient Apparatus Bernoulli's

Theorem Apparatus

- Free and Force Vortex Apparatus Fluid Friction Apparatus with Hydraulic Bench

Chemical Engineering Thermodynamics Lab

In the thermodynamics lab, equipment is related to the basic laws and applications of thermodynamics like boiler, refrigeration unit, Joule-Thomson apparatus, and Boyle's law apparatus. This lab not only allows students to have a thorough understanding of these principles but also develops the basic requirement of a chemical engineer, i.e., to cope with the wide variety of problems such as calculation of heat and work requirement of physical and chemical processes.

Equipment List

- Expansion Process unit
- Temperature Measurement & Calibration unit
- Pressure Measurement & Calibration Unit
- Saturation Pressure Unit
- Recycle Loop
- Mechanical Heat Pump
- Solar Energy Demonstration Unit
- Refrigeration Cycle Demonstration Unit with DAQ software
- Single Cylinder Steam Engine
- Mechanical Equivalent of Heat Apparatus
- Laser Thermometers





Workshop

This laboratory supports basic course in machine tool and machining at undergraduate level. The experiments to be performed in the laboratory are designed in such a way as to reinforce understanding of the basic principles and practical skills needed by students to visualize various phenomena encountered in different applications. The questions provided at the end of each experiment reinforce the students' understanding, besides preparing them for viva-voce exams.

Equipment List

- Pillar drill
- Cut Off Machine
- Bench grinder
- Milling Machine
- Shaper Machine
- Lathe Machine
- CNC Machine
- Tool Kit

Chemical Process Technology Lab

Chemical process technology lab provides hands-on experience for industrial/ semi-industrial equipment. CPT lab is mainly focused on process and plant design, scale-up, etc. The students will utilize diverse scientific concepts from different subjects in one assignment/project, for instance, analytical chemistry, thermodynamics, heat and mass balances, unit operations, kinetics, process control, uncertainty calculations, sampling techniques, safety,

and environmental aspects.

Equipment List

- Various industry pilot plants
- Furnace
- oil bath
- Mechanical Shaker
- oven
- conductivity meter
- PH Meter

Computer Lab

The lab facility helps to design, simulate, and optimize different chemical engineering processes. ANSYS Computational Fluid Dynamics (CFD) Software used to predict the impact of fluid flows under different conditions during operations. HyperChem is also used for building new molecules, predicting their molecular mechanics and dynamics. ASPEN Engineering Suite (AES) is extensively used for designing Chemical Process Industries, optimization of existing and new process industries, economic evaluations, and feasibility studies of process industries. There are 50 workstations at the simulation laboratory.

Electrical Engineering Lab (Shared)

Electrical Engineering Lab aims to provide basic knowledge of electrical equipment and skills to undergraduate students through various experiments. This lab is focused on the fundamentals of circuit analysis, voltage, current, sources, and Ohm's law to resolve complex electric circuits. Also gives the

solutions for resistive circuits followed by complex elements, e.g., capacitors, inductors and operational amplifiers, circuits with DC sources, and circuits with sinusoidal sources.

Labs in Procurement Phase

- Particle Technology Lab
- Separation Processes-I Lab
- Separation Processes-II Lab
- Fuels and Energy Engineering Lab
- Chemical Reaction Engineering Lab
- Instrumentation and Process Control Lab
- Environmental Engineering Lab



MEMBERS OF FACULTY

DEPARTMENT OF CHEMICAL ENGINEERING & ENERGY



DR. RIZWAN AHMAD

Assistant Professor & HOD

PhD in Environmental Engineering, INHA University, Incheon, South Korea
Self-assembles mesoporous catalytic films, Photocatalytic membrane reactors,
Membrane distillation, Wastewater treatment, Membrane Bioreactors

DR. MUHAMMAD MUJAHID

Professor

PhD in Materials Engineering, University of Oxford, England
Nano and Biomaterials, Phase Transformations, Structure-Property Relationships, Materials Characterization



DR. FIDA HUSSAIN

Assistant Professor

PhD in Environmental Engineering, Wuhan University of Technology, Wuhan, China
Fabrication of Nano-Bimetallic Catalysts, Fenton and Photo-Fenton Catalysis, CO₂ Fixation,
Water Quality Monitoring and Water treatment, Environmental Remediation

DR. IMRAN ULLAH KHAN

Assistant Professor

PhD in Chemical Engineering, Universiti Teknologi Malaysia, Malaysia
Membrane Separation Processes, Renewable Energy, Synthesis of Nanomaterials for Gas Adsorption,
Pulp, Paper and Surface Treatment Technology



DR. SADIA MEHMOOD

Assistant Professor

PhD in Physical Chemistry, Quaid-i-Azam University, Islamabad, Pakistan
Electrochemistry, Electrode materials for Fuel Cell, Nanomaterials fabrication and functionalization,
Catalysis, Plasmonic Materials

DR. AMIR MUHAMMAD

Assistant Professor

PhD in Chemical Engineering, University of Engineering and Technology, Peshawar, Pakistan
Process Modeling and Simulation, CFD, Membrane Separation Processes, Membrane Contactors,
Water Treatment, Gas Separation



DEPARTMENT OF CHEMICAL ENGINEERING & ENERGY

DR. MUHAMMAD MUQEET

Assistant Professor

PhD in Environmental Eng, Mehran University of Engineering & Technology, Jamshoro, Sindh, Pakistan
Engineering Entrepreneurship, Nanofiber-based product design, Electro spinning, Biomaterial processing,
Polymer Science and Engineering, Nanomaterials Functionalization



ENGR. MUHAMMAD IMAD

Lab Engineer

MSc. Chemical & Energy Engineering, Otto Von Guericke University Magdeburg, Germany
Membrane synthesis and characterization, Mixed matrix membranes, MOFs,
Wastewater Treatment, Gas Separation

ENGR. MARYAM KHALID

Lab Engineer

BSc. in Chemical Engineering, University of Peshawar, Peshawar, Pakistan
CFD, Modelling and simulation, Gas separation





Faculty of Biomedical Sciences & Engineering

The faculty of Biomedical Sciences and Engineering was established in 2020 and is comprised of three departments: Biomedical Sciences, Biomedical Engineering and Clinical Engineering. Various programs in the faculty focus on teaching and research in different areas of medical sciences and engineering, ranging from fundamental understanding of molecular basis of cell & their interactions, to highly advance area of knowledge related to comprehension of human pathologies, from diagnostic analysis to treatment and recovery. Particularly, our programs are tailored toward development of implantable medical devices, such as pacemakers and artificial hips, to more futuristic technologies such as stem cell engineering and the 3-D printing of biological organs. Various aspects of mechanical engineering, electrical engineering, chemical engineering, materials science, physics, chemistry, mathematics, and computer science and engineering all will be integrated with human biology in biomedical Sciences and engineering to improve human health.

DEPARTMENT OF BIOMEDICAL SCIENCES

- Bachelor of Science in Biomedical Sciences

Program Description

The field of Biomedical Sciences encompasses both biology and medicine to solve human health issues. PAF-IASST, Haripur is the first institute in KP to establish the Department of Biomedical Sciences, with learning and research focuses on various aspects of medical sciences, ranging from fundamental understanding of molecular basis of the cell and their interactions, to highly advanced areas of knowledge related to the understanding of human pathologies. It is the first of its kind department in the country to offer a dual degree in the field of biomedical sciences in collaboration with Austrian Institutions. Most importantly, the department is chiefly committed to producing graduates with exceptional and individualized educational experience, amply skilled to solve problems related to biomedical science. It is uniquely the only Biomedical Science Department in the country with plans for close collaboration with medical research institutions and industries. The student-centered practical-based teaching methodology to be followed will ensure enhanced learning. We aim to field in the service of society graduates of high merit and capability with the capacity and passion to make new discoveries and advancements in the diagnosis and therapeutics of human diseases. We also expect our graduates to bring about improvements in emerging biomedical technologies such as medical imaging, wearable devices, assistive technologies, cell and tissue engineering, molecular diagnostics, personalized medicine, regenerative and Nano medicines, stem cells and cell reprogramming, and more.

- Associated Careers

A biomedical scientists has multifarious career paths after completion of Bachelor of Science in biomedical science: Biomedical Scientist, Drug Developer, Researcher, Professor, Nanotechnologist, Neuroscientist, Cytologist, Pathologist, Bioentrepreneur, Geneticist, Gerontologist, Molecular Biologist, Immunologist, Laboratory

Technician, Crime Scene Investigator, Community Health Educator, Dietician, Endocrinologist, Biotechnician, Medical Technology Developer, Naturopath, Toxicologist, Parasitologist, Medical Sales Representative, and Medical Science Liaison person and so on.



Semester 1

Code	Course Name	Credits
SS-101	Functional English	2
SS-111	Islamic Studies	2
COMP-101	Introduction to ICT	2
COMP-101L	Introduction to ICT Lab	1
MTH-111	Mathematics	3
BMS-121	Biochemistry	3
BMS-121L	Biochemistry Lab	1
CHEM-101	Chemistry and Stoichiometry	2
CHEM-101L	Chemistry and Stoichiometry Lab	1
Total Credit Hours		17

Semester 2

Code	Course Name	Credits
SS-102	Communication Skills	2
SS-112	Pakistan Studies	2
BMS-111	Human Physiology-I	2
BMS-111L	Human Physiology-I Lab	1
BMS-113	Human Anatomy	3
BMS-113L	Human Anatomy Lab	1
BMS-141	Cell and Molecular Biology	2
BMS-141L	Cell and Molecular Biology Lab	1
BMS-131	Microbiology	3
BMS-131L	Microbiology Lab	1
Total Credit Hours		18

Semester 3

Code	Course Name	Credits
SS-203	Technical and Business Writing	3
MGT-262	Entrepreneurship	3
BMS-212	Human Physiology-II	2
BMS-212L	Human Physiology-II Lab	1
BMS-224	Cytology and Histopathology	2
BMS-224L	Cytology and Histopathology Lab	1
BMS-242	Human Genetics	2
BMS-242L	Human Genetics Lab	1
BMS-253	Biomedical Instrumentations & Techniques	2
BMS-253L	Biomedical Instrumentations & Techniques Lab	1
Lab Rotation/Internship (Noncredit Hour)		
Total Credit Hours		18

Semester 4

Code	Course Name	Credits
BMS-222	Hematology	2
BMS-222L	Hematology Lab	1
BMS-225	Chemical and Clinical Pathology	3
BMS-225L	Chemical and Clinical Pathology Lab	1
BMS-251	Functional Diagnostics & Laboratory Information System	2
BMS-251L	Functional Diagnostics & Laboratory Information System Lab	1
BMS-232	Immunology and Serology	2
BMS-232L	Immunology and Serology Lab	1
BMS-271	Cell Culture	2
BMS-271L	Cell Culture Lab	1
Lab Rotation/Internship (Noncredit Hour)		
Total Credit Hours		16

Semester 5

Code	Course Name	Credits
BMS-323	Hemostaseology	2
BMS-323L	Hemostaseology Lab	1
BMS-314	Human Reproduction and Embryology	3
BMS-314L	Human Reproduction and Embryology Lab	1
BMS-383	Biomedical Nanotechnology	2
BMS-383L	Biomedical Nanotechnology Lab	1
BMS-352	Environmental Health and Biosafety	1
BMS-352L	Environmental Health and Biosafety Lab	1
BMS-343	Aging and Age-related Diseases	3
BMS-372	Recombinant DNA Technology	2
BMS-372L	Recombinant DNA Technology Lab	1
Lab Rotation/Internship (Noncredit Hour)		
Total Credit Hours		18

Semester 6

Code	Course Name	Credits
BMS-362	Forensic Science	3
BMS-326	Pharmacology and Toxicology	2
BMS-326L	Pharmacology and Toxicology Lab	1
BMS-361	Bioinformatics	2
BMS-361L	Bioinformatics Lab	1
SS-341	Economics and Healthcare Management	2
BMS-374	Biomaterials and Tissue Engineering	2
BMS-374L	Biomaterials and Tissue Engineering Lab	1
BMS-382	Assisted Reproductive Technology	2
BMS-382L	Assisted Reproductive Technology Lab	2
SS-331	Community Services (Noncredit Hour)	0
Lab Rotation/Internship (Noncredit Hour)		
Total Credit Hours		18

Semester 7

Code	Course Name	Credits
MTH-412	Biostatistics	2
MTH-412L	Biostatistics Lab	1
BMS-481	Artificial Organs Technology	3
BMS-4##	Elective Course I	3
BMS-4##	Elective Course II	3
BMS-498	Final Year Project	3
Total Credit Hours		15

Semester 8

Code	Course Name	Credits
SS-322	Professional Ethics	3
BMS-473	Stem Cells and Cell Replacement Therapy	3
BMS-473L	Stem Cells and Cell Replacement Therapy Lab	1
BMS-4##	Elective Course III	3
BMS-4##	Elective Course IV	3
BMS-498	Final Year Project	3
Total Credit Hours		16

ELECTIVE COURSES

Code	Course Name	Credits
BMS-427	Immuno and Clinical Haematology	3
BMS-415	General and Comparative Endocrinology	3
BMS-416	Molecular and Clinical Endocrinology	3
BMS-417	Molecular Physiology	3
BMS-454	DNA Diagnostics	3
BMS-446	Cancer Biology and Cancer Genetics	3
BMS-445	Clinical Teratology	3
BMS-475	Synthetic Biology	3
BMS-476	Introduction to Nuclear Medicine	3
BMS-433	Medical Parasitology and Entomology	3
BMS-444	Medical Virology	3
BMS-445	Biophysics	3
BMS-464	Medical Imaging	3





Human Anatomy, Physiology and Embryology Laboratory

The Human Anatomy, Physiology and Embryology Laboratory at PAF-IAST will equip undergraduate students with the fundamentals and practical aspects of human anatomy, physiology, and embryology. The Human Anatomy, Physiology, Embryology Laboratory will complement the lecture course by providing them with hands-on access to practical and advanced techniques in human anatomical, physiological and embryological analyses. They will gain sound understanding of human anatomy, physiology and embryology through experiences necessary to foster critical thinking skills needed for practical application of the knowledge and functions of human anatomy, physiology and embryology. The lab will generate a learning environment built on experiment participation, collaborative assignments, course-based undergraduate research, and interaction with staff and peers.

Biomaterials & Tissue Engineering Laboratory

Biomaterials and tissue engineering lab will be geared to exposing students to the cutting-edge technologies of cell culture, tissue engineering and artificial organ technology. The students will gain experience on conventional (2D) and 3D mammalian cell culture, and will develop the capability to

create artificial tissue and organs using modern technologies such as 3D bio printing, bio fabrication and organ on CHIP. They will also acquire latest techniques used in biomedical nanotechnology.

Biochemistry and Molecular Biology Laboratory

Biochemistry and molecular biology lab will impart insight through experiments in biochemistry, molecular biology, chemistry, genetics, immunology, microbiology, neurochemistry, etc. The students will be extensively exposed to working with biomolecules in the laboratory, with a view to equip them with skill-sets needed for future research participation at the undergraduate and graduate level as well as for jobs in the biotechnological and pharmaceutical industries. The students will greatly benefit from hands-on experience on purification and characterization of biomolecules, including carbohydrates, lipids, nucleic acids, and proteins. The knowledge of the basics of molecular biology and biochemistry techniques, will revitalize their thinking process towards exploration of specialized fields such as therapeutic interventions, personalized medicine and gene therapy, and, their corollary, disease prevention.

Pathology and Hematology Laboratory

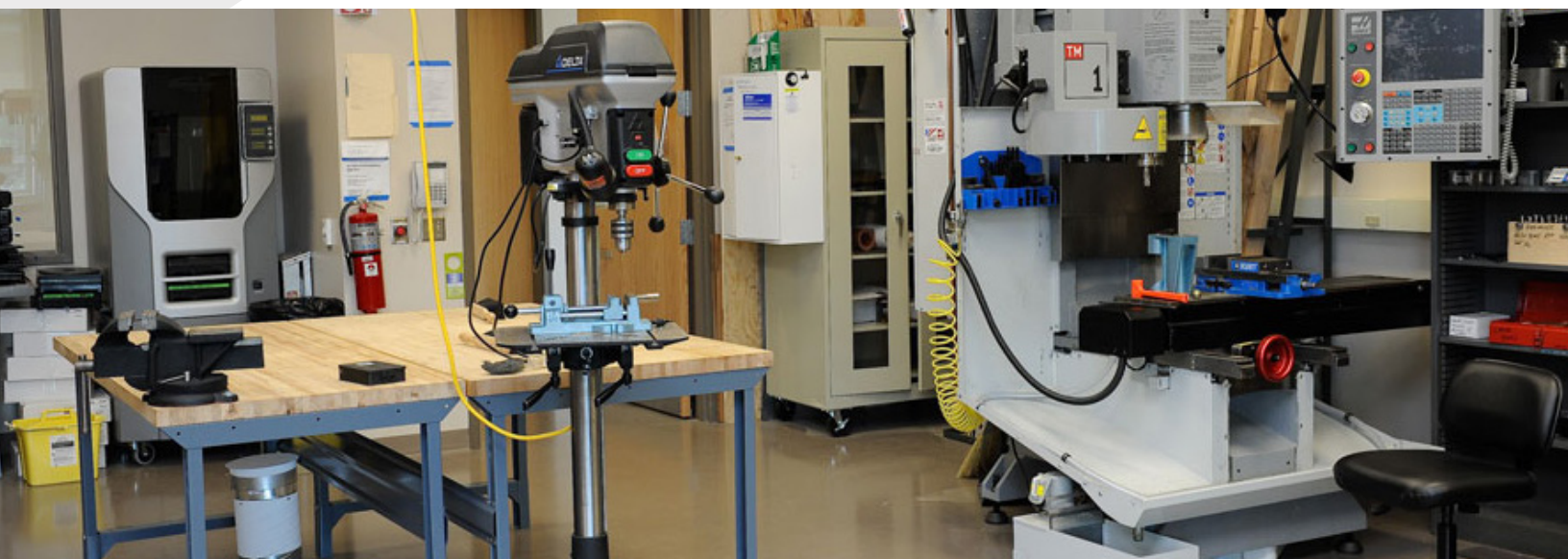
The Pathology and Hematology Laboratory will equip undergraduate students with the fundamentals practical aspects of clinical pathology through

tests to be carried out on clinical specimens in order to obtain information about the health of a patient for diagnosis, treatment, and prevention of disease. Clinical Chemistry is generally concerned with analysis of body fluids for diagnostic and therapeutic purposes. Unlike research laboratories that focus on basic science, clinical medical laboratories are the manifestation of applied science. This laboratory aims to provide students with hand-on training in order to enable them to deal with many specimens that activate one or more sophisticated automated analyzers capable of processing a fraction of the sample to produce one or more test results. The lab is a great resource to train potential healthcare providers with the specialized knowledge of diseases caused blood and blood components. The creative learning environment in the lab promotes experiment participation and course-based undergraduate research.

Core Practical and Research Labs Facility

One of the core strengths of the department are a set of six labs equipped with state-of-the-art equipment/facilities for In-Vitro Fertilization encompassing Histology, Cell Culture, Microbiology, Molecular Biology and Microscopy. Histology lab the facility of automatic tissue processor, microtome and cryostat. The molecular biology is partitioned into PCR and post-PCR working stations, equipped with multiple PCRs, cars as well as post-PCR with electrophoretic, gel imaging and western blotting systems.

The microbiology lab has separate workstations for virus, fungus/parasite and bacterial culture and experiments. At the cell culture lab, BSL2 facility is available for human and animal cell and tissue culture. The microscopy and Fluorescence Activated Cell Sorting (FACS) lab comprises latest confocal microscope, fluorescence microscopes, inverted microscope and FACS sorter. In addition to these prime labs which are available to students 24/7 for training and experimental work, The department also has a dedicated state-of-the-art computer lab.



MEMBERS OF FACULTY

DEPARTMENT OF BIOMEDICAL SCIENCES



DR. FAZAL WAHAB

Associate Professor & Chairman

PhD (2011), Quaid-i-Azam University, Islamabad, Pakistan

Brazil (2014), Germany (2018), China (2019)

Specialization: Molecular and Cellular Endocrinology, Molecular Neurobiology,

Assisted Reproductive Technology, Male Germline Stem Cell Biology

DR. ASHRAF M. JAHANIAN

Professor

PhD, University of London, United Kingdom

Molecular Biology, Cell Biology



DR. FAZLI WAHID

Associate Professor

PhD (2013), Kyungpook National University, South Korea

Biotechnology, Biomaterials and Tissue Engineering

DR. HUMAIRA AYUB

Assistant Professor

PhD (2015), Comsats University Islamabad, Pakistan

Biochemistry, Molecular Biology and Human Genetics



DR. FARAKH JAVED

Assistant Professor

PhD(2016), National University of Science & Technology, Islamabad, Pak

Virology and Immunology

DR. WAQAR KHALID SAEED

Assistant Professor

PhD (2018), Hanyang University, South Korea

South Korea (2018), Physiology, Hepatology (Internal Medicine), Translational and Molecular Medicine,

Stem Cell Biology, Drug discovery





PAK-AUSTRIA FACHHOCHSCHULE:

INSTITUTE OF APPLIED SCIENCES AND TECHNOLOGY

ADMISSIONS

AT PAF-IAST, equal educational opportunities greet prospective candidates regardless of their economic or social status. We do not discriminate on the basis of race, color, religion, beliefs, gender, age, marital status, national origin etc. Female candidates are encouraged to join our engineering and sciences programs.

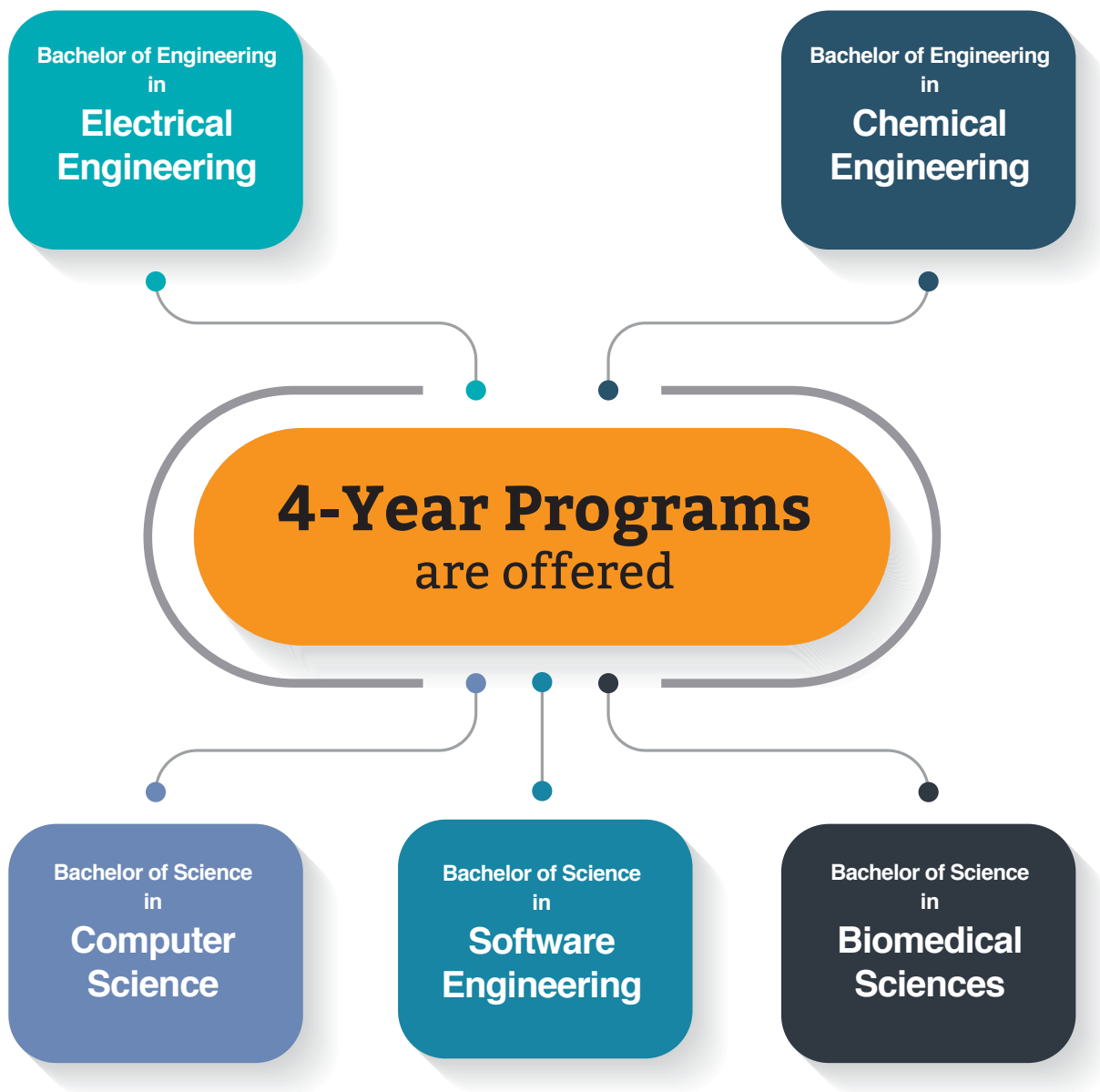


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ADMISSION-FALL 2020



Admission Eligibility Criteria for Bachelor Programs

S#	Program	Requirements	
1.	Bachelor of Engineering in Electrical Engineering	<ul style="list-style-type: none"> - HSSC in Pre-Engineering - HSSC in Pre-Medical with Additional Maths - A-Levels with Physics, Maths and Chemistry - DAE in relevant technology - Entry Test / SAT Subject Test 	With at least 60% Marks
2.	Bachelor of Engineering in Chemical Engineering	<ul style="list-style-type: none"> - HSSC in Pre-Engineering - HSSC in Pre-Medical with Additional Maths - A-Levels with Physics, Maths and Chemistry - DAE in relevant technology - Entry Test / SAT Subject Test 	With at least 60% Marks
3.	Bachelor of Science in Computer Science & Bachelor of Science in Software Engineering	<ul style="list-style-type: none"> - HSSC in Pre-Engineering / ICS - HSSC in Pre-Medical with Additional Maths - A-Levels with Physics, Maths and Computer Science / Chemistry - DAE in relevant technology - Entry Test / SAT Subject Test 	With at least 50% Marks
4	Bachelor of Science in Biomedical Sciences	<ul style="list-style-type: none"> - HSSC in Pre-Medical - A-Levels with Physics, Biology and Chemistry - Entry Test / SAT Subject Test 	With at least 50% Marks

- HSSC stream candidates are eligible to apply for admission on the basis of HSSC Part-I result. Confirmation of their admission shall be contingent on submission of HSSC Certificate or HSSC Detailed Marks Certificate (with the minimum aggregate marks required for the program) before commencement of the respective study program.
- O/A level and other non-SSC/HSSC stream candidates need to submit equivalence certificates issued by Inter-Board Committee of Chairmen (IBCC), Pakistan.
- Candidates of O/A level and other non-SSC/HSSC stream can apply on the basis of O level/other non-SSC equivalence certificate duly issued by IBCC. Confirmation admission shall be is subject to submission of A Level/ other non-HSSC equivalence certificate before commencement of the respective study program. Submission of a valid O Level/r non-SSC equivalence certificate is mandatory at the time of applying for admission.
- Candidates can apply on the basis of PAF-IAST Entry Test or SAT or both.
- For Bachelor of Engineering, as per PEC policy 2% quota is available for admission to candidates possessing Diploma of Associate Engineering (DAE) with minimum 60% marks for the respective technology.
- For candidates in A Level/other non-HSSC (final year), 40% weightage will be assigned to their O Level/ other non-SSC equivalence marks on the basis of equivalence certificates issued by IBCC.

Entry Merit Scheme

Final merit list of candidates for undergraduate programs will be prepared with weighted score indicated below:

S#	Category	Weightage
1	SSC/ Equivalent	10%
2	HSSC /Equivalent	30%
3	PAF-IAST Entry Test / SAT Subject	50%
4	Interview	10%

PAF-IAST Entry Test Pattern

All candidates will be given a test of intermediate level education to evaluate the degree of factual knowledge and its comprehension and application.

S#	Category	Weightage
1	English	10%
2	Maths / Biology	40%
3	Physics	25%
4	Chemistry / Comp. Science	25%

SAT Subject Test

SAT scores from College Board, USA should reach PAF-IAST before announcement of the first merit-list. PAF-IAST institutional code to receive SAT scores is xxxx. Scores received after the deadline will not be entertained. SAT scores are valid for two years. SAT Subject Test scores are required for following subjects:

- Engineering Programs
- Mathematics Level-II
- Physics
- Chemistry
- Biomedical Programs
- Biology Level-II
- Physics
- Chemistry

- Computing Programs
- Mathematics Level-II
- Physics

Admissions Process (Sequence)

- Registration /Signup on the web portal
- Application Processing
- Entry Test
- Uploading documents
- Submission of Application
- Announcement of Merit List

Cancellation of Admission

- Admission is liable to be cancelled if the candidate is found guilty of suppression or misrepresentation of material facts at any stage.
- The seats of those candidates who, after deposit of admission dues, do not join within 15 days of commencement of their respective programs shall be declared vacant, to be filled up by candidates next in queue on the merit list.

Submission of Original Documents for Verification:

Successful candidates are required to print the Provisional Selection Letters and send attested photocopies of the following documents along with duly paid fee invoice (PAF-IASST) of admission dues to Admission Section, PAF-IASST Mang, Haripur, & KP.

- SSC/Equivalent certificate along with Detailed Marks Certificate
- HSSC/Equivalent certificate along with Detailed Marks Certificate
- Equivalence certificate(s) from IBCC in case of equivalent examinations
- The institute will register the student's name according to his/her SSC or O level equivalence certificate duly issued by IBCC.

Allocation of Programs

- Allotment of programs to students will be carried out strictly according to the merit position and the candidate's duly indicated preference.
- Candidate will be considered for upgrade of programs by default in respective disciplines.
- The seats falling vacant as a result of dropouts will be re-allocated and filled through upgrades of candidates, subject to their formal willingness and deposit of admission dues in time.
- Name of candidates who fail to deposit admission dues within stipulated time will be dropped.

Fee Structure

Fee Type	Amount	Remarks
Tuition Fee	<ul style="list-style-type: none"> Rs.90,000/- per semester for national students Rs.180,000/- per semester for international students Rs.5,000/-per credit hour for national students Rs.10, 000.- per credit hours for international students 	<ul style="list-style-type: none"> Regular semester load of up to 18 CHs For less than 12CHs or for additional courses in regular semester beyond 18CHs
Admission Fee	Rs.30,000/-	One-time & non-refundable
Security	Rs.30,000/-	One-time & refundable
ECA	Rs.5,000/-per annum	Sport, Clubs, Societies etc.
Hostel Rent	Rs.3000/- per month	For lodging only Note: boarding etc. shall be charged on actual
Hostel Security	Rs.3,000/-	One-time & refundable
Other Semester expenses	Rs.1,000 per semester	Miscellaneous expenses

Course Repetition Fee

The student admitted to a repeat course(s) shall be required to pay the regular per credit hour charges for the said repeat course(s), if the regular semester load exceeds the 18-credit hour limit.

Application Processing Fee for Bachelor Programs

1. PAF-IAST Entry Test (for each exam) Rs 2,000
2. SAT results Rs 2,000

Payment of Dues

1. Successful candidates will be required to pay the admission fee, security and full semester fees by the prescribed due date.
2. Tuition fee will be payable on semester basis. Students will be required to pay their fees by the prescribed due date before the commencement of each semester.

Fee Refund Policy for all Bachelor Programs

- A freshly inducted student must inform PAF-IAST in writing if he/she decides to withdraw his/her admission.
- Admission Fee is not refundable under any circumstances.
- Security deposit is refundable at the time of completion of degree or closure of Admissions.
- Tuition Fee, ECA and other semester expenses are refundable in accordance with the guidelines of Higher Education Commission (HEC), as follows.

Timelines	Refund %age
Up to the 7th day of start of classes	Full (100%)
From the 8th –15th day of start of classes	Half (50%)
From the 16th day onward of start of classes	No Refund

Note: Days include both working days and holidays

- In case a student becomes ineligible on declaration of results, he/she will be entitled to get 100% tuition fee refunded provided he/she applies within 10 days of declaration of result along with the proof of ineligibility.

Withholding Tax

Withholding Tax under section 236I of Income Tax Ordinance 2001 is applicable @ 5% to the entire amount of fee (i.e., Tuition Fee, Admission Fee, ECA and other semester expenses) provided payable amount exceeds Rs 200,000 in a fiscal year (July to June). However, this tax does not apply if the fee is paid by a non-resident subject to following provisions:

- Copy of passport as evidence to show that during previous tax year, his/her stay in Pakistan was less than one hundred eighty-three days.
- Submission of a certificate declaring that he has no known source of income in Pakistan.
- The fee can be remitted directly from a foreign country to the specified PAF_IASST bank account.

Tax collected under this section shall be adjustable against the tax liability of either of the parents or guardian paying the fee. 5% advance tax is deducted in every spring semester. Students eligible to claim waiver of this tax may contact fee section before the due date fixed for payment of spring semester fee.

Fee Revision Policy

The Institute reserves the right to increase tuition fee for new entrants @ 10% for every year.



Merit-Based Scholarships

1. The candidate in each program achieving the top position (i.e., the highest aggregated marks) in the admission merit list will be exempt from tuition fee (full) for the 1st semester.
2. Every semester, two scholarships will be awarded in each program to students who secured GPA in the following order in the previous semester with regular course-load

GPA	%age Relief in Tuition Fee
3.96 – 4.0	100%
3.91 – 3.95	50%
3.76 – 3.90	30%
3.5 – 3.75	25%





EXAMINATION



Dr. Dil Nawaz Khan

Designation: Controller of Examination/ Provost

Qualification: PhD (Engineering Sciences/Applied Physics)
Ghulam Ishaq Khan Institute of Engineering Sciences & Technology, Topi, Swabi Pakistan

Specialization: Engineering Sciences/Applied Physics

Experience:

- Controller of Examinations in University of Haripur
- Assistant Controller & Controller of Examination in BISE Abbottabad, Mardan, Peshawar
- Associate Professor of Physics, Higher Education Department, Khyber Pakhtunkhwa

Examination

A sound examination system is in the preparatory phase to evaluate students' academic performance at the institute.

Our Examinations Office works under Controller of Examination.

This office is responsible for authentication of transcripts of all degrees or any other examination certificate issued by the Institute. The Examination Office is responsible for conduct of examinations, announcement and notification of results each semester, issuance of transcripts and certificates, award of degrees, verification of academic certificates/transcripts/degrees and the arrangements for convocations. As such, it is a key body to ensure the quality, reliability and credibility of academic assessments/examinations.

Credit Hour System

The credit hours assigned to a theory or a laboratory course are determined by the contact hours allocated to it per week throughout a semester. For a theory course one credit hour is equivalent to one contact hour of lecture per week, while for a laboratory course, three contact hours of practical work per week constitute one credit hour.

Semester Credit Load

Students can normally register in accordance with their respective degree program of 15-18 credit hours in a semester.

Degree Requirements

To qualify for the award of a Bachelor degree, a student must earn a minimum of 130 to 136 credits, depending upon his / her program of study. At the time of graduation, the Cumulative Grade Point Average (CGPA) of the student should not be below 2.00.

Medium of Instruction

English is the medium of instruction and examination at the institute.

Summer Internship

It is mandatory for every student to undergo internships of various durations with appropriate industrial unit(s) to complete the program-specified number of hours.



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