



University for Industry

NUtech

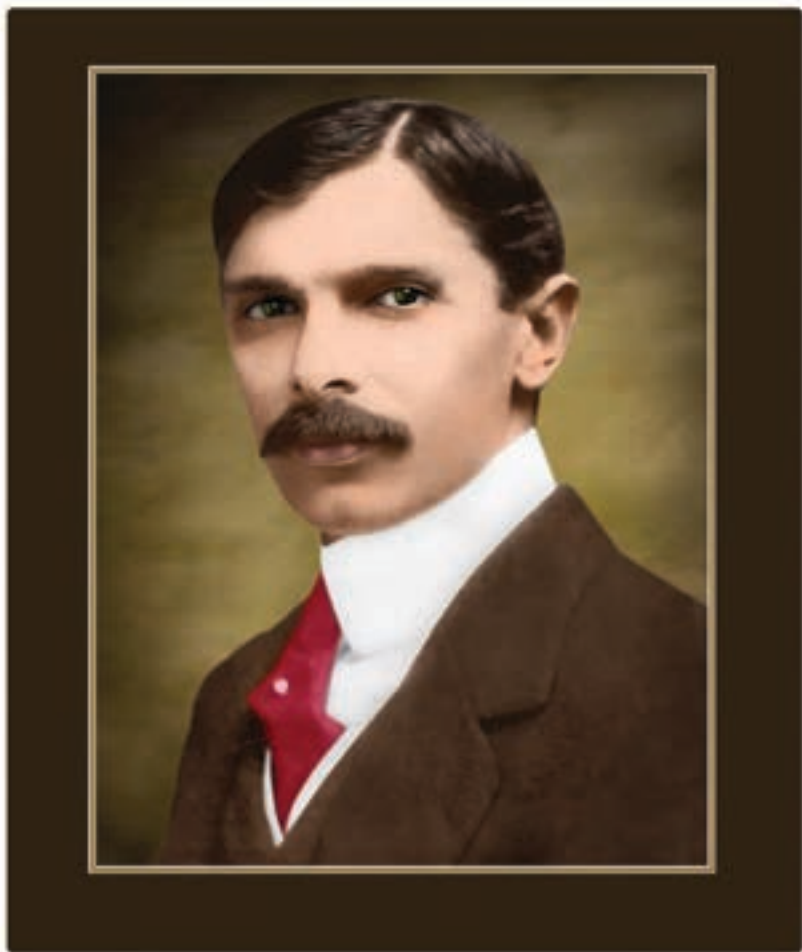
Leading to Progress & Excellence

NATIONAL UNIVERSITY OF TECHNOLOGY

**PROSPECTUS
2024-25**



NATIONAL UNIVERSITY OF TECHNOLOGY
INAUGURATED BY
CHIEF OF ARMY STAFF
GEN QAMAR JAVED BAJWA, NI (M)
24th APRIL 2019



QUAID E AZAM

MUHAMMAD ALI JINNAH

" Develop a sound sense of discipline, character, initiative and a solid academic background. You must devote yourself whole-heartedly to your studies, for that is your first obligation to yourselves, your parents and to the State. You must learn to obey for only then you can learn to command. "

(Islamia College, Peshawar - 12th April, 1948)

Disclaimer:

The NUTECH prospectus gives required information to prospective students wishing to apply for admission in National University of Technology (NUTECH). It describes in outline, the courses and facilities offered by the University. Effort is made to ensure that the information provided in the prospectus is accurate and up-to-date. However, the University does not accept liability for any inaccuracy or change outside reasonable control of the University. The University intends to provide the courses and facilities described in the prospectus, but reserves the right to withdraw or make alterations to these courses or facilities if found necessary, without any prior notice. Likewise, fees for the programs commencing are provisional and subject to change.



RECTOR'S MESSAGE

NUTECH is envisioned to be an internationally acclaimed research driven technology university destined to produce national and international industry leaders of character in the coming years. Being a bastion of learning and scholarship, NUTECH is the 'University for Industry' with the motto "Leading to Progress and Excellence". Among the many distinguished features the salients of NUTECH are the technology driven innovative teaching, learning and industrial research based applied sciences, engineering, technology and skills education system, world class qualified faculty, curriculum of the level of world's top ranking technology universities, strong academia-industry linkages as per best international practices. It has introduced emerging technologies based industrial research programs, with 'Outside Classroom' learning opportunities, industrial leadership programs, technology based student learning communities, technology focused research groups based culture for the accumulation and creation of new knowledge frontiers, engineering and technology inspired career acceleration opportunities for future industry leaders and innovative research opportunities programs to develop technologies for the society and industry. NUTECH learning systems promote sciences, engineering, technology and skills based knowledge ecosystem to inspire the youth as promising entrepreneurs of tomorrow. We are poised to introduce innovative minds of science and engineering as technology creators, developers and managers for the industrial enterprises of today and tomorrow. Joining NUTECH as a student is like embarking on a journey of promising future yet sustainable in cherishing technological emblem. Team NUTECH is a scholarly enterprise imparting scholarly knowledge and nurturing versatility, confidence, leadership and uniqueness in diverse competing global technologies through world-class education in applied sciences, engineering technologies, other areas of scholarship, professional certifications, technical and professional vocational skills. NUTECH is an objective-oriented and industry-focused university, committing to steer industry and transform national economy by opening new knowledge corridors for the society and humanity. Through its unique NUTECH skills development framework (NSDF), the university is poised to transform



the prevalent education standards of technology implementers and diploma associates and convert them into most productive workforce facilitating national industrial growth and prosperity for Pakistan. We warmly welcome all who aspire to become part of NUTECH community as active members of "Science, Engineering, Technology and Skills Family" in Pakistan.

Lt Gen Moazzam Ejaz (Retd), HI(M)
Rector NUTECH

HISTORY OF NUTECH

The idea of NUTECH was born in early 2015 based on the interactions with national industry in the context of Pakistan's economic growth. On 21st August 2017, a bill was passed by the National Assembly Standing Committee on Science and Technology of Pakistan to establish a technology university under The National University of Technology Bill, 2017. The bill was subsequently passed by the National Assembly on 20th November, 2017, then by the Senate Standing Committee on Science and Technology on 10th January, 2018 followed by the Senate on 26th January, 2018. Finally, the President's assent was received on 22nd February, 2018. The University commenced its UG programs in fall 2018.





Vision&Mission

VISION

To be a world-class research driven technology university committed to best serve society and industry through purposeful education, research and innovation.

MISSION

To advance knowledge and educate students in science, engineering, technologies and other areas of scholarship so as to grow knowledge economy and develop leaders, professionals and skilled workforce embodied with the spirit of discovery, innovation, entrepreneurship, social responsibilities and ethical practices to best serve the society and industry.



WELCOME TO NUTECH

*We Provide Equal Opportunities to Male and
Female Students*

Contact us:

Admission Office

For any query regarding Admission

admission@nutech.edu.pk, 051-5463983, 0330 9310005, ext: 129

Treasurer Office

For any query regarding Fee & all Financial Matters

treasurer.office@nutech.edu.pk, 051-5476768, ex 184

Registrar Office

For any query about Rules & Regulations, Accreditation & Affiliation

registrar.office@nutech.edu.pk, 051-5476768, ex 123

Exam Office

For any query about Exam, Scholarships & NUTECH Entry Test

exam.office@nutech.edu.pk, 051-5470259, ex 170

DoU Office

For any query about the matters pertaining to Academic Regulations & Programs of Studies

dou.office@nutech.edu.pk, 051-5476809, ex 195

DSL Office

For any assistance about Student Affairs including their Campus Activities

dsl@nutech.edu.pk, 051-5476809, ex 161

NSDD Office

For any query about conventional and Hi-Tech, National/International Certificate and Diploma

nsdd.office@nutech.edu.pk, 051-5476809, ex 156



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Introduction

NUTECH is federally chartered university (February 2018) and administered by Ministry of Science and Technology. It is established as an independent degree awarding institution to address the challenges posed by rapid advances in science, engineering, technologies and technical professional Skills.

It is the University for meeting national and international industrial challenges of existing, emerging & future technologies. In line with top ranking engineering and technology universities, NUTECH will prepare engineers and technologists for creating industry specific systems, solutions and their implementation by imparting finest technical knowledge for skills optimization through best international practices.

Difference NUTECH will Make

- » We believe that professional competence is best fostered by coupling classroom teaching & research with practical lab and industrial projects while focusing attention on real-world problems.
- » At NUTECH, innovation is the “Way of Life” and a guiding principle.
- » NUTECH offers academic courses in all disciplines with direct relevance to their implementation at the relevant industries.
- » NUTECH introduces a culture of undergraduate technology research communities in line with best international practices at the world’s top ranking technology universities.
- » On campus interdisciplinary composite technology research groups provide the foundation for innovative learning and technology driven research at NUTECH.
- » To remain abreast with best international practices, NUTECH believes in global connectivity from the outset through possible collaborations for joint research avenues and progression.
- » Curricula is aligned to the world’s top ranking engineering and technology universities in USA and Europe.
- » NUTECH curricula is integrated with creative social sciences to produce genuine and unique industry leaders of engineering and technology.
- » Very strong link between academia and industry as the performance outcomes of students and faculty will be gauged on the basis of resolution of industrial problems through projects.
- » NUTECH has technology research labs and innovation center at the departmental level to effectively cater for industrial needs through strong university-industry linkages.
- » Unique outside classroom learning programs on the lines of advance global academic institutions.



Cont...

- » Career counseling by expert team provided to students for planning their careers and seeking scholarships.
- » Focus on personality development.

Salient Aspects of UG Education

- » The design of undergraduate programs at NUTECH helps students acquire the knowledge, intellectual abilities, skills and values needed to meet the challenges of professional and personal life. The undergraduate education at NUTECH comprises: regular subjects, experiential learning programs and personality development.

Academic Structure



Experiential Learning Programs



- » **ILEP.** The Industrial Learning Experience Program (ILEP) gives students an opportunity to see how the theory being taught in class is put to use in industry. During most of the semesters, students will be given industrial class in the industry. The on-campus portion of this program includes outside preparation focused on studying similar industrial processes/practices being used/followed in international industry, preparation of a report and discussion and presentation during a seminar.
- » **ICAT.** Industrial and Creative Activity Term (ICAT) is a four-week term during which faculty and students, free from the rigors of regularly scheduled classes, engage in industry-focused design/development projects and technology driven innovative/creative activities. Students and faculty are also free to set their own personal learning and teaching goals based on personal interests.
- » **NLCP.** In the first year, students can deepen their understanding of sciences and humanities and their relationships with engineering and technology as part of NUTECH Learning Communities Program (NLCP). The Sciences and Sociology community (S2) focus on integration of disciplines, and teaching sciences and humanities within the broader human framework. The Collaborative Learning Community (CLC) creates an academic environment where students develop an in-depth and broader understanding of the applied sciences and how these relate to their daily life. The Media, Arts, Science and Technology (MAST) Community is a home to research where students learn how research is carried out and how media, art and technology is used to enhance communication and expression. Finally, GeoTech is a learning community for NUTECH freshmen to comprehend and solve complex real-world problems.
- » **NCAP.** During the second year, students will continue their studies with subjects meeting various University requirements and beginning subjects in departmental programs, and will also focus on development of interpersonal and intrapersonal skills related to employment in industry as part of NUTECH Career Acceleration Program (NCAP). It is a unique career booster for students aimed at industrial skills development, professional mentoring, and academia-industry networking. Program ranges from career basics - professional résumés and cover letters, networking, jobsearch, and interview skills - to essential workplace competencies such as communication, negotiation, presentations, problem-solving, team development and project management, and everything needed to acquire an internship.

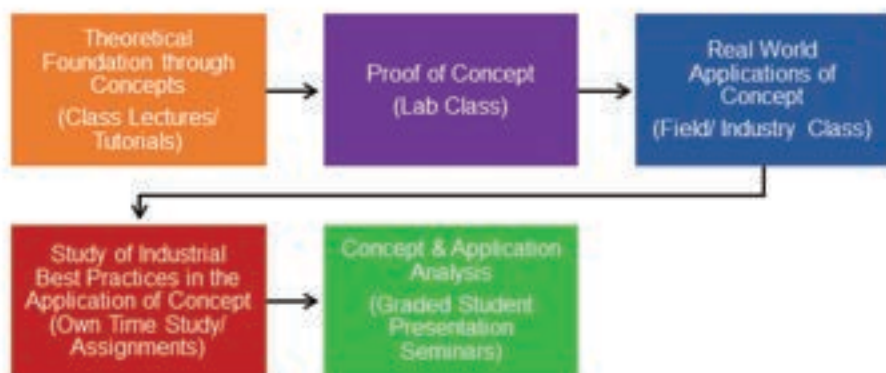
- » **NELP.** In the third and fourth years, students will be required to focus on departmental programs. In addition, in the third and fourth years, students will have the opportunity to participate in NUTECH Engineering Leadership Program (NELP), and develop teamworking and teams-leading skills and leadership abilities by going through rigorous leadership exercises in courses, labs and through interactions with industrial leaders. NELP supplements NUTECH's technical education with the leadership skills that prepare students for effective careers in engineering and technology fields.
- » **UREP.** In third and fourth years, undergraduate students will have the opportunity to join faculty and graduate students in research projects through the Undergraduate Research Experience Program (UREP). As members of research groups, students will collaborate with faculty and graduate students on industry focused research.
- » **Personality Development.** The wholesome purpose of NUTECH undergrad programs is personality development of students to face the challenges of the real world. This is achieved by integration of studies with Outside Class Learning Experience (OCLE). The concept of OCLE revolves around extra-curricular & co-curricular activities which also means a lot of fun in the campus life.

Industrial Liaison Academic System

The success of NUTECH Industrial Liaison Program (NILP) depends primarily on the faculty based Industrial Liaison Office (ILO) with its components spreading over the departments and technology labs of the university. The office arranges sponsored projects from industry/ companies. All the components of ILO work closely with a portfolio of industries/ companies, staying abreast of their needs and responding to specific requests through Undergraduate Research Experience Program.



5 Step UG Learning Cycle



Industrial Learning Experience (ILE) Program

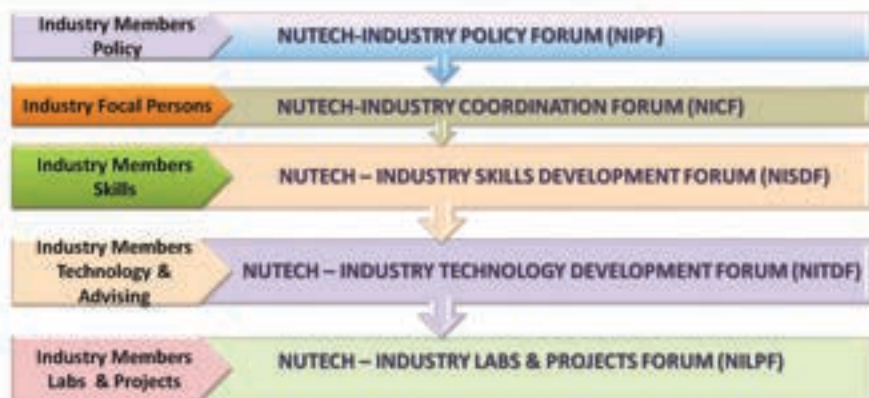
- » Help students comprehend application of taught concepts in industry.
- » Instructor teaches industrial processes relevant to theory.
- » Students are taught relevant industrial systems and processes .
- » Students undertake technology/industry focused projects to develop creative & innovative thinking abilities.
- » ILE course is mapped with concepts being taught in that particular semester.
- » For each semester project, departmental teachers identify relevant industry & industrial process based on subjects being offered in that semester.
- » Departments ensure coordination & faculty orientation/ training with relevant industry before commencement of semester.

NUTECH Departmental Industry Advisory Committees

- » Curriculum Alignment with Industry Needs.
- » Industry Students Projects Designing.
- » Industry focused Faculty Research Work.
- » Industry Advice based Academic System.



Industry Collaboration System



NUTECH Technology Labs (NUTL)

» Labs in NUTECH are a separate entity to support evidence based learning and research work at UG & PG levels. The teaching labs under NUTL are:-

Civil Engineering	Concrete Lab
	Geotechnical Engineering Lab
	Transportation Engineering Lab
	Mechanics of Material Lab
	Hydraulics & Fluids Lab
	Engineering Survey Lab
	Environmental Engineering Lab
Mechanical Engineering	Fluid Mechanics Lab
	Heat Transfer Lab
	Thermodynamics Lab
	Mechanics of Materials Lab
	Mechanics of Machines/Elements of Mechanical Design Control and Instrumentation Lab
	Workshop Technology Lab
	Manufacturing Lab
	Internal Combustion Engines Lab
Electrical Engineering	Circuit and Electronics Lab
	Control and Instrumentation Lab
	Power System and Machine Lab
	Embedded Systems Lab
	Microwave and Communication Lab
	Design Project Lab
Computer Engineering	Digital and Embedded Systems Lab
	Communications, Networks, and IOT Lab
	CEN Design Lab
	Electronics and DLD Lab
	AI Robotics and Controls Lab
Information Technology	General Purpose Computer Labs 1
	Software Engineering Lab
	Database Lab
Applied Sciences & Humanities Labs	Physics Lab
	Chemistry Lab

- » NUTECH Undergraduate Technology labs (NUTL) is a unique concept derived from world's leading technology universities like MIT. Under this arrangement, all the labs in a university join hands to make a collective resource to further research and development along with fulfilling academic requirements.
- » National University of Technology (NUTECH) is established to create, develop and promote technologies for the industry, hence the university laboratories have been developed on the lines of leading universities around the world. NUTECH is also designed to do applied industry focused research and generate solutions, which is only possible through a dynamic and vibrant academic, research and intellectual support infrastructure based system of technology labs. Therefore, the technology labs have been designed to provide intellectual, academic & research support to industry for the resolution of their technology driven problems. The system will set standards of technology based practical knowledge acquisition involving industry, national scientific labs and research setups. The system will act as a catalyst towards the promotion of the concept of NUTECH as "University for Industry". For the same purposes, state of the art equipment has been selected and has been made available in NUTECH Labs.



Main Achievements

- » In a very short span of time NUTECH has established state of the art undergrad teaching labs of four engineering programs, Civil engineering technology program, Computer sciences and Artificial Intelligence program. Supporting labs of basic sciences are also fully functional. Equipment of more than one billion have been commissioned in custom build labs.

Bachelor of Science Civil Engineering (4 Years)



"The mission of the undergraduate civil engineering program is to produce technically sound and innovative graduates, industrial leaders, useful members of society, and entrepreneurs of character to address current and future challenges of industry and society"

Program Educational Objectives (PEOs)

- » **PEO-1:** To apply knowledge and skills to provide sustainable solutions to challenging engineering problems in industry and academia.
- » **PEO-2:** Pursue lifelong learning, continual professional development and sustainable growth of the society.
- » **PEO-3:** To manage engineering and social problems effectively and innovatively, while adhering to work ethics and social values.

Program Learning Outcomes (PLOs)

- » **Engineering Knowledge:** An ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
- » **Problem Analysis:** An ability to identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
- » **Design and Development of Solutions:** An ability to design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental

considerations.

- » **Investigations:** An ability to investigate complex engineering problems in a methodical way including literature survey, design and conduct of experiments, analysis and interpretation of experimental data, and synthesis of information to derive valid conclusions.
- » **Modern Tool Usage:** An ability to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, to complex engineering activities, with an understanding of the limitations.
- » **Engineer and Society:** An ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solution to complex engineering problems.
- » **Environment and Sustainability:** An ability to understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.
- » **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
- » **Individual and Teamwork:** An ability to work effectively as an individual or in a team, on multifaceted and /or multidisciplinary settings.
- » **Communication:** An ability to communicate effectively, orally as well as in writing, on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- » **Project Management:** An ability to demonstrate management skills and apply engineering principles to one's own work, as a member and/or leader in a team, to manage projects in a multidisciplinary environment.
- » **Lifelong Learning:** An ability to recognize the need for, and have the preparation and ability to engage in, independent and life-long learning in the broadest context of technological change.

Curriculum of BS CE

Semester- I			Semester- II		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
CE1101	Engineering Mechanics	3-0	CE1114	Engineering Surveying	2-0
CE1102	Engineering Mechanics Lab	0-1	CE1115	Engineering Surveying Lab	0-1
CE1108	Civil Engineering Materials	2-0	MATH203	Applied Differential Equations	3-0
CE1109	Civil Engineering Materials Lab	0-1	HU1001	Business Communication	2-0
CE1104	Engineering Drawing	1-0	CE1106	Basic Electro-Mechanical Engineering	2-0
CE1105	Engineering Drawing Lab	0-1	CE1107	Basic Electro-Mechanical Engineering Lab	0-1
MATH205	Applied Calculus	3-0	CE1103	Engineering Geology	2-0
IS2001	Islamic Studies	2-0	CE1116	Mechanics of Solids I	2-0
CE1113	Computer Fundamentals Lab	0-1	CE1117	Mechanics of Solids I Lab	0-1
HU1002	Functional English	2-0			
Total		13-4	Total		13-4
Semester- III			Semester- IV		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
CE2116	Advanced Engineering Survey	1-0	CE2118	Transportation Engineering I	3-0
CE2117	Advanced Engineering Survey Lab	0-1	CE2110	Reinforced Concrete Design I	3-0
CE2112	Mechanics of Solids II	3-0	CE2111	Reinforced Concrete Design I Lab	0-1
CE2113	Mechanics of Solids II Lab	0-1	CE2115	Structural Analysis II	3-0
CE2110	Computer Programming	1-0	CE2116	Fluid Mechanics	3-0
CE2111	Computer Programming Lab	0-1	CE2117	Fluid Mechanics Lab	0-1
MATH305	Numerical Analysis	2-0	CE2112	Soil Mechanics	3-0
MATH306	Numerical Analysis	0-1	CE2113	Soil Mechanics Lab	0-1
PS2001	Pakistan Studies	2-0			
CE2107	Structural Analysis I	3-0			
Total		11-6	Total		15-3
Semester- V			Semester- VI		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
CE3206	Advanced Fluid Mechanics	3-0	CE3204	Environmental Engineering I	2-0
CE3207	Advanced Fluid Mechanics Lab	0-1	CE3205	Environmental Engineering I Lab	0-1
CE3215	Civil Engineering Drawing and Graphics	1-0	CE3317	Transportation Engineering II	3-0
CE3216	Civil Engineering Drawing and Graphics Lab	0-1	CE3318	Transportation Engineering II Lab	0-1
CE3304	Reinforced Concrete Design II	3-0	CE3315	Construction Management	2-0
CE3305	Reinforced Concrete Design II Lab	0-1	CE3316	Construction Management Lab	0-1
CE3319	Engineering Hydrology	3-0	MATH204	Probability and Statistics	3-0
CE3320	Engineering Hydrology Lab	0-1	CE3317	Occupational Health and Safety	1-0
CE3319	Geotechnical and Foundation Engineering	3-0	CE3313	Quantity & Cost Estimation	2-0
CE3320	Geotechnical and Foundation Engineering Lab	0-1	CE3314	Quantity & Cost Estimation Lab	0-1
CEILE001	Industrial Learning Experience 1	0-0	CEILE002	Industrial Learning Experience 2	0-0
Total		11-6	Total		13-4
Semester- VII			Semester- VIII		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
CE4103	Construction Engineering	3-0	CE4105	Geo Informatics	1-0
CE4101	Building Information Modelling	0-1	CE4106	Geo Informatics Lab	0-1
CE4301	Environmental Engineering II	2-0	SS2002	Professional Ethics	2-0
CE4310	Steel Structures	3-0	CE4303	Hydraulics and Irrigation Engineering	3-0
CE4104	Architecture and Town Planning	2-0	CE4304	Hydraulics and Irrigation Engineering Lab	0-1
MGT1001	Entrepreneurship	1-0	CE4310	Construction Economics and Financial Management	3-0
CE4307	Capstone Project I	0-1	CE4311	Capstone Project II	0-1
Total		12-4	Total		9-6

Bachelor of Science Mechanical Engineering (4 Years)



The Department of Mechanical Engineering is a well-established department of the Faculty of Engineering offering a BS degree in Mechanical Engineering. The department started its BS Mechanical Engineering program in Fall 2018. The curriculum of BS Mechanical Engineering was developed in line with the best international practices and National Curriculum Revision Committee (NCRC) guidelines. The Outcome Based Education (OBE) was implemented at BS Mechanical Engineering program from the start. This program has been particularly designed to meet the requirements of modern Mechanical Engineering skills for the industry, through its state-of-the-art laboratories, well designed curriculum, best teaching practices and the learning communities.

Program Educational Objectives (PEOs)

- » **PEO 1:** To Apply knowledge and skills to provide sustainable solutions to challenging engineering problems in industry and academia
- » **PEO 2:** Pursue lifelong learning, continual professional development, and sustainable growth of the society
- » **PEO 3:** To Manage engineering and social problems effectively and innovatively while adhering to work ethics and social values

Program Learning Outcomes (PLOs)

- » **PLO 1:** Engineering Knowledge. Ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems

- » **PLO 2: Problem Analysis.** Ability to identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences

- » **PLO 3: Design and Development of Solutions.** Ability to design solutions for complex engineering problems and design systems, components or processes and develop/ create / innovate technologies that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations

PLO 4: Investigations. Ability to investigate complex engineering problems in a methodical way including literature survey, design and conduct of experiments, analysis and interpretation of experimental data, and synthesis of information to derive valid conclusions

PLO 5: Modern Tool Usage. Ability to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, to complex engineering activities, with an understanding of the limitations

PLO 6: Engineer and Society. Ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solution to complex engineering problems

PLO 7: Environment and Sustainability. Ability to understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development

PLO 8: Ethics. Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice

PLO 9: Individual and Teamwork. Ability to work effectively as an individual or in a team, on multifaceted and /or multidisciplinary settings

PLO 10: Communication. Ability to communicate effectively, orally as well as in writing, on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions

PLO 11: Project Management. Ability to demonstrate management skills and apply engineering principles to one's own work, as a member and/or leader in a team, to manage projects in a multidisciplinary environment

PLO 12: Lifelong Learning. Ability to recognize the importance of, and pursue lifelong learning in the broader context of innovation and technological developments

Curriculum of BS ME

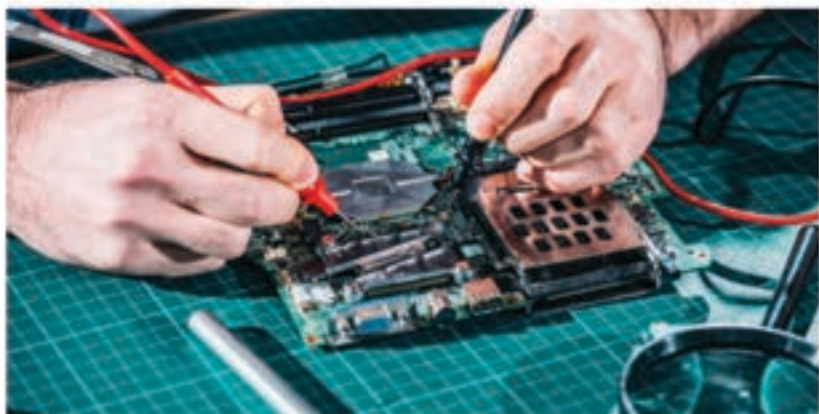
Semester- I			Semester- II		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
PHY333	Applied Physics	3-0	MATH337	Calculus II	3-0
PHY334	Applied Physics Lab	0-1	ME2301	Engineering Mechanics I (Statics)	3-0
MATH334	Calculus I	3-0	ME2306	Workshop Practice	0-1
CHE2007	Chemistry	3-0	HU2009	English II (Technical Report Writing)	1-0
HU2004	English I	2-0	HU2010	English II (Technical Report Writing) Lab	0-1
ME2315	Engineering Drawing	2-0	IS2001	Islamic Studies	2-0
ME2316	Engineering Drawing and CAD Lab	0-2	ME3369	Engineering Materials	3-0
PS2001	Pakistan Studies	2-0	ME2309	Computer Systems and Programming	2-0
			ME2310	Computer Systems and Programming Lab	0-1
		Total			Total
		12-3			14-3

Semester- III			Semester- IV		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
MATH335	Differential Equations and Linear Algebra	3-0	ME3305	Numerical Analysis	3-0
ME3316	Engineering Mechanics II (Dynamics)	3-0	ME3306	Numerical Analysis Lab	0-1
ME3317	Engineering Mechanics Lab	0-1	ME3109	Mechanics of Machines	3-0
ME3369	Electronics	3-0	ME3209	Mechanics of Materials I	3-0
ME3370	Electronics Lab	0-1	ME3317	Thermodynamics II	3-0
ME3309	Thermodynamics I	3-0	ME3318	Thermodynamics Lab	0-1
ME2301	Electrical Engineering	2-0	ME3310	Fluid Mechanics I	3-0
ME2304	Electrical Engineering Lab	0-1			
		Total			Total
		13-3			14-3

Semester- V			Semester- VI		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
ME2301	Probability and Statistics	3-0	ME3343	Machine Design II	2-0
ME3373	Mechanics of Materials II	3-0	ME4320	Internal Combustion Engines	3-0
ME3374	Mechanics of Materials Lab	0-1	ME4307	Heat and Mass Transfer	3-0
ME3317	Machine Design I	3-0	ME3318	Manufacturing Process	3-0
ME3369	Fluid Mechanics I	3-0	ME3319	Manufacturing Process Lab	0-1
ME3370	Fluid Mechanics Lab	0-1	ME3723	Project Management	2-0
ME4203	Measurement and Instrumentation	2-0	ME3403	Control Engineering	3-0
ME4204	Measurement and Instrumentation Lab	0-1	ME3404	Control Engineering Lab	0-1
MEI13001	Industrial Learning Experience	0-0	MEI13001	Industrial Learning Experience	0-0
		Total			Total
		14-3			16-3

Semester- VII			Semester- VIII		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
ME4109	Heating, Ventilation and Air Conditioning (HVAC)	3-0	MEXXXX	Technical Elective II	2-0
ME4310	Heat Transfer and HVAC Lab	0-1	MEXXXX	Technical Elective III	2-0
ME3318	Mechanical Vibrations	3-0	ME4326	Power Plants	3-0
ME3319	Mechanical Vibrations Lab	0-1	ME4337	IC Engine and Power Plants Lab	0-1
ME3318	Health, Safety and Environment	3-0	MGT3203	Entrepreneurship	3-0
ME4305	Introduction to Finite Element Analysis	3-0	SSC1330	Professional Ethics	2-0
ME4306	Introduction to Finite Element Analysis Lab	0-1	ME4999	Capstone Project II	0-4
ME4098	Capstone Project I	0-2			
ME4708	Engineering Economics	2-0			
MEXXXX	Technical Elective I	2-0			
		Total			Total
		13-5			10-5

Bachelor of Science Electrical Engineering (4 Years)



The mission of the undergraduate electrical engineering program is to produce technically sound and innovative graduates, industrial leaders and entrepreneurs of character and vision who can address current and future industrial challenges.

Program Educational Objectives (PEOs)

- » **PEO1:** To apply the knowledge and skills to provide sustainable solutions to challenging engineering problems in industry and academia.
- » **PEO2:** Pursue lifelong learning, continued professional development and sustainable growth of the society.
- » **PEO3:** To manage engineering and social problems effectively and innovatively while adhering to work ethics and social values.

Program Learning Outcomes (PLOs)

- » **PLO-01:** Engineering Knowledge: Ability to apply knowledge of mathematics, science and engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
- » **PLO-02:** Problem Analysis: Ability to identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
- » **PLO-03:** Design/Development of Solutions: Ability to design solutions for complex engineering problems and design systems, components,

or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

- » **PLO-04: Investigation:** Ability to investigate complex engineering problems in a methodical way including literature survey, design and conduct of experiments, analysis and interpretation of experimental data, and synthesis of information to derive valid conclusions.
- » **PLO-05: Modern Tool Usage:** Ability to create, select and apply appropriate techniques, resources, and modern engineering and IT tools. Including prediction and modelling, to complex engineering activities, with an understanding of the limitations.
- » **PLO-06: The Engineer and Society:** Ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solution to complex engineering problems.
- » **PLO-07: Environment and Sustainability:** Ability to understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.
- » **PLO-08: Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
- » **PLO-09: Individual and Team Work:** Ability to work effectively, as an individual or in a team, in multifaceted and/or multidisciplinary settings.
- » **PLO-10: Communication:** Ability to communicate effectively, orally as well as in writing on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentations, make effective presentations, and give and receive clear instructions.
- » **PLO-11: Project Management:** Ability to demonstrate management skills and apply engineering principles to one's own work, as a member and/or leader in a team to manage projects in a multidisciplinary environment.
- » **PLO-12: Lifelong Learning:** Ability to recognize importance of, and pursue lifelong learning in the broader context of innovation and technological developments.

Curriculum of BS EE

Semester-I			Semester-II		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
PH1104	Applied Physics	2-0	HU2002	Functional English	2-0
PH1104L	Applied Physics Lab	0-4	MATH1103	Complex Variables and Transform	3-0
MATH1204	Linear Algebra	3-0	EE1004	Occupational Health and Safety	2-0
MATH1204L	Calculus and Analytical Geometry	3-0	EE1004L	Digital Logic Design	3-0
EE1004	Workshop Practice Lab	0-4	EE1004L	Digital Logic Design Lab	0-4
IS1004	Islamic Studies and Ethics	2-0	PS1004	Pakistan Studies and Global Perspective	2-0
EE1204	Linear Circuit Analysis	3-0	HU1004	Communication Skills	2-0
EE1204L	Linear Circuit Analysis Lab	0-4	HU1004L	Engineering Economics	2-0
			EE1004L	Engineering Drawing Lab	0-4
		Total			Total

Semester-III			Semester-IV		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
HU2004	Technical Writing and Presentation Skills	2-0	SS1004	Professional Ethics	2-0
MATH1304	Differential Equations	3-0	EE1004	Signals and Systems	3-0
MATH1304L	Probability and Statistics	3-0	XXXXXX	IDEE I*	3-3
EE1004	Computer Programming	3-0	EE1004L	Instrumentation and Measurements	3-0
EE1004L	Computer Programming Lab	0-4	EE1004L	Instrumentation and Measurements Lab	0-4
EE1204	Electrical Network Analysis	3-0	EE1204	Electronic Devices and Circuits	3-0
EE1204L	Electrical Network Analysis Lab	0-4	EE1204L	Electronic Devices and Circuits Lab	0-4
		Total			Total

Semester-V			Semester-VI		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
EE1004	Introduction to Embedded Systems	3-0	EE1004	Electrical Machines	3-0
EE1004L	Introduction to Embedded Systems Lab	0-4	EE1004L	Electrical Machines Lab	0-4
EE1004	Communication Systems Engineering	3-0	EE1004	Linear Control Systems	3-0
EE1004L	Communication Systems Engineering Lab	0-4	EE1004L	Linear Control Systems Lab	0-4
EE1004	Electromagnetics Field Theory	3-0	EE1004	Digital Signal Processing	3-0
EE1004L	Data Structures and Algorithms	3-0	EE1004L	Digital Signal Processing Lab	0-4
EE1004	Data Structures and Algorithms Lab	0-4	EEXXXX	Depth Elective I**	3-0
MGT1004	Engineering Project Management	2-0	MGT1004	Entrepreneurship	2-0
		Total			Total

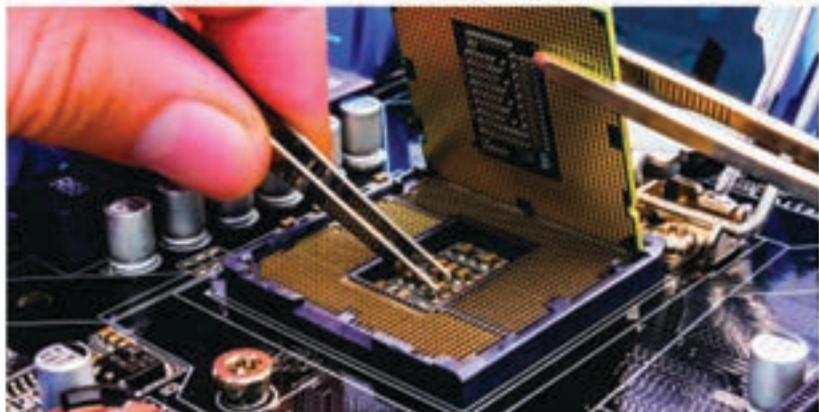
Semester-VII			Semester-VIII		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
XXXXXX	Natural Science Elective	2-3	EEXXXX	Depth Elective II**	3-3
EEXXXX	Depth Elective III**	3-3	EEXXXX	Depth Elective III**	3-3
EEXXXX	Depth Elective III**	3-0/3	EEXXXX	Depth Elective IV**	3-0/3
EE1004L	Capstone Project I	0-3	EE1004L	Capstone Project II	0-4
XXXXXX	IDEE I*	3-0/3			
		Total			Total

* IDEE Courses: The student may take multidisciplinary courses from other departments after approval from the department (academic advisor). In addition, the EE stream courses of multidisciplinary nature can also be taken as IDEE courses.

** Depth Elective Courses: The courses will be offered from following concentration streams.

1. Communication Systems and Networks
2. System on Chip
3. Autonomous Systems
4. Smart Systems
5. Electrical Power Systems

Bachelor of Science Computer Engineering (4 Years)



"The Department aims to establish a remarkable reputation for both teaching and research in the field of Computer Engineering. We produce industrial leadership qualities among students to address the upcoming challenges in industrial technology."

Program Educational Objectives (PEOs)

- » **PEO-1:** To apply knowledge and skills to provide sustainable solutions to challenging engineering problems in industry and academia.
- » **PEO-2:** Pursue lifelong learning, continual professional development and sustainable growth of the society.
- » **PEO-3:** To manage engineering and social problems effectively and innovatively while adhering to work ethics and social values.

Program Learning Outcomes (PLOs)

PLO-01: Engineering Knowledge

PLO-02: Problem Analysis

PLO-03: Design/Development of Solutions

PLO-04: Investigation

PLO-05: Modern Tool Usage

PLO-06: The Engineer and Society

PLO-07: Environment and Sustainability

PLO-08: Ethics

PLO-09: Individual and Team-Work

PLO-10: Communication

PLO-11: Project Management

PLO-12: Lifelong Learning

Curriculum of BS CEN

Semester-I			Semester-II		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
MATH101	Calculus and Analytical Geometry	3	MATH201	Linear Algebra	2
IS102	Islamic Studies and Ethics	2	CEN100	Computer Programming	1
CEN104	Information and Communication Technologies	2	CEN109	Computer Programming Lab	1
CEN105	Information and Communication Technologies Lab	1	CEN110	Circuit Analysis	3
PHY1301	Applied Physics	2	CEN111	Circuit Analysis Lab	1
PHY1302	Applied Physics Lab	1	HE1001	Communication Skills	2
CEN106	Computer Engineering Workshop	1	HE1007	Technical Writing & Presentation Skills	2
CEN107	Occupational Health and Safety	1	MATH966	Discrete Structures	3
PS102	Pakistan Studies and Global Perspectives	2	CENLE1002	Industrial Learning Experience 2	1
CENLE1001	Industrial Learning Experience 1	1			
	Total	19		Total	18

Semester-III			Semester-IV		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
CEN201	Object Oriented Programming	3	MATH204	Differential Equations	3
CEN202	Object-Oriented Programming Lab	1	CEN210	Signals and Systems	3
CEN206	Digital Logic Design	3	CEN211	Signals and Systems Lab	1
CEN207	Digital Logic Design Lab	1	CEN214	Computer Organization and Architecture	3
CEN208	Electronic Devices and Circuits	3	CEN215	Computer Organization and Architecture Lab	1
CEN209	Electronic Devices and Circuits Lab	1	CEN218	Data Structures and Algorithms	3
SS204 or mast1001 or SSC1101 or SSC1102	Social Science Elective I (Engg. Economics or Computational Media Design or Becoming Humane or Modern Conceptions Of Freedom)		CEN219	Data Structures and Algorithms Lab	1
MATH202	Complex Variables and Transforms	3	MGT1004 or MGT1002	Management Science Elective - I (Engg. Management OR Engg. Project Management)	2
CENLE1003	Industrial Learning Experience 3	1	CENLE1004	Industrial Learning Experience 4	1
	Total	18		Total	18

Semester-III			Semester-IV		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
CEN201	Object Oriented Programming	3	MATH204	Differential Equations	3
CEN202	Object-Oriented Programming Lab	1	CEN210	Signals and Systems	3
CEN206	Digital Logic Design	3	CEN211	Signals and Systems Lab	1
CEN207	Digital Logic Design Lab	1	CEN214	Computer Organization and Architecture	3
CEN208	Electronic Devices and Circuits	3	CEN215	Computer Organization and Architecture Lab	1
CEN209	Electronic Devices and Circuits Lab	1	CEN218	Data Structures and Algorithms	3
SS204 or mast1001 or SSC1101 or SSC1102	Social Science Elective I (Engg. Economics or Computational Media Design or Becoming Humane or Modern Conceptions Of Freedom)		CEN219	Data Structures and Algorithms Lab	1
MATH202	Complex Variables and Transforms	3	MGT1004 or MGT1002	Management Science Elective - I (Engg. Management OR Engg. Project Management)	2
CENLE1003	Industrial Learning Experience 3	1	CENLE1004	Industrial Learning Experience 4	1
	Total	18		Total	18

Semester-VII			Semester-VIII		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
CEN3009	Software Engineering	3	MATH1003	Numerical Analysis	2
CENXXXX	Multi-Disciplinary Engineering Elective I	2/3	MATH1004	Numerical Analysis Lab	1
CENXXXX	Multi-Disciplinary Engineering Elective I Lab	1/0	MGT1001	Management Science Elective - B (Entrepreneurship)	2
CEN4001	Digital System Design	3	CENXXXX	Computer Engineering Depth Elective-IV	3
CEN4002	Digital System Design Lab	1	CENXXXX	Computer Engineering Depth Elective-IV Lab	1
CENXXXX	Computer Engineering Depth Elective-II	3	CENXXXX	Multi-Disciplinary Engineering Elective II	2
CENXXXX	Computer Engineering Depth Elective-II Lab	1	CENXXXX	Multi-Disciplinary Engineering Elective II Lab	1
CEN4009	Capstone Project I	1	CEN4009	Capstone Project II	4
	Total	15		Total	16

Bachelor of Science Computer Science (4 years)



"Computer Science department aims to produce Leaders of Progress and Excellence through the fusion of academic excellence with personal character. Students not only develop expertise in the chosen field but are also given opportunities for broad learning to become intellectual leaders, problem solvers, responsible and useful members of the society. The department has devised the curriculum that is based on the concept of Learning by Doing to provide every undergraduate student with outstanding education grounded in basic, applied and social sciences."

Program Educational Objectives (PEOs)

- » **PEO 1:** Enter in the computing profession or related fields in prominent organizations or working as a technopreneur.
- » **PEO 2:** Become medium level experts able to creatively apply their expertise to resolution of technical problems.
- » **PEO 3:** Earn reputation as a professional, sensitive to the environmental, social, safety and economic context and possess a strong commitment to ethical practices.
- » **PEO 4:** Attain a junior leadership position and be acknowledged as a valuable team member able to communicate effectively.
- » **PEO 5:** Continued their professional development and physical well-being.

Program Learning Outcomes (PLOs)

- » **Academic Education:** Completion of an accredited program of study designed to prepare graduates as computing professionals.

- » **Knowledge for Solving Computing Problems:** Apply knowledge of computing fundamentals, knowledge of a computing specialization, and mathematics, science, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.
- » **Problem Analysis:** Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.
- » **Design / Development of Solutions:** Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
- » **Modern Tool Usage:** Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.
- » **Individual and Teamwork:** Function effectively as an individual and as a member or leader in diverse teams and in multi-disciplinary settings.
- » **Communication:** Communicate effectively with the computing community and with society at large about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.
- » **Computing Professionalism and Society:** Understand and assess societal, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice.
- » **Ethics:** Understand and commit to professional ethics, responsibilities, and norms of professional computing practice.
- » **Life-long Learning:** Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

Curriculum of BS CS

Semester-I			Semester- II		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
PHY1101	Physics I	3-0	PHY1201	Physics II	3-0
MATH1101	Calculus I	4-0	MATH1102	Calculus II	4-0
CHE1001	Chemistry	3-0	BIO1002	Biology	3-0
PHY1102	Physics I Lab	0-1	PHY1202	Physics II Lab	0-1
CHE1002	Chemistry Lab	0-1	BIO1003	Biology Lab	0-1
HU1001	Language and Communications Skills	2-0	IS1001	Islamic Studies	2-0
SSC1101	Becoming Humane/ Computational Media Design/		CS1025	Computational Thinking	2-0
MAST1001	Modern Conception of Freedom				
SSC1102	Industrial Learning Experience 1	0-0-1	CSLE1002	Industrial Learning Experience 2	0-0-1
CSLE1001					
	Total	14-2-1		Total	14-2-1
Semester- III			Semester- IV		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
CS1001	Introduction to Information Technology	3-0	CS2005	Object Oriented Programming	3-0
CS1002	Introduction to Information Technology Lab	0-1	CS2006	Object Oriented Programming Lab	4-0
MATH2501	Probability and Statistics	3-0	CS1601	Digital Logic Design	3-0
CS1003	Programming Fundamentals	3-0	CS1602	Digital Logic Design Lab	0-1
CS1004	Programming Fundamentals Lab	0-1	MATH3301	Linear Algebra and ODEs	0-1
MATH3901	Discrete Structures	3-0	CS1101	Theory of Automata	3-0
PS1001	Pakistan Studies	2-0	HU1005	Technical Communication for Engineers	2-0
CSLE1003	Industrial Learning Experience 3	0-0-1	CSLE1004	Industrial Learning Experience 4	0-0-1
	Total	14-2-1		Total	15-2-1
Semester- V			Semester- VI		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
CSXXX2	Restrictive Elective I	3-0	CS4105	Compiler Construction	3-0
SS2001	Ethics for Engineers	2-0	CS4011	Database Systems	3-0
CS3009	Software Engineering	3-0	CS4012	Database Systems Lab	0-1
CS3007	Data Structures and Algorithms	3-0	CS4103	Design and Analysis of Algorithms	3-0
CS3008	Data Structures and Algorithms Lab	0-1	CSXXX3	Restrictive Elective II	3-0
CS4603	Computer Organization and Assembly Language	3-0	CS4013	Operating Systems	3-0
CS4604	Computer Organization and Assembly Language Lab	0-1	CS4014	Operating Systems Lab	0-1
CSLE1005	Industrial Learning Experience 5	0-0-1	CSLE1006	Industrial Learning Experience 6	0-0-1
	Total	14-2-1		Total	15-2-1
Semester- VII			Semester- VIII		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
CS3501	Artificial Intelligence	3-0	CS4301	Parallel and Distributed Computing	3-0
CS3502	Artificial Intelligence Lab	0-1	CS4017	Information Security	3-0
CS4015	Computer Networks	3-0	CSXXX2	Concentration Stream Subject II	3-0
CS4016	Computer Networks Lab	0-1	CSXXX3	Concentration Stream Subject III	3-0
CSXXX1	Concentration Stream Subject I	3-0	CS4099	Capstone Project II	0-4
CSXXX4	Restrictive Elective III	3-0			
MGT1001	Entrepreneurship	2-0			
CS4098	Capstone Project I	0-2			
	Total	14-4		Total	12-4

Bachelor of Science in Software Engineering (4 years)



The primary mission of Bachelor of Science in Software Engineering program is the education of students who can define, design, develop, deliver and maintain high quality software systems within resource constraints; and to prepare students for careers as software engineers in industry and research.

Program Educational Objectives (PEOs)

By four years after graduation, graduates of software engineering program will have:

- » **PEO 1:** Entered in the software engineering and computing profession or related fields in prominent organizations or working as a technopreneur.
- » **PEO 2:** Become medium level experts able to creatively apply their expertise of science, engineering and technology to the solution of technical problems.
- » **PEO 3:** Earned a reputation as a professional, sensitive to the environmental, social, safety and economic context and possess a strong commitment to ethical practices.
- » **PEO 4:** Attained a junior leadership position and be acknowledged as a valuable team member able to communicate effectively.
- » **PEO 5:** Continued their professional development and physical well-being.

Program Learning Outcomes (PLOs)

Program outcomes are the narrower statements that describe what students are expected to know and be able to do by the time of

graduation. These relate to the knowledge, skills and attitude that the students acquire while progressing through the program. PLO's of UG program are as under:

- » **PLO 1:** Software Engineering Knowledge – To apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of Complex Software Engineering problems.
- » **PLO 2:** Problem Analysis – Identify, formulate, research literature, and analyze complex computational problems, reaching substantiated conclusions using first principles of mathematics, natural sciences, computing, and software Engineering.
- » **PLO 3:** Design/Develop Solutions – Design solutions for complex computing problems and design systems, components, and processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
- » **PLO 4:** Investigation & Experimentation – Conduct investigation of complex computing problems using research based knowledge and research based methods.
- » **PLO 5:** Modern Tool Usage – Create, select, and apply appropriate techniques, resources and modern Computer-Aided Software Engineering (CASE) tools, including prediction and modelling for complex computing problems.
- » **PLO 6:** Society Responsibility – Understand and assess societal, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice.
- » **PLO 7:** Environment and Sustainability – Understand the impact of professional software solutions in societal and environmental contexts and demonstrate knowledge of, and need for, sustainable development.
- » **PLO 8:** Ethics – Apply ethical principles and commit to professional ethics and responsibilities and norms of Software Engineering practice.
- » **PLO 9:** Individual and Team Work – Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.
- » **PLO 10:** Communication – Communicate effectively on complex Software Engineering processes and activities with the software Engineering community and with society at large.

PLO 11: Project Management and Finance – Demonstrate knowledge and understanding of management principles and economic decision-making and apply these to one's own work as a member or a team.

PLO 12: Life Long Learning – Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological changes.

Curriculum of BS SE

Semester- I			Semester- II		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
CS1027	Introduction to ICT	2-0	PHY1203	Applied Physics	2-0
CS1028	Introduction to ICT Lab	0-1	PHY1204	Applied Physics Lab	0-1
CS1003	Programming Fundamentals	3-0	CS2005	Object Oriented Programming	3-0
CS1004	Programming Fundamentals Lab	0-1	CS2006	Object-Oriented Programming Lab	0-1
HU1013	English Composition and Comprehension	3-0	CS2029	Discrete Structures	3-0
MATH1105	Calculus and Analytical Geometry	3-0	HU1015	Communication and Presentation Skills	3-0
CS1025	Computational Thinking	2-0	CS3009	Software Engineering	3-0
MAST1001	Computational Media Design	2-0	IS1001	Islamic Studies	2-0
		Total		Total	16-2
Semester- III			Semester- IV		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
CS3123	Software Requirements Engineering	3-0	CS4013	Operating Systems	3-0
CS3007	Data Structures and Algorithms	3-0	CS4014	Operating Systems Lab	0-1
CS3008	Data Structures and Algorithms Lab	0-1	MATH2501	Probability and Statistics	3-0
MATH2202	Linear Algebra	3-0	CS4103	Design and Analysis of Algorithms	3-0
CS3101	Theory of Automata	3-0	CS4011	Database Systems	3-0
CS3133	Human-Computer Interaction	3-0	CS4012	Database Systems Lab	0-1
PS1001	Pakistan Studies	2-0	CS4129	Software Design & Architecture	2-0
			CS4130	Software Design & Architecture Lab	0-1
		Total			Total
		17-1			14-3
Semester- V			Semester- VI		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
CS4015	Computer Networks	3-0	CS4139	Operations Research	3-0
CS4016	Computer Networks Lab	0-1	CS300X	Restrictive Elective I	3-0
CS4131	Software Construction & Development	2-0	CS4017	Information Security	3-0
CS4132	Software Construction & Development Lab	0-1	CS4141	Web Engineering	3-0
HU2001	Technical and Business Writing	3-0	CS4125	Software Quality Engineering	3-0
CS4135	Business Process Engineering	3-0	HU2005	Professional Practices	3-0
CS4137	Formal Methods in Software Engineering	3-0			
		Total			Total
		14-2			18-0
Semester- VII			Semester- VIII		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
CS300X	Concentration Stream Subject I	3-0	MGT1001	Entrepreneurship	2-0
CS300X	Restrictive Elective II	3-0	CS300X	Concentration Stream Subject II	3-0
CS4127	Software Project Management	3-0	CS300X	Concentration Stream Subject III	3-0
CS4143	Software Re-Engineering	3-0	CS4099	Capstone Project II	0-4
CS4098	Capstone Project I	0-2			
		Total			Total
		12-2			8-4

Bachelor of Science Artificial Intelligence (4 years)



The mission of the Artificial Intelligence program is to produce technically sound and innovative graduates, industrial leaders and entrepreneurs of character and vision who can address current and future industrial technology challenges.

Program Educational Objectives (PEOs)

By four years after graduation, graduates of artificial intelligence program will have:

- » **PEO 1:** Entered in the artificial intelligence and computing profession or related fields in prominent organizations or working as a technopreneur.
- » **PEO 2:** Become medium level experts able to creatively apply their expertise of science, engineering and technology to the solution of technical problems.
- » **PEO 3:** Earned a reputation as a professional, sensitive to the environmental, social, safety and economic context and possess a strong commitment to ethical practices.
- » **PEO 4:** Attained a junior leadership position and be acknowledged as a valuable team member able to communicate effectively.
- » **PEO 5:** Continued their professional development and physical well-being.

Program Learning Outcomes (PLOs)

Program outcomes are the narrower statements that describe what students are expected to know and be able to do by the time of

graduation. These relate to the knowledge, skills and attitude that the students acquire while progressing through the program. PLO's of UG program are as under:

- » **PLO 1:** Academic Education: Completion of an accredited program of study designed to prepare graduates as computing professionals.
- » **PLO 2:** Knowledge for Solving Computing Problems: Apply knowledge of computing fundamentals, knowledge of a computing specialization, and mathematics, science, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.
- » **PLO 3:** Problem Analysis: Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.
- » **PLO 4:** Design / Development of Solutions: Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
- » **PLO 5:** Modern Tool Usage: Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.
- » **PLO 6:** Individual and Teamwork: Function effectively as an individual and as a member or leader in diverse teams and in multi-disciplinary settings.
- » **PLO 7:** Communication: Communicate effectively with the computing community and with society at large about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.
- » **PLO 8:** Computing Professionalism and Society: Understand and assess societal, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice.
- » **PLO 9:** Ethics: Understand and commit to professional ethics, responsibilities, and norms of professional computing practice.
- » **PLO 10:** Life-long Learning: Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

Semester-I			Semester-II		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
CS1027	Introduction to ICT	2-0	CS2005	Object Oriented Programming	3-0
CS1028	Introduction to ICT Lab	0-1	CS2006	Object Oriented Programming Lab	0-1
CS1003	Programming Fundamentals	3-0	CS4011	Database Systems	3-0
CS1004	Programming Fundamentals Lab	0-1	CS4012	Database Systems Lab	0-1
HU1013	English Composition and Comprehension	3-0	MATH2501	Probability and Statistics	3-0
MATH1103	Calculus and Analytical Geometry	3-0	HU1015	Communication and Presentation Skills	3-0
CS1025	Computational Thinking	2-0	MATH2202	Linear Algebra	3-0
MAST1001	Computational Media Design	2-0	CSILE1002	Industrial Learning Experience 2	0-0-1
CSILE1001	Industrial Learning Experience 1	0-0-1			
	Total	15-2-1		Total	15-2-1
Semester-III			Semester-IV		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
CS3007	Data Structures and Algorithms	3-0	CS4103	Design and Analysis of Algorithms	3-0
CS3008	Data Structures and Algorithms Lab	0-1	CS1601	Digital Logic Design	3-0
CS3501	Artificial Intelligence	3-0	CS1602	Digital Logic Design Lab	0-1
CS3502	Artificial Intelligence Lab	0-1	CS4015	Computer Networks	3-0
CS2029	Discrete Structures	3-0	CS4016	Computer Networks Lab	0-1
MATH2304	Differential Equations	3-0	CSXXXX	Restrictive Elective	3-0
CS4017	Information Security	3-0	CS2509	Programming for Artificial Intelligence	2-0
CSILE1003	Industrial Learning Experience 3	0-0-1	CS2510	Programming for Artificial Intelligence Lab	0-1
			CSILE1004	Industrial Learning Experience 4	0-0-1
	Total	15-2-1		Total	14-3-1
Semester-V			Semester-VI		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
CS4603	Computer Organization and Assembly Language	3-0	CS4013	Operating Systems	3-0
CS4604	Computer Organization and Assembly Language Lab	0-1	CS4014	Operating Systems Lab	0-1
CS3511	Artificial Neural Network	2-0	BIO1004	Applied Biology	2-0
CS3512	Artificial Neural Network Lab	0-1	BIO1005	Applied Biology Lab	0-1
CSXXXX	Concentration Stream Subject I	3-0	CS4507	Computing Vision	2-0
CS3503	Machine Learning	2-0	CS4508	Computing Vision Lab	0-1
CS3504	Machine Learning Lab	0-1	CS4505	Natural Language Processing	3-0
CS3513	Knowledge Representation and Reasoning	3-0	CSXXXX	Concentration Stream Subject II	3-0
CSILE1005	Industrial Learning Experience 5	0-0-1	CSILE1006	Industrial Learning Experience 6	0-0-1
	Total	13-3-1		Total	13-3-1
Semester-VII			Semester-VIII		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
CS4301	Parallel and Distributed Computing	2-0	CSXXXX	Concentration Stream Subject III	3-0
CS4302	Parallel and Distributed Computing Lab	0-1	MGT1001	Entrepreneurship	2-0
HU2001	Technical and Business Writing	3-0	IS1001	Islamic Studies	2-0
CS3009	Software Engineering	3-0	HU2003	Professional Practices	3-0
CHE1003	Applied Chemistry	2-0	CS4099	Capstone Project II	0-4
CHE1004	Applied Chemistry Lab	0-1			
PS1001	Pakistan Studies	2-0			
CS4098	Capstone Project I	0-2			
	Total	12-4		Total	10-4

Bachelor of Science Cyber Security (4 years)



The Bachelor of Science Cyber Security BS (CybSec) program intends to produce skilled professionals to understand the processes that impact information security, safeguarding information assets, collection and preservation of digital evidences, analysis of data, and identification and fixing of security vulnerabilities. The program will equip students with the fundamental knowledge of computer science that forms the technical foundation of the field, with an essential focus on experiential learning through laboratory exercises in the security courses. This degree is a state-of-the-art course with a perfect blend of Cyber Security that is designed to set the graduates up for immediate industry success by combining and leveraging today's cutting-edge technology with real-world scenarios.

Program Educational Objectives (PEOs)

By four years after graduation, graduates of cyber security program will have:

- » **PEO 1:** Entered in the cyber security and computing profession or related fields in prominent organizations or working as a technopreneur.
- » **PEO 2:** Become medium level experts able to creatively apply their expertise of science, engineering and technology to the solution of technical problems.
- » **PEO 3:** Earned a reputation as a professional, sensitive to the environmental, social, safety and economic context and possess a strong commitment to ethical practices.
- » **PEO 4:** Attained a junior leadership position and be acknowledged as a valuable team member able to communicate effectively.
- » **PEO 5:** Continued their professional development and physical well-being.

Program Learning Outcomes (PLOs)

Program outcomes are the narrower statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills and attitude that the students acquire while progressing through the program. PLO's of UG program are as under:

- » **Academic Education:** Completion of an accredited program of study designed to prepare graduates as computing professionals.
- » **Knowledge for Solving Computing Problems:** Apply knowledge of computing fundamentals, knowledge of a computing specialization, and mathematics, science, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.
- » **Problem Analysis:** Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.
- » **Design / Development of Solutions:** Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
- » **Modern Tool Usage:** Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.
- » **Individual and Teamwork:** Function effectively as an individual and as a member or leader in diverse teams and in multi-disciplinary settings.
- » **Communication:** Communicate effectively with the computing community and with society at large about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.
- » **Computing Professionalism and Society:** Understand and assess societal, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice.
- » **Ethics:** Understand and commit to professional ethics, responsibilities, and norms of professional computing practice.
- » **Life-long Learning:** Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

Curriculum of BS CY

Sr.	Subject	Credit Hours	Sr.	Subject	Credit Hours
Semester 1			Semester 2		
1	Programming Fundamentals	3+1	1	Database Systems	3+1
2	Application of Information & Communication Technologies	2+1	2	Object Oriented Programming	3+1
3	Discrete Structures	3+0	3	Digital Logic Design	2+1
4	Calculus and Analytic Geometry	3+0	4	Multivariable Calculus	3+0
5	Functional English	3+0	5	Linear Algebra	3+0
Total		16	Total		17
Semester 3			Semester 4		
1	Artificial Intelligence	2+1	1	Computer Organization and Assembly Language	2+1
2	Data Structures	3+1	2	Cyber Security	3+1
3	Information Security	2+1	3	Information Assurance	2+1
4	Computer Networks	2+1	4	Applied Physics	2+1
5	Software Engineering	3+0	5	Expository Writing	3+0
6	Probability & Statistics	3+0	6	Islamic Studies	2+0
Total		19	Total		17
Semester 5			Semester 6		
1	Operating Systems	2+1	1	Digital Forensics	2+1
2	Network Security	2+1	2	Parallel & Distributed Computing	2+1
3	Secure Software Design and Development	2+1	3	Domain Elective 3	2+1
4	Domain Elective 1	2+1	4	Domain Elective 4	2+1
5	Domain Elective 2	2+1	5	Domain Elective 5	2+1
6	General Education Requirement	2+0	6	Domain Elective 6	2+1
Total		17	Total		18
Semester 7			Semester 8		
1	Final Year Project - I	0+2	1	Final Year Project - II	0+4
2	Analysis of Algorithms	3+0	2	Ideology and Constitution of Pakistan	2+0
3	Technical & Business Writing	3+0	3	Professional Practices	2+0
4	Entrepreneurship	3+0	4	Civics and Community Engagement	2+0
5	Domain Elective 7	2+1	Total		10
6	Elective Supporting Course	3+0			
Total		16			

Bachelor of Science Information Technology (4 years)



The Bachelor of Science in Information Technology (BS IT) is a comprehensive degree program that combines theoretical knowledge and practical skills in the field of information technology. Students enrolled in the program undergo a core curriculum covering computer science fundamentals, mathematics, and programming, after which they can choose specialized tracks such as network administration, cybersecurity, software development, or database management. The curriculum typically includes courses in programming, database management, networking, cybersecurity, systems analysis, and IT project management. Emphasis is placed on developing essential professional and communication skills. Additionally, students often participate in internships or capstone projects to gain hands-on experience in real-world IT environments. Upon graduation, BSIT degree holders are well-prepared for diverse careers in areas such as software development, network administration, and cybersecurity, or they may choose to pursue further education in specialized IT fields.

Program Educational Objectives (PEOs)

By four years after graduation, graduates of Information Technology program will have:

- » **PEO 1:** Entered in the information technology and computing profession or related fields in prominent organizations or working as a technopreneur.
- » **PEO 2:** Become medium level experts able to creatively apply their expertise of science, engineering and technology to the solution of technical problems.
- » **PEO 3:** Earned a reputation as a professional, sensitive to the environmental, social, safety and economic context and possess a strong commitment to ethical practices.
- » **PEO 4:** Attained a junior leadership position and be acknowledged as a valuable team member able to communicate effectively.
- » **PEO 5:** Continued their professional development and physical well-being.

Program Learning Outcomes (PLOs)

Program outcomes are the narrower statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills and attitude that the students acquire while progressing through the program. PLO's of UG program are as under:

- » **Academic Education:** Completion of an accredited program of study designed to prepare graduates as computing professionals.
- » **Knowledge for Solving Computing Problems:** Apply knowledge of computing fundamentals, knowledge of a computing specialization, and mathematics, science, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.
- » **Problem Analysis:** Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.
- » **Design / Development of Solutions:** Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
- » **Modern Tool Usage:** Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.
- » **Individual and Teamwork:** Function effectively as an individual and as a member or leader in diverse teams and in multi-disciplinary settings.
- » **Communication:** Communicate effectively with the computing community and with society at large about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.
- » **Computing Professionalism and Society:** Understand and assess societal, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice.
- » **Ethics:** Understand and commit to professional ethics, responsibilities, and norms of professional computing practice.
- » **Life-long Learning:** Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

Curriculum of BS IT

Sr. No.	Subject	Credit Hours	Sr. No.	Subject	Credit Hours
Semester 1			Semester 2		
1	Programming Fundamentals	3+1	1	Database Systems	3+1
2	Application of Information & Communication Technologies	2+1	2	Object Oriented Programming	3+1
3	Discrete Structures	3+0	3	Digital Logic Design	2+1
4	Calculus and Analytic Geometry	3+0	4	Multivariable Calculus	3+0
5	Functional English	3+0	5	Linear Algebra	3+0
Total		16	Total		17
Semester 3			Semester 4		
1	Artificial Intelligence	2+1	1	Computer Organization and Assembly Language	2+1
2	Data Structures	3+1	2	Web Technologies	2+1
3	Information Security	2+1	3	Cyber Security	2+1
4	Computer Networks	2+1	4	Applied Physics	2+1
5	Software Engineering	3+0	5	Expository Writing	3+0
6	Probability & Statistics	3+0	6	Islamic Studies	2+0
Total		19	Total		17
Semester 5			Semester 6		
1	Operating Systems	2+1	1	(Information Technology Infrastructure	2+1
2	DB Administration & Management	2+1	2	Parallel & Distributed Computing	2+1
3	System & Network Administration	2+1	3	Domain Elective 3	2+1
4	Domain Elective 1	2+1	4	Domain Elective 4	2+1
5	Domain Elective 2	2+1	5	Domain Elective 5	2+1
6	General Education Requirement	2+0	6	Domain Elective 6	2+1
Total		17	Total		18
Semester 7			Semester 8		
1	Final Year Project - I	0+2	1	Final Year Project - II	0+4
2	Analysis of Algorithms	3+0	2	Ideology and Constitution of Pakistan	2+0
3	Technical & Business Writing	3+0	3	Professional Practices	2+0
4	Entrepreneurship	3+0	4	Civics and Community Engagement	2+0
5	Domain Elective 7	2+1	Total		10
6	Elective Supporting Course	3+0			
Total		16			

Bachelor of Engineering Technology (Civil) - 4 Years



BET (Civil) cooperative model is a unique program aimed to producing engineering technologists having requisite applied knowledge, hands on experience of construction industry, distinction and excellence in civil technologies management, research and technology services in the construction industry.

Program Educational Objectives (PEOs)

After 3 - 5 years of graduation, BET (Civil) graduate will be able to:

- » **PEO1:** Apply knowledge and skills to provide sustainable solutions to challenging engineering problems in industry and academia.
- » **PEO2:** Engage in lifelong learning, embrace technological advancements, and demonstrate sustainable growth and professional development in a rapidly changing engineering landscape.
- » **PEO3:** Effectively communicate, collaborate, and lead multidisciplinary teams to address engineering technology challenges and provide solutions while considering ethical, societal, cultural, and environmental aspects.

Program Learning Outcomes (PLOs)

- » **Engineering Technology Knowledge:** An ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
- » **Problem Analysis:** An ability to identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

- » **Design and Development of Solutions:** An ability to design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
- » **Investigations:** An ability to investigate complex engineering problems in a methodical way including literature survey, design and conduct of experiments, analysis and interpretation of experimental data, and synthesis of information to derive valid conclusions.
- » **Modern Tool Usage (SA5):** An ability to select and apply appropriate techniques, resources, and modern technology and IT tools, including prediction and modelling, to broadly-defined engineering technology problems, with an understanding of the limitations.
- » **The Engineering Technologist and Society (SA6):** An ability to demonstrate understanding of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering technology practice and solutions to broadly defined engineering technology problems.
- » **Environment and Sustainability (SA7):** An ability to understand and evaluate the sustainability and impact of engineering technology work in the solution of broadly defined engineering technology problems in societal and environmental contexts.
- » **Ethics (SA8):** Understand and commit to professional ethics and responsibilities and norms of engineering technology practice.
- » **Individual and Team Work (SA9):** An ability to function effectively as an individual, and as a member or leader in diverse teams.
- » **Communication (SA10):** An ability to communicate effectively on broadly defined engineering technology activities with the engineering technologist community and with society at large, by being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- » **Project Management (SA11):** An ability to demonstrate knowledge and understanding of engineering technology management principles and apply these to one's own work, as a member or leader in a team and to manage projects in multidisciplinary environments.
- » **Lifelong Learning (SA12):** An ability to recognize the need for, and have the ability to engage in independent and life-long learning in specialist engineering technologies.

Curriculum of BET (Civil)

Semester- I			Semester- II		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
BETH1001	Applied Mathematics-I	3-0	BETCE1101	Applied Mechanics	3-0
BETCE1101	Materials for Infrastructure Engineering Tech	2-0	BETCE1102	Applied Mechanics Lab	0-1
BETCE1102	Materials for Infrastructure Engineering Tech Lab	0-1	BETCE1103	Surveying	3-0
BETCE1103	Transportation Engineering	2-0	BETCE1104	Surveying Lab	0-1
BETCE1104	Transportation Engineering Lab	0-1	BETCE1105	Drawing and CAD	3-0
BETCE1105	Construction Machinery	2-0	BETCE1106	Drawing and CAD Lab	0-1
BETH1101	Construction Machinery Lab	0-1	BETCE1107	Transportation Infrastructure	2-0
BETH1102	English Exposition	2-0	BETCE1108	Transportation Infrastructure Lab	0-1
BETCE1108	Computer Fundamentals Lab	0-1	BETH1103	Communication Skills & Technical Writing	2-0
		Total	21-3	Total	
Industrial Year 1					
Course Code		Course Title		Credits	
BETCE1109		Transportation Infrastructure Construction Industry		4	
Semester- III			Semester- IV		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
BETCE1110	Non-Structural Infrastructure Components	2-0	BETCE1110	Civil and Substructure	3-0
BETCE1111	Non-Structural Infrastructure Components Lab	0-1	BETCE1111	Civil and Substructure Lab	0-1
BETCE1112	Basics of Structural Design	2-0	BETCE1112	Residential Buildings	2-0
BETCE1113	Structural Engineering	2-0	BETCE1113	Residential Buildings Lab	0-1
BETCE1114	Structural Engineering Lab	0-1	BETCE1114	Substructure Development	2-0
BETCE1115	Concrete Technology	2-0	BETH1104	Islamic Studies	2-0
BETCE1116	Concrete Technology Lab	0-1	BETCE1115	Building Regulations Studies	2-0
BETH1101	Applied Mathematics-II	3-0	BETCE1116	Pre-stressed and Precast Concrete	2-0
		Total	21-3	Total	
Industrial Year 2					
Course Code		Course Title		Credits	
BETCE1117		Building Construction Industry		4	
Semester- V			Semester- VI		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
BETCE1118	Environmental Engineering	2-0	BETCE1118	Irrigation and Hydraulic Structures	2-0
BETCE1119	Environmental Engineering Lab	0-1	BETCE1119	Irrigation and Hydraulic Structures Lab	0-1
BETH1105	Pakistan Studies	2-0	BETH1105	Entrepreneurship	2-0
BETCE1120	Special Infrastructure	2-0	BETCE1120	Quantity Surveying and Cost Estimation	2-0
BETCE1121	Urban Development Studies	2-0	BETCE1121	Quantity Surveying and Cost Estimation Lab	0-1
BETCE1122	Fluid Mechanics	2-0	BETH1106	Occupational Health and Safety	2-0
BETCE1123	Fluid Mechanics Lab	0-1	BETCE1122	Tunnelling and Underground Space Technology	2-0
		Total	21-3	Total	
Industrial Year 3					
Course Code		Course Title		Credits	
BETCE1124		Special Infrastructure Construction Industry		4	
Semester- VII			Semester- VIII		
Course Code	Course Title	Credits	Course Code	Course Title	Credits
BETH1106	Project Economics	2-0	BETH1106	Project Management	2-0
BETH1107	Bidding and Contract Management	2-0	BETH1107	Project Management Lab	0-1
BETH1108	Numerical Methods and Linear Algebra	2-0	BETH1108	Professional Ethics	2-0
BETH1109	Numerical Methods and Linear Algebra Lab	0-1	BETH1109	Construction Risk Management	2-0
BETCE1125	Building Information Modeling	2-0	BETCE1125	Elective	2-0
BETCE1126	Building Information Modeling Lab	0-1	BETCE1126	Final Year Project-II	0-1
BETCE1127	Final Year Project-I	0-1			
		Total	8-6	Total	
Industrial Year 4					
Course Code		Course Title		Credits	
BETCE1128		Project Management Industry		4	

DESIGN TO BE



'Hands-on' problems solver University of local and international industry



UG Degree Programs, Credit Hours & Seats in Various Disciplines

Serial	Degree Title	Credit Hour
1	Bachelor of Science Civil Engineering (BS CE)	134
2	Bachelor of Science Mechanical Engineering (BS ME)	132
3	Bachelor of Science Electrical Engineering (BS EE)	130-133
4	Bachelor of Science Computer Engineering (BS CEN)	140
5	Bachelor of Science in Computer Science (BS CS)	138
6	Bachelor of Science in Software Engineering (BS SE)	130
7	Bachelor of Science in Artificial Intelligence (BS AI)	136
8	Bachelor of Science in Cyber Security (BS CY)	130
9	Bachelor of Science in Information Technology (BS IT)	130
10	Bachelor of Engineering Technology (Civil) – BET (Civil)	136



Admissions

- » NUTECH provides equal educational opportunities to all qualified prospective students regardless of economic or social background.
- » The University does not discriminate on the basis of race, colour, religion, marital status, beliefs, age, national origin and physical or mental disability (provided the doctor provides the candidates with a certificate to under go the mental / physical robustness enough to take on rigours during degree program).
- » NUTECH admits students for the fall term each year (classes commence in October).
- » Candidates are encouraged to submit their applications as early as possible and are responsible for ensuring that all admission credentials are submitted on time.
- » Application will not be reviewed until all materials have been received. Each programme is designed to initially enroll up to 50 students, and subsequently up to 100 students (after necessary approval from the accreditation bodies).
- » Applicants are offered admission on a competitive basis, with those meeting NUTECH's selective admission criteria receiving first offers. The University encourages female students to join the university.

Schedule of Admissions

- » Ads in Newspapers in the month of January - March.
- » Online Registration through website and depositing registration and application processing fee in designated branches of bank as per instructions given on website (www.nutech.edu.pk).
- » Applicants can appear in Nutech Entry Test for the admission or SAT score card be uploaded by international/ expatriate students by given date (before last date for submission of applications).
- » Three Series of NUTECH Entry Test will be conducted, computer-based at NUTECH Islamabad and Paper-based at other centers (Qta, GB, Skardu, Lhr, Bwp, and AJK).
- » Display of 1st merit list and issue of provisional admission offer letter by 1st week of October.
- » Display of second merit mid of October and display of final merit list by 3rd week of October.
- » Start of classes in 2nd week of November.
- » Deposit of admission and tuition fee before given dates for each merit list.





Eligibility Criteria of UG Programs

Students of FSc (Pre-Eng, Pre-Med), ICS, HSSC with Math, DAE, A-Level, and Equivalent can Apply

Programs	SSC/O Level/ Equivalent	HSSC/ A Level/ Equivalent	Qualification	NUTECH Entry Test
BS Civil Engineering (BS CE) BS Mechanical Engineering (BS ME) BS Electrical Engineering (BS EE) BS Computer Engineering (BS CEN)	60% Marks	80% Marks	FSc Pre-Engineering/Pre-Medical with additional Math/ICS or equivalent with a combination of Math, Physics & Computer Science/ DAE (relevant discipline)	As a mandatory requirement
BS Computer Science (BS CS) BS Software Engineering (BS SE) BS Artificial Intelligence (BS AI) BS Cyber Security (BS CY) BS Information Technology (BS IT)	60% Marks	50% Marks	FSc Pre-Engineering/Pre-Medical with any combination of Math/HSSC level of Mathematics with a combination of any other subjects/DAE (All Disciplines)	
Bachelor of Engineering Technology (Civil), BET (Civil)	50% Marks	50% Marks	FSc Pre-Engineering/Pre-Medical ICS/DAE in Civil Engineering	

Entrance Exam

- » National candidates have to appear in NUTECH Entry Test (NUET) for Undergraduate Programs. The test will be computer-based at NUTECH Islamabad and Paper-based at other centers (Peshawar, Lahore, Multan, Hyderabad, GB, Quetta, Muzaffarabad, and Bahawalpur). NUET is a mandatory requirement for National Students. Merit calculation will be based on the highest marks obtained by the candidates against the seats available in each degree program.
- » The candidates will be tested as per their last qualification (which makes them eligible for programs). The syllabus of the Entry Test will include questions from subjects Math, Physics, Chemistry/Computer science, and English / reasoning taught at SSC / Equivalence and HSSC/DAE / equivalence levels in all the boards of Pakistan.
- » include questions from subjects Math, Physics, Chemistry/Computer science, and English / reasoning taught at SSC / Equivalence and HSSC/DAE / equivalence levels in all the boards of Pakistan.
The Distribution of the paper will be as under:
 - a. Math (standard as per programs) - 40%
 - b. Physics (") - 30%
 - c. Chemistry/Computer Science (") - 20%
 - d. English / reasoning (") - 10%

- » Candidate will be tested as per his previous qualification as under: -
 - a. FSc (Pre Engg) will be tested for Math, Physics, Chemistry, and English.
 - b. FSc (Pre Medical) will be tested for physics, Chemistry, Gen Arithmetics, and English.
 - c. DAE (Any Discipline) will be tested primarily from DAE Syllabus.
 - d. ICS will be tested for Math, Physics, Computer, and English.
 - e. HSSC with Maths (General Group) will be tested for Math, Physics, Computer, and English.

Merit Criteria

- » Admissions shall be granted on the basis of merit determined by combining the weighted marks. The weightage criteria for the undergraduate degree programs shall be as given below:
 - NUTECH Entry Test / SAT subject test (for international / expatriate students) - 70%.
 - HSSC/A-Level/Equivalent Examination or HSSC Part-I / A-1 (in case final result is awaited) - 20%.
 - SSC/O-Level/Equivalent Examination - 10%.

Requisite Documents

- » Applicants offered admission will submit following documents in original along with four attested photocopies of each :
 - Detailed Mark Sheets of matriculation or equivalent.
 - Intermediate or equivalent examination certificate by IBCC.
 - Migration Certificate, if applicable.
 - Provisional Certificate, if applicable.
 - Undertaking on Stamp Paper to abide by the rules and regulations of NUTECH. Sample available on website.
 - Computerized National Identity Card or 'B' Form.
 - Two thumb size (1" x 1") and four passport size photographs attested from back side.

Merit Criteria

- » All applicants who will be provisionally offered admission would be required to provide Medical Certificate of a Government hospital or registered medical practitioner before joining the university.

Admission Ineligibility Criteria

» Applicants are ineligible to apply under following conditions or circumstances:

- Applicants securing less than 60% marks in SSC / O-Level (IBCC Equivalence Certificate) will not be eligible for any of the undergraduate programs (It's 50% Technology programs).
- Likewise those attaining less than 60% marks in HSSC / A-Level (IBCC Equivalence Certificate) would also be ineligible. (It's 50% for CS, SE, AI & Technology programs).
- Applicants from Cambridge stream or equivalence exam, not in possession of equivalent certificate of IBCC for O & A-Levels or equivalent foreign qualification cannot apply.
- Those applicants who failed or did not appear in any of subject in HSSC Part-I & II or A1 & A2 level or equivalent examination would render themselves ineligible.
- For DAE qualification, admission application of students awaiting final result will not be accepted on the basis of Hope or Provisional Certificate.
- Applicants who has been expelled in the past from any university on disciplinary / moral grounds will not qualify for admission.
- Involvement in criminal proceedings will be subject to security clearance from police / concerned authorities.
- NUET (NUTECH Entry Test) or SAT Subject (Math Level-II) score card be submitted with application form. Late submission shall not be entertained.

Note: Candidates must check eligibility criteria before submitting their online application forms to confirm that they are academically eligible for admission into the program of their choice.

Scholarships

» NUTECH offers Need based, Ehsaas (sponsored by HEC), and Merit based scholarships for deserving students (obtaining 3.75 SGPA and above) as per university policy. Need based Scholarships are offered by NGO's are also available on NUTECH website as per the terms & conditions and time lines.

Salient Aspects of Admissions

- » Degree program will be offered based on merit and in order of preference given in the application form.
- » Applicants will be allowed to change their preference of degree program once only after approval of concerned authority. However, application for change of preference after display of third or final merit list will not be allowed.
- » Applicants will be given a choice to change the degree program on merit basis, in case of dropouts on vacant seats in other programs after joining their preferred program.
- » Upon the display of merit list of the successful applicants, they will be required to confirm their willingness to enroll by depositing the prescribed fee challan along with medical certificate.
- » Admission will only be considered complete if the payment of all dues within specified dates is confirmed to the Admission Office of NUTECH.
- » If an applicant fails to confirm his/her enrolment within the notified period or by due date, his/her admission will stand cancelled forthwith and the seat will be offered to the next candidate on the waiting list after further display of fresh merit list.
- » Confirmation of admission will be made after verification of original documents from concerned authorities and deposit of dues by candidate.
- » Applicants submitting provisional certificate for awaited result of HSSC part-II or A-level/foreign exam will be given confirmation of admission if they fulfill requirement of merit as per eligibility criteria of the program admitted for.
- » Applicants who have applied/re-appeared in examinations for improvement of grades shall not be considered for admission under the category of result awaiting candidates and their most immediate notified result shall be counted in the preparation of merit list.
- » Students of A-level are to submit affirmation for depositing the equivalence certificate issued by IBCC within 20 days of the start of classes.
- » Mandatory Welcome and Orientation session will be held at NUTECH for all freshman to acquaint them with campus life, policies and facilities being offered by the university.

Cancellation of Admission

- » Admission of Applicants will stand cancelled on provision of any false information/credentials.
- » Applicants found guilty of suppression or misrepresentation of material facts at any stage will lose admission or continuity of degree program.
- » If Applicants fails to submit requisite mandatory documents within stipulated time to university authorities will have to forego his/her admission.
- » Applicants who fail to join within 15 days of commencement of programs even with fee paid will lose their admission.
- » Admission of a student who is unable to attend any lecture during first four weeks after the start of the semester will stand cancelled automatically without any notification.

Rejection of Application

- » The university reserves the right to reject any application without assigning any reason.

Dress Code for Students

As part of grooming we encourage students to follow the dress code as:

» **GIRLS:**

- Female students are supposed to wear graceful Pakistani dress compatible with the social norms. Tights are not allowed. Decency and simplicity are desirable.

» **BOYS:**

Summer:

- Monday : Collar Shirt , dress pants (with shirt tucked in) and dress shoes (neck tie optional)
- Tuesday to Thursday : Collar shirt , dress pants or blue/black jeans (with shirt tucked in) and dress shoes.
- Friday : Collar Shirt ,dress pants or blue/black jeans (with shirt tucked in) and dress shoes (neck tie optional) or decent Shalwar Qameez and dress shoes.

Winter:

- Monday : Lounge suite/decent combination of coat , pants and dress shirt with neck tie and dress shoes.
- Tuesday to Thursday : Collar shirt ,dress pants or blue/black jeans (with shirt tucked in), coat (or jacket) and dress shoes.
- Friday : Collar shirt , dress pants or blue/black jeans (with shirt tucked in), coat (or jacket) and dress shoes (neck tie optional) or decent Shalwar Qameez, coat/ waist coat and dress shoes.



Fee Structure

Fee structure constitutes an essential facet of any university. It affords education which is economical enough to attract talented students to contribute for progress of the country from all classes of society. NUTECH fee structure for undergraduate programs is appended below, it does not include transport, accommodation, messing, ID card, library, graduation fee and other miscellaneous heads :

UG Programs Fee Structure

Type of Fee	PKR(Rs)	USD (s)
Appl Processing Fee (for each NUET & Non Refundable)	2,500	100
Admission Fee (one-time & Non-Refundable)	30,000	1100
Security Deposit (one time & Refundable)	10,000	500
Misc. Charges	7,500	300
Semester Fee for BET(Civil) only (per Semester)	92,500	3000
Semester Fee for other UG programs (per Semester)	138,000	3000

Note: Fee is subject to revision by university authority from time to time.

Fee Refund Policy

- » Refund of fee policy is subject to revision from time to time and will be implemented as under:

a)	Upto 7th Day from Start of Semester	100% fee refund less registration and admission processing fee
b)	Between 8th – 15th day from Start of Semester	50% fee refund less admission processing fee and registration fee
c)	16th day onward from Start of Semester	No refund of any kind of fee will be made less security deposit

- Welcome and Orientation days are included in start of semester classes.
- Timeline shall be calculated continuously, covering both weekdays and weekend.
- The refund application will be processed within 15 working days from receiving the application.

Establishment of HBL Branch

» HBL has established its branch in NUTECH to meet financial requirement of NUTECH faculty, staff & students.





MS Degree Programs
at
NUTECH

MS Degree Programs

Serial	Degree Title
1	Master of Science Civil Engineering (MS CE)
2	Master of Science Computer Engineering (MS CEN)
3	Master of Science Computer Science (MS CS)
4	Master of Science Artificial Intelligence (MS AI)
5	Master of Science Software Engineering (MS SE)

Eligibility Criteria (MS)

- » Sixteen years of schooling or 4 year education after HSSC/FSc/Grade 12/equivalent will be required for admission in the MS with a minimum CGPA of 2.0 (on a scale of 4.0).
- » HEC / PEC (as applicable) recognized Bachelors/Masters degree Following test results are required.
- » NTS GAT, ETC HAT & GRE General (with a minimum 50% cumulative score for admission in MS) as an eligibility condition for admission or test of the equivalent level at the University (when conducted).
- » The type of degree requirements is different for different programs. For example MS in CS is open to take candidates having BS in different majors. However, for admission in MS in CE, Bachelors in Civil Engineering is required.

Merit Criteria (MS)

Entrance test conducted by NTS/NUTECH and/or other HEC approved test will be considered and following weighted marks will be considered:

- Undergraduate CGPA: 30%
- Written Exam (GAT etc): 50%
- Interview: 20 %

Fee structure (MS)

Type of Fee	Rs
Application Processing Fee (At the time of Registration only)	2,000
Admission Fee (One Time only)	10,000
Security (One Time & Refundable)	10,000
Semester Fee (Per Semester)	83,000

Note: Fee is subject to revision by university authority from time to time.

Master of Science Civil Engineering (MS CE) - 2 Years



Vision: The vision of our graduate civil engineering program is to produce young engineers equipped with professional and leadership qualities. These individuals will have the capacity to take up professional and research assignments in Civil Engineering and allied fields with focus on interdisciplinary and innovative approach to worldly problems so that they can compete at Global level.

Mission: The mission of the graduate civil engineering program is to produce technically sound and innovative graduates, industrial leaders, useful members of society, and entrepreneurs of character to address current and future challenges of industry and society.

Program Learning Outcomes (PLOs)

The graduates will be able to:

- » Demonstrate in-depth knowledge of a particular subject area and broad inter disciplinary knowledge of other areas in civil engineering.
- » Plan and conduct applied research that addresses specific questions of significance in a particular area in civil engineering.
- » Apply analytical and conceptual skills to solve civil engineering problems both individually and as a part of team using innovative techniques to build an effective relationship between theory, research and practice.
- » Exhibit research communications, collaboration and mentoring skills in the roles as professional team members and team leaders.
Enter the workforce for planning, designing, organizing, developing, managing, and maintaining civil engineering projects.

Semester- I		
Course Code	Course Title	Credits
CE-6xxx	Core Course - I	3(3-0)
CE-6xxx	Core Course - II	3(3-0)
CE-7xxx	Elective Course - I	3(3-0)
RM-6000	Research Methodology	1(1-0)
	Total	10-0
Semester-II		
CE-6xxx	Core Course – III	3(3-0)
CE-6xxx	Core Course – IV	3(3-0)
CE-7xxx	Elective Course – II	3(3-0)
CE-7xxx	Elective Course - III	3(3-0)
	Total	12-0
Semester- III		
CE-7xxx	Elective Course-IV	3(3-0)
CE-8999/CE7xxx	Research Thesis/Two Elective Courses	6(0-6)
	Total	3+6=9

Master of Science Artificial Intelligence (MS AI) - 2 Years



Computer Science department aims to produce Leaders of Progress and Excellence through the fusion of academic excellence with personal character. Students not only develop expertise in the chosen field but are also given opportunities for broad learning to become intellectual leaders, problem solvers, responsible and useful members of the society. The department has devised the curriculum that is based on the concept of Learning by Doing to provide every undergraduate student with outstanding education grounded in basic, applied and social sciences with a focus on engineering and technology that will:

- Produce future technology leaders in the field of Computer Science mainly focusing on bridging the gap between industry and academia through world-class education in science engineering, technology, other technologies, other areas of scholarship, professional certifications, technical & vocational skills.
- Develop state-of-the-art technologies through continuous research and development that can help industries in cost savings, rapid product development, process improvements and gaining competitive advantage in the marketplace.
- Produce graduates that are not only competent in technical skills but also have strong communication skills and teamwork abilities. Promote culture of research and student involvement through continuous industry academia collaboration.

Program Learning Outcomes (PLOs)

The graduates will be able to:

- Demonstrate in-depth knowledge of a particular subject area and broad knowledge of other areas in Computer Science.

- Exhibit technical communication, collaboration and mentoring skills in the roles as team members and team leaders in research and development in computing fields.
- Enter the workforce for effective planning, designing, organizing, developing, managing and maintaining informatics systems.

Program Structure

Core Courses	
Course Title	Credit Hours
Advanced Artificial Intelligence	3
Knowledge Representation and Reasoning	3
Programming for Artificial Intelligence	3
Advanced Machine Learning	3
Elective Courses	
Multi-Agent Systems	3
Computer Vision and Video Analytics	3
Advanced Pattern Recognition	3
Reinforcement Learning	3
Ethical Issues in Artificial Intelligence	3
Robotics Planning and Perception	3
Applications of Artificial Intelligence	3
Deep Learning	3
Natural Language Processing	3

MS AI Curriculum

Semester – I	
Core Course – I	3
Core Course – II	3
Core Course – III	3
Total	9
Semester – II	
Core Course – IV	3
Elective Course – I	3
Elective Course – II	3
Research Methodology	0
Total	9
Semester – III	
Elective Course – III	3
Elective Course – IV	3
MS Thesis	6
Total	12

Master of Science Software Engineering (MS SE) - 2 Years



Program Education Objectives (PEOs)

A postgraduate study in Software Engineering provides intensive preparation in the concepts and techniques related to the design, programming, and application of computing systems. Postgraduate students will be provided with a deep understanding of both advanced and important current issues.

The graduated students will be able to:-

- Create, share, and apply knowledge in Software Engineering, including interdisciplinary areas and the entrepreneurial skills that extend the scope of SE and benefit humanity.
- Be successful and effective problem-solvers and life-long learners who will contribute positively to the economic well-being of society.
- To be able to contribute to applied scientific research in the emerging field of various technologies.

Program Learning Outcomes (PLOs)

The graduates will be able to:

- Demonstrate in-depth knowledge of a particular subject area and broad knowledge of other areas in Software Engineering.
- Plan and conduct applied research that addresses specific questions of significance in a particular subject area in Software Engineering.
- Exhibit good understanding of and the ability to follow professional ethics in research, teaching, and professional service, including global culture awareness and environment impact.

- Exhibit technical communication, collaboration and mentoring skills in the roles as team members and team leaders in research and development in computing fields.
- Enter the workforce for effective planning, designing, organizing, developing, managing and maintaining informatics systems.

Program Structure

Core Courses	
Course Title	Credit Hours
Advanced Requirements Engineering	3
Advanced Software System Architecture	3
Software Testing and Quality Assurance	3
Elective Courses	
Software Measurement and Metrics	3
Component Based Software Engineering	3
Advanced Formal Methods	3
Advanced Human-Computer Interaction	3
Agile Software Development Methods	3
Empirical Software Engineering	3
Advanced Software Project Management	3
Software Risk Management	3
Software Measurement and Metrics	3
Software Configuration Management	3
Reliability Engineering	3
Complex Networks	3
Agent Based Modeling	3

MS SE Curriculum

Semester – I	
Core Course – I	3
Core Course – II	3
Core Course – III	3
Total	9
Semester – II	
Core Course – IV	3
Elective Course – I	3
Elective Course – II	3
Research Methodology	0
Total	9
Semester – III	
Elective Course – II	3
Elective Course – IV	3
MS Thesis	6

Master of Science Computer Science (MS CS) - 2 Years



Computer Science department aims to produce Leaders of Progress and Excellence through the fusion of academic excellence with personal character. Students not only develop expertise in the chosen field but are also given opportunities for broad learning to become intellectual leaders, problem solvers, responsible and useful members of the society. The department has devised the curriculum that is based on the concept of Learning by Doing to provide every undergraduate student with outstanding education grounded in basic, applied and social sciences with a focus on engineering and technology that will:

- Produce future technology leaders in the field of Computer Science mainly focusing on bridging the gap between industry and academia through world-class education in science engineering, technology, other technologies, other areas of scholarship, professional certifications, technical & vocational skills.
- Develop state-of-the-art technologies through continuous research and development that can help industries in cost savings, rapid product development, process improvements and gaining competitive advantage in the marketplace.
- Produce graduates that are not only competent in technical skills but also have strong communication skills and teamwork abilities. Promote culture of research and student involvement through continuous industry academia collaboration.

Program Learning Outcomes (PLOs)

The graduates will be able to:

- Demonstrate in-depth knowledge of a particular subject area and broad knowledge of other areas in Computer Science.

- Demonstrate in-depth knowledge of a particular subject area and broad knowledge of other areas in Computer Science.
- Plan and conduct applied research that addresses specific questions of significance in a particular subject area in Computer Science.
- Exhibit good understanding of and the ability to follow professional ethics in research, teaching, and professional service, including global culture awareness and environment impact.
- Exhibit technical communication, collaboration and mentoring skills in the roles as team members and team leaders in research and development in computing fields.
- Enter the workforce for effective planning, designing, organizing, developing, managing and maintaining informatics systems.

MS CS Curriculum

Semester- I		
Course Code	Course Title	Credits
CS6001	Advanced Analysis of Algorithms	3(3-0)
CS6003	Advanced Operating Systems	3(3-0)
CSxxxx	Elective Course – I	3(3-0)
RM6000	Research Methodology	1(1-0)
	Total	10-0
Semester-II		
CS6005	Theory of Programming Languages	3(3-0)
CS6007	Advance Theory of Computation/Theory of Automata – II	3(3-0)
CSxxxx	Elective Course - II	3(3-0)
CSxxxx	Elective Course - III	3(3-0)
	Total	12-0
Semester- III		
CSxxxx	Elective Course - IV	3(3-0)
CS8999/ CSxxxx	MS Thesis or 2 Elective Courses	6(0-6)
	Total	3+6=9



Master of Science Computer Engineering (MSCEN) at NUTECH prepares students for advanced study, research, and industrial practice in the field of computer engineering. The industry-oriented curriculum of MS Computer Engineering provides the right blend of core courses and electives which are grouped into following areas: Data Science and Systems, AI, Robotics and Computer vision, Cyber physical systems, Hardware systems etc., and optional Thesis.

Our Master of Science Computer Engineering degree program will prepare the students for the following careers:

- » AI/Machine Learning Research Engineer
- » Data Scientist/ Analyst
- » Network Engineer
- » Computer Vision Engineer
- » IoT Engineer
- » Robotics Engineer
- » Embedded Systems Engineer
- » Cybersecurity Analyst
- » Software Developer

Program Educational Objectives (PEOs)

The educational objectives of MS CEN program are stated below:

- a. To apply theoretical, practical knowledge and provide innovative solutions of complex engineering problems in Computer Engineering and allied domains.
- b. To demonstrate satisfactory interpersonal skills as an individual and in a team with the help of effective oral and written communication.
- c. To pursue continual professional development, lifelong learning and sustainable growth of the society.

Program Learning Outcomes (PLOs)

The MS CEN program prepares students to attain the educational objectives by ensuring that the student should be:

- Able to understand theoretical and practical knowledge in Computer Engineering and allied domains.
- Able to do research and provide innovative solutions of complex engineering problems using state-of-the-art methodologies.
- Able to demonstrate satisfactory interpersonal skills with the help of effective oral and written communication.

Curriculum (MS CEN)

Semester- I		
Course Code	Course Title	Credits
CEN-XXXX	Core Course-I	3 (3-0)
CEN-XXXX	Core Course-II	3 (3-0)
RM-XXXX	Research Methodology (1 contact hour -noncredit)	-
CEN-XXXX	Elective-I	3 (3-0)
	Total	9-0
Semester-II		
CEN-XXXX	Core Course-III	3 (3-0)
CEN-XXXX	Elective-II	3 (3-0)
CEN-XXXX	Elective-III	3 (3-0)
CEN-XXXX	Elective-IV	3 (3-0)
	Total	12-0
Semester- III		
CEN-XXXX	Elective-V	3 (3-0)
CEN-XXXX	Thesis	6(0-6)
	Total	3+6=9



DAE SINO-PAK DUAL DIPLOMA PROGRAMS

at

NUTECH



NUtech
Leading to Progress & Excellence

Dual Diploma Programs (2 Years at NUTECH, 1 Year in China)

Serial	Title	No. of Seats
1	DAE Software Technology	25
2	DAE Big Data Technology	25
3	DAE Mechatronics Technology	25

Admission Requirements

Prospective students should have completed their Matric or O-levels with science subjects (Min 50%) as a prerequisite for admission into the DAE programs. The age limit for Diploma programs is 16-21 years.

Merit Criteria

100% weightage will be given to the matric percentage.

Fee Structure

Type of Fee	PKR (RS)	
Appl Processing Fee (at the time of Registration & Non Refundable)	2,000	
Admission Fee (one-time & Non-Refundable)	5,000	
Security Deposit (one time & Refundable)	5,000	
Monthly Fee (to be paid on quarterly basis)	15,000	
At the time of Admission Total fee		55,000

DAE Software Technology

The DAE SINO PAK Dual Diploma program is a collaborative effort between Pakistani and Chinese educational institutions, tailored to meet industry demands. With a carefully planned curriculum, students gain a mix of theoretical knowledge and practical skills needed for today's job market. From language and math basics to specialized training in software and database management, graduates are well-prepared for various industries. They emerge as adaptable professionals ready to contribute to both nations' economies and beyond.

The target industries for graduates are software development houses, IT services centers, telecommunications hubs, finance departments, e-commerce marketplace, and manufacturing units. Their skill set encompasses proficiency in programming languages such as Java, SQL, and HTML5, along with expertise in software development, database

management, and networking. They become well-equipped to pursue careers as software developers, database administrators, network engineers, project managers, and IT consultants, among others, in both local and global contexts.

Program Learning Outcomes

PLO1 (Foundational Knowledge): Acquire a solid understanding of foundational subjects including Islamiat & Pakistan Studies, English, Chinese Language, Applied Mathematics, Applied Physics, and Applied Chemistry, providing a well-rounded educational background.

PLO2 (Computer Applications Proficiency): Develop proficiency in computer applications and software, including programming languages such as Java, SQL, and HTML5, along with hands-on experience in Android app development and web development.

PLO3 (Database Management Skills): Gain expertise in relational database management systems (RDBMS), including concepts such as database design, SQL programming, and database administration.

PLO4 (Networking and Operating Systems): Understand the principles of computer networks, operating systems, and digital logic design, preparing for roles involving system administration and network management.

PLO5 (Advanced Development Techniques): Explore advanced topics in software development, including machine learning applications, graphic designing, and technic of entrepreneurship principles to foster innovation and adaptability in the software industry.

PLO6 (Project Management and Entrepreneurship): Develop project management skills through project training modules, culminating in the ability to plan, execute, and deliver software projects effectively. Additionally, gain an understanding of entrepreneurship principles to foster innovation and adaptability in the software industry.

PLO7 (Cross-Cultural Competence): Acquire proficiency in Chinese language and understanding of Chinese culture, enhancing cross-cultural communication skills and preparing for opportunities in international collaborations and ventures.

Software Technology Curriculum

Courses: 1 st Year (NUTECH, Pakistan)				
Course Code	Course Title	Theory	Practical	Credits
Gen-111	Islamiat & Pakistan Studies-1	1	0	1
Eng-112	English	2	0	2
Chinese-112	Chinese Language-1	2	0	2
Math-123	Applied Mathematics-I	3	0	3
Phy-132	Applied Physics	1	3	2
Chem-132	Applied Chemistry	1	3	2
CIT-112	Computer Application S/W	0	6	2
SWT-112	Introduction to Computer Programming with JAVA	1	3	2
SWT-122	Introduction to database concept and SQL programming	1	3	2
SWT-132	Basics of HTML5 Web Development	1	3	2
Total		13	21	20
Courses: 2 nd Year (NUTECH, Pakistan)				
Gen-211	Islamiat & Pakistan Studies-2	1	0	1
Math-233	Applied Mathematics-2	3	0	3
Mgmt.-211	Business Communication	1	0	1
GenC-212	Chinese Language-2	2	0	2
MgmC-212	Understanding China	2	0	2
CIT-223	Computer Networks	2	3	3
MTR-272	Digital Logic Design	1	3	2
SWT-212	Basics of Android App Development	1	3	2
SWT-223	Web Development w/JAVA	1	6	3
CIT-263	Relational Data-Base Management System	2	3	3
CIVIL-271	Entrepreneurship	1	0	1
SWT-231	Project Training-I	0	3	1
Total		17	21	24
Courses: 3 rd Year (TANG Institute, China)				
GenC-312	Chinese Language-3	1	0	1
Eng.-311	Technical Report Writing	1	0	1
CIT-344	Graphic Designing	2	6	4
CIT-333	Operating System	2	3	3
SWT-312	Advanced HTML 5 Web Development	1	3	2
SWT-322	Advanced Development with JAVA	1	3	2
SWT-332	Machine Learning Applications	1	3	2
SWT-342	Advanced Android App Development	1	3	2
SWT-351	Project Training-I	0	3	1
Total		10	24	18

Big Data Technology

The DAE SINO PAK Big Data Technology Program represents a pioneering collaboration between Pakistani and Chinese educational institutions, offering a comprehensive curriculum tailored to meet the evolving demands of the data-driven industry. Anchored in a structured study scheme spanning three years, this program equips students with the knowledge and skills necessary to excel in the dynamic field of big data analytics. With a focus on proficiency in programming languages such as Python, SQL, and Java, coupled with hands-on experience in databases, data modeling, and data integration, students develop a strong foundational understanding of big data concepts. The program emphasizes technical expertise in frameworks like Hadoop and Spark, empowering students to analyze large datasets, derive actionable insights, and effectively communicate findings to diverse stakeholders. Furthermore, the curriculum instills principles of data governance, quality assurance, and problem-solving, fostering innovation and adaptability in a rapidly evolving technological landscape. By promoting continuous learning and collaboration, graduates emerge as highly skilled professionals equipped to address complex business challenges and drive innovation in the burgeoning field of big data technology.

The graduates DAE Big Data Technology are highly across private, semi-government, and government sectors, as well as internationally, due to the increasing demand for skilled professionals in areas such as Big Data Analysis, Software Engineering, Database Administration, Web Programming, and more. Graduates are equipped for various roles including Big Data Analyst, Software Engineer, Database Administrator, and Web Programmer, making them highly sought-after assets in industries requiring expertise in monitoring, upgrading, and securing Big Data nodes. Additionally, opportunities extend to roles like Assistant Developer, Junior Database Administrator, and Web Development Supervisor, as well as positions in project management and freelancing platforms like Fiverr and Upwork.

Program Learning Outcomes

PLO1 (Fundamental Understanding): Develop a strong foundational understanding of big data concepts, including databases, data modeling, and data integration, alongside proficiency in programming languages commonly used in big data applications.

PLO2 (Technical Expertise): Acquire proficiency in big data processing frameworks such as Hadoop and Spark, with the ability to analyze large datasets, derive insights, and present findings effectively using tools like Python and SQL.

PLO3 (Data Governance and Quality Assurance): Understand the importance of data frameworks, policies, and practices to ensure data quality, integrity, and availability, and apply them in real-world scenarios.

PLO4 (Problem Solving and Innovation): Cultivate the ability to identify business problems that can be addressed with big data analytics and develop innovative solutions, demonstrating independent problem-solving skills and creativity.

PLO5 (Communication and Collaboration): Develop effective communication skills to articulate complex technical concepts to diverse stakeholders, collaborate effectively with team members, and adapt to the rapidly evolving nature of big data technology.

PLO6 (Continuous Learning and Adaptation): Foster a mindset of continuous learning and adaptation to keep pace with advancements in big data technology, enhancing social adaptability and employability in dynamic professional environments.

Big Data Technology Curriculum

Courses: 1 st Year (NUTECH, Pakistan)				
Course Code	Course Title	Theory	Practical	Credits
Gen-111	Islamiat & Pakistan Studies	1	0	1
Eng-112	English	2	0	2
GenC-112	Chinese Language-1	2	0	2
Math-123	Applied Mathematics-I	3	0	3
Phy.-132	Applied Physics	1	3	2
Ch.-132	Applied Chemistry	1	3	2
SWT-112	Introduction to Computer Programming with JAVA	1	3	2
SWT-122	Introduction to database concepts and SQL programming	1	3	2
SWT-132	Basics of HTML& Web Development	1	3	2
BDT-111	Introduction to Big Data	1	0	1
BDT-112	Linux Technology Application	1	3	2
BDT-121	Computer Tool Software Application	0	3	1
Total		15	21	22
Courses: 2 nd Year (NUTECH, Pakistan)				
Gen-211	Islamiat & Pak Studies	1	0	1
Math-233	Applied Mathematics-II	3	0	3
Mgm-211	Business Communication	1	0	1
GenC-212	Chinese Language-2	2	0	2
MgmC-212	Understanding China	2	0	2
SWT-223	Web Development with JAVA	1	6	3
CIVIL-271	Entrepreneurship	1	0	1
BDT-212	Python Programming Basics	1	3	2
BDT-222	Data Structure	1	3	2
BDT-232	Introduction to Distributed Computing in Cloud	1	3	2
BDT-242	Data Management	1	3	2
Total		15	18	21

Courses: 3rd Year (TANG Institute, China)

Course Code	Course Title	Theory	Practical	Credits
Gen-311	Islamiat & Pak Studies	1	0	1
BDT-311	Career planning and employment guidance	1	0	1
BDT-313	Big Data Foundation and Application	1	6	3
BDT-312	Data Acquisition Technology	1	3	2
BDT-322	Data Preprocessing Technology	1	3	2
BDT-323	Data Mining Application	1	6	3
BDT-333	Application of Big Data Analysis Technology	1	6	3
BDT-343	Data Visualization Technology and Application	1	6	3
GenC-312	Profession Chinese	2	0	2
Total		20	30	20

DAE Mechatronics

The DAE Sino-Pak Dual Diploma program in Mechatronics combines Pakistani and Chinese educational strengths, providing students with a focused curriculum spanning three years. Through a blend of theoretical knowledge and practical skills, students develop expertise in interdisciplinary mechatronics principles, including electrical basics, mechanical systems dynamics, and programming proficiency. Graduates emerge equipped with the necessary competencies for success in the global engineering landscape, demonstrating proficiency in project management, communication, and ethical decision-making.

Graduates of this program are highly employable in various industries due to their interdisciplinary skill set and practical experience. With expertise in areas such as electrical and electronics basics, mechanical systems and dynamics, control systems and automation, programming, and project management, graduates are well-equipped to pursue careers in robotics, automation, manufacturing, automotive, aerospace, and beyond. Their ability to apply theoretical knowledge to real-world challenges, coupled with strong communication and teamwork skills, makes them valuable assets to employers seeking innovative solutions and efficient operations.

Program Learning Outcomes

PLO1 (Fundamental Understanding): Graduates will demonstrate a comprehensive understanding of the interdisciplinary nature of mechatronics, integrating principles from mechanical, electrical, and computer engineering.

PLO2 (Sensor and Actuator Proficiency): Students will be proficient in the selection, application, and integration of sensors and actuators, understanding their role in converting physical signals to electrical signals and vice versa.

PLO3 (Control Systems Mastery): Graduates will master the concepts of feedback control systems and their application in automation and robotics, including the design and analysis of PID controllers and stability analysis.

PLO4 (Electrical and Electronics Knowledge): Students will possess a strong foundation in basic electrical circuits, components, and laws, as well as the principles of digital electronics, enabling them to apply these concepts to mechatronic systems.

PLO5 (Programming and Software Development Skills): Graduates will develop programming skills in languages such as C/C++, Python, or MATLAB, allowing them to control mechatronic systems and analyze data effectively. They will also be proficient in software tools and platforms commonly used in mechatronics, such as CAD software for design and simulation tools for modeling dynamic systems.

PLO6 (Robotics and Automation Expertise): Students will acquire expertise in robotic kinematics, dynamics, and trajectory planning, as well as practical experience in programming and operating industrial robots for various tasks in manufacturing and automation.

PLO7 (Project Management and Professionalism): Graduates will develop project management skills, including planning, scheduling, and risk management, as well as effective communication and teamwork skills. They will also adhere to professional ethics, standards, and safety regulations relevant to the field of mechatronics engineering.

PLO 8 (Cultural and Economic Understanding): Gain a comprehensive understanding of Chinese culture, history, and economic systems, enabling effective communication and collaboration in cross-cultural engineering projects.

PLO 9 (Communication Proficiency and Ethical Decision-Making): Develop the ability to articulate complex engineering concepts effectively and ethically, while demonstrating sensitivity to diverse cultural and ethical perspectives in professional interactions and decision-making processes.

Mechatronics Curriculum

Courses: 1st Year (NUTECH, Pakistan)

Course Code	Course Title	Theory	Practical	Credits
Gen-111	Islamiat & Pakistan Studies	1	0	1
Eng-112	English	2	0	2
GenC-112	Chinese Language-I	2	0	2
Math-123	Applied Mathematics-I	3	0	3
Phy-132	Applied Physics	1	3	2
Ch-132	Applied Chemistry	1	3	2
MTRC-113	Basic Engineering Drawing & CAD – I	1	6	3
COMPC-112	Introduction to Computer Studies & Programming	1	3	2
MTRC-121	Introduction to Mechatronics	1	0	1
MTRC-133	Electrical Essentials	2	3	3
MTRC-143	Workshop Practice a) Metalwork and Machining b) Woodworking c) Welding	1	6	3
MTRC-151	Computer Tool Software Application	0	3	1
Total		16	27	20

Courses: 2nd Year (NUTECH, Pakistan)

GEN-201	Islamiat & Pakistan Studies	1	0	1
MATH-212	Applied Mathematics-II	2	0	2
GENC-212	Chinese Languages-II	2	0	2
MGMC-212	Understanding China	2	0	2
MGM-212	Business Communication & Report Writing	1	3	2
MTRC-202	Engineering Materials	1	3	2
MTRC-212	Drives & Linkages	1	3	2
MTRC-222	Sensors & Actuators	1	3	2
MTRC-233	Motors & Generators	2	3	3
MTRC-253	Measuring Instruments	2	3	3
MTRC-263	Electronic Devices & Circuits	2	3	3
MTRC-272	Digital Logic Design	2	3	3
Total		19	24	27

Courses: 3rd Year (TANG Institute, China)

Gen-301	Islamiat & Pak Studies	1	0	1
MGMC-311	Intelligent production and management	1	0	1
MTRC-313	Digital Design & Simulation of Production Line	2	3	3
MTRC-321	Hydraulics & Pneumatics	1	0	1
MTRC-333	Programmable Logic Controllers	2	3	3
MTRC-343	Micro Controller Application Technology	2	3	3
MTRC-353	Fundamentals of Industrial Robotics	2	3	3
MTRC-361	Overview of Artificial Intelligence	1	0	1
MTRC-373	Programming and practical training of CNC machine tools	1	3	2
MTRC-383	Mechanical and Electrical Comprehensive Training	2	3	3
MTRC-392	Project	0	6	2
Total		15	24	23

Facilities in NUTECH

Medical Facilities

Available 24/7



NUTECH has excellent **hostel Facilities** and infrastructure within the campus. Separate hostels for girls & boys provide an affordable, hygienic and safe environment to make the students feel at home



Faculty & Student Cafeteria

Centrally air conditioned & tiled flooring with adequate lighting & clean environment



Adequate Transport Facilities

available for Students & Staff

Accommodation Facility

NUTECH provides fully furnished hostel facilities for both boys and girls students enrolled in various disciplines of the university. Al-Khwarizmi Boys Hostel is situated inside university campus at walking distance of approx. 5 minutes. However, Girls hostel is located in well-developed and secured area of Westridge Rawalpindi.

Facilities

Facilities	Boys Hostel	Girls Hostel
Furnished accommodation	√	√
Study Stations	√	√
WIFI facility	√	√
Well-lit rooms	√	√
Community washrooms	√	
Attached Washrooms		√
Tuck Shop	√	
TV Room	√	√
Dinning Facility	√	√
Gymnasium	√	
Table Tennis	√	
Laundry services	√	
24/7 Power backup	√	√

Hostel Allotment

Hostel allotment is carried out on “first come first serve” basis as per merit maintained by the Hostel Management, the newly admitted students of the University can apply for hostel accommodation at the Hostel management office. Existing students can apply for hostel accommodation through written application to Hostel Management though DSL office. After approval and on availability, the accommodation facility will be provided to the desired students.

Note: The hostel facility is available for outstation students only.



NUTECH strongly believes in overall grooming and personality development of students. NUTECH has dedicated Office of Student Affairs (OSA). The Office contributes to the educational mission of the University by initiating programs and services that support an environment conducive to academic and personal development. OSA Office spares no efforts to empower students and assists them with its innovative character and personality development mechanism in developing their potential as responsible citizens and future leaders.

Mandate:

The OSA envisions, plans and organizes University activities related to student services and campus life. Primarily, this office is responsible for serving as a point of information for students and responding to various kinds of students' needs and queries. The Office is also responsible for fostering and implementing the Student Life vision, which is focused on character development and personal formation to help support the mission of National University of Technology (NUTECH). In addition, it is also responsible for the management and supervision of all kinds of co-curricular and extra-curricular activities of NUTECH students. Following are the three main functions of the DSL Office:

» **Student Affairs:**

Student Affairs Office serves as a first point of contact and support for students. It is responsible for actively addressing and responding to students' complaints. It acts as a liaison between students and different departments. It also ensures interpretation and implementation of NUTECH policies and regulations and enforce student code of conduct



at campus. It encourages suggestions, feedback or comments for improvements in students' facilities such as hostels, cafeterias, dining plans and common rooms.



Smoking is a gateway to further serious addiction that is why it has to be curbed. Drug abuse poses a threat to the health and safety of our students and community. NUTECH is committed to the elimination of drug in our lives and has a zero-tolerance policy for its use.

CLUBS & SOCIETIES

- » **Clubs & Societies:** NUTECH Clubs and Societies strive to instill a sense of teamwork and sportsmanship in students through a variety of activities all centered around building up students' humanistic, artistic and adventurous attributes. Our clubs and societies provide multiple socio-academic opportunities to the students helping them shape their personalities and build their confidence. In its aim to holistically groom students in all endeavors of life, NUTECH has established NUTECH Fine Arts & Creativity Club, NUTECH Adventure Club, NUTECH Social Service Club, NUTECH Green Youth Movement Club, NUTECH Media & Publicity Society and NUTECH Literary & Debating Society.

- » **Co-Curricular Activities:** The above-mentioned clubs and societies are the main stakeholders in organizing on and off campus co-curricular and extra-curricular activities for students. Such activities are monitored and supervised solely by the DSL Office and are organized to foster comradeship, endurance and many other skills and attributes that help the students in polishing their personality and character.



We provide equal opportunities to students with disabilities to participate in Extra-curricular and recreational activities

- » **Counselling Cell:** Counselling Cell provides counselling services (individual, group) to help promote emotional health of students and faculty members. It conducts workshops/lectures to faculty members to create conducive learning environment (psychological, emotional aspects). It also promotes students success as it facilitates their future career development. Moreover, it assists students in adapting to the environmental demands and pressures of the university life.



NUTECH is committed to create and maintain an educational working and living environment free from discrimination and harassment. We encourage everyone to report all incidents of discrimination and/or harassment and respond to all allegations while taking steps to ensure that each is handled according to applicable policies.



- » **NUTECH Library** plays a vital role in achieving core objectives of the institution like assisting in imparting quality education, dissemination of relevant and upto date information and helping our users in carrying out extensive research works. It has a seating capacity for about 200 readers. Library is stocked with rich collection of encyclopaedias, dictionaries and a large reference collection of text and general interest books.
- » **Aim:** To serve our university community in the best possible way in providing requisite and upto date information while affording conducive learning environment.
- » **Timings:** Monday – Friday: 09:00 am - 05:00 pm
- » **Resources:** Library has more than 13,500 books and rich collection of research journals / magazines pertaining to engineering and applied sciences. It is also subscribing number of popular magazines for the interest / information of its users.
- » **Reference Section:** Reference resources are located at the 6th & 7th floor. These include following:
 - **Reference Books:** This section consists of dictionaries, encyclopaedias and various titles of course and reference textbooks pertaining to various engineering disciplines.
 - **Research Journals / Magazines and General Interest Magazines:** NUTECH Library subscribes to variety of quality research journals, general interest magazines and newspapers.
- » **Services and Facilities:** NUTECH Library provides different types of services and facilities to its users. These services and facilities are:-

Sr. #	Services	Facilities
01	Online Public Access Catalogue (OPAC)	34 x Research Stations
02	Reference Service	Integrated Library Management System (ILMS)
03	Help Desk Service	5 x Group Discussion Rooms
04	Circulation Desk Service	Plagiarism Detection Software
05	Current Awareness Service (CAS)	
06	Reprographic Service	

- » **NUTECH Digital Library:** NUTECH Library provides access to different databases and more than 23,000 high quality peer reviewed journals and articles through HEC Digital Library Program. Prominent available databases are **ASTM, INFORMS, ELIBRARY, PROQUEST, SPRINGERLINK, TAYLOR and FRANCIS, JOHN WILEY – BLACKWELL.**
- » **Serial Subscriptions:** NUTECH Library has different types of serial subscriptions for the faculty and users. These include IEEE, ASME and DOAJ International Impact Factor Journals / Magazines, General Interest Magazines and Newspapers.
- » **Fresh Arrivals:** NUTECH Library regularly updates fresh arrivals on library webpage for faculty, staff, and students.
- » **Contact:** NUTECH library is digitally accessible through library webpage <https://nutech.edu.pk/library>. The users can also contact library staff through telephone extension 180.

NORIIC

NUTECH Office of Research Industrialization, Internationalization and Commercialization (NORIIC) is established at NUTECH to fulfill its motto of "University for Industry". Objective of NORIIC is to integrate products and market by conducting market research through establishment of industrial linkages and finding avenues for commercialization and internationalization of indigenous products and career development of engineers, engineering technologists, and graduates of NUTECH in other areas of scholarship. Director General heads NORIIC, and manages/oversees the following tasks:

- » Integrate NUTECH academics, research and skills education with the existing and emerging technology and skills based needs of industry.
- » Facilitates the University in establishing the research links of NUTECH with the industry, business and commercial enterprises.
- » Explore possible avenues for the placement of students, researchers and faculty in the industry, national research labs and commercial organizations.
- » Arrange resources for promising industry development projects through joint collaborations/interactions with the research funding agencies/companies.
- » Remain updated of all the technology and skills based and industry related research and academic projects based developments in the university,
- » Interact and strengthen research based commercial relations with the different chambers, associations and representative organizations of national industry,

- » Create company(s)/ entities for the future commercialization or industrialization through joint ventures.
- » Promote and place NUTECH products in industry, commercial markets through marketing strategies.
- » Build-on from the benefits of academic engagement through transformation into commercialization.

Office of Treasurer

Office of treasurer ensures financial viability of NUTECH through transparency, competence and integrity. The office of the treasurer is managed and controlled by "Treasurer" who acts as head of Finance office of NUTECH and as the principal finance officer of the University.

Office of Controller of Examination

Office of the Controller of Examination ensures transparent conduct of examinations with a view to realizing the intended study objectives in line with NUTECH vision. Moreover, it ensures safe custody of academic records with utmost accuracy and security. The Office of the Controller of Examination is responsible to perform inter alia the following functions:

- » Establishes strong, reliable, secure and credible examination system in the University, to improve the quality of examination throughout the system
- » Ensures that all components of the examination system in the University follow the rules and policies of the University in true letter and spirit and to ensure the same quality standards across the board.
- » Improves the examination policies of the University to make them flexible enough to adapt to the changing environment on continuous basis.
- » Establishes an effective communication system for timely dissemination of information to all concerned.
- » Arranges and coordinate invigilators for the smooth conduct of examinations.
- » Ensures compilation of mid and end semester examination results, after ratification from concerned Performance Evaluation Committee.
- » Facilitates notification of finally approved results.
- » Designs and develop mechanism for Issuance of Degrees, Provisional certificates/ Transcript and other certificates.

Registrar Office

The office integrates and synergizes all academics, research, skills education based learning and knowledge enhancement activities with future design, planning and development activities of the university. Registrar plays key role in the preparation of academics' plan encompassing academic calendar, weekly academic activities, arrangements and facilitation of education workshops, conferences, symposia, academic association and linkages with scientific organizations, R&D setups etc. Registrar is the focal representative, sole spokesperson and interpreter of policies of the university before the outside world.

ICT Office

ICT Office Implements policies related to Information and Communication Technologies (ICT), and is responsible for planning and implementation of ICT projects for provision of ICT facilities to the NUTECH community and evaluation and processing of all IT related requirements of the constituents. ICT Office helps in storage systems of important data or document to protect company's valuable records. Storage systems, such as vaults, it can help via keep information safe.

Human Resource Office

Office of Human Resource models the HR policies in mustering the finest, diversified and motivated work force that realizes the NUTECH's Vision and Mission. Human Resource Office is responsible to perform following functions:

- » Attract and retain the best professionally sound faculty / staff.
- » Ensure retention of the astute work force at the University.
- » Improve the profile and performance of the university recruiting and developing highly competent employees / staff.
- » Promote flexibility and innovation by developing organizational capability.
- » Invest heavily in leadership development of NUTECH at all tiers.
- » Develop user friendly Human Resource system, while ensuring confidentiality of employee's data.
- » Adhere and implement strict merit and transparency in the enrolment / appointment of all the employees without any favor or discrimination.

Administration Office

Office of the Administration acts as the center of all administrative activities of NUTECH, as prescribed from time to time. It is responsible to look after host of administrative matters including classes, labs, hostels, security, transport, cafeteria, horticulture and other miscellaneous aspects, essential for smooth functioning of the University for the achievement of vision and mission of National University of Technology.

NBTPE Office

- » Conduct examinations and issue certificates of technical, vocational, industrial, and professional education for levels 1-5 trainings as per
- » National Vocational and Qualification Framework (NVQF).
- » Prescribe curricula and courses of study for its examinations.
Lay down policies, procedures and conditions for affiliation, de-affiliation and recognition of institutions.
- » Enforce and maintain secrecy/confidentiality of all examinations, results and records etc.
- » Accord, refuse or withdraw affiliation/recognition wholly or partially, after considering inspection reports received from an Inspection Committee appointed by the NBTPE on its behalf.
- » Inspect and arrange for an inspection of affiliated/constituent /recognized institutions and call for inspection reports.
- » Lay down conditions for admission to its examinations, to determine the eligibility of candidates and to admit them to the examinations.
- » Award certificates and diplomas to the persons who have passed the relevant examinations.
- » Fix, demand and receive such fees as may be prescribed.
- » Supervise the residence, health and discipline of students of affiliated/ constituent/ recognized institutions and classes to promote their general welfare.
- » Institute and award scholarships, medals and prizes as per approved policies / procedures.
- » Maintain record of exams funds in coordination with the NUTECH treasure office.
- » Appoint the staff and define their duties and conditions of service.
- » Liaise and coordinate with other bodies/entities like NAVTTC, IBCC and Govt Ministries for formulation and implementation of policies directly or indirectly affecting the vision, mission and objectives of TVET education of NUTECH and its affiliated/constituent/ recognized institutes.
- » Perform all other acts as may be necessary to achieve the vision, mission and objectives of TVET education of NUTECH and NBTPE.

- » NUTECH as University for Industry, aims to adopt a leading role in transformation of national industry by addressing the emerging educational needs through educational offerings in collaboration with industry, regulatory bodies and other stakeholders. NUTECH Quality Management System (NQMS) focuses upon regular academic audit, review, up gradation and improvement of learning, teaching and all related tiers of knowledge eco-system.
- » **Motto of NQMS:** NQMS motto is developed as an enlightenment for initiating future pursuits for excellence in academics, research and character development.
- » **Quality Statement:** NUTECH Quality Statement, given below, highlights the fundamental spirit and essence behind the perceived concept of character building and high quality education:

اعلیٰ تربیت بہترین تعلیم کے ساتھ
(Finest Character Building with Best Education)



Three pillars of NUTECH Quality Management System (NQMS)

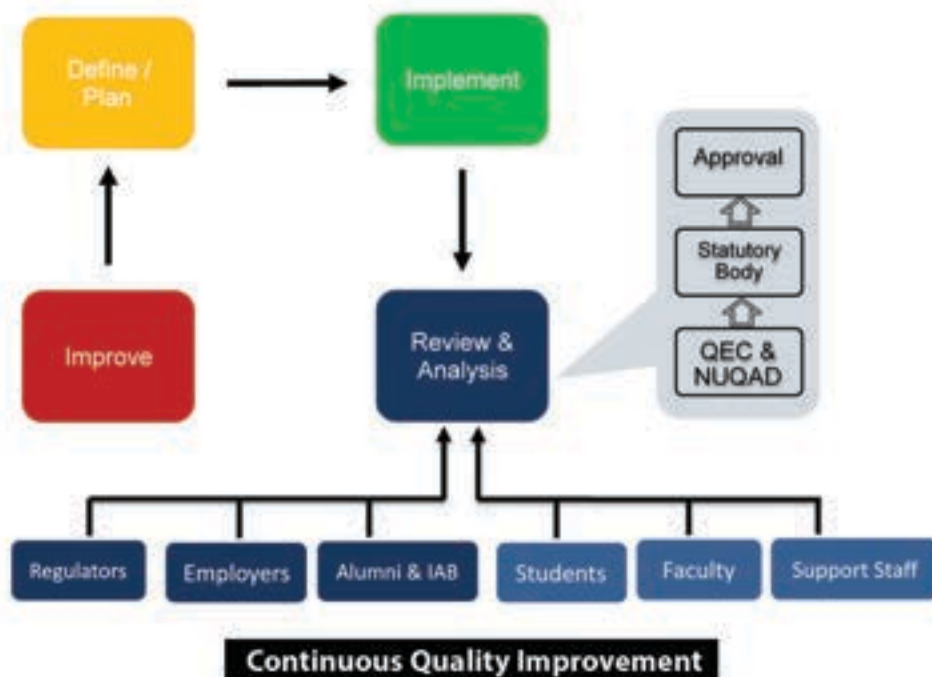
- » **Objectives:** NQMS concept revolves around establishing a comprehensive system of quality assurance at NUTECH with following objectives:
 - To enable regular academic audit, review, assessment, upgrade and improvement of all tiers of knowledge eco-system (level 1 to 8).
 - To ensure that interests/concerns of all stakeholders, particularly graduates and industry, are addressed promptly, in a transparent and professional manner.

Cont...

- To ensure that all academic initiatives, from level 1 to 8, and associated support processes are positively contributing towards the spirit of personality development and character building so as to achieve desired conformity with the Vision, Mission and Guiding Principles of NUTECH.

» Scope:

- NQMS covers the entire spectrum of NUTECH activities related to infrastructure, finance, management, human resource, academics and all aspects of students' campus life, i.e. from admission to graduation, and interactions with the students even after their graduation, its main impetus is expected to revolve around ensuring the attainment of objectives and outcomes of academic programs (level 1 to 8).
- Moreover, NQMS applies to all types of educational initiatives undertaken by NUTECH, regardless of mode of study and place of delivery.



NUTECH Skills Development Department (NSDD)

Skills education bridges the gap between basic functioning and capabilities. NSDD is a team of passionate professionals with goal to improve everyone's life through lifelong Skills. NSDD is providing conducive environment for the energetic youth to explore their abilities in different skills. Our Skills education including High-Tech courses are designed for individual from every field who requires enhanced professional knowledge to optimize



the performance and attain sustainable employment opportunity at national and international industry. NSDD focuses on the quality of skills education / training for developing employable skills oriented towards the world of work; delivering high quality technical education at different levels of difficulties to prepare the youth for employments and

sustainable livelihood; thereby, contributing towards the socio-economic development. The NSDD is structured to provide policy directions, procedures and processes for identification and development of technical and vocational qualifications through participation of industry, conduct of trainings, assessment systems, quality assurance and establishment of a management information system.



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NUTECH PARTICIPATES IN ENGINEERING CAPSTONE EXPO 2023



Rector Secretariat



Lt Gen Moazzam Ejaz (Retd), HI(M)
Rector



Maj Gen Raza Ali Khan, HI(M)
Pro-Rector Skills



Maj Gen Khurram Anwar HI(M)
Pro-Rector P & R



AVM M. Asif Aslam, SI (M)
Pro-Rector NORIIC

Support Staff



Dr. Syed Adnan Qasim
Registrar



Muhammad Tahseen Arif Goraya
Director NBTPE



Muhammad Shahid Manzoor
Director Admission



Nauman Pasha
Director Human Resource



Taimur Baig
Director NUQAD



Zahid Hussain
Treasurer



Muhammad Maqbool Ahmed
Controller of Examination



Shaukat Ali Khan
Director PMO/SCM



Tariq Mahmood
Consultant P & D

Cont...



Nasir Majeed Akhtar
Dean of Student Affairs (DSA)



Jawad Afzal Malik
Director Library & NUMEST

Academic Dean/Principal



Dr. M. Khurram
Dean of University (DoU)



Dr. Nauman Razaq
Principal NUSET



Dr. Muhammad Rashid
Principal NUSIT

Departments / Faculty

Civil Engineering Department



Dr. Muhammad Aaqib
HoD Civil
PhD (South Korea)
Specialization: Geotechnical Engineering



Dr. Malik Sarmad Riaz
Assistant Professor
PhD (Belgium)
Specialization: Traffic Engineering



Dr. Muhammad Nouman Sattar
Assistant Professor
PhD (South Korea)
Specialization: Water Resources & Environmental Engineering



Ehsan Ullah Khan
Lecturer
MS (NUST)
Specialization: Structural Engineering



Muhammad Waqas
Lecturer
MS (CUST)
Specialization: Water Resources Engineering



M. Rizwan Shahid
Lecturer
MS (China)
Specialization: Structural Engineering



Muhammad Zubair Bashir
Lecturer
MS (NUST)
Specialization: Structural Engineering



Samreen Khurshid
Lecturer
MS (NUST)
Specialization: Geotechnical Engineering



Sana Gul
Lecturer
MS (NUST)
Specialization: Structural Engineering



Asim Sultan
Lecturer
MS (NUST)
Specialization: Structural Engineering



Ali Tariq
Lecturer
MS (NUST)
Specialization: Construction Engineering and Management (On study leave abroad)

Mechanical Engineering Department



Dr. Kamran Nazir
HoD/Assistant Professor
PhD (South Korea)
Specialization: Computational Fluid Dynamics / Fluid Mechanics



Dr. Liaquat Ali Khan
Associate Professor
PhD (UET)
Specialization: Control, Vibrations, Thermo-Fluids



Dr. Waheed Gul
Assistant Professor
PhD (South Korea)
Specialization: Nano Composites, Materials, Characterization, Vibrations



Ali Raza
Lecturer
MS (EME College NUST)
Specialization: Alternative Diesel Fuels, CFD



Sajid Raza Zaidi
Lecturer
MS (NUST)
Specialization: Design & Manufacturing, Laser Material Processing



Basit Shafiq
Lecturer
MS (NED)
Specialization: Heat Transfer, CFD



Afnan Ahmed Gillani
Lecturer
MS (NUST)
Specialization: Design & Manufacturing



Syeda Laraib Tariq
Lecturer
MS (UET)
Specialization: Thermo Fluids, Renewable Energy

Electrical Engineering Department



Dr. Muhammad Abu Bakr
Head of Department
PhD (South Korea)
Specialization: Robotics and Control



Dr. Nauman Razzaq
Associate Professor
PhD (NUST)
Specialization: Biomedical Signal Processing



Dr. Khalid Iqbal
Associate Professor
PhD (UK)
Specialization: Communication



Dr. Waqar Uddin
Assistant Professor
PhD (South Korea)
Specialization: Power and Control



Dr. Muhammad Shahid Iqbal
Assistant Professor
PhD (Turkey)
Specialization: Communication



Syed Shahzad Hussain
Lecturer
MS (UET)
Specialization: Embedded Systems



Aneeqa Ramzan
Lecturer
MS (NUST)
Specialization: Medical Image Processing



Abdul Basit Taj
Lecturer
MS (CASE)
Specialization: Power Electronics



Syed Sarosh Ali Shah
Lecturer
MS (Italy)
Specialization: Computational and Applied Neuroscience

Computer Engineering Department



Dr. Kamran Javed
HoD/Associate Professor
PhD (France)
Specialization: Automatic control & Industrial Informatics



Dr. Awais Yasin
Associate Professor
PhD (China)
Specialization: Robotics



Dr. Marium Jalal Chaudhry
Associate Professor
PhD (Italy)
Specialization: Electrical & Comp Engineering



Dr. Muhammad Ejaz Khan
Associate Professor/Director LQEC
PhD (Korea)
Specialization: Nanoscience and Technology



Dr. Abdul Rehman Buzdar
Assistant Professor
PhD (China)
Specialization: Digital System Design



Dr. Muhammad Umair Khan
Assistant Professor
PhD (Turkey)
Specialization: Electrical and Electronics Engineering



Faria Tasneem
Lecturer
MS (AIR University)

Computer Science Department



Dr. Muhammad Rashid
HoD (CS)
PhD (FAST)
Specialization: Computer Science



Dr. Abdullah Waqas
Assistant Professor
PhD (Quaid-I-Azam University)
Specialization: Electronics



Dr. Sultan Daud Khan
Associate Professor
PhD (Italy)
Specialization: Computer Science



Dr. Zulfiqar Ali
Assistant Professor
PhD (FAST)
Specialization: Machine Learning



Dr. Mussadiq Abdul Rahim
Assistant Professor
PhD (BIT, China)
Specialization: Artificial Intelligence and Cybersecurity



Dr. Benish Fida
Assistant Professor
PhD (UoP, Italy)
Specialization: Machine Learning and Image Processing



Kainat Zafar
Lecturer
MS (USA)
Specialization: Computer Science



Afa Zafar
Lecturer
MS (COMSATS)
Specialization: Software Engineering



Dr. Usman Alam Gillani
Lecturer
PhD (QAU)
Specialization: General Relativity



Dr. Mohsan Waseem Ather
Assistant Professor
PhD (Cyprus)
Specialization: Experimental Particle Physics

Bachelor of Engineering Technology (Civil) Department



Dr. Muhammad Aaqib
HoD BET (Civil)
PhD (South Korea)
Specialization: Geotechnical Engineering



Dr. Nafeesa Shaheen
Assistant Professor
PhD (NUST)
Specialization: Structural Engineering



Muhammad Yousuf
Lecturer
MS (FAST)
Specialization: Transportation Engineering



Ali Siddique
Lecturer (on study leave)
MS (COMSATS)
Specialization: Structural Engineering



Saad Fawad Azim
Lecturer
MS (NUST)
Specialization: Construction Engineering & Management



Mutahir Abbas
Lecturer
MS (UET Peshawar)
Specialization: Structural Engineering



Muhammad Adnan
Principal NUSASH
MS (COMSATS)

Specialization: Environmental Sciences

Mathematics Faculty



Dr. Ubaid Ahmed Nisar
Assistant Professor
PhD (COMSATS)
Specialization: Computational/
Mathematics



Dr. Muhammad Waqas
Assistant Professor
PhD (QAU)
Specialization: Fluid Mechanics



Dr. Faryal Younis
Assistant Professor
PhD (QAU)
Specialization: Survey Sampling
Bayesian Statistics



Dr. Zeeshan Asghar
Assistant Professor
PhD (QAU)
Specialization: Computational
Biomechanics



Dr. Atta Ullah
Assistant Professor
PhD (QAU)
Specialization: Cryptography,
Commutative Algebra



Dr. Mehwish Manzoor
Lecturer
PhD (QAU)
Specialization: Fluid Mechanics

Physics Faculty



Dr. Sohail Anjad
Associate Professor
PhD (France)
Specialization: Experimental
Particle Physics



Dr. Khushbakht Shamrez
Assistant Professor
PhD (CUI)
Specialization: Material Science
& Nano Technology

Chemistry Faculty



Dr. Maria Hasan
Lecturer
PhD (NUST)
Specialization: Inorganic/
Analytical Chemistry

Humanities Faculty



Muqaddas Inayat
Lecturer
MPhil (NUML)
Specialization: Linguistics and
Literature



Zaigham Aizad Malik
Lecturer
MS (COMSATS)
Specialization: Linguistics and
Literature



Nadeem Khalid
Director / Principal NSDD



Naveed Yusuf
Director PI&E



Sadiya Qureshi
Principal NIVATS

Faculty of DAE / NSDD



Dr. Khushbakhat
Assistant Professor
PhD
DAE Instructor: Mathematics



Dr. Maria Hassan
Lecturer
PhD
DAE Instructor: Chemistry



Dr. Shahbaz Anjum
Deputy Director Academic
PhD
DAE Instructor: Pak Studies



Sohaib Ashraf
Lecturer
PhD (Continue)
DAE Instructor: Islamiat



Hamza Hassan
Consultant DAE
HSK-V
DAE Instructor: Chinese
language & Culture



Maryum Zaman
Lecturer Skills
MS Information Security



Amna Bibi
Lecturer Skills
MSc Economics/
Hospitality Expert



Arslan Mehmood Khan
Senior Lecturer
PhD (Continue)
DAE Instructor: Physics



Sadaf Nadeem
Lecturer Skills
PhD (NUST) in progress
DAE Instructor: Big Data



Muhammad Zohaib Khan
Senior Lecturer
PhD (Continue)
DAE Instructor: Business Communication



Usman Majeed
Lecturer Skills
B.A (Mass Comm)



Shams-ul-Haq
Lecturer Skills
B. Com



Faizan Abbas
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MS(CS)



Qazi Nauman Ejaz
Lecturer Skills/Instructor DAE
Master in Computer Science



Nouman Zafar Hashmi
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MSCS



Ali Shehzad
Lecturer / DAE Instructor
Bachelor



Rukhsana Parveen
DAE Instructor
MS(EE)



Muhammad Asher Ahsan
DAE Instructor
MS(CS) in progress



Sameen Naz
DAE Instructor
MS Robotics & AI



Naveed Khan
DAE Instructor
MS(CS)



Syed M Ali Khaqan
DAE Instructor
MS(IT)



Bilal Mehmood
DAE Instructor
MS(CS)



Muhammad Adil
DAE Instructor
MS(EE)



Muhammad Asif Akram
DAE Instructor
MS Nuclear



Hafiz Bab Ur Rayan
DAE Instructor
BS(CS)

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NUTECH PARTICIPATES IN ENGINEERING CAPSTONE EXPO 2023



1ST POSITION IN FEDERAL ENGINEERING CAPSTONE EXPO 2024



BRITISH COUNCIL CHARLES WALLACE FELLOWSHIP AWARD 2024



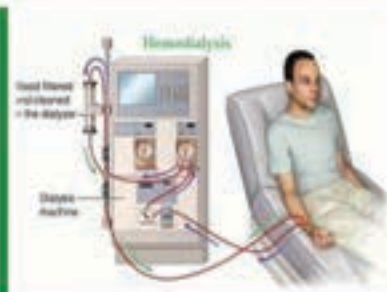
NATIONAL IDEA BANK COMPETITION - WINNING INNOVATIVE IDEAS



NUTECH INDUSTRIAL R&D PROJECTS



NUTECH FUTURE INDUSTRIAL R&D PROJECTS



STUDENTS ACTIVITIES



STUDENTS ACTIVITIES





NATIONAL UNIVERSITY OF TECHNOLOGY

“University for Industry”

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