PROSPECTUS 2021

+ Natural and Applied Biosciences

NUST
Defining futures

This prospectus contains basic information about the undergraduate, masters, and PhD programmes, life at the University, learning resources and advice to local and international students who wish to join the University in Fall 2021. It also shows the fee structure, funding modes (financial assistance), procedure for applying for admission and criteria for entry. Information about the constituent institutions, teaching faculties along with their expertise, and courses offered is also given. Brief descriptions of degree programmes and curricula details are listed with course titles, codes and credit hours.

Disclaimer

The information in this prospectus is correct at the time of its publication. Whilst every effort is made to ensure accuracy of information, the University does not accept liability for any inaccuracy or change outside reasonable control of the University. It is issued for general guidance of public and candidates wishing to enter the University in Fall 2021 and does not form part of any contract. 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 programmes starting in 2021 are provisional and subject to change.

Welcome from the Rector

I am indeed privileged to assume responsibility as Rector NUST. In a short span of 3 decades, the university has become a benchmark for other Pakistani Higher Education Institutions (HEIs). It has done so through its commitment to academic excellence and market-driven curricula in tandem with an aggressive R&I portfolio and industry linkages. The university has a broad-based alumni network of 38000+ individuals either adding value to national and international corporates in sectors such as Software, Telecommunication, Power, Banking, infrastructure, etc., or pursuing further higher studies and research in some of the most renowned HEIs around the globe.

Being a proud alumnus of one of NUST's long-established Colleges, I take pride in witnessing the university making quantum leaps in the realms of higher education and research. Today our knowledge ecosystem thrives upon intellectual prowess of our academicians and researchers supplemented by state-of-the-art infrastructure to facilitate fast-paced socio-economic development of the country. For instance, the implementation of Quadruple Helix Model has paved the way for initiatives such as establishment of Pakistan's first Science & Technology Park – the NSTP – and the country's first facility for indigenous production of heart stents and life-supporting medical devices, to name a few.

We at NUST recognise the value of internationalisation and the power of globalisation, and invest greatly in establishing international linkages that have proven critical to our growth. It is with this realisation that NUST has forged meaningful partnerships with as many as 170 universities from 35 countries, thus facilitating the exposure of its students and faculty through opportunities of exchange and collaboration.

Evolution of NUST into a comprehensive HEI offering undergraduate and graduate programmes in a myriad of disciplines, and its innumerable educational, research and social contributions, are a tribute to the commendable achievements of my predecessors. My sincere compliments to the people who have invested their time and intellect towards building the institution's reputation as a research-oriented, entrepreneurial and engaged university that aims to serve the nation and humanity. As we feel pride for their achievements, it is the responsibility of the current and future generations of NUST to uphold this reputation and add to its values.

This year presented a renewed set of challenges for the academic world with the onset of COVID-19 and subsequent shift to Distance Learning. In a time of such disruption and uncertainty, it is the collective efforts of NUST fraternity – its students, faculty, administration and auxiliary staff – that have allowed the university to preserve its commitment to quality education and deliver on its promise of excellence even during the pandemic.

As I step into my role as the Rector of this prestigious institution constituted of academically competent, culturally enlightened, technologically equipped and socially responsible individuals, I hereby invite students, academics and educators alike to vie for a place at NUST and play their part for the society at large.

Engr Javed Mahmood Bukhari
Rector NUST

Ranked **358**

QS World University Ranking 2022

QS world university rankings 2020

Ranked **214** worldwide Engineering & Technology #1 in Pakistan

QS world university rankings 2021

Ranked **76** among Asian Universities

QS Asian university rankings 2021

Ranked **801-1000** among THE World University Rankings 2021

Ranked **41** Young University

QS World Ranking Ranking 2021

Ranked **251-300** amongst Asian Universities Time Higher Education (THE) Rankings 2021

Ranked **201-250** in the subject of Electrical & Electronics Engineering #1 in Pakistan

QS world university rankings 2021

Ranked **251-300** in the subject of Chemical Engineering #1 in Pakistan

Ranked **301-350** in the subject of Mechanical & Aeronautical Engineering #1 in Pakistan

Ranked **143** in the subject of Computer Science & Information Systems #1 in Pakistan

Excellent Performance Award for scoring 100% in Yearly Quality Progress by Quality Assurance Agency, HEC at the Annual Progress Review Meeting on 4 March 2021

NUST holds the singular honor of being the No. 1 university in Pakistan as per the latest Quacquarelli Symonds (QS) World University Rankings, Asian Rankings and Top 50 under 50 Rankings

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About the University

National University of Sciences and Technology (NUST) was established in March 1991 for promotion of higher scientific education in the country, especially in the fields of science and technology by providing stable and disciplined academic environment together with need-based research, pertinent to industrial requirements. The University was granted its Charter in 1993. Over the years, the university has expanded in scope, services and stature and has emerged as a leading comprehensive University in the public sector.

Within two decades, NUST has achieved important milestones and gained immense significance as an institution of higher education in Pakistan. The University produces professionals and researchers of very high calibre, capable of developing indigenous technologies to meet the growing demands of the 21st century. It is envisioned to grow as a center of excellence for the country's scientific and technological progress. An outstanding feature of the University is that while maintaining traditional values of excellence in teaching and research, it challenges conventional practices and creates new ways of developing and delivering courses, pertaining to emerging and cutting-edge disciplines, on most modern lines.

NUST is a new-age university defining new frontiers in teaching and research. The programmes are distinctive for their high-quality research orientation. Notwithstanding the significance of undergraduate courses, there is ever-growing emphasis on postgraduate studies and research output. Creativity and innovation are embedded as core values in all scholastic activities. The conducive academic environment at the campuses facilitates educational pursuits.

NUST has developed linkages with international universities of repute to ensure two-way flow of knowledge and to be in step with modern trends. Split programmes and visits of eminent professors from reputed foreign universities is a regular feature of the academic activity. These eminent scholars deliver lectures on the latest developments in their respective fields and also help update and review the academic programmes.

Defining Futures

Vision

To evolve NUST into a world class Centre of Excellence among Higher Education Institutions, leading the transformation of Pakistan towards a rapidly developing Knowledge Economy to realize the national objective of a progressive and prosperous country among comity of nations.

Mission

In pursuance of NUST vision, strive to achieve following mission goals:

- To develop NUST as a Comprehensive, Academic and Research led university with a focus on Creativity, Innovation and Entrepreneurship so as to amicably negotiate Social, Economic and Environmental challenges faced by the country.
- With foundations based on principles of Merit, Transparency and Fair Play, nurture talent by providing equal opportunity to all segments of polity.
- Empower students to develop their full potential acquiring leadership and social skills, to act as agent of change within the society.
- Improve global visibility by enhancing mutually beneficial linkages with international organizations and partner universities.
- Strengthen NUST financially to enable the university achieve its goals by raising awareness amongst local and international Pakistani diaspora including Alumni base around the world.
- Ensure conducive learning and working environment for students and staff at par with international standards.

Strategic Thrusts

Excellence in Teaching & Education

Provide high-quality education in sciences and technology while remaining accessible to all sections of the society.

Focus on Research

Undertake high-quality yet relevant research to support the emerging knowledge-based economy and society.

Spirit of Enterprise

Develop instruments and mechanism for promotion of enterprising spirit and entrepreneurial culture among NUST graduates and create strong linkages with industry.

Internationalisation and Global Vision

Develop strong international linkages to ensure inflow of new knowledge and state-of-the-art technologies, while building a positive international image of the University and the country.

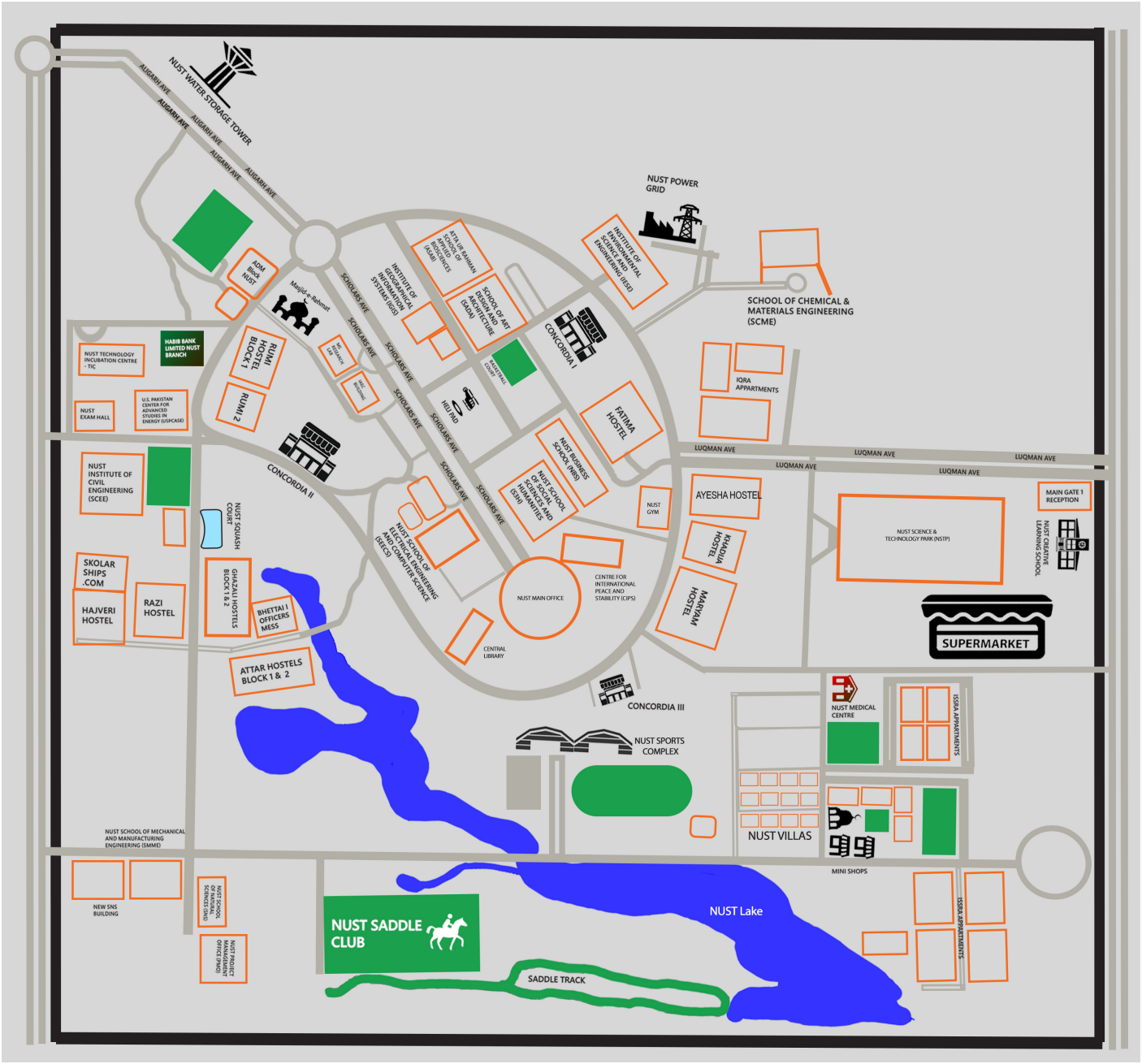
Positive Social Impact

Structure curricula and programmes to influence a wider cross-section of the population in terms of education and absorption of new technologies.

Why Choose NUST?

Excellence does not grow in wilderness; it has to be pursued with singular zeal and commitment. National University of Sciences and Technology chronicles a tale of success inscribed with the galvanizing force of progressive vision and commitment par excellence. Although, barely two decades old, this premier national university, justifiably feels proud of its unprecedented success as a center of excellence.

- National University of Sciences and Technology (NUST) is the dynamic face of higher education in Pakistan. Although, barely 29 years old, this premier national institution justifiably feels proud of its unprecedented credentials as a center of excellence.
- NUST holds the singular honour of being the **# 1** university in Pakistan as per the latest Quacquarelli Symonds (QS) World University Rankings, Asian Rankings and Top 50 under 50 Rankings.
- NUST is ranked **#358** in the world and **#1** in Pakistan in QS World University Rankings.
- NUST is ranked **#76** worldwide and **#1** in Pakistan in QS Asian Rankings
- NUST is ranked **#41** worldwide and **#1** in Pakistan in QS Young Universities (Top 50 Under 50) Rankings.
- NUST also holds prominent position worldwide and in
- Pakistan in various subjects. NUST is included in top **150** world universities and is **#1** in Pakistan in Computer Science & Information Systems.
- NUST is included in top **250** world universities and is **#1** in Pakistan in Electrical & Electronics Engineering.
- NUST is included in top **350** world universities and is **#1** in Pakistan in Mechanical, Aeronautical & Manufacturing Engineering and Chemical Engineering.
- With its galaxy of **20** constituent teaching institutions, NUST provides quality education to its students.
- NUST's multi-disciplinary campuses offer undergraduate and postgraduate programmes in a wide range of fields, including Engineering & Technology, Life Sciences, Arts and Humanities, Natural Sciences, Social and Management Sciences.
- NUST is competitive in engaging the best to serve as faculty members. NUST faculty of over **1200** highly qualified and capable men and women includes **600+** PhDs', mostly qualified from premier International universities.
- NUST's high-profile international linkages for research and academic collaborations embrace over 130 celebrated centers of excellence in **32** countries around the globe.
- NUST has few equals in generous funding for education of talented but financially challenged students. It also provides sponsored education to students hailing from economically backward areas of Pakistan.
- Because of sound education and trusted skill levels, NUST graduates stay in demand for jobs, both in public and private sectors nationally and internationally. Several NUST graduates have launched their own business ventures.
- Being a NUSTIAN is a great transforming experience.
- NUST accepts and invests in the best-those with a passion to excel in life.



Location

NUST is located in the heart of the Capital (Sector H-12) Islamabad, amid a hub of research organisations and institutions of higher learning. It is easily accessible from the Kashmir Highway. It is at 35-minute drive from Benazir Bhutto International Airport and 5 minutes from the Motorway (M1). Apart from fascinating tourist attractions in and around the city, some famous historical sites (like Taxila and Kittas Raj) and hill stations (like Murree and Patriata) are within easy access. There are museums, theatres, parks, shopping centers and a diplomatic enclave which houses the foreign missions. The city is also known for its universities, colleges and research organisations.

Geography

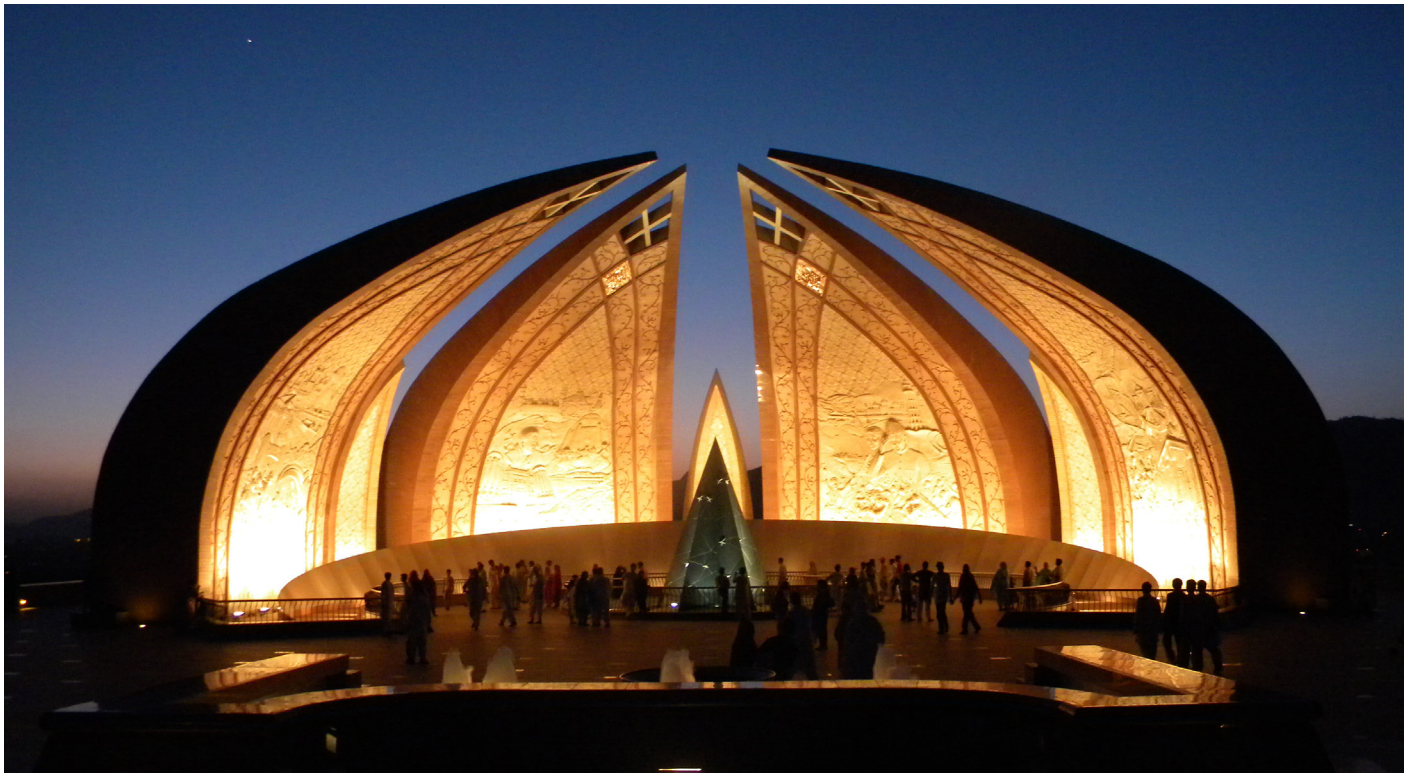
Islamabad is located in the backdrop of lush green Margalla mountains in the foothills of the mighty Himalayas, at the northern rim of the Potohar Plateau. The area is undulating, interspersed with mountain streams and rivulets. It is co-located with the historic Gakhar city of Rawalpindi; thus displaying a beautiful blend of the ancient and the modern.

Climate

The city enjoys a continental climate with hot summers (May - June), rainy monsoons (July - August), fabulous fall (October - November), cold winters (December - January) and a blooming spring (March¬April). The climate is regulated by alpine mountains in the vicinity and manmade lakes (Khanpur, Rawal and Simli) which are also the sources of potable water for the twin cities. The temperature ranges from 4° C in January to 46° C in June.

Demography

The twin cities (Islamabad-Rawalpindi) have a population exceeding 4.5 million. There is a happy blend of different ethnic communities including members of foreign missions. Urdu is the lingua franca. However, English is also generally understood and spoken by the educated sections of the society. English is also the medium of instruction in the universities.



Academic Structure

NUST is a public sector university which functions under the aegis of the Ministry of Science and Technology. There is a Board of Governors and an Academic Council which oversee academic matters. Rector is the Chief Executive Officer. He is assisted by three Pro-Rectors. The University comprises five colleges (located away from the NUST Campus, H-12 Islamabad) and ten schools, and three research centers at the NUST Campus, H-12 Islamabad.

Academic Calendar

The academic year commences in September each year. There are two regular academic semesters of 18-20 weeks duration: September-January (Fall Semester), February-June (Spring Semester) and July-August (Summer Semester). Although summer semester is not a regular one but give the students opportunity to clear their deficient courses. The University observes summer vacation from August to September. Admissions are offered in the Fall Semester. The University functions from 9am to 5pm, 5 days a week. However, laboratories and libraries remain accessible to the researchers till late at night and even on weekends.

Transportation

Rent-a-car service is available at the airport, hotels and bus terminals. Radio cabs are also easily accessible. Public transport including Metro Bus Service plies on a number of routes in the twin cities besides yellow cabs (taxis) which ply round-the-clock. In case of yellow cabs, it is advisable to negotiate the fare in advance.

Who to Contact

At NUST, a student enters a novel phase of life; one that requires continuous support for one's academic, physical as well as mental growth and well-being. Keeping this in mind, the University offices function in a student-friendly manner and remain accessible and helpful. You can directly contact the right department or office for all your queries. Shown opposite are various student-related offices and their functions for you to find the right contact.

Pro-Rector (Academics)

Oversees all the offices which deal with academic and administrative issues of the students during their stay in the University.

Registrar and Controller of Examinations

Deals with the entire life-cycle of the students--from applying to NUST and registration of undergraduate students to issuance of transcripts and degrees. He also deals with matters pertaining to scholarships, transfers, migrations, discipline, etc.

Director Academics

Handles matters pertaining to academic regulations, programmes of studies and academic calendar.

Director Admissions

Deals with matters pertaining to NUST Entry Test.

Director Finance

Deals with matters pertaining to fee and finances of the students.

Director Administration

Deals with hostel accommodation, messing, security, transport and sports.

Director Postgraduate Programmes

Deals with matters pertaining to academic life-cycle of postgraduate students: from application, admission, registration, scholarship, academic progress to issuance of degree.

Director Student Affairs

Oversees student-led activities including libraries, clubs and societies & discipline.

Director Medical Services

Supervises health care and medical services.

Office of Research, Innovation & Commercialization (ORIC)

Provides guidance and support to the institutions for activities related to research and development.

Career Development Center

Helps the students in placement and job opportunities, guiding them in preparing resumes and learning interview techniques.

Center for Counseling and Career Advisory

Staffed with professional counselors and psychologists, the Center provides personalised counselling services to students to help them cope with adjustment problems and issues affecting their studies. They also conduct aptitude and psychological tests.

Developing Careers

Career Development Center (CDC)

Career Development Centre (CDC) provides resources and assistance in all aspects of the career development and job search processes. Current Undergraduate students and Post Graduate students are invited to utilize our services. The services offered by CDC are as follows:

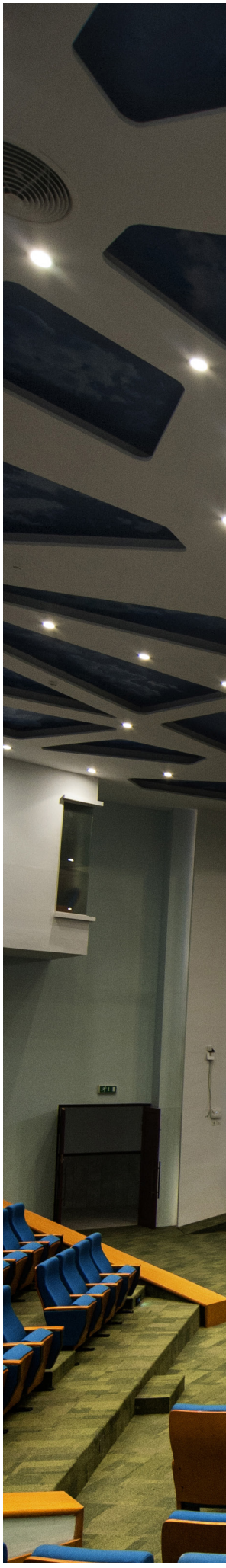
Career/Job Development Services:

- Career Development Workshops
- Career Coaching Services
  - Resume/cover letter critiques
  - Mock interviews
  - Networking/branding strategies
- One-o-One Career Counseling Sessions
- Focused Group Activities on Career Plans

Career Development Centre is focused to empower students to take personal responsibility for their lifelong career development. The overall goal is to challenge every student to examine their values, interest, skills and abilities and to define his or her life by providing opportunities for students to learn about themselves and the needs of society. In order to equip NUST graduates with tools and strategies to develop latest Job Market employability skills, publication on career guidance are provided through their campus management system. Career Development Centre has the following publications:

- Career Development Guide
- Resume Guide Book
- Internship Guide Book
- Job Search Handbook
- Interviewing Skills Manual
- Resume Writing Manual
- Skill Development Activities

Contact Us:
CIE Building, NUST H-12, Islamabad
cdc@ric.nust.edu.pk
051-90856270




Humanity means respect for the mankind
Learn to appreciate the true worth of Man -Iqbal
WEC-2013
5TH WORLD ENGINEERING CONGRESS
Advancement in Engineering, Technology & Science: Creating Synergies

Research and Development

Research is the focal point of university education all over the world. Universities significantly contribute towards creation of new knowledge and discovery of fresh frontiers of creativity and innovation.

Contribution to Research

NUST aims at emerging as a leading research-intensive university in Pakistan, comparable to the best in the world within the next 10 years. Our main thrust is on high-quality teaching and goal-oriented research and development (R&D). The University's PhD programmes help create the requisite research culture duly supported by well-qualified faculty and need-based research. In order to accomplish the requirements of research and development, high-quality laboratories and research facilities are made available to the faculty and students round-the-clock.

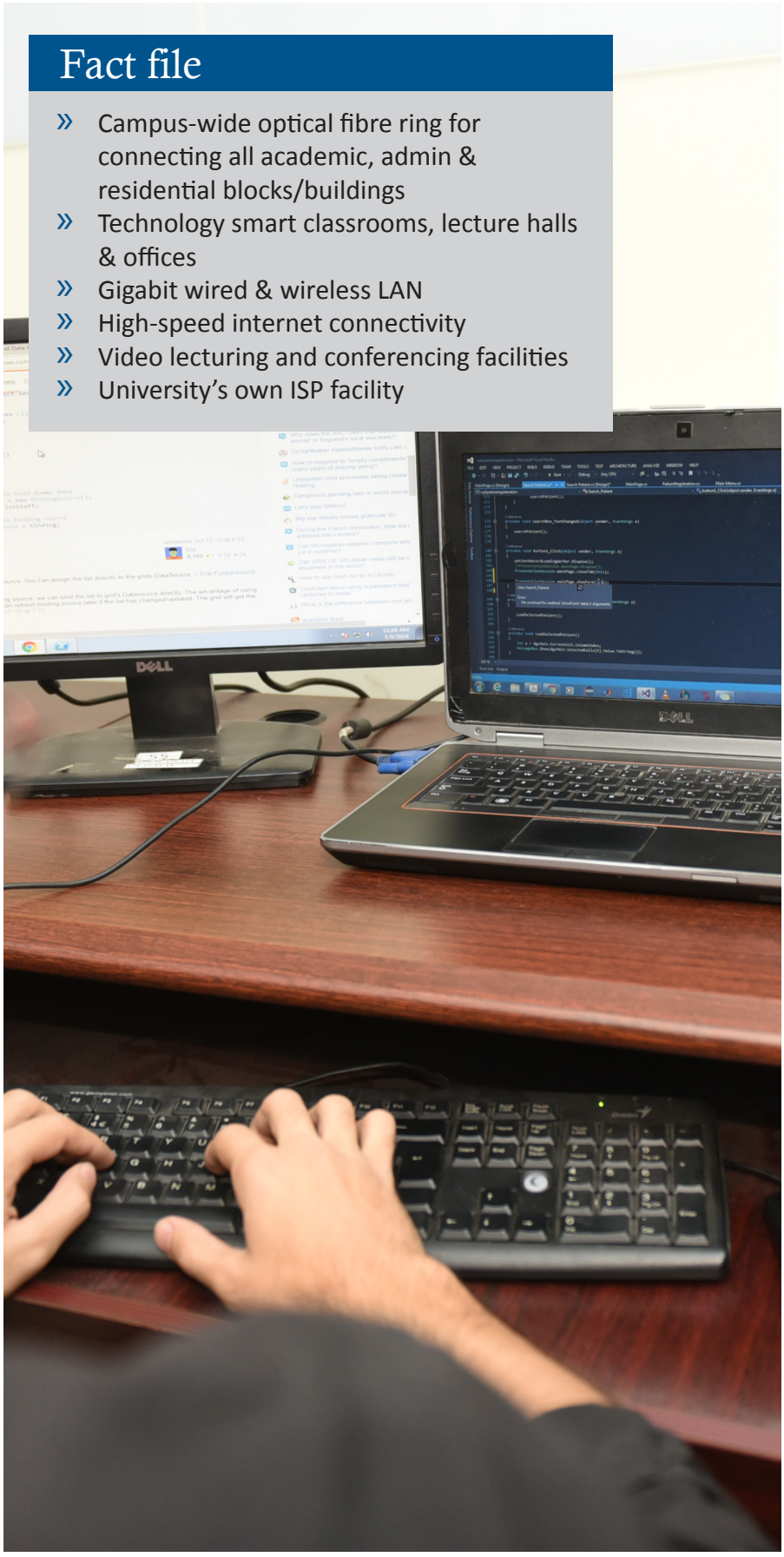
In the last 5 years, the faculty members completed 295 sponsored R&D projects and these included 31 projects sponsored by the university per se. Concurrently, during the same period, NUST students and faculty also published 3445 research papers in journals of repute and presented 2358 research papers in conferences, workshops, symposia etc. around the globe.

Research Collaborations

NUST seeks to garner expertise from a wide variety of sources (within/outside the country) in order to boost its academic & research activity. This in turn helps create deeper impact on the world of science and technology. Consequently, the University collaborates with leading international universities, professional organizations, commercial ventures, talented professionals and scholars to pursue its academic and research goals. Our faculty, researchers and students are constantly adding value to NUST by remaining actively engaged with professional groups and individuals in research, review of academic papers and organization of conferences, seminars and workshops etc. NUST has developed linkages with as many as 62 international universities and organizations of 32 different countries. These collaborations help our faculty remain up-to-date with current knowledge and ensure a two-way flow of knowledge.

Fact file

- Campus-wide optical fibre ring for connecting all academic, admin & residential blocks/buildings
- Technology smart classrooms, lecture halls & offices
- Gigabit wired & wireless LAN
- High-speed internet connectivity
- Video lecturing and conferencing facilities
- University's own ISP facility



R&D Eco-system

Directorate of Research Innovation and Commercialisation (RIC)

The role of RIC Directorate is to facilitate and co-ordinate research activities of NUST constituent institutions and to liaise with other national as well as international academics, research and industrial organizations to facilitate research at NUST. It also encapsulates NUST's research and intellectual property opportunities at the earliest stage, and translates these benefits to industry by working closely with industry through partnerships, collaborations and licensing. It also acts as a conduit to facilitate NUST graduates towards employment and internship in these industries with the focus on promoting and making NUST graduates the premium choice for the employers.

- **Project Coordination Office**: It promotes, facilitates and monitors cutting-edge research activities, including collaborative and inter disciplinary research, in areas related to the goals of the University. It gauges industry needs and process match making with NUST institutions to solve industrial problems. It also provides support for building Research capacity and capability of the University.

- **NUST Intellectual Property Office (IPO):** In the increasingly knowledge-driven economy, Intellectual Property (IP) is a key consideration. Keeping in view its importance, the University established NUST Intellectual Property Office with the following objectives.
  - Offering Intellectual Property protection to innovators/ researchers by filing of Patents, Copyright, Trademarks, and Design Rights, etc.
  - Facilitating the commercial interests of and due rewards to innovators/researchers
  - Establishing a national network of Intellectual Property Rights related services.
  - Collaborating with International Organisation such as WIPO to facilitate the filing of Patents at international level
  - Intellectual Property Management
- **Technology Transfer Office (TTO):** The mission of TTO is to encapsulate NUST's research and intellectual property opportunities at the earliest stage, and to translate these benefits to industry by working closely with CIE constituent entities, as well as industry; through partnerships, collaborations, licensing and formation of spin-off companies. It is responsible for moving research results and discoveries from the laboratory to the marketplace. It does so by being fully aware of the university R&D activities, invention disclosures and market needs. It assesses commercial potential and successfully transfers technology for commercial applications. It also creates and manages synergies and collaborations with other research entities and organisations to facilitate commercialisation.
- **Career Development Center:** CDC provides programmes and services to students and alumni in exploring and making effective career choices. The programmes and services provide opportunities for NUST students and alumni to foster professional networks with employers and also assist employers in meeting their recruitment needs. The Industrial Liaison Office (ILO)is part of CDC.
  - **Industrial Liaison Office (ILO):** It predominantly maintains strong Academia Industry Linkage and facilitates students with the focus on promoting and making NUST graduates the premium choice for the employers.

Technology Incubation Center (TIC)

The Center has been established to facilitate and support the innovation engine of the University. It is the first model technology business incubator of Pakistan established under the academia. The objective is to provide an environment that attracts and nurtures technology based start-up companies, and transforms them into commercially viable enterprises. TIC provides a platform for NUST faculty/students and other entrepreneurs having commercially viable R&D output, to establish their own start-up companies in order to commercialise their R&D work as entrepreneurs.

The objectives of TIC include fostering an entrepreneurial culture, by providing the students and faculty of NUST, an opportunity to transform their technology-based business ideas to reality. These facilities are also open to the general public, provided they contribute to NUST knowledge base. It further aims to facilitate the availability of NUST resources to the incubatees in a mutually beneficial way by liaising with private/ public sector funding sources, government agencies, industrial associations, chambers of commerce and industries to provide facilitation and networking for Incubatee companies. TIC has now also started offering services including pre-incubation, virtual Incubation and consultancies through Catalysts to incubatee companies, apart from its other business support services.

Professional Development Center (PDC)

NUST established its Professional Development Center (PDC) in July 2007 under an initiative of Higher Education Commission (HEC) to provide continued education and professional development services to industry so that industry could acquire state of the art knowledge to maximize its productivity and efficiency. PDC leverages NUST technology base and faculty through its training events for creating industry academia linkages. Besides this, PDC also provides knowledge and training to NUST faculty and staff regarding best practices in managing a 21st century institution. It engages highly experienced trainers both from NUST and outside of NUST to conduct hands on exercise/case study based industry problem specific trainings. PDC has so far conducted hundreds of industry-focused workshops and has trained more than 3500 professionals from about 450 organizations. It uses state of the art information, communication and learning technologies to deliver highly professional trainings. PDC also creates training partnerships with different organizations. Currently, PDC is a management training partner of International Finance Corporation (IFC), a member of World Bank Group as well as the Professional Engineering Body of Pakistan Engineering Council (PEC) for carrying out continued professional development of PEC registered and professional engineers.

Science and Technology Ventures (STV)

ST Ventures is a project of NUST primarily established to commercialize NUST research out put and to undertake business ventures. It is also required to promote R&D and technological innovations through marketable products and technologies.
ST Ventures is also working in different fields of Renewable Energy Technology such as Solar Photovoltaic (PV), Solar Thermal and Bio-diesel with in-house available manpower and NUST resource persons.

It acts as one window facilitator for the NUST Institutes and Colleges for acquiring consultancy services. Based on the requirement of Industry/different organizations against their problems / issues, the relevant NUST Institutions are utilized for provisioning of resource persons (PhD/MS faculty or students doing their PhD or MS) depending upon the requirement and nature of a project, and accordingly a complete team is formed for timely execution of the projects.

University Advancement Office

University Advancement Office has been created with a mission to augment the efforts directed towards the realisation of the University's vision and strategic objectives. Its activities encompass resource generation and joint ventures by mobilising collective efforts and resources. The Office ultimately seeks to contribute towards self-sustenance of NUST.

National Science & Technology Park

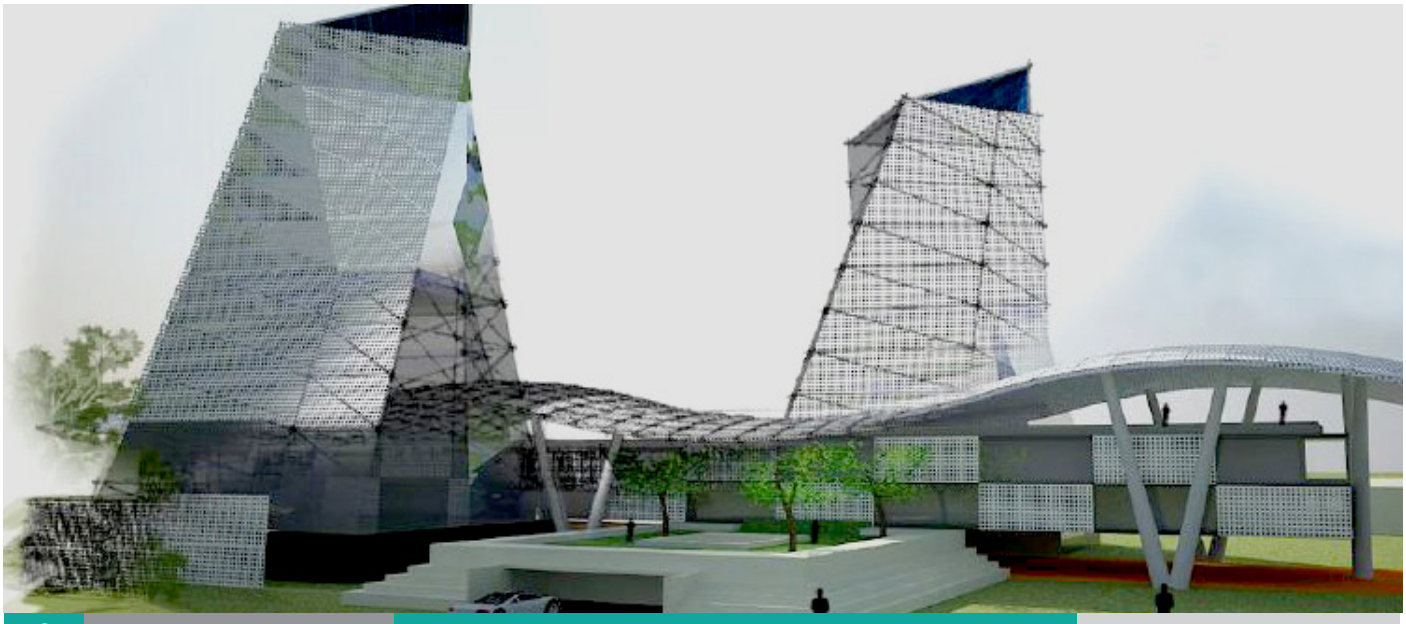
NUST aims to become a hub for public and private technological, financial and human capital through the establishment of a Technology Park at the NUST Campus, H-12, Islamabad. The project will encourage knowledge creation at the cutting-edge and develop organisational, human and social capital to compete in the global economy. It looks forward to building networks stretching far beyond major institutions to include entrepreneurs, investors, professionals and underprivileged communities for mentoring and learning.

The Park will promote interaction between institutional elements, i.e., universities, research parks, large companies, venture funds, etc. and non-institutional elements, i.e., talent, bodies of knowledge and virtual communities to create job opportunities for the youth and link local assets to global markets in order to generate value. It aims to stimulate economic activity in the country by developing a unique knowledge-based multi-industry cluster around the capital.

Based on the conviction that new research clusters in developing countries will capture an increasing share of global R&D investment and increase the volume added to technology innovations, NUST R&D initiatives will encompass an innovation center, an R&D center, a science center, a technology incubation center, a manufacturing resource center and a learning academy that will provide technical and vocational expertise, and entrepreneurship and leadership training. The expansive park will also host a research commercialisation center, university-industry liaison nucleus and event management and recreational facilities. The Park will have a distinctive knowledge brokering facility by means of which it will act as an information intermediary to provide advice on selection of goods or services, business intelligence or research data to interested parties.

Strategic Planning and Management Office (SP&MO)

After shifting of its Main Campus from Lalkurti, Rawalpindi to Sector H-12, Islamabad, NUST has grown at a very rapid pace. Presently, the total student's strength is 16062, comprising of 535 PhD students, 5229 MS/MPhil students and 10298 UG students. Till now, the university has awarded 29778 degrees, out of which 237 are PhD, 6072 are MS/MPhil and 23469 are UG degrees. The faculty strength is 898 with 408 PhDs. During the Financial Year 2016-17, a project of national importance i.e. Medical Devices Development Centre (MDDC) was approved by the Government of Pakistan, which has also been successfully established. During the Financial Year 2017-18, two major projects approved by the Government were National Centre of Artificial Intelligence and National Centre in Robotics and Automation. In Financial Year 2018-19, the major under approval projects are NUST Campus at Quetta and Upgradation / Replacement of Existing Laboratory Equipment at all campuses of NUST.
NUST is establishing its campus in Quetta in order to provide quality education for youth of Balochistan in the field of Engineering & Technology. The ground-breaking ceremony of NUST Quetta Campus was held on May 08, 2018. NUST would be offering undergraduate and postgraduate degrees in the field of Civil Engineering, Water Resource Management, Tunelling / Mining Engineering., Computer & Allied Sciences.



Student Support Services

NUST offers a broad array of resources that allow students to extend and deepen their learning through civic engagement and participation in, and leadership of an active network of student-initiated projects and organizations. Services have been established to address all issues of the students pertaining to their university life-cycle, from selection to graduation and alumni network management. The services include Center for Counselling and Career Advisory, IT Facilities, Clubs and Societies Office, NUST Archives, Sports Office, Hostels and Messing Office, Internship and Placement Office, Alumni Office and commercial Bank.

Center for Counseling and Career Advisory (C^3A)

The Centre offers professional, psychological and educational assessment, guidance and counselling and related services to the members of NUST community with a view to advancing and enhancing the academic and personal growth of students and other members of the University in general. NUST is the only university in Pakistan having a dedicated team of trained Psychologists and Counsellors conducting aptitude and psychological testing coupled with counseling and undertaking research projects at the same time.

The Centre also functions as a student/faculty support organization and strives to develop the students into wholesome and productive human beings. The testing facilities at C3A assist students in having a clearer understanding of their personality, their strengths and weaknesses and problematic areas of their lives, thus guiding the individuals towards best possible choices and better adjustment in everyday life.

Facilities available at the Centre are:

» Individual Counseling
» Group Counseling
» Psychological Testing
» Workshops and Trainings
» Seminars and Lectures
» Harassment Complaint Cell
» Counseling Camps
» Community Services
» Psycho-educational programmes/seminars

Assessment and Measurement is conducted for the following:

» Intelligence Quotient (IQ)
» Emotional Quotient (EQ)
» Achievement
» Personality
» Aptitude
» Ability
» Career-related issues
» Interests, Values, Opinions and Attitudes
» Anxiety and Depression
» Examination Stress, Anger, Leadership Styles, Psychological Well-being and Social Skills

Contact:
Call: 051-9085-1571, 051-9085-1579
Email: c3a@nust.edu.pk

IT and Computing Facilities

Information and Communication Technologies (ICT) Facilities at NUST

Provision of ICT facilities and services to NUST faculty, students & administrative staff is the core functional role of ICT Directorate; this directorate provides facilities and services at NUST Main Campus, Sector H-12 Islamabad and support services to Schools and constituent Colleges. To provide Quality of Service (QoS) to our valued users, ICT Directorate is broadly providing following ICT facilities and services:-

ICT Infrastructure. NUST offers most modern computing and networking facilities and has the distinction of providing Internet access since early nineties. These include:-

» Main Data Center, which is acting as hub for dissemination of all ICT services to NUST community.
» Campus Optical Fiber Network, connecting all buildings with Main Data Center.
» Gigabit Local Area Networks (LANs) in all Schools
» High-speed Internet facility to the users through Pakistan Education and Research Network (PERN) programme of Higher Education Commission (HEC).
» Latest high-speed Wi-Fi connecting has recently been established in all boys and girls hostels under Smart University Project (SUP) through HEC.
» Central Authentication of all hostel Wi-Fi users for secured Internet access.
» Computing laboratories are equipped with state-of-the-art servers, computers, software and allied equipment, which are connected through high speed LAN.
» NUST Intranet is in place connecting all remote Campuses with Main Campus for information and resource sharing.

Campus Management System

To automate student academic life cycle processes NUST has implemented Campus Management Solution (CMS) in Fall-2015. CMS covers whole spectrum of student life cycle

activities from student Admission till graduation. Following are the main modules of CMS:

- Student Admission
- Course Enrollment
- Attendance
- Gradebook
- Student Financials
- Research Thesis Tracking & Management (RTTM)
- Financial Aid
- Student Self Service: for (Attendance Monitoring, Fee Invoices, Courses Enrollment, Grades View, Un-official Transcript, Feedback & Notifications)

Faculty Self Service: for (Attendance Marking, Grading, Personal Profiles update, Advise Students)

- Transcript Generation
- Alumni
- Feedback & Survey Forms

With implementation of CMS, students from anywhere can now view/monitor their Attendance, Assignments' marks, Grades, Fee invoices, Academic Progression, Notifications and generate their transcript on real time.

NUST Mobile Application

NUST has launched its first official mobile application in Aug 2017, which is available at Google Play Store. Mobile Application targeting the NUST Students, Parents and Employees. NUST Mobile application contains information about Student's Profile, Attendance, Timetable, Exam Results, NUST Notifications, and Payroll etc. Parents and Guardians are able to see the Attendance and Exam Results of their wards through a highly intuitive screen-design of the Mobile Application and employees have the capability of viewing their Payroll in addition to getting live notifications with the up to date happening in NUST.

NUST Web Portal

An elaborate NUST Web Portal (www.nust.edu.pk) build in Microsoft SharePoint Technology available for dissemination of vital information to general public, students and the faculty. It covers more than 40 NUST & its respective constituent schools/colleges/institutes domains, which provides information about the research, students clubs & societies, programmes and activities of those institutions, updated on regular basis. A complete online admission/registration system along with NUST Financial Aid Application Form has been provided to the prospective candidates to apply for NUST. Processes namely registration, filling application form, and discipline wise selections, online payment through credit card and result announcement are available online to the prospective students.

To promote paperless environment in the University, following computerized systems are also in place:

- Electronic Inter Office Note (e-ION) system for official correspondence and task management.
- Electronic Mail Tracking System (e-MTS) to maintain mail movement record and location of document (files, letters, faxes, etc.).

Human Resource Management/Development

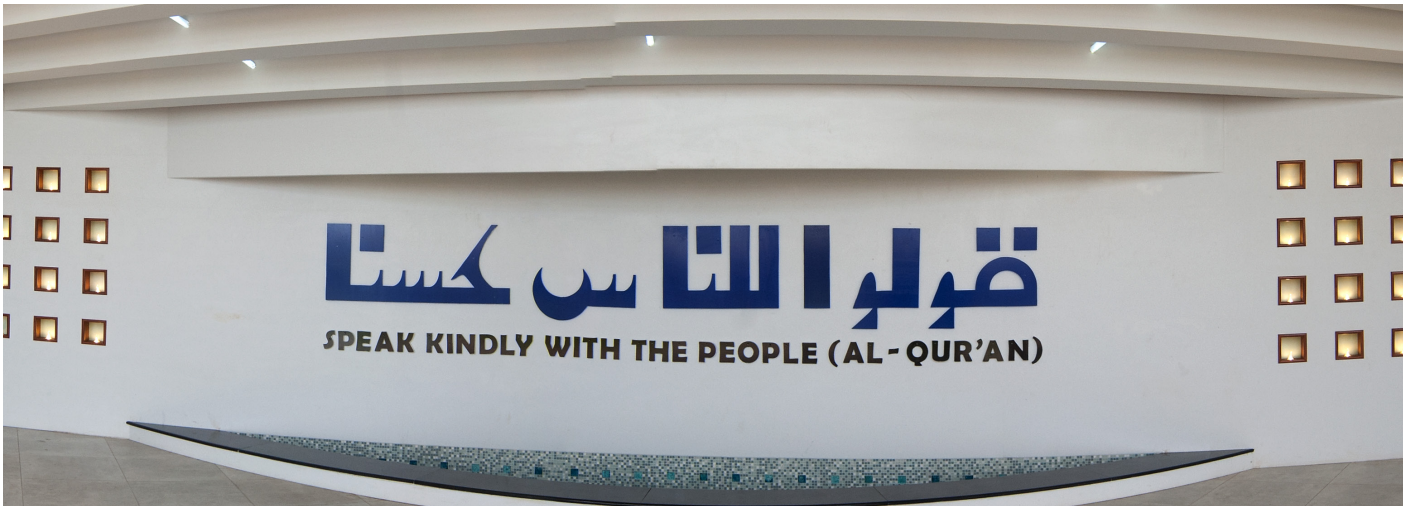
NUST is a multi-campus university employing faculty and staff from diverse disciplines. The HR Directorate recruits and retains the best workforce to contribute towards the continuing success of the University. It is actively engaged in development of faculty and staff to ensure high standard and quality of education.

The faculty at NUST is actively engaged in research activities and providing an environment of practical learning to the students. The HR Directorate supports such programmes for the faculty to keep their expertise up-to-date and develop their skills continuously. Eligible faculty is sent abroad for higher studies and research programmes, and is also assisted for placement in various schools on their return.

Career development is another notable function carried out by the HR Directorate. It has successfully carried forward the progress of the University to operate at an optimal level in times of financial crunch by exploring/offering fully funded scholarships.

Faculty Development Programme

The programme was started in 2002. As many as 430 scholars have been sent abroad for higher studies, out of which 311 have joined back.



Student Affairs

Students' Clubs/Societies were established in 2011 under Student Affairs Directorate. The purpose was to provide an opportunity to every student to join a club or society keeping in view his potential and taste to nurture his leadership and managerial abilities. Response of the students has been highly encouraging. Hundreds of events are planned every year by the students from the forum of clubs and societies sponsored by Student Affairs Directorate.

Clubs and Societies

Clubs and Societies is a forum for grooming the students in leadership traits as per their peculiar aptitude and potential. It enhances their foresight and organizational abilities. They are expected to plan and execute their club activities as they perceive in consultation with the club members and Faculty Sponsors. It inculcates team spirit and ability to take everybody on board. It makes a person more responsible and mature.

Existing Clubs and Societies are allocated to institutions as under:

- NUST Entrepreneurs Club
- NUST Science Soceity
- NUST Literary Circle
- NUST Book Club
- NUST Bazm-e-Pakistan
- NUST Adventure Club
- NUST Environment Club
- NUST Dramatic Club
- NUST Debating Society
- NUST Media Club
- NUST Community Service Club
- NUST Fine Arts Club
- NUST BioReach Society
- NUST Leaders Society (NLS)
- NUST Excursion Club (NEC)
- NUST Digital Club (NDC)
- NUST Water Sports Club
- NUST Technical Amusement Club (NTAC)
- NUST Paragliding Club (NPC)
- NUST Quiz Club (NQC)
- NUST Trekking Club (NTC)
- NUST Archery Club (NAC)
- NUST Cultural Club (NCC)
- NUST Fitness Club (NFS)
- NUST Robotics Club (NRC)
- International Chapter (NMAC)
- GeneUs
- Physics & Astronomy
- NUST Economics Society
- Music Club
- American Academy of Environmental Engineers & Scientists (AAEES)

Administrative Aspects

All Clubs shall adhere to the following approved appointments:

- Faculty Sponsor
- President
- Secretary
- Press Secretary
- Treasurer

Half the Office Bearers must be from institutions other than the sponsor institution.

Scope of the Clubs & Societies

Every Club and Society has its own defined scope, aim and objectives which are in sync with the title of the society.

NUST Archive

Publishing and Student Affairs Directorate is also responsible for managing NUST Archive. The section collects/conserves archival material of historical importance including policy decisions, MoUs, artifacts, rare photographs and other miscellaneous documents. Digitization of documents is also maintained by the section.

National Level Visits

SA Dte is responsible for conduct of inbound and outbound national level visits of schools/colleges and universities. NUStians eagerly wait for trips to Northern areas and other recreational spots.

Summer School

SA Dte is starting its first summer school from July 2018. It will become a regular feature in future. It aims at providing pre-University experience to FSC/O level students who are preparing their mind to join university. Students of the age group of 16 years are eligible for the course.

High Achievers Award

Student Affairs Directorate arranges a simple but impressive ceremony once a year to recognize and certify the students who win a position in International, National or Inter-university competitions.

NUST Olympiad

Student Affairs Directorate arranges NUST Olympiad once in two year. It is a mega event of the Directorate and students eagerly await this event.

Orientation Week

NUST arranges orientation week for the Freshmen in September every year. Student Affairs Directorate plays lead role in the conduct of this event.

Healthcare Services

NUST is providing medical services to the entire NUST Campus, H-12, Islamabad through a purpose-built NUST Medical Center, while in institutions outside Islamabad the same are being provided through their respective medical outfits. NUST Medical Center has a team of qualified medical officers and trained paramedical staff, who provide services round-the-clock. The Center is supported with fully equipped ambulances to evacuate the serious patients to Armed Forces and other civil sector tertiary care facilities. With the establishment of NUST Medical Complex at NUST Campus, H-12, Islamabad, the services of a tertiary care hospital will be available on campus.

Accommodation

The newly built campus at H-12, Islamabad is located in the serene backdrop of majestic Margalla Hills. The NUST Campus, H-12, Islamabad blends old and modern architecture. The Kashmir Highway, which leads to M-1 (Motorway) linking it to the rest of the country through a wide range of motorways network, coasts along the campus which is only at 20-minutes drive from all the main terminals-air, bus and railways.

NUST Campus, H-12, Islamabad provides well-furnished and equipped male and female hostels named after great Muslim Scholars as under:

Girls Hostels

- Fatima Hostels (2 blocks) - PG Students, Single Occupancy with attached washrooms
- Zainab Hostel, Ayesha Hostel - UG Students, Double / Triple Occupancy
- Khadija Hostel, Amna Hostel - UG/PG Students, Triple Occupancy

Boys Hostels

- Rumi Hostels (3 blocks) - PG Students, Single / Double Occupancy with attached washrooms
- Zakariya Hostel - UG Students
- Hajveri Hostel - Triple Occupancy
- Ghazali Hostels*
- Razi Hostels*
- Attar Hostels*

*2 blocks each

Monthly Accommodation Charges (NUST Campus, H-12, Islamabad)

Hostel Accommodation Charges for National Students

- Single occupancy with attached bath Rs. 6500/-
- Double occupancy with attached bath Rs. 5500/-
- Double occupancy with community bath Rs. 4500/-
- Tripple occupancy with community bath Rs. 4000/-

Married Students

- One bedroom apartment Rs. 9,000/-
- Two bedroom apartment Rs. 13,000/-

Note:

- Security Fee of Rs. 10,000/- (Refundable) will be charged at the time of allotment.

- Hostel includes accommodation charges only.

Visiting Faculty Accommodation

A guest block has been created for visiting faculty in the married student's hostel. The block is fully furnished with attached dining facilities.

Secure Environment

In addition to highly effective Campus security arrangements, all hostels have CCTV Cameras, protective boundary walls, security personnel and dedicated staff at each block.

Hostel Management

A qualified and experienced management team, composed as under, looks after hostel affairs:

- Deputy Director and AD Hostels with Office Staff, Manager (Hostels) and Caretakers.
- Deputy Director Hostels and AD Hostels (Male & Female) with Office Staff, Managers (Hostel) and Caretakers

Manager (Hostels) with necessary staff remains available in each hostel round the clock.

Facilities

Facilities provided in the hostels include:

- Attached / Community washrooms
- Fully furnished rooms
- Central heating system
- High Speed internet connectivity
- Telephone
- Gymnasium, Billiard Table, Table Tennis
- TV lounges with Cable TV
- Dining Halls with attached kitchens and service areas
- Standby Generator
- Laundry Service (Free of Cost)
- Medical Care
- Prayer Area
- Vending Machine

Allotment Procedure

Hostel accommodation in the relevant category is allotted as per Hostel Allotment SoP's. Students are required to apply on available online google docs form on NUST website http://nust.edu.pk/Campus-Life/Pages/Amenities-Facilities.aspx.

Messing

The hostels provide catering services and the boarders have a choice to enjoy a variety of wholesome food, prepared under hygienic conditions.

Charges

Mess Security Rs. 9,000/- (Refundable)
Monthly Charges Rs. 6750 /- (Rs. 225/- per day)

Cafeteria and Shopping Complex

Aesthetically designed cafeterias and shopping complexes, called Concordia I and Concordia II, have been constructed in the northern and southern wings of NUST Campus, H-12, Islamabad. Concordias offer the following services:-

Concordia-I

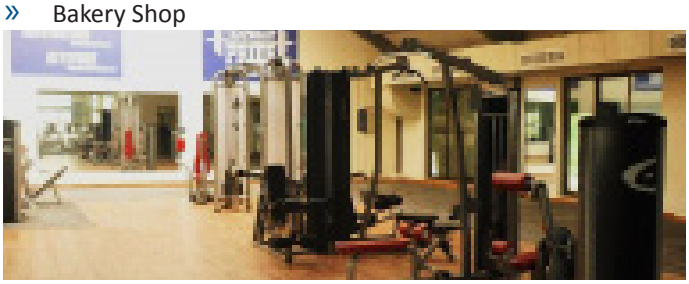
- Cafeteria
- Mini Mart (Artizm)
- Refreshment Corner
- Stationery Shop
- Photo State / Computer Shop

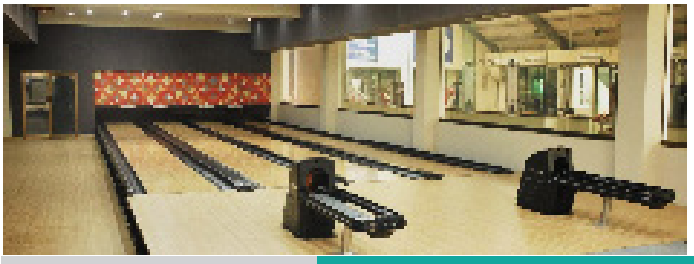
Concordia-II

- Cafeteria
- Mini Mart
- Stationery Shop
- Photo State / Computer Shop
- Gents Tailor
- Ladies Tailor
- Barber Shop
- Souvenir Shop
- Photocopier Shop

A new shopping complex opposite MI Room, near Gate – 10 has been added which include a full-fledged branch of CSD Store and following shops:-

- Beauty Parlor
- Meat, Chicken, Fruit & Vegetable
- Gents Tailor
- Ladies Tailor
- Cobbler Shop
- Pharmacy & Cosmetics Shop
- Stationery, Photocopy & Scanner
- Barber Shop
- Dry Cleaner Shop
- Bakery Shop
- Mobile Shop





Shuttle Service

NUST has a very elaborate and very well organized transport system to cater for the needs of students, faculty and staff alike. Special emphasis is on environmental friendly transport system. NUST runs a fleet of Electric Cars within Campus to minimize carbon emission. Electric Cars are utilized to shuttle between various locations within the campus i.e. Hostels to various School/Offices and from Gates to Schools/Hostels/Offices. NUST also has a very well organized mass transit transport system for pick and drop of students, faculty and staff from all localities of twin cities with variable timings. Transport is also made available to facilitate students for industrial visits, research projects, club activities, society/community initiatives, awareness walks and for excursion trips.

Sports and Recreation

NUST offers a wide variety of sports activities. All Colleges have elaborate sports infrastructure. The NUST Campus, H-12, Islamabad is developing at a fast pace and have the following facilities of international standard:-

Indoor Facilities: 2x Multipurpose hall, 2x Basketball, 1x Volleyball, 6x Badminton, 6x Table Tennis, 2x Snooker, 1x pool table, 4x Fitness Gyms, 2x Squash Courts, 1x all weather Swimming Pool, 1x Bowling Alley.

Outdoor Facilities:- 2x Football fields, 5x Cricket grounds, 1x hockey ground, 9x Futsal grounds, 5x Basketball courts, 1x Handball court , 1x Netball court, 9x Volleyball Courts, 4x Badminton courts, 5x Tennis courts, 1x Skating Rink, 1x Climbing Wall, 1x Athletic ground, 1x Hiking Trail (1.5 Km).

Hostels Facilities:- 10x Fitness gym, 4x Table Tennis , 4x Pool Tables, 2x Basketball courts, 1x Volleyball court and 17x Badminton courts.

NUST has established a Riding Club in H-12 Campus being the pioneer University in Pakistan to have such a facility. Regular Inter-College/School Sports Competitions are held every year at the University. NUST teams have been participating and performing well in HEC Intervarsity Sports Competition both at the Zonal and National levels. No of our players have represented Pakistan in different Sports and achieved good positions at National Levels.

NUST also has a well qualified and very experienced team of sports coaches. They impart the sports coaching to students and supervise all the sports activities in the University.

Membership of Quality Assurance Associations/Networks

NUST has actively been playing a role of assuring and enhancing the quality of education since its inception. For the purpose of learning, knowledge sharing of good practices, global networking and co-organizing international seminars and networks, NUST is an active member of following international associations / networks

- International Network of Quality Assurance for Higher Education
- Asia-Pacific Quality Network
- Association of Commonwealth Universities
- International Association of Universities
- Association of Management Development Institutions in South Asia
- United Nations Academic Impact
- Association of Quality Assurance Agencies of Islamic World
- The Tallories Network
- Inter University Consortium for promotion of Social Sciences (IUCPP)

NUST Campuses

H-12, Islamabad Campus

School of Electrical Engineering and Computer Science (SEECS)

NUST School of Electrical Engineering and Computer Science (formerly NIIT) chronicles an incredible tale of what focused efforts with a clear vision, singular commitment and a passionate quest for excellence are capable of achieving within the span of a decade. From its embryonic appearance in 1999 as a tiny IT wing of NUST, this school has blossomed into one of the finest seats of higher education. The philosophy of education at SEECS puts due premium on an essential blending of engineering and computing education with a sound orientation of social and humanitarian interests of the society. With the relocation of SEECS to the idyllic setting of NUST Campus, H-12, Islamabad, it is destined to set a new pace for cultivation of wholesome social and moral values in the students who are privileged to enter its portals.

NUST Business School (NBS)

NBS has evolved and emerged as a well established institute from NUST Institute of Management Studies NIMS. In the recent past it has proved itself as one of the finest and prestigious management schools of Pakistan offering both the UG and PG programmes with state-of-the-art learning infrastructure which includes well equipped class rooms, lecture and seminar halls, language and research labs, a fully functional library that offers both physical and digital sources of information along with top-of-the line teaching faculty with years of research and professional experience. NBS employs result based teaching methodology through its close liaison with the industry. Several initiatives such as joint field projects, research activities, workshops, seminar and lectures from professionals enrich the professional learning of the students. Its recent accreditation with the NBEAC has enhanced inter and intra-institutional cooperative practices as well as ensured professional mobility and employment opportunities for its graduates. We at NBS believe in continued improvement mechanism through periodic students' surveys, faculty and curriculum evaluation. Our increasing focus on research together with the initiatives to develop synergies with other centers of excellence within NUST will enable us to become business school par excellence.

School of Social Sciences and Humanities (S^3H)

The discipline of social sciences plays a vital role in understanding the function of society, studying individual behavior and evaluating social problems and their impact on society. Taking cognizance of the significance of social sciences and humanities discipline, NUST has recently established the School of Social Sciences and Humanities (S^3H). Founded in 2013, the history of the school can be traced back to 1999 when its seed began to germinate in the form of establishment of NUST Institute of Management Sciences (NIMS) which was renamed as NUST Business School (NBS) in 2008. Later, three social sciences departments namely Department of Economics, Department of Government and Public Policy, and Department of Mass Communication were launched and initially housed under the umbrella of NUST Business School. These three departments together with Department of Behavioral Sciences and Department of Career Counseling & Education converged into the School of Social Sciences and Humanities in the year 2013. A brand new state-of-the-art building of S^3H has been constructed and the school has shifted to new building in 2015.

School of Chemical and Materials Engineering (SCME)

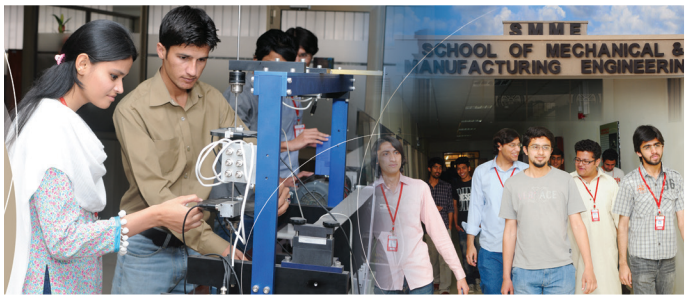
The School of Chemical and Materials Engineering (SCME) became functional in 2006 as a research-oriented school of NUST and is currently offering two undergraduate and three postgraduate degree programmes in the twin disciplines of Chemical Engineering, Materials Engineering and Nanoscience & Engineering. Setting up an educational institution in unique and highly specialised areas is a great challenge. It is very

satisfying that within four years, the postgraduate programmes stand fully established. The School has acquired the services of one of the best faculty in the country, besides establishing a rigorous self-assessment Quality Assurance process to ensure that our graduates get the best education possible. An equal emphasis is laid on development of their character and personality.

School of Civil and Environmental Engineering (SCEE)

School of Civil and Environmental Engineering was established in November 2008. It comprises four vibrant institutions namely National Institute of Transportation (NIT) , Institute of Environmental Science and Engineering (IESE), Institute of Geographical Information Systems (IGIS) and NUST Institute of Civil Engineering (NICE). SCEE is a modern and progressive engineering school of the country, the first of its kind that offers a wide choice of BE programmes in Civil, Geoinformatics and Environmental Engineering. In BE programmes, the students are given the option of selecting elective majors. SCEE has very strong postgraduate programmes (MS/PhD) in Structural Engineering, Geotechnical Engineering, Transportation Engineering, Water Resources Engineering, Environmental Engineering, Environmental Science, Geographic Information Systems, Urban & Regional Planning, Geotechnical & Tunneling, Remote Sensing and Construction Engineering & Management.

School of Mechanical and Manufacturing Engineering (SMME)



The School of Mechanical and Manufacturing Engineering (SMME) was established in 2008. SMME was set up to prepare human resource with essential skills in Mechanical Engineering and allied renewable technologies, with specific emphasis on manufacturing, automobile, power/energy and biomedical sectors to perform effectively in the technological world. The School has state-of-the-art laboratories related to mechanical, manufacturing, robotics and biomedical fields.

The School is offering an undergraduate programme in Mechanical Engineering and postgraduate programmes (MS and PhD) in Mechanical Engineering, Design and Manufacturing Engineering, Robotics and Intelligent Machine Engineering, Biomedical Sciences and Biomedical Engineering.

School of Art, Design and Architecture (SADA)

The School of Art, Design and Architecture is an addition to the elite league of NUST constituent Schools and Colleges. SADA was established in September 2010. The school now in its eighth year is continuously working towards establishing one of the most modern and competitive schools of Architecture in the country. The School is all set to bring a truly world-class dimension to the field of education in art, architecture and design by collaborating with the world-renowned Department of Architecture of the Middle East Technical University (METU) Turkey, the first department established at METU in 1956, which is affiliated with various international bodies of architecture. This collaboration will be instrumental in combining the strengths of both world class universities, that collectively hold over seven decades of experience in creating, disseminating and re-inventing knowledge. This collaboration will go a long way in imparting a truly global perspective to our programmes; thereby amalgamating the best of both cultures in order to produce strikingly creative work by students and faculty alike. The school is presently offering a Bachelor of Architecture and Industrial Design Degree. It has well equipped studios, labs and workshops.

Research Center for Modelling and Simulation (RCMS)

Research Center for Modelling and Simulation was established at NUST in 2007 to set up Modelling and Simulation facilities for design and development in various disciplines through education, training and research, and to act as a platform to integrate these efforts by the government, academia and industry. The Center focuses on mathematical modelling and simulation of structures, fluids, electrical systems, communication systems, computer and network architecture, operations management, human behaviour and war scenarios. RCMS started its first MS degree programme in Computational Science and Engineering in Fall 2008 has been upgraded to PhD with specialisations in Fluid Flow and Structures and Computational Infrastructures and Visualisation. The curriculum has been structured to impart students with solid M&S foundational knowledge and skills. The Center also offers MS in Systems Engineering and Bioinformatics.

School of Natural Sciences (SNS)

Established in May 2004, School of Natural Sciences (SNS) formerly known as Centre for Advanced Mathematics and Physics (CAMP), is a young and thriving school that contributes vitally to the research output of not only NUST but also of the country. The research carried out at SNS is regularly published in international journals of repute. SNS offers MS programmes in the fields of Mathematics, Physics, Chemistry and Statistics; PhD programmes in Mathematics, Physics and Chemistry; and an exciting four-year undergraduate programme leading to the Bachelor of Science (BS) in Mathematics, Physics and Chemistry. Our postgraduate programmes emphasize breadth of understanding in the core areas of Mathematics, Physics, Chemistry and Statistics. SNS faculty, exhibiting their erudition in research, have published in quality journals with high impact factor. Research culture has significantly been strengthened with the dedicated efforts of the faculty

Center for Counseling and Career Advisory (C^3A)

CCenter for Counseling and Career Advisory (C^3A) is a unit of NUST that provides primary mental health services. C^3A is offering this service, to all the NUST students, faculty, personnel and families of those associated, within and outside the NUST Campus, H-12, Islamabad. The core objective of C^3A is to provide professional counseling services, for educational, social, emotional and psychological issues that may inhibit personal or professional performance and advancement. The Center also offers workshops, seminars and lectures to augment the counseling process apart from carrying out research on a variety of psychological and educational issues.

Atta-ur-Rahman School of Applied Biosciences (ASAB)

The School was initially established as Center of Virology and Immunology in October 2007, to provide research and teaching facilities in the field of Virology and Immunology. Recently, it has been named after the eminent scientist, Dr Atta-ur-Rahman, who has very graciously accepted to be its patron and advisor. The School provides excellent research and teaching facilities in the field of applied biology in Pakistan. ASAB has dynamic interdisciplinary undergraduate and graduate programmes which prepare the students for pursuits in research and teaching in pure molecular as well as applied biology. The faculty includes members of Health, Plant and Industrial Biotechnology, Virology, Molecular Biology, Plant Biology, Biochemistry, Medicine, Neurology, Rheumatology, Immunology and Oncology. The research and training programes have collaborations with other institutions in Pakistan and abroad. The School offers MS Healthcare Biotechnology, MS Plant Biotechnology, MS Industrial Technology and PhD Applied Biosciences.

US-Pak Center for Advanced Studies in Energy (USPCAS-E)

US-Pak Center for Advanced Studies in Energy (USPCAS-E) was launched in June 2011 to provide impetus to energy sector programmes and support and consolidate related activities/ projects with a view to contributing to national economy in times of energy crisis. It was inaugurated on January 9, 2012. Collaborating partners from Canada, USA, UK, RSA and KSA warmly participated in the event. The Center aims at providing sustainable supply of energy at affordable rates with greater share of renewable in the energy mix to reduce environmental footprint. The center's vision resides in setting up pilot plants to demonstrate the feasibility of specific programmes in the various energy sectors. Thus, takes the lead in moving from research and development to demonstration; a step that is considered vital for meaningful academia-industry collaboration. The Center offers MS and PhD in Energy Systems Engineering, MS in Thermal Energy Engineering and Electrical Engineering (Power) programmes.

Rawalpindi Campuses

Military College of Signals (MCS)

Since its inception, the Military College of Signals (MCS) has matured into a premier college of NUST and a center of professional excellence. MCS was established in 1947 as School of Signals. In 1960, it was affiliated with Royal School of Signals to fulfil the requirements of Pakistan Army in the field of Telecommunication Engineering. In 1977, it was affiliated with University of Engineering and Technology, Lahore for award of Telecommunication degree, thereby gaining its elevation as Military College of Signals. In 1991, MCS became a constituent college of National University of Sciences and Technology (NUST). The College also started undergraduate and postgraduate programmes in Software Engineering and postgraduate programme in Telecommunication, System Engineering and Information Security. In 2001, the College introduced PhD degrees in all its programmes.

College of Electrical and Mechanical Engineering (C of E&ME)

C of E&ME is situated along the Grand Trunk Road, at Rawalpindi-Islamabad nexus. Fascinating locale and congenial environment are indeed the hallmarks of this institution. It enjoys the distinction of being the largest constituent college of NUST in terms of doctoral positions in the faculty, student enrolment, diversity of training programmes, research and higher education, infrastructure and facilities. The College attained ISO-9001 certification in 1999; 9001-2000 in 2003 and 9001-2008 in 2009. It has been earning distinctions and acknowledgement in quality assurance and PEC accreditation evaluation. It offers a rich assortment of degree programmes ranging from undergraduate to postgraduate programmes in diverse disciplines, the main fields being Electrical, Mechanical, Software, Computer and Mechatronics Engineering as well as Engineering Management.

NUST Institute of Peace and Conflict Studies (NIPCONS)

NIPCONS was established at the NUST Campus, Tamizuddin Road, Rawalpindi in December 2009, with the primary mandate to plan / organize the system of education for Army cadets / Young Officers (YOs), compatible with the academic syllabus / standards of NUST and award UG degree (Bachelors of Military Art and Science [BMAS]) on completion of specified syllabus / credit hours. Additionally, the Institute is envisioned to grow as a Center of excellence in the field of Peace and Conflict Studies (CIPS). CIPS was established on 1st March 2013. Later, it was inaugurated by UNSG Ban Ki-moon on 13th August 2013. It is a unique institution – the only one of its kind established with the purpose of conducting research and training in matters related to UN Peacekeeping Operations (UNPKOs). Its mandate is, however, not restricted to the relatively narrow field of peacekeeping. The studies at CIPS are organized within the overarching discipline of Peace & Conflict Studies. This relatively new branch of social sciences is devoted to identifying and analysing the nature of conflict with a view to finding solutions through peaceful and non-violent means. The center is offering MS and PhD programme in Peace and Conflict Studies.

Risalpur Campuses

Military College of Engineering (MCE)

The School of Military Engineering was established after the end of World War-II in 1946 near Kirkee (Poona) in southern India. After the partition of the sub-continent and emergence of Pakistan, the School of Military Engineering was established at Sialkot in April 1948. The institute was shifted from Sialkot to Risalpur in the year 1952 and developed into an engineering institution.

Military College of Engineering is a premier college of NUST that offers an undergraduate degree in Civil Engineering. It has a rich legacy dating back to the post World War II era. Passing several milestones, MCE was granted degree awarding status through Presidential Ordinance of 1962. With the emergence of NUST, MCE entered the folds of the University's constituent colleges in 1995. MCE was recertified as an ISO 9001-2000 institute after successfully meeting all quality standards in July 2008. MCE

has the honour of producing 3157 BE graduates, including 60 foreign students.

College of Aeronautical Engineering (CAE)

College of Aeronautical Engineering (CAE) has a legacy which is as impressive as some of tis aforementioned counterparts. The college was established in 1965 with the help of USAF, which provided three experienced and qualified officers as its pioneering Principal and Head of Departments. This premier college offers undergraduate and postgraduate degrees in Aerospace and Avionics Engineering. Its programmes are fortified by foreign qualified faculty. The College was initially located at Pakistan Air Force (PAF) Base Korangi and was affiliated with the University of Karachi. Later, on the establishment of NED University of Engineering & Technology in March, 1977, affiliation of the College was transferred to NED University. In May, 1986, CAE was shifted to Risalpur and since then it is an integral part of the PAF Academy. It became a constituent college of National as University of Sciences and Technology (NUST), Islamabad in 1994. The MS programme in Aerospace and Avionics Engineering commenced at CAE in 1997. In 1999 CAE achieved ISO 9000 certification for the quality management system of its academic programmes. Outcome Based Education (OBE) programme was started at CAE in 2014 after PEC became a provisional signatory of the Washington Accord (WA) of International Engineering Alliance (IEA).

National Institute of Transportation (NIT)

The National Institute of Transportation (NIT) is one of the pioneer constituent institute of NUST. The Institute was established in 1991 at Risalpur. The Institute's mandate is to develop manpower equipped with latest engineering knowledge and compatible skills to take on the challenges in the field of transportation. Since its inception, this National institute has been imparting advance higher education in core civil engineering fields (i.e. MS / PhD programs in Transportation Engineering, Structural Engineering and Geotechnical Engineering). NIT is focused to become a center of excellence of international repute by providing quality education, research and training. NIT has always played a leading role as a think tank by sharing expertise and suggesting long term solutions for complex engineering issues. The faculty of the institute has always been involved in national and international level research and development projects.

Karachi Campus

Pakistan Navy Engineering College (PNEC)

The genesis of PN Engineering College lies in the Officers Training Section (OTS) which was set up in 1962. In 1966, the status of OTS was upgraded to that of a college and given the name of Pakistan Navy Engineering College (PNEC). PNEC was affiliated with Karachi University in the same year. In 1977, the affiliation of PNEC was transferred to NED University of Engineering & Technology. The college was shifted to its present location in 1982. In 1995 it became constituent college of National University of Sciences and Technology (NUST). PNEC Offering comprehensive undergraduate degrees in Electrical Engineering and Mechanical Engineering. Pakistan Naval Engineering College (PNEC), Karachi has the distinction of being the first educational institution of the country to have obtained ISO-9001 certification. Another milestone was achieved with the introduction of its first MS and PhD programmes in 1998. The College continues to diversify its programmes, and offers MS and PhD programmes in Electrical (Control) Engineering, Manufacturing Engineering & Management, and Mechanical Engineering. The College has also introduced MS in Naval Architecture programme from Fall 2018.

NUST Balochistan Campus, Quetta

NUST Balochistan campus (NBC) was inaugurated in an impressive ceremony by Chief of Army Staff and Chairman NUST Board of Governors – Gen. Qamar Javed Bajwa NI (M), HI(M), in the presence of Chief Minister Balochistan – Abdul Quddus Bizenjo, Speaker Balochistan Assembly Rahila Durrani, Balochistan Assembly's Leader of Opposition Abdul Rahim Ziaratwal, Vice Chancellors and students of different universities and other notables in 2019. Through this campus, NUST aims to take quality education to the youth of Balochistan, enabling them to graduate from Pakistan's No. 1 Science & Technology university, and be at par with the best engineers and scientists not only in Pakistan but also internationally.

Institutions and Programmes

SNS

School of Natural Sciences

School of Natural Sciences (SNS)

Established in May 2004, School of Natural Sciences (SNS) formerly known as Centre for Advanced Mathematics and Physics (CAMP), is a young and thriving school that contributes vitally to the research output of not only NUST but also of the country. The research carried out at SNS is regularly published in international journals of repute. SNS offers MS programmes in the fields of Mathematics, Physics, Chemistry and Statistics; PhD programmes in Mathematics, Physics and Chemistry; and an exciting four-year undergraduate programme leading to the Bachelor of Science (BS) in Mathematics, Physics and Chemistry. Our postgraduate programmes emphasize breadth of understanding in the core areas of Mathematics, Physics, Chemistry and Statistics. SNS faculty, exhibiting their erudition in research, have published in quality journals with high impact factor. Research culture has significantly been strengthened with the dedicated efforts of the faculty. In 2020, SNS has published 169 publications in research journals and 1 conference paper in proceedings of international conferences.

Faculty Profile

Dr Rashid Farooq **Principal**
Dr. Sci. (Kyoto University, Japan)
Discipline: Mathematics
Specialisation: Discrete Mathematics

Department of Mathematics

Dr Meraj Mustafa Hashmi, HoD
PhD (QAU), Pakistan
Discipline: Mathematics
Specialisation: Fluid Mechanics

Dr Mujeeb-ur-Rehman, HoD Research
PhD (NUST) Pakistan
Discipline: Mathematics
Specialisation: Differential Equations

Dr Ahmad Javid
PhD (University of the Punjab), Pakistan
Discipline: Mathematics
Specialisation: Soliton Theory, Partial Differential Equations

Prof. Azad Akhter Siddiqui
PhD (QAU) Pakistan
Discipline: Mathematics
Specialisation: Computational Mathematics

Dr Tooba Feroze
PhD (QAU) Pakistan
Discipline: Mathematics
Specialisation: Mathematical Physics

Dr Matloob Anwar
PhD (GCU) Pakistan
Discipline: Mathematics
Specialisation: Analysis

Dr Mubasher Jamil (Ex-Pakistan)
PhD (NUST) Pakistan
Discipline: Mathematics
Specialisation: Mathematical Physics

Dr Moniba Shams
PhD (Glasgow) UK
Discipline: Mathematics
Specialisation: Computational Mathematics

Dr Muhammad Ishaq
PhD (GCU) Pakistan
Discipline: Mathematics
Specialisation: Algebra

Dr Muhammad Asif Farooq
PhD (NTNU) Norway
Discipline: Mathematics
Specialisation: Computational Mathematics

Dr Muhammad Ilyas Chishti
PhD (NUML) Pakistan
Discipline: English
Specialisation: English Linguistics

Dr Tahir Mehmood
PhD (NMBU), Norway
Discipline: Statistics
Specialisation: Multivariate Modeling and Statistical Learning

Dr Muhammad Qasim
PhD, (Erciyes University), Turkey
Discipline: Mathematics
Specialisation: Topolgy

Dr Firdos Khan
PhD, (University of Klagenfurt), Austria
Discipline: Statistics
Specialisation: Bayesian and Environmental Statistics

Department of Physics

Dr Shahid Iqbal, HoD
PhD (QAU) Pakistan
Discipline: Physics
Specialisation: Theoretical Quantum Physics

Dr Ayesha Khalique
PhD (TU Darmstadt) Germany
Discipline: Physics
Specialisation: Theoretical Quantum Physics

Dr Muddasir Ali Shah
PhD (GCU) Pakistan
Discipline: Physics
Specialisation: Plasma Physics

Dr Fahad Azad
PhD (University of Hong Kong) Hong Kong
Discipline: Physics
Specialisation: Material Physics

Dr Faheem Amin
PhD (PUM) Germany
Discipline: Physics
Specialisation: Nanotechnology

Dr Muhammad Ali Paracha
PhD (QAU) Pakistan
Discipline: Physics
Specialisation: High Energy Physics

Dr S. Rizwan Hussain
PhD/Postdoc (CAS, Beijing/Peking University, Beijing) China
Discipline: Physics
Specialisation: Condensed Matter Physics (Experimental)

Dr Saadi Ishaq
PhD (CAS), China
Discipline: Physics
Specialisation: Theoretical Particle Physics

Dr Muzzamal Iqbal Shaukat
PhD (UOL), Portugal
Discipline: Physics
Specialisation: Quantum Information

Dr Tajammal Hussain Khokar
PhD (GCU), Pakistan
Discipline: Physics
Specialisation: Plasma Physics

Department of Chemistry

Dr Azhar Mahmood Malik. HoD
PhD (University of Karachi) Pakistan
Discipline: Chemistry
Specialisation: Organic Chemistry

Dr Muhammad Arfan
PhD (QAU) Pakistan
Discipline: Chemistry
Specialisation: Synthetic Chemistry, Peptide Synthesis

Prof. Habib Nasir
PhD (University of Karachi) Pakistan
Discipline: Chemistry
Specialisation: Molecular Nanotechnology

Dr Mudassir Iqbal
PhD (University of Twente) Netherlands
Discipline: Chemistry
Specialisation: Organic Synthesis

Dr Muhammad Fahad Ehsan (EX-Pakistan)
PhD (NCNST) China
Discipline: Chemistry
Specialisation: Physical Chemistry

Prof. Muhammad Mazhar
Distinguished National Professor
PhD (Budapest) Hungary
Discipline: Chemistry
Specialisation: Inorganic/Material Chemistry

Dr Asad Mumtaz
PhD (Universiti Teknologi PETRONAS), Malaysia
Discipline: Chemistry
Specialisation: Physical/ Nano-materials Chemistry

Dr Muhammad Adil Mansoor
PhD (University of Malaya), Malaysia
Discipline: Chemistry
Specialisation: Inorganic/Materials Chemistry

Dr Rashid
PhD (University of Queensland), Australia
Discipline: Chemistry
Specialisation: Inorganic Chemistry

Dr Shahid Iqbal
PhD (CAS), China
Discipline: Chemistry
Specialisation: Physical Chemistry

Research at SNS

Research culture is being strengthened through dedicated and collaborative efforts of the entire research community including faculty and students. SNS faculty has excelled in research by getting their work published in quality journals with high impact factor.

Research Groups

There are various research groups working at SNS, many of which hold collaborative meetings and research presentations regularly.

Research Groups – Mathematics

- Algebra &Analysis
- Computational Mathematics and Fluid Mechanics
- Differential Equations
- Discrete Mathematics
- Mathematical Physics
- Statistics

Research Groups – Physics

- Quantum Optics and Quantum Information
- High Energy Physics
- Plasma Physics
- Condensed Matter Physics

Research Groups – Chemistry

- Functional Nanomaterials
- Molecule Design and Synthesis
- Nanotechnology and Photocatalysis
- Hybrid Materials
- Inorganic and Nano-Chemistry
- Material Chemistry

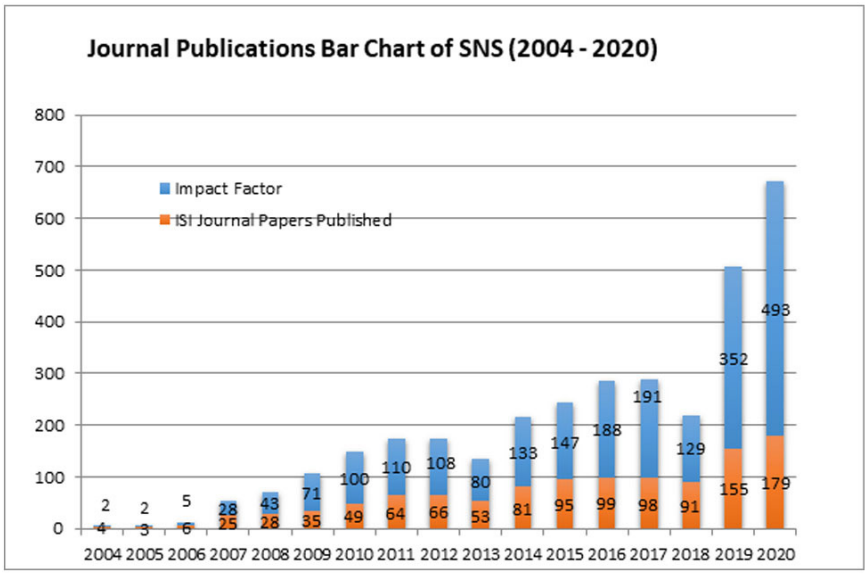
Financial Assistance

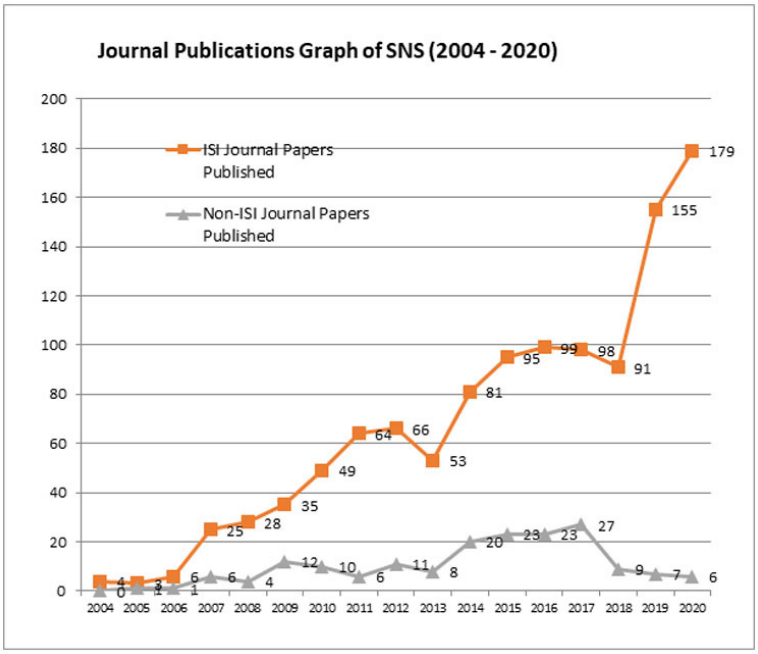
SNS offers financial assistance to bright and needy students in various forms, which includes:

- Fee waivers
- Research associate-ships
- Teaching assistant-ships
- HEC Scholarships
- NESCOM Scholarships

Research Funding

Currently, all students in the research phase of their PhD are receiving financial assistance





International Collaborations

- Memorandum of Understanding has been signed between University of Witwatersrand, Johannesburg, South Africa and SNS for a period of five years in the field of Mathematics. In addition to research collaboration, the agreement includes exchange of students and faculty.
- A collaborative agreement with the Department of Physics of the University of Lecce, Italy in the field of Astrophysics is also in place. There have been three workshops in Astrophysics as a result of this collaboration
- SNS has a comprehensive agreement signed with the Abdus Salam International Centre for Theoretical Physics, Trieste, Italy. Besides many other features, the agreement allows for the exchange of three students and three faculty members every year for a period of up to one month.
- A research agreement has been signed between SNS and Research Institute for Mathematical Sciences (RIMS) of Kyoto University, Japan.

Activities

Academic Activities

SNS is hotspot for Mathematics, Physics and Chemistry related activities not only in the capital area but is also a major player nationwide in these fields. Some recent activities in the said fields include the following:

- Sixth International Conference on Recent Developments in Fluid Mechanics organized by SNS from March 17-19, 2015.
- Conference on Symmetries, Differential Equations and Applications (SDEA-II) was held at NUST organized by SNS from Jan 27-30, 2014. A large number of local and foreign scholars participated in the conference.
- The 4th Joint Italian-Pakistan Workshop on Relativistic Astrophysics was held at SNS from 15-17 February 2013. The first three Joint Italian-Pakistani Workshops on Relativistic Astrophysics were co-sponsored by SNS and held in Italy, in collaboration with the University of Lecce in 2007, 2009 and 2011. The proceedings of the first are published as a special issue of Nuovo Cimento, that of the second as a special issue of General Relativity and Gravitation and the third in the European Journal of Physics, Conference Series.
- CAMP conference on Mathematical Sciences was organized at SNS from 17th to 19th November 2011. The conference covered a vast variety of research fields from applied mathematics as well as pure mathematics. There were 37 speakers from different universities around the country and from abroad who presented their research work in Bio-Mathematics, Mathematical Economics, Differential Equations, Teleparallel Gravity and many other fields.
- NUST Conference on Application and Methods of Physics (NUST-SNS) was held on 21st and 22nd Nov. 2011 at SNS. The national conference was the first physics conference held at NUST. The basic aim of the conference was to provide a forum where recent developments in Physics would be discussed. The various fields covered at the conference were Cosmology, Astrophysics, Relativity, Particle Physics, Quantum Optics, Nanotechnology, Bose Einstein Condensate and Quantum Information. In total 40 speakers presented their work. Posters by various researchers were also displayed throughout the conference.
- Two one-day conferences were organized by SNS in honour of Prof Muneer Ahmad Rashid and Prof Riazuddin in 2008 and 2009 respectively.
- In addition to student seminars and special seminars delivered by distinguished speakers from time to time, there are two regular weekly seminar series, one in Mathematics and one in Physics. In these series experts from various universities from all over Pakistan come, deliver lectures, answer questions and head lively discussions about their field of research

USA-Pakistan Bilateral Conference on Energy Nanomaterials 2020

Department of Physics, School of Natural Sciences, NUST organized USA-Pakistan Bilateral Conference on Energy Nanomaterials 2020 on 16-17 January 2020. The conference provided a platform to novice researchers to interact and collaborate with experts of different fields. The conference was a successful effort to initiate national and international collaborations especially with Prof. Deji Akinwande from University of Texas at Austin, USA. Insightful talks by International eminent scholars including Prof. Deji Akinwande (University of Taxes at Austin, USA), Dr. Nasir Mahmood (RMIT, Melbourne, Australia), Dr. M. S. Anwar (University of Cambridge, United Kingdom), Prof. Xu Bin (Beijing University of Chemical Technology, Beijing, China), Dr. Zafar Iqbal (United Arab Emirates University, Al-Ain, UAE); Dr. Arslan Shehzad (Georgia Institute of Technology, Atlanta, Georgia and Mr. Abdul Sammed (Dalian University Dalian, China) made the subject conference a great success.

The event remained successful in terms of new research collaborations at national and international scale. Dr. Rizwan together with Prof. Deji Akinwande from University of Texas at Austin, USA and Dr. Muhammad Zafar Iqbal are going to launch a special issue in the journal 'Frontiers in Physics' in the common field of interest which has also been the topic of the conference.

Promoting Applied Sciences in Pakistan (PASP – 20)

The e-conference "Promoting Applied Sciences in Pakistan (PASP – 20)" organized by NUST School of Natural Sciences was held on July 20-21, 2020. Ch. Fawad Hussain, Federal Minister for Science and Technology graced the conference as chief guest while Federal Minister for Defense Production Ms. Zubaida Jalal was the guest of honour. Distinguished speakers from U.K, USA, Japan, Germany, Qatar, Italy, Belgium, China, Czech Republic, Australia, Middle East and from within the country enlightened the participant through their subject specific prowess. The main theme of the conference was to promote Science and its applications in Pakistan in various fields including Superconductors, Space Technology, Energy Storage, Quantum Entanglement, Data Storage, etc. Due to growing energy needs, researchers are working hard in tuning and engineering different energy materials for energy storage and conversion. Due to limited resources, it is essential to put effort in improving not even our energy related materials but also devices into small, compact, flexible and better performing systems. In the conference, all the problems related to energy materials and devices were discussed in detail. The discussion covered all the areas regarding energy generation, energy transfer, material cost, device size, endurance, retention, speed and the compatibility of material with the device. The senior researchers from different countries presented their work.

The scope and objective of the conference was to provide a platform for researchers, academicians as well as professionals to present their research results and development activities in the field of nanomaterials related to energy. This conference provided opportunities to leading native and foreign researchers to not only present their recent work at the conference but also to exchange new ideas and experiences, to establish research as well as commercial relations and to find global partners for future collaboration. It also aimed to raise awareness about the alternative technologies and experimentations related to synthesis, fundamental properties and applications of our quickly expanding family of 2D materials.

International Conference on Recent Trends in Mathematical Sciences-III

Department of Mathematics, School of Natural Sciences organized an International E-Conference on Recent Trends in Mathematical Sciences on 22-23 December 2020. Dr. Nassar Ikram (HI), Pro-Rector RIC, NUST graced the event as chief guest while Prof. Ali Ridha Mahjoub from Paris Dauphine University, France was the special guest. Other international speakers included Prof. Irfan Şiap (Yıldız Technical University, Turkey), Prof. Kenta Ozeki (Yokohama National University, Japan), Prof. Gunther Jäger (Stralsund University of Applied Sciences, Germany), Prof. Bernhard Müller (Norwegian University of Science & Technology, Norway), Prof. Mustafa Türkyılmazoğlu (Hacettepe University, Turkey) and Dr. Abdul Wahab (Nazarbayev University, Kazakhstan). The aim of the conference was to bring together international and national researchers together during the crunch time when COVID-19 hit all walks of life. The e-conference went a great success as it provided the students, faculty and researchers the requisite exposure to witness advancement in different areas of Mathematics. Overwhelming local and international participants attended the event with great zeal. The researchers explored new research areas of mathematics to excel in their career.

International Conference on Research Advancements in Chemistry (ICRA-C 2021)

The first online "International Conference on Research Advancements in Chemistry" was held on 10-11 March 2021. The prime objective of the conference was to share recent advancements in chemistry and material science. The conference was attended by eminent national and international scholars. It focused on challenges associated with green environment and the plausible solutions to these problems. Dr. Shahid Rasul, in his keynote talk discussed the urgency of incorporating renewable energy sources, like carbon dioxide and water for fuel generation. The conference was virtually conducted on zoom webinar with four different sessions in two days. Prof. Dr. Shahid Mahmood Baig; chairman Pakistan Science Foundation graced the conference as chief guest. Dr. Rashid Farooq, Principal SNS, in his opening address, highlighted the significance of the subject conference emphasizing research and academic achievements by SNS. Later, Dr. Muhammad Ali Mohammad, Director Research, Innovation and Commercialization, NUST welcomed the worthy chief guest, speakers and all the participants and highlighted the phenomenal growth of NUST as an institution. Prof. Dr. Shahid Mahmood Baig appreciated the research initiatives of SNS students and faculty emphasizing on the role of Pakistan Science Foundation at multiple fronts and urged researchers to participate in ICRAC-2021 by contributing through their research projects. He also extended his assistance in funding and various other dimensions of the entire research process. The conference concluded on the following recommendations:

- Pakistan should curtail use of fossil fuels for power generation, and the trend of growing use of coal needs to be backtracked.
- Meaningful efforts are required to increase forest cover.
- The uncontrolled and rampant growth of housing societies on fertile agricultural land need to be strictly controlled.
- Environmental bodies need to be functional with robust implementation of regulations, monitoring and control.

BS Mathematics

Programme Description

This programme is designed to broaden the mathematical background of students and to enable them to choose from a wide spectrum of career options.

Unique Features

This programme offers courses which are in line with those of leading educational institutions all over the world and which also conform to all standards of degree programmes being conducted at other constituent colleges of NUST. It produces graduates who understand the complex facets of mathematical systems, and the integration of these systems in applied sciences and industry. Our undergraduate programme in mathematics is intended to provide students with necessary knowledge, abilities and methods so that they will be able to carry out professional work on a scientific basis, to critically classify scientific results and to act with responsibility.

Associated Careers

Mathematics graduates in Pakistan traditionally pursue careers in education and research centres or go on for higher studies. Our programme not only keeps the requirement of these fields in mind but also equips students with skills that are needed in the modern industrial and financial markets. All over the developed world, mathematicians are employed by banks, stock exchanges, lending agencies and most other industries. SNS is acutely aware that we are a rapidly developing nation and our institutions require expert mathematicians to fulfil their needs on an urgent basis. This broadens the scope of the graduates of this programme and enables them to choose from a wide variety of jobs available in Pakistan and abroad, particularly in the areas mentioned above.

Scheme of Studies

Programme Code N-619

First Year

Semester I

Course Code	Course Title	Credits
CH 103	Chemistry	3-1
HU 101	Islamic Studies	2-0
HU 107	Pakistan Studies	2-0
HU 110	English	3-0
MATH 111	Calculus-I	3-0
PHY 106	Mechanics	3-1
Total Credits		**18**

Semester II

Course Code	Course Title	Credits
CS 110	Fundamentals of Computer Programming	3-1
FL 100	Foreign Language	3-0
HU 108	Communication & Interpersonal Skills	3-0
MATH 112	Calculus II	3-0
PHY 107	Electricity and Magnetism	3-1
Total Credits		**17**

Second Year

Semester III

Course Code	Course Title	Credits
ECO 101	Principles of Microeconomics	3-0
HU 210	Techanical Writing	3-0
MATH 213	Calculus III	3-0
MATH 263	Probability Theory	3-0
MATH 272	Discrete Mathematicas and Applications	3-0
MATH 274	Elementary Number Theory	3-0
Total Credits		**18**

Semester IV

Course Code	Course Title	Credits
MATH 235	Mathematical Computing	2-1
MATH 242	Real Analysis-I	3-0
MATH 264	Introduction to Statistics	3-0
MATH 321	Linear Algebra	4-0
ECO/ CS 111/220	Principles of Macroeconomics/ Database Systems	3-0/ 3-1
Total Credits		**16/17**

Third Year

Semester V		
Course Code	**Course Title**	**Credits**
CS 250	Data Strucutres & Algorithms	3-1
ECO 222	Professional Ethics	2-0
MATH 251	Ordinary Differential Equations-I	3-0
MATH 342	Real Analysis-II	3-0
MATH 343	Complex Analysis	3-0
MATH 345	Topology-I	3-0
Total Credits		**17**

Semester VI		
Course Code	**Course Title**	**Credits**
MATH 325	Group Theory-I	3-0
MATH 332	Numerical Analysis-I	3-0
MATH 353	Partial Differential Equations	3-0
MATH 354	Calculus of Variations	3-0
MATH 382	Differential Geometry	3-0
MGT 271	Entrepreneurship	2-0
Total Credits		**17**

Fourth Year

Semester VII		
Course Code	**Course Title**	**Credits**
CSL 401	Community Services Learning	1-1
MATH 423	Rings and Fields	3-0
MATH 452	Ordinary Differential Equations-II	3-0
MATH 491	Fluid Mechanics	3-0
	Elective-I	3-0
	Elective-II	3-0 / 3-1
Total Credits		**15/16**

Semester VIII		
Course Code	**Course Title**	**Credits**
MATH 446	Functional Analysis	3-0
MATH 455	Integral Equations	3-0
MATH 457	Mathematical Modelling	3-0
	Elective-III	3-0
	Elective-IV	3-0
Total Credits		**15**

Elective Courses

Mathematics		**Credits**
MATH 421	Group Theory-II	3-0
MATH 426	Module Theory	3-0
MATH 433	Numerical Analysis-II	3-0
MATH 434	Numerical Linear Algebra	3-0
MATH 435	Introductions to Finite Element Methods	3-0
MATH 436	Introduction to Aproximation Theory	3-0
MATH 445	Measure and Integration	3-0
MATH 447	Topology-II	3-0
MATH 456	Discrete Dynamical Systems	3-0
MATH 471	Cryptography	3-0
MATH 480	Tensor Calculus	3-0
MATH 483	Spherical Trigonometry	3-0
MATH 492	Computational Fluid Dynamics	3-0
PHY 203	Classical Mechanics-I	3-0
PHY 204	Electrodynamics-I	3-0
PHY 302	Quantum Mechanics-I	3-0
PHY 361	Special Relativity	3-0
PHY 462	General Relativity	3-0
Mathematical Economics		
ECO 325	Introduction to Econometrics	3-0

ECO 326	Applied Econometrics	3-0
MATH 463	Stochastic Processes	3-0
MATH 473	Operations Research	3-0
MATH 475	Game Theory	3-0
Data Science		
DS 401	Intorduction to Data Science	2-1
DS 402	Machine Learning for Data Analysis	3-1
DS 403	Data Mining for Big Data	2-1
DS 404	Information Visualization	2-1

BS Physics

Programme Description

School of Natural Sciences (SNS) is also offering the BS programme in physics for those who need to pursue their career as a physicist or use it as a tool in other technological areas. The main focus is to teach students the analysis of complex situations which will be helpful in the main stream physics as well as in other fields such as R&D industries and management sciences.

Unique Features

In this four years programme, the students will have an option to choose a minor, in addition to specialize in theoretical or experimental physics, like in European and American universities. The choice of minors will allow the students to broaden their horizons by focusing on an allied area or to take advanced elective physics courses and will grant access of a wider job market for students. For instance, in the electronics minor the student will have the opportunity to take courses from the Electronics/ Electrical programme offered by SEECS. Currently available minor streams are:

- Mathematics
- Nanotechnology
- Electronics

Associated Careers

The graduates with specialisation in theoretical physics and experimental physics should be able to join as faculty in different educational institutions or continue their post-graduate education. A BS degree in physics and a minor in electronics would have a wide range of jobs open like in the fields of photonics and optoelectronics in industry. They can make also good physics faculty in engineering institutes. Students with nanotechnology as minor will have opportunity in energy capture and storage, electronics/ semiconductor industry, material science including textiles, polymers, packaging, pharmaceuticals and medical, biotechnology, environmental control and monitoring and military and national security. They will also have the possibility of employment within and outside Pakistan in academia as well as in energy corporate and industry and in medical science. A minor in mathematics will be helpful in the field of mathematical/theoretical physics.

Scheme of Studies

Programme Code: N-630

First Year

Core Courses

Semester-I			Semester-II		
Course Code	**Course Title**	**Credits**	**Course Code**	**Course Title**	**Credits**
HU-110	English-I	3 – 0	BIO-110	Introductory Biology	2 – 1
CH-103	Chemistry	3 – 1	PHY-107	Electricity & Magnetism	3 – 1
PHY-106	Mechanics	3 – 1	CS-110	Fundamental of Computer Programming	3 – 1
MATH-111	Calculus-I	3 – 0	MATH-112	Calculus-II	3 – 0
HU-107	Pakistan Studies	2 – 0	HU-108	Communication & Interpersonal Skills	3 – 0
			HU-101	Islamic studies	2 – 0
Total Credits		**16**	**Total Credits**		**19**

Second Year

Semester-III			Semester-IV		
Course Code	**Course Title**	**Credits**	**Course Code**	**Course Title**	**Credits**
HU-212	Technical and Business writing	2 – 0	XXxxx	Humanities I	3 – 0
MATH-206	Linear Algebra for Physicists	3 – 0	PHY-203	Classical Mechanics I	3 – 0
MATH-205	Differential Equations for Physicists	3 – 0	PHY-204	Electrodynamics I	3 – 0
PHY-201	Modern Physics	3 – 0	PHY-205	Thermal Physics	3 – 0
PHY-202	Waves & Oscillation	3 – 0	PHY-212	Mathematical Methods for Physicists-I (MMP I)	3 – 0
PHY-261	Astronomy	2 – 1	PHY-291	Electronics	2 – 1
Total Credits		**17**	**Total Credits**		**18**

Third Year

Semester-V			Semester-VI		
PHY-301	Electrodynamics II	3 – 0	PHY-361	Special Relativity	3 – 0
PHY-302	Quantum Mechanics I	3 – 0	PHY-321	Condensed Matter I	3 – 0
PHY-303	Statistical Mechanics I	3 – 0	PHY-304	Quantum Mechanics II	3 – 0
PHY-312	Mathematical Methods for Physicists-II (MMP II)	3 – 0	PHY-392	Lab II	0 – 2
PHY-391	Lab I	0 – 2	XXxxx	Elective-II	3 – 0
XXxxx	Elective-I	3 – 0	XXxxx	Elective-III	3 – 0
Total Credits		**17**	**Total Credits**		**17**

Fourth Year

Semester-VII			Semester-VIII		
PHY-422	Condensed Matter II	3 – 0	XXxxx	Humanities II	3 – 0
PHY-471	Atomic, Molecular & Nuclear Physics	3 – 0	XXxxx	Humanities III	3 – 0
XXxxx	Elective-IV	3 – 0	XXxxx	Elective-VII	3 – 0
XXxxx	Elective-V	3 – 0	XXxxx	Elective-VIII	3 – 0
XXxxx	Elective-VI	3 – 0	XXxxx	Elective-IX	3 – 0
Total Credits		**15**	**Total Credits**		**15**

Elective Courses

Physics Main Stream

Course Code	Course Title	Credits
PHY-411	Group Theory	3-0
PHY-412	Classical Mechanics-II	3-0
PHY-421	Statistical Mechanics-II	3-0
PHY-431	Advanced Quantum Mechanics	3-0
PHY-432	Foundations of Quantum Mechanics	3-0
PHY-433	Quantum Information	3-0
PHY-434	Quantum Computation	3-0
PHY-435	Quantum Optics	3-0
PHY-441	Particle Physics-I	3-0

PHY-442	Particle Physics-II	3-0
PHY-443	Quantum Field Theory	3-0
PHY-451	Introduction to Plasma Physics	3-0
PHY-452	Kinetic Theory of Plasma waves	3-0
PHY-461	Astrophysics	3-0
PHY-462	General Relativity	3-0
PHY-463	Cosmology	3-0
PHY-464	Relativistic Astrophysics	3-0
XX XXX	Project	0-6
Experimental Physics		
PHY-481	Introduction to Nanomaterials	3-0
PHY-482	Smart Nanomaterial	3-0
PHY-483	Material Science	3-0
PHY-484	Surfaces and Interfaces	3-0
PHY-485	Characterization of Materials	3-0
PHY-486	Functional Properties of Materials	3-0
XX XXX	Project	0-6
Mathematics Minor		
PHY-411	Group Theory	3-0
MATH-381	Differential Geometry-I	3-0
MATH-242	Real analysis-I	3-0
MATH-344	Metric and Topological Spaces	3-0
MATH-446	Functional Analysis	3-0
MATH-452	Ordinary Differential Equations-II	3-0
MATH-491	Fluid Mechanics	3-0
MATH-457	Mathematical Modeling	3-0
MATH-482	Differential Geometry-II	3-0
MATH-274	Elementary Number Theory	3-0
MATH-272	Discrete Mathematics and Applications	3-0
MATH-471	Cryptography	3-0
XX XXX	Project	0-6
Electronics Minor		
EE-221	Digital Logic Design	3-1
EE-211	Electrical Network Analysis	3-1
EE-215	Electronic Devices and Circuits	3-1
EE-232	Signals and Systems	3-1
EE-xxx	Microprocessor Interfacing Lab	3-1
EE-371	Linear Control Systems	3-1
EE-351	Communication Systems	3-1
EE-368	Power Electronics	3-1
EE-342	Microwave Engineering	3-1

EE-343	Transmission Lines and Waveguides	3-1
EE-442	Microwave Devices	3-1
EE-330	Digital Signal Processing	3-1
XX-xxx	Project	0-6
Nanotechnology Minor		
CHE-360	Fundamentals of Polymer Engineering	3-0
CHE-461	Polymer Reaction Engineering	3-0
MSE-343	Composite Materials	3-0
MSE-471	Vacuum Technology in Surface Engineering	3-0
MSE-473	Novel Techniques in Surface Engineering	3-0
PHY-481	Introduction to Nanomaterials	3-0
PHY-482	Smart Nanomaterial	3-0
PHY-483	Material Science	3-0
PHY-484	Surfaces and Interfaces	3-0
PHY-485	Characterization of Materials	3-0
PHY-486	Functional Properties of Materials	3-0
XX XXX	Project	0-6
Humanities		
HU-112	Industrial Psychology	3-0
HU-219	Philosophy	3-0
ECO-101	Principles of Microeconomics	3-0
MGT-272	Entrepreneurship	3-0
GPS-101	Intro to Political Science	3-0

Honours and Awards

- Dr Syed Rizwan Hussain — University Best Researcher Award 2020
- Dr Manzar Soahil — Best Teacher Award from SNS for 2020
- Dr Muddassir Iqbal — Best Researcher Award from SNS for 2019-20
- Dr Mujeeb-Ur-Rehman — Best Teacher Award from SNS for 2019-20
- Dr Muhammad Ishaq — Best Teacher Award from SNS for 2019-20

BS Chemistry

Programme Description

This programme is aimed to broaden the Chemistry background of students enabling them to prepare and develop themselves to meet country's future academic and industrial needs.

Unique Features

This programme is designed keeping it in line with national and international practices as well as market demands. It has been further modified to link it to various industries in Pakistan and across the globe. The graduates produced from this programme will study courses from Physical Chemistry, Inorganic Chemistry, Organic Chemistry, Analytical Chemistry or Nano Chemistry. The first three years of BS programme will be same for all students where they will be equipped with knowledge of all the disciplines of Chemistry. However, from the seventh semester, students will take courses in specialized areas of chemistry in accordance with their choice.

Associated Careers

Career opportunities for Chemists are in plenty not only in Pakistan but also across the globe. Chemistry graduates in Pakistan traditionally pursue careers in education, Public/Private sector research organizations, Industries or go on for higher studies. Chemical and Pharmaceutical industry occupies a big market for Chemists in Pakistan. Besides, Chemistry graduates find their place in oil and gas sector, defense organizations, textile, paint and food industries. Our programme not only meets the requirement of these fields but also equips students with skills that are needed in the modern research areas of advanced countries. All over the developed world, Chemists are required in rapidly modifying technological advancements in almost all sectors of daily life. We are a rapidly developing nation and our institutions require expert Chemists to fulfill national needs on an urgent basis. This broadens the scope of the graduates of this programme and enables them to choose from a wide variety of jobs available in Pakistan and abroad, particularly in the areas mentioned above. The complete detail of courses and their semester-wise breakup is given below:

Scheme of Studies

Programme Code N-660

First Year

Semester-I			Semester-II		
Course Code	**Course Title**	**Credits**	**Course Code**	**Course Title**	**Credits**
CHE-100	Chemical Process Principles	3-0	PHY-106	Mechanics	3-1
HU-110	English-I	3-0	BIO-110	Introductory Biology	2-1
CH-150	Fundamentals of Inorganic Chemistry	3-1	CH-111	Fundamentals of Analytical Chemistry	3-1
MATH-118	Mathematics for Chemistry-I	3-1	HU-108	Communication and Interpersonal Skills	3-0
CS-110	Fundamentals of Computer Programming	3-1	HU-101	Islamic Studies	2-0
			HU-107	Pakistan Studies	2-0
	Total Credits	**17**		**Total**	**18**

Second Year

Semester-III			Semester-IV		
Course Code	**Course Title**	**Credits**	**Course Code**	**Course Title**	**Credits**
PHY-107	Electricity and Magnetism	3-1	CH-270	Fundamentals of Organic Chemistry	3-1
CH-280	Fundamentals of Physical Chemistry	3-1	CH-210	Analytical Chemistry-I	3-1
CH-250	Inorganic Chemistry-I	3-1	ECO-101	Principles of Microeconomics	3-0
MATH-224	Mathematics for Chemistry-II	3-0	HU-222	Professional Ethics	2-0
HU-210	Technical Writing	3-0	MATH-261	Mathematical Statistics-I	3-0
	Total	**18**		**Total**	**16**

Third Year

Semester-V			Semester-VI		
Course Code	**Course Title**	**Credits**	**Course Code**	**Course Title**	**Credits**
CH-380	Physical Chemistry-I	3-1	CH-382	Physical Chemistry-II	3-1

CH-332	Chemistry of Environment	3-0	CH-351	Inorganic Chemistry-II	3-1
CH-311	Analytical Chemistry-II	3-1	CH-371	Organic Chemistry-II	3-1
CH-370	Organic Chemistry-I	3-1	CH-340	Industrial Chemistry	3-0
CHE-201	Advanced Chemical Process Principles	3-0	CH-360	Nanochemistry-1	2-0
	Total	**18**		**Total**	**17**

Fourth Year

Semester-VII			**Semester-VIII**		
CH-4XX	Elective-I	3-0	CH-4XX	Elective-V	3-0
CH-4XX	Elective-II	3-0	CH-4XX	Elective-VI	3-0
CH-4XX	Elective-III	3-0	CH-4XX	Elective-VII	3-0
XX-XXX	Elective-IV	3-0	XX-XXX	Elective-VIII	3-0
CH-499	Research Thesis / Project / Advanced Lab	0-3	CH-499	Research Thesis / Project / Advanced Lab	0-3
CSL-401	Community Services Learning (Non Graded Course)	0-2	MGT-271	Entrepreneurship	2-0
	Total	**15**		**Total**	**17**

All elective courses will be offered from the discipline of BS chemistry programme except Elective-IV and VIII courses which can also be opted from other UG programmes of NUST on recommendation of HoD Chemistry

List of Elective courses

From the seventh semester, students will take courses in specialized areas of Chemistry in accordance with their choice. Every course entails 03 credit hours. The list of courses is given below:

Analytical Chemistry Group		
CH-410	Analytical Techniques-I	3-0
CH-411	Nuclear Spectroscopy Techniques	3-0
CH-412	Electrochemical Techniques	3-0
CH-413	Analytical Techniques-II	3-0
CH-414	Advanced Separation Techniques	3-0

Organic Chemistry Group		
CH-470	Heterocyclic and Organometallic Compounds	3-0
CH-471	Reactive Intermediates	3-0
CH-472	Organic Spectroscopy-I	3-0
CH-474	Organic Spectroscopy-II	3-0
CH-475	Natural Products	3-0
CH-476	Organic Synthesis	3-0
CH-477	Medicinal Chemistry	3-0

Nanochemistry Group		
CH-461	Nanobiology	3-0
CH-462	Nanohybrid Systems	3-0
CH-463	Adv Nanomaterials	3-0
CH-464	Analytical Tech in Nanochemistry	3-0
CH-465	Nanomaterials for Envmt and Catalysis	3-0
CH-466	Nanochemistry-II	3-0

Inorganic Chemistry Group		
CH-450	Organometallics	3-0
CH-451	Chemical Crystallography	3-0
CH-454	Group Theory in Chemistry	3-0
CH-453	Inorganic Polymers	3-0
CH-455	Coordination Chemistry	3-0

Physical Chemistry Group		
CH-480	Solid State Chemistry	3-0
CH-481	Quantum Chemistry	3-0
CH-482	Radiation and Photochemistry	3-0
CH-483	Polymer Chemistry	3-0
CH-484	Adv Chemical Kinetics	3-0
CH-485	Colloid and Surface Chemistry	3-0

MS and PhD Programmes

SNS offers postgraduate programmes leading to the degrees of MS and PhD in Mathematics, Physics and Chemistry.

MS: The MS programme at SNS comprises 24 credit hours of coursework followed by a research phase culminating in a dissertation carrying a weight of 6 credit hours. The MS degree is designed to broaden the appreciation and deepen the understanding of the subject, and to acquaint our students with the latest research trends in various areas of Mathematics, Physics and Chemistry. The MS degree can better enhance one's job prospects and, in addition, facilitatesseeking admission to PhD programme.

PhD: The PhD programme at SNS comprises 18 credit hours of coursework followed by a research phase culminating in a dissertation carrying a weight of 36 credit hours based on a highly individualized, investigative and creative study which will make a significant contribution to knowledge. A unique feature of our PhD programme is that the students are required to deliver three seminars in addition to the public defence of their dissertation; one in the chosen field of research, one in the thrust area but not directly related to the research topic, and one in an area other than the thrust area. This is designed so as to encourage both breadth and depth of knowledge and understanding. Additionally, all candidates for the PhD degree must pass a comprehensive examination that tests them on the fundamental concepts in Mathematics/Physics/Chemistry in general, as well as the basic ideas in their chosen field of research.

Mathematics

The thrust areas in Mathematics are:

- Algebra
- Analysis
- Computational Mathematics
- Differential Equations
- Discrete Mathematics
- Mathematical Physics

The list of core and elective courses offered in the academic year 2016-17 is given below. All courses carry 3 credit hours unless otherwise specified.

Scheme of Studies

Programme Code:N719/819

Mathematics Programme

Course Code	Course Title	Credits	Course Code	Course Title	Credits
MATH-801	Algebra	3	MATH-804	Differential Equations	3
MATH-802	Analysis	3	MATH-899	MS Thesis	6
MATH-803	**Geometry**	**3**			

Elective Courses

Course Code	Course Title	Credits
MATH-807	Commutative Algebra	3
MATH-823	Numerical Methods for Differential Equations	3
MATH-817	Advanced Functional Analysis	3
MATH-818	Theory of Ordinary Differential Equations	3
MATH-819	Analysis of Fractional Differential Equations	3
MATH-820	Calculus of Variations and Optimal Control	3
MATH-821	Analytical Approximate Solutions of ODEs	3
MATH-822	Mathematical Modelling-I	3

MATH-903	Partial Differential Equations-I	3
MATH-905	Symmetry Methods for Differential Equations-I	3
MATH-908	Fixed Point Theory	3
MATH-909	Continuum Mechanics-I	3
MATH-911	Special Functions	3
MATH-941	Graph Theory	3
MATH-943	Convex Analysis	3
MATH-944	Semigroup Theory of Operators	3
MATH-945	Lie Group Representations	3
MATH-946	Category Theory	3
MATH-949	Combinatorics	3
MATH-955	General Relativity and Cosmology	3
MATH-956	Finite Volume Method	3
MATH-957	Algebraic Topology	3
PHY-801	Classical Mechanics	3
PHY-803	Quantum Mechanics	3
PHY-805	Electromagnetism	3
PHY-806	Thermal Physics	3
PHY-902	Quantum Field Theory-I	3
PHY-907	General Relativity	3
PHY-912	Relativistic Astrophysics	3
PHY-920	Classical Field Theory	3
STAT-806	Statistical Learning	3
ME-881	Advanced Fluid Mechanics	3
Additional Courses		
RM-898	Research Methodology	2
SEM/WKSP-897	Seminar / Workshop	1

PhD Courses

Core Courses

Course Code	Course Title	Credits
MATH-801	Algebra	3
MATH-802	Analysis	3
MATH-803	Geometry	3
MATH-804	Differential Equations	3
MATH-807	Commutative Algebra	3
MATH-823	Numerical Methods for Differential Equations	3
MATH-817	Advanced Functional Analysis	3
MATH-818	Theory of Ordinary Differential Equations	3

MATH-819	Analysis of Fractional Differential Equations	3
MATH-820	Calculus of Variations and Optimal Control	3
MATH-821	Analytical Approximate Solutions of ODEs	3
MATH-822	Mathematical Modelling-I	3
MATH-903	Partial Differential Equations-I	3
MATH-904	Partial Differential Equations-II	3
MATH-905	Symmetry Methods for Differential Equations-I	3
MATH-906	Symmetry Methods for Differential Equations-II	3
MATH-908	Fixed Point Theory	3
MATH-909	Continuum Mechanics-I	3
MATH-910	Continuum Mechanics-II	3
MATH-911	Special Functions	3
MATH-941	Graph Theory	3
MATH-943	Convex Analysis	3
MATH-944	Semigroup Theory of Operators	3
MATH-945	Lie Group Representations	3
MATH-946	Category Theory	3
MATH-949	Combinatorics	3
MATH-951	Mathematical Modelling-II	3
MATH-955	General Relativity and Cosmology	3
MATH-956	Finite Volume Method	3
MATH-957	Algebraic Topology	3
PHY-801	Classical Mechanics	3
PHY-803	Quantum Mechanics	3
PHY-805	Electromagnetism	3
PHY-806	Thermal Physics	3
PHY-902	Quantum Field Theory-I	3
PHY-907	General Relativity	3
PHY-908	Cosmology-I	3
PHY-912	Relativistic Astrophysics	3
PHY-914	Particle Physics-I	3
PHY-920	Classical Field Theory	3
ME-881	Advanced Fluid Mechanics	3
MATH-960	Reading and Research-I	3
MATH-961	Reading and Research-II	3
MATH-982	Seminar Delivered-G*	0
MATH-984	Seminar Delivered-R*	0
MATH-999	PhD Thesis	30
Additional Courses		
SEM/WKSP 997	Seminar / Workshop	1

Physics

The thrust areas in Physics are:

- Astrophysics
- Cosmology
- High Energy Physics
- Nanotechnology
- Plasma Physics
- Relativity
- Theoretical Quantum Physics

The list of core and elective courses is given below. All courses carry 3 credit hours unless otherwise specified.

Core Courses

Scheme of Studies

Programme Code N: 730/830

Mathematics Programme

Course Code	Course Title	Credits
PHY-803	Quantum Mechanics	3
PHY-806	Thermal Physics	3
PHY-801	Classical Mechanics	3
PHY-805	Electromagnetism	3
PHY-899	**MS Thesis**	**6**

Elective Courses

Course Code	Course Title	Credits
PHY-802	Methods of Mathematical Physics	3
PHY-804	Differential Equations	3
PHY-807	Topics in Mathematical Physics	3
PHY-901	Advanced Quantum Mechanics	3
PHY-902	Quantum Field Theory-I	3
PHY-903	Foundations of Quantum Mechanics	3
PHY-904	Quantum Field Theory-II	3
PHY-905	Quantum Field Theory-III	3
PHY-906	Geometry	3
PHY-907	General Relativity	3
PHY-908	Cosmology-I	3
PHY-909	Cosmology-II	3
PHY-910	Two-Component Spinor Formalism	3
PHY-911	Twistor Theory	3
PHY-912	Relativistic Astrophysics	3
PHY-913	Supermassive Black Holes	3
PHY-914	Particle Physics-I	3
PHY-915	Particle Physics-II	3
PHY-916	Group Theory for Physicists	3
PHY-917	Atomic and Molecular Spectroscopy	3
PHY-918	Introduction to Quantum Optics	3
PHY-919	Astrophysics	3
PHY-920	Classical Field Theory	3
PHY-921	Plasma Physics	3
PHY-922	Nanophysics	3
PHY-923	Quantum Information and Quantum Computation	3
PHY-924	Experimental Techniques of Physics	3
PHY-925	Optical Properties and Spectroscopy	3
PHY-926	Condensed Matter Physics	3
PHY-927	Atom Optics	3
PHY-961	Reading and Research-I	3
PHY-962	Reading and Research-II	3
PHY-963	Reading and Research-III	3
PHY-971	Courses from Other NUST Institutions	3

PHY-981	Seminar Attendance (Non Credit)	0
PHY-982	Seminar Delivered – G (Non Credit)	0
PHY-984	Seminar Delivered – R (Non Credit)	0
PHY-983	Seminar Delivered – T (Non Credit)	0
PHY-999	**PhD Thesis**	**30**

My Experience at SNS

"What is most distinctive about SNS is the high standards that it holds for quality and objectivity and the growth opportunities that it provides to talented, hard-working people."

Ibrar Hussain
Assistant Professor

Chemistry

Chemistry is an incredibly multidisciplinary science at NUST. The Department of Chemistry, School of Natural Sciences (SNS) offers research intensive programmes leading to Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in Chemistry, giving talented and motivated students the chance to make discoveries in chemical science and related disciplines. Our programme is designed to provide students with a broad background in chemistry while simultaneously offering opportunities to do cutting-edge, multidisciplinary research. Research opportunities are available in a wide-range of contemporary areas of chemistry, including organic, inorganic, physical, analytical, polymer, environmental and nano-materials chemistry.

The aim of the graduate programme in chemistry is to provide an environment for individuals to develop the skills to become leaders in scientific research and education, capable of making original contributions to the advancement of chemistry. The first year is devoted mainly to advanced coursework with the opportunity to begin research in the latter part of the year. During the second and subsequent years, the major emphasis is given to research for both MS and PhD students.

We are seeking students with a strong background in chemistry and the motivation and enthusiasm to pursue new and unsolved research questions.

Scheme of Studies

Programme Code: N760/860

Chemistry Programme

Course Code	Course Title	Credits
CH 801	Organic Chemistry	3
CH 802	Physical Chemistry	3
CH 803	Inorganic Chemistry	3
CHE 823	Advanced Analytical Techniques	3
CH-899	**MS Thesis**	**6**

Elective Courses

Course Code	Course Title	Credits
CH-804	Advanced Techniques in Physical Chemistry	3
CH-805	Advanced Thermal Analysis	3
CH-806	Chemical Kinetics	3
CH-807	Coordination Chemistry	3
ENS-820	Environmental Chemistry	3
CH-808	Industrial Chemistry	3
CH-809	Medicinal Chemistry	3
CHE-816	Molecular Nanotechnology	3
CH-810	Nanochemistry	3
CH-811	Organic Synthesis	3
CH-812	Pharmaceutical Chemistry	3
CH-813	Photochemistry	3
PSE-821	Polymer Chemistry	3
CH-814	Research Methodology	3
CH-815	Stereochemistry	3
CH-816	Supramolecular Chemistry	3
CH-817	Topics in Inorganic Chemistry	3
CH-818	Topics in Organic Chemistry	3
CH-819	Topics in Physical Chemistry	3
CH-820	Green Chemistry	3
CH-821	Phase Diagrams for Material Synthesis	3
CH-822	Heterogeneous Catalysis	3

The MS programme requires a minimum of 24 credit hour (CH) course work and a 6 CH research work. After completing the core courses in first semester, MS students will study four elective courses from the courses being offered followed by research work.

List of PhD Courses (any six)

Course Code	Course Title	Credits
CH-901	Advanced Inorganic Chemistry	3
CH-902	Advanced Organic Chemistry	3
CH-903	Advanced Spectroscopy	3
CH-904	Modern Trends in Analytical Chemistry	3
CH-905	Nano / Biodevices	3
CH-906	Stereoselective Synthesis	3
CH-907	Advanced Physical Chemistry	3
CH-908	Review Paper	3
CH-909	Seminar	3
CH-910	Research Methodology	3
CH-911	Carbon Nanomaterials	3
CH-912	Solar Photovoltaics	3
CH-913	Thermoelectrics	3
CH-914	Asymmetric Synthesis	3
CH-801	Organic Chemistry	3
CH-802	Physical Chemistry	3
CH-803	Inorganic Chemistry	3
CHE-823	Advanced Analytical Techniques	3
CH-804	Advanced Techniques in Physical Chemistry	3
CH-805	Advanced Thermal Analysis	3
CH-806	Chemical Kinetics	3
CH-807	Coordination Chemistry	3
ENS-820	Environmental Chemistry	3
CH-808	Industrial Chemistry	3
CH-809	Medicinal Chemistry	3
CHE-816	Molecular Nanotechnology	3
CH-810	Nanochemistry	3
CH-811	Organic Synthesis	3
CH-812	Pharmaceutical Chemistry	3
CH-813	Photochemistry	3
PSE-821	Polymer Chemistry	3
CH-814	Research Methodology	3
CH-815	Stereochemistry	3
CH-816	Supramolecular Chemistry	3
CH-817	Topics in Inorganic Chemistry	3
CH-818	Topics in Organic Chemistry	3
CH-819	Topics in Physical Chemistry	3
CH-820	Green Chemistry	3
CH-999	**PhD Thesis**	**30**

Note: PhD Students will complete the requirements of 800/900 level coursework (18 CH) to be decided by the doctoral Guidance and Examination Committee (GEC). Students will be required to qualify comprehensive exam conducted by department before the start of research work.
Any relevant courses from other departments will be available to the Students with the consent of GEC and permission of concerned HoD.

MS Statistics

At NUST, statistics is a remarkably multidisciplinary science. The School of Natural Sciences (SNS) offers research-intensive programmes leading to a Master of Science degree in Statistics, allowing talented and motivated students to make breakthroughs in related fields. Our programme is designed to give students a broad foundation in statistics while also providing opportunities for cutting-edge, multidisciplinary research.

The goal of the programme is to provide students with the academic background and research skills needed to contribute effectively to challenging projects in statistics and related fields such as engineering statistics, spatial statistics, medical statistics, econometrics, and bioinformatics.

The first year is primarily devoted to advanced coursework, with the option to begin research in the later half of the year. For MS students, the emphasis is on research during the second year. MSc or BS (16 years of education) in Statistics, Mathematics, Data Science, Actuarial Science, or equivalent is required for admission to the MS Statistics programme. We are looking for students who are highly motivated and enthusiastic about pursuing new and unanswered research questions.

Core Courses

Scheme of Studies

Programme Code: N775

Mathematics Programme

Course Code	Course Title	Credits
STAT-821	Probability Theory	3
STAT-822	Statistical Inference	3
STAT-803	Generalized Linear Models	3
STAT-804	Multivariate Analysis	3
STAT-899	**MS Thesis**	**6**

General Electives

Course Code	Course Title	Credits
STAT-805	Bayesian Inference	3
STAT-806	Statistical Learning	3
STAT-807	Statistical Process Control	3
STAT-808	Time Series and Forecasting	3
STAT-809	Survival Data Analysis	3
STAT-810	Applied Stochastic Models	3
STAT-811	Medical Statistics	3
STAT-812	Financial Econometrics	3
STAT-813	Statistical Signal Processing	3
STAT-815	Statistical Methods in Risk Management	3
STAT-814	Spatial Statistics	3

Additional Course

Course Code	Course Title	Credits
RM-898	Research Methodology	2
SEM/WKSP-897	Seminar / Workshop	1

ASAB

Atta-ur-Rahman School of Applied Biosciences

Atta-ur-Rahman School of Applied Biosciences

VISION & MISSION

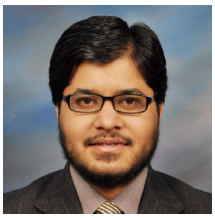
Atta-ur-Rahman School of Applied Biosciences (ASAB) constantly seeks to provide a responsive learning environment and creative thinking that enables the students to achieve their highest level of proficiency in their academic career and a better employment in the diverse areas of most rapidly expanding Biotechnology Industry. To achieve this vision, the mission has been designed carefully to provide students, both theoretical knowledge and practical hands on skills in the most demanding fields of health care, industrial and plant/agriculture biotechnology.

Faculty Profile

Prof Dr Hussnain A. Junjua, Principal

PhD (Imperial Collage), United Kingdom
Discipline: Industrial Biotechnology
Specialisation: Microbiology, Systembiology & Nanobiology

Department of Healthcare Biotechnology



Dr Touqeer Ahmed (HoD)
PhD (Aga Khan University), Pakistan
Discipline: Healthcare Biotechnology
Specialisation: Pharmacology & Neuroscience

Dr Attya Bhatti
PhD (Quaid-i-Azam University), Pakistan
Discipline: Healthcare Biotechnology
Specialisation: Molecular Genetics & Functional Genomics

Dr Sobia Manzoor
PhD (University of Punjab), Pakistan
Discipline: Healthcare Biotechnology
Specialisation: Parasitology, Molecular Stem Cell Biology, Molecular Virology (Hepatitis C)

Dr Sadia Zahid
PhD (University of Karachi), Pakistan
Discipline: Healthcare Biotechnology
Specialisation: Biochemistry & Neurobiology

Dr Peter John
PhD (Quaid-i-Azam University), Pakistan
Discipline: Healthcare Biotechnology
Specialisation: Human Genetics & Immunogenetics

Dr Rumeza Hanif
PhD (University College London), United Kingdom
Discipline: Healthcare Biotechnology
Specialisation: Cancer Genetics & Therapeutics

Dr Aneela Javed
PhD (Georg August University), Germany
Discipline: Healthcare Biotechnology
Specialisation: Virology & Immunology

Ms Yasmin Badshah
MPhil (COMSATS Institute of Information Technology), Pakistan
Discipline: Healthcare Biotechnology
Specialisation: Medical Microbiology

Dr Maria Shabbir
PhD (Quaid-i-Azam University), Pakistan
Discipline: Healthcare Biotechnology
Specialisation: Molecular Biology & Cancer Genetics

Dr Saira Justin
PhD (Goethe University Frankfurt), Germany
Discipline: Healthcare Biotechnology
Specialisation: Bladder Cancer & Integrative Medicine

Dr Salik Javed Kakar
MBBS Ayub Medical College/Khyber Medical University
PhD (The University of Manchester), United Kingdom
Discipline: Healthcare Biotechnology
Specialisation: Biomedicine, Gene Therapy & Molecular Genetics

Dr Miriam K. Gomez
PhD (University of Edinburgh), United Kingdom
Discipline: Healthcare Biotechnology
Specialisation: Genetics & Molecular Medicine

Dr Dilawar Khan
PhD (Goethe University Frankfurt), Germany
Discipline: Healthcare Biotechnology
Specialisation: Cancer Stem cells & Cancer Signaling

Department of Plant Biotechnology

Dr Muhammad Qasim Hayat (HoD)
PhD (Quaid-i-Azam University), Pakistan
Discipline: Plant Biotechnology
Specialisation: Molecular Phylogenetics & Medicinal Plants

Dr Alvina Gul
PhD (Quaid-i-Azam University), Pakistan
Discipline: Plant Biotechnology
Specialisation: Wheat Improvement in a Holistic Manner

Dr Muhammad Tahir
PhD (University of the Punjab), Pakistan
Discipline: Plant Biotechnology
Specialisation: Artificial microRNA based gene silencing; Begomoviruses (Cotton, Tomato), Barley yellow dwarf virus, Sugarcane mosaic virus; Plant transformation; Development of antibodies against Begomoviruses

Dr Faraz Bhati
PhD (Imperial College), United Kingdom
Discipline: Plant Biotechnology
Specialisation: Molecular Biology, Virology & Mychoviruses

Dr Nasar-um-Minullah
PhD (Zhejiang University), China
Discipline: Plant Biotechnology
Specialisation: Plant Cell Signaling

Dr Rabia Amir
PhD (University of Edinburgh), United Kingdom
Discipline: Plant Biotechnology
Specialisation: Plant Cell Signalling

Salik Hasan Aslam
MSc (The University of Melbourne), Australia
Discipline: Plant Biotechnology
Specialisation: Industrial Application and Commercialization of Biotechnology research

Dr Faiza Munir
PhD (Quaid-i-Azam University), Pakistan
Discipline: Plant Biotechnology
Specialisation: Plant Biochemistry and Molecular Biology

Ms Nosheen Fatima
MPhil (Kansas State University), USA
Discipline: Plant Biotechnology
Specialisation: Quantitative Genetics

Dr Ghulam Haider
PhD (Justus-Liebig University Giessen) Germany
Discipline: Plant Biotechnology
Specialisation: Plant ecophysiology, nutrition, bioremediation and carbon sequestration

Dr Muhammad Waqas Alam Chattha
PhD (The University of Sydney), Australia
Discipline: Agribusiness Management
Specialisation: Agricultural and Resource Economics, Spatial Economics and Econometrics, Environmental Economics

Dr Khurram Yousaf
PhD (Nanjing Agricultural University), China
Discipline: Agribusiness Management
Specialisation: Agricultural Mechanization Engineering, Post-harvest Processing of Agricultural Commodities, Mechanical Drying

Department of Industrial Biotechnology

Dr Saadia Andleeb (HoD)
PhD (Quaid-i-Azam University), Pakistan
Discipline: Industrial Biotechnology
Specialisation: Microbiology

Dr Abdul Rahman
PhD (Universite de Lorraine Nancy), France
Discipline: Industrial Biotechnology
Specialisation: Food processing and Biotechnology

Dr Najam-us-Sahar Sadaf Zaidi
PhD (University of the Punjab), Pakistan
Discipline: Industrial Biotechnology
Specialisation: Biotechnology / Molecular Biology / Flaviviruses / Avian Influenza Virus

Dr Tahir Ahmad Baig
PhD (University of the Punjab), Pakistan
Discipline: Industrial Biotechnology
Specialisation: Enteric virus, Molecular Biology. Environmental Toxicology

Dr Amjad Ali
PhD (Universidade Federal de Minas Gerais Belo Horizote), Brazil
Discipline: Industrial Biotechnology
Specialisation: Genomics, Bioinformatics and Systems Biology

Dr Fazal Adnan
PhD (Justus-Liebig University of Giessen), Germany
Discipline: Industrial Biotechnology
Specialisation: Bacterial gene expression and regulation, RNA biology, RNomics

Dr Shah Rukh Abbas
PhD (University of Cambridge), United Kingdom
Discipline: Industrial Biotechnology
Specialisation: Nanotechnology, Biosensors, Natural polymers, Ultrasound contrast agents, Theranostics

Collaborations

Besides working in partnership with some key national institutes, ASAB has active international collaborations with several foreign universities including centres of excellence in China, the US and Europe. These collaborations enable students to go abroad for training to acquire professional skills. Information on these collaborative initiatives is given below.

National Collaborations

University/organization of the collaborator	Areas of Collaboration
Pakistan Council for Sciences & Technology (PCST)	Establishment of National Analytical Laboratory for Substances of Abuse
University of Animal and Veterinary Science, Lahore	Transgenic Mice, Small Primate Model for HCV
King Edward Medical University, Lahore	Human Papilloma Viruses (HPV)
Agha Khan University, Medical College, Karachi	Antiviral Testing
PIAES University, Pakistan Atomic Energy Commission, Islamabad	Biophotonics, Confocal Microscopy
National Institute of Health, Islamabad	Dengue Virus
National Institute for Biotechnology and Genetic Engineering (NIBGE), Faisalabad	Leukemia
Agricultural Biotechnology Division, NIBGE, Faisalabad	Cotton
School of Biological Sciences, PU, Lahore	Proteomics
Institute of Agricultural Sciences, PU, Lahore	Cotton leaf curl disease

International Collaborations

University of the Collaborator	Title of the Project
Department of Rheumatology, University of Toronto, Canada	Study of neurological disorders from Pakistani families
Department of Rheumatology, University of Pittsburgh, USA	Identification of susceptibility genes involved in Rheumatoid arthritis & systemic Lupus Erythematosus.
Department of Rheumatology, Oxford University, UK	siRNA based therapeutic interventions for Rheumatoid Arthritis
Department of Microbiology & Immunology, University of North Carolina, USA	siRNA based inhibition of dengue virus
Bioscience Center, Purdue University, USA	Construction of Dengue Virus Sub-genomic Replicon & testing of inhibitors
Department of Medicine, Oxford University, UK	Vaccinal strategies against influenza virus
Biomaterials & Advanced Drug Delivery Laboratory, Stanford University, USA	Construction of virosomes against influenza virus
Pasteur Institute, France	Role of HCV core protein in viral life cycle
Genomics Research, University of Manchester, UK	HCV induced IL-12 Expression
Department of Neurology, Georg-August University, Germany	Strategies for neuroregeneration in neurodegenerative mice models
College of Medicine, Al-Faisal University, Riyadh, KSA	Role of Psycho-stimulants in Alzheimer's disease: A proteomics study
Centre for Biological Sciences, Southampton University, UK	Identification and functional characterization of P2A and P2B type Ca2+ ATPases in different species of Gramineae.
Department of Microbiology and Infectious diseases, Rosalind Franklin University of medicine and Science, USA	Role of hepatitis C virus non-structural proteins in the induction of insulin resistance
Department of Medicine, University of California, USA	Evaluate the cellular & molecular effects of HCV non-structural/structural protein expression on genes involved in mitochondria mediated apoptosis pathway
Department of Pediatrics, University of North Carolina, USA	Evaluation of therapeutic efficacy of INF treatments in HCV infected SVR & non-SVR patients
Department of Microbiology and Immunology, Pennstate College of Medicine, USA	Molecular variants & conserved cysteine residues in HPV 16 encapsidation and infection
Center for Physiology and Pharmacology, Department of Vascular Biology and Thrombosis Research, Medical University of Vienna, Austria	Effect of molecular interaction of IKK on oncogenic cellular transformation and regulation
Virology, KU University of Leuven, Belgium	Testing of immunomodulatory and antiviral compounds against HCV
University of Barcelona, Spain	Barcoding & Phylogenetics of Artemesia
Department of Surgery, University of Toronto, Canada	Molecular biology of immunomodulatory systems
Emerging Pathogens Institute, University of Florida, USA	Bacteriophage therapy of biofilm forming bacteria
Biomedical Engineering, Washington University in St. Louis, USA	Comparative analysis of antibiotic resistance markers in US and Pakistani enterobacteriaceae isolates
Department of Biology, Emory University, USA	Population dynamics of bacteriophages against microbes of diabetic foot ulcers
Department of Medicine, University of California, San Diego National Institute of Laser & Optronics, Pakistan	HBV associated hepatocellular carcinoma in Pakistan

Sanford Children's Health Research Center, University of California	Effect of vitamin C on cancer
Department of Molecular Biology and Genetics, AARHUS UNIVERSITY	To identify the responsible transcription factors involved in the expression of IL-28R.
Department of Plant Virology, DSMZ, Germany	Development of antibodies, infectious clones & infectivity studies of Cotton Leaf Curl Multan Virus
School of Plant Sciences, University of Arizona	Development & validation of cotton infecting begomoviral induced cell death via a modified beta satellite containing the Cyt c gene.
Department of Plant Pathology, University of Florida	Development and validation of transgenic virus resistance in Nicotiana benthamiana by expression of artificial microRNA carrying begomovirus derived sequences
Department of Plant Sciences, University of McGill	Artificial microRNA mediated transgenic resistance against Sugarcane mosaic virus in Nicotiana benthamiana
School of cancer Sciences, University of Birmingham	Development & designing of effective vaccine against human papillomavirus using genotype 16 & 18
School of Pharmaceutical Sciences, University of São Paulo	Influence of protein energy malnutrition in the cell cycle of bone marrow mesenchymal stem cells
Institut Gustave Roussy, Villejuif, France	Corelation between diabetes and chemotherapeutic resistance in breast cancer
German Primate Centre, Georg August University, Germany	MicroRNA profiling of HIV individuals in Pakistani population
Federal University of Minas Gerais, Brazil	Genome sequencing, assembly & annotation
Institute of Integrative Omics and Applied Biotechnology, India	Microbial genomics: Identification of drugs & vaccine candidates
Institute for Human Genetics, University of Jena, Germany	Gene mapping in Rare Neurogenetic syndromes
RILD Wellcome Wolfson Centre, University of Exeter, UK	Genetic studies in Primary microcephaly and epilepsy
Agricultural flagship, Commonwealth Scientific Industrial and Research Organization (CSIRO) ACT, Australia.	Transgenic resistance against Sugarcane mosaic virus

Fact file

ASAB faculty has secured an amount of 148 million PKR from different national and international funding agencies.

Student Support Facilities

Research Laboratories

ASAB has established the following laboratories, with state-of-the-art equipment:

- Viral Hepatitis Laboratory
- Hepatitis B Virus Lab
- Bacteriophage Laboratory
- Flavivirus Laboratory
- Antiviral Laboratory
- Cancer Research Laboratory
- Vaccinology Laboratory
- Molecular Immunology Laboratory
- Plant Pathology Laboratory
- Plant Virology Laboratory
- Plant Tissue Culture Laboratory and Insectory
- Molecular Diagnostic Laboratory
- Nanobiotech Laboratory
- Medicinal Chemistry Laboratory
- Functional Genomics & Immunogenetics Laboratory
- Laboratory Animal House
- Glass house
- Plant Systematics and evolution Laboratory
- Medicinal Plants Research Lab

Library

ASAB library is well-stocked with books, journals and magazines. The library database is remotely accessible. The library can arrange reading material from other libraries when required.

Events

The exchange of scientific information and ideas is very important for scientific discoveries. With the global economic recession, science in developed countries is suffering from deep budget cuts. Atta-ur-Rahman School of Applied Biosciences (ASAB) is committed to embodying a creative force in our researchers through a multidisciplinary research programme. According to Dr Craig Venter, a world leading geneticist, 'if the 20th century was the century of physics, the 21st century will be the century of biology'. Bioscience Club at ASAB is an effort to bring together scientists from different fields of biology at NUST platform to keep us updated with the recent advances in the field of biology.

Following conferences/seminars/workshops were organized by ASAB in collaboration with other organizations in the year 2017.

- A seminar entitled "Advances in Automated Karyotyping" was organized by ASAB in collaboration with Penicon-Pakistan. Dr Jamal Maaz from USA gave a beautiful talk about new software for karyotyping.
- A national seminar and workshop on "Emerging Viral Threats: Ebola & Congo" was organized by ASAB in collaboration with Chemical House, Pakistan; Merck Pvt Ltd, Pakistan; The Worldwide Scientific, Pakistan; and Musajee Adam & Sons. Pakistan. Key note speakers and trainers include Dr Birjees Mazhar Kazi, Executive Director NIH, Islamabad, Dr Najma Javed, Head PMRC-CRC at NIH Islamabad, Dr Muhammad Salma, Senior Scientific Officer, NIH, Islamabad.
- A national seminar entitled "Seminar on Genetic Disorders: From awareness to diagnosis" was organized by ASAB in collaboration with National Academy of Young Scientists Pakistan (NAYS). Professor Dr Shahid Mahmood Baig (SI), NIBGE, Faisalabad, and Professor Dr Muhammad Ismail, IBGE, Islamabad, were key note speakers at the event.

Following students of ASAB won prizes at different occasions in the year 2017

- Tahir Hussain, PhD student at the Atta-ur-Rahman School of Applied Biosciences (ASAB) won a $3000 travel grant from the prestigious American Society for Microbiology to present his abstract in the 114th general meeting of the American society for microbiology held at Boston, Massachusetts, USA from May 17-20, 2014
- A National competition the 'National Science Communication Challenge' was organized by National Academy of Young Scientists (NAYS) and American society of Microbiology that called for posters, videos, brochures and advertisements related to various health and public awareness issues. A team of NUST students consisting of Nida ul Fatima, Rabia Anwer and Tahir Hussain from ASAB and Sheeraz Ahmad from SMME participated in the competition and were declared First in the poster design and Runners-up in the overall challenge. The team has been granted a travel grant to attend any upcoming national conference, and was presented award letters by the DG CAMP-Punjab University.
- Tahira Khan a Masters student of healthcare biotechnology at the Atta-ur-Rahman School of Applied Biosciences (ASAB), NUST Islamabad, presented a poster on her Bachelors research thesis, namely" Newcastle disease virus mediated virotherapy for hepatocellular carcinoma", and won the prize for the best research poster in healthcare category. This event was organized by COMSATS in collaboration with ECO-science foundation (ECOSF) and UNESCO on World Science day for peace and development on November 12, 2014.
- Zoya Ghori, a student of MS Plant biotechnology ASAB NUST won the prize for the best poster in Biosciences category. Her poster entitled "Mycoviruses- Natural fungicides of the future" based on the application of hypovirulent mycoviruses as biological control agents of plant pathogenic fungi that can potentially revolutionized our country's agriculture sector. This event was organized by COMSATS in collaboration with ECO-science foundation (ECOSF) and UNESCO on World Science day for peace and development on November 12, 2014.

NUST Journal of Natural Sciences

For efficient dissemination of information about molecular biology, biotechnology and virology/immunology, ASAB is contributing the biennial publication of a Journal by the name of "NUST Journal of Natural Sciences".

Student Societies

Currently, the following societies are functional at ASAB

- ASAB Art and Culture Society
- GeneUs
- NUST Horticulture Society
- BioReach Society
- ASAB Students' Club

CONTACT US

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Atta-ur-Rahman School of Applied Biosciences
NUST, H-12 campus, Islamabad, Pakistan

Academic Programmes

Biotechnology (Health, Plant and Industrial) and Agribusiness Management the specialized MS/PhD Programme of Study, provide resources to the teacher to facilitate rigorous instruction and increase the level of student understanding related to biotechnology and Agribusiness concepts. Students will complete hands-on activities, projects, and problems designed to build content knowledge and technical skills in the field of biotechnology. Research and experimental design will be highlighted as students develop and conduct industry appropriate investigations.

The MS/PhD Biotechnology and Agribusiness Programmes are designed to provide a more rigorous preparation for advanced study in the Applied Biosciences. The programs are tailored not only to students who intend to pursue a career in academic or research but also for students who obtain employment in commercial organization in the biotechnology field. The curriculum will increase the breath of graduate training and afford a greater range of educational possibilities and career options. The courses will provide platform for students in understanding the theoretical and practical aspects of biotechnology and Agribusiness. In 2020, ASAB has published 101 publications in research journals.

BS Biotechnology

Programme Description

ASAB is determined to deliver rigorous and inspiring education in the field of Applied Biosciences. The curriculum for BS Biotechnology is designed to promote innovative learning styles and a solid foundation in applied biosciences. The courses are dynamic, internationally aligned and evolve with the changing requirement of Industry.

Research

The proposed programme will provide opportunities for students to develop knowledge and understanding of biosciences within the context of applications in biomedical, health and food sciences. It will also build work-related competences, enterprise skills and transferable skills. It will enhance their employability as professional as public health, mediscience and food industry staff, and open up progression pathways to higher degrees in biosciences. It is planned for graduates intending to develop their careers in the biosciences and biotechnology sectors, especially: Healthcare, Molecular Clinical Diagnostic Technologies, Agricultural Biotechnology, Food Sciences and Associated Fields.

Career Opportunities

- Biotechnology Firms
- Academic and Scientific Institutions
- Pharmacological and pharmaceutical companies
- Research and Diagnostic domains

BS Biotechnology

Scheme of Studies

Programme Code: A677

Semester I		
Course Code	**Course Title**	**Credits**
	Natural Sciences- I	3+1
	Social Sciences -I	3+0
	QR-I	3+0
	A&H- I	3+0
HU-110	English -I (EW-I)	3+0
	Total	**16**

Semester II		
Course Code	**Course Title**	**Credits**
	Natural Sciences- II	3+1
	Social Sciences -II	3+0
	QR-II	3+0
	A&H- II	3+0
HU-108	Communication and Interpersonal Skills (EW-II)	3+0
	Total	**16**

Semester III		
Course Code	**Course Title**	**Credits**
HU-101	Islamic Studies	2+0
HU-107	Pak Studies	2+0
HU-210	Technical Writing (EW-III)	3+0
BIT-115	Cell Biology	2+1
BIT-217	Biochemistry-I	2+1
BIO-101	Biophysics	3+0
	Total	**16**

Semester IV		
Course Code	**Course Title**	**Credits**
BIT-210	Molecular Biology	3+0
BIT-218	Microbiology and Virology	2+1
BIT-116	General Genetics	2+1
BIT-110	Biotechnology	3+0
BIO-103	Biodiversity	2+1
	PLL	Non Credit
	Total	**15**

Semester V		
Course Code	**Course Title**	**Credits**
BIO-209	Enzymology	2+1
VAI-240	Immunology	3+0
BIT-313	Food Biotechnology	3+0
BIT-320	Biochemistry -II	2+1
BIT-215	Bioinformatics	2+1
	PLL	Non Credit
	Total	**15**

Semester VI		
Course Code	**Course Title**	**Credits**
BIT-319	Modern Research Techniques	2+1
BIO-203	Cell Signaling	3+0
BIT-410	Agriculture Biotechnology	2+1
BIT-312	Vaccinology (M)	2+1
BPH-276	Toxicology (DC)	3+0
	PLL	Non Credit
	Total	**15**

Semester VII		
Course Code	**Course Title**	**Credits**
BIT-411	Health Biotechnology	3+0
BIT-419	Environment Biotechnology	2+1
BIT-418	Genomics and Proteomics	2+1
BIT-413	Research Planning and Report Writing	3+0
RAB-499	Research Project	0+2
	PLL	Non Credit
	Total	**14**

Semester VIII		
Course Code	**Course Title**	**Credits**
BIT-415	Industrial Biotechnology	2+1
BIT-414	Gene Therapy and Viral Vectors	3+0
FAB-368	Fermentation Biotechnology	2+1
RAB-499	Research Project	0+4
	Total	**13**

Minor Specialties

Stream 1: Plant and Agriculture Biotechnology

Course Code	Course Title	Credits
VAI-345	Plant Virology	(3+0)
BPH-473	Medicinal Plants	(3+0)
VAI- 343	Plant Immunology	(3+0)
ABT-320	Principles of Crop Production	(3+0)
FAB-465	Sustainable Agriculture	(3+0)
PLB-436	Agriculture and Climate Change	(3+0)

Stream 3: Biopharmaceuticals and Diagnostics

Course Code	Course Title	Credits
BIO-204	Human Biology and Pathology	(2+1)
MTD-452	Introduction to Forensics	(3+0)
MTD-353	Clinical Biochemistry	(2+1)
BPH-371	Biopharmaceuticals and Basic Pharmacokinetics	(3+0)
BPH-372	Pharmacology	(2+1)
BPH-375	Immunopathology and Immunotherapy	(2+1)

University Minor Biotechnology

Course Code	Course Title	Credits
BIT-313	Food Biotechnology	3+0
BPH-276	Toxicology	3+0
BIT-411	Health Biotechnology	3+0
BIT-414	Gene Therapy and Viral Vectors	3+0

Stream 2: Industrial Biotechnology

Course Code	Course Title	Credits
MIC-357	Environmental Microbiology and Public health	(3+0)
MIC-450	Epidemiology: Analytical and Experimental Approaches	(3+0)
FAB-360	Intro to Food Analysis	(2+1)
MIC- 452	Food Preservation Technology	(3+0)
FAB-361	Food, Nutrition and Public Health	(3+0)
BIT-416	Biosensors and Chip Technologies	(3+0)

Stream 4: Allied Sciences

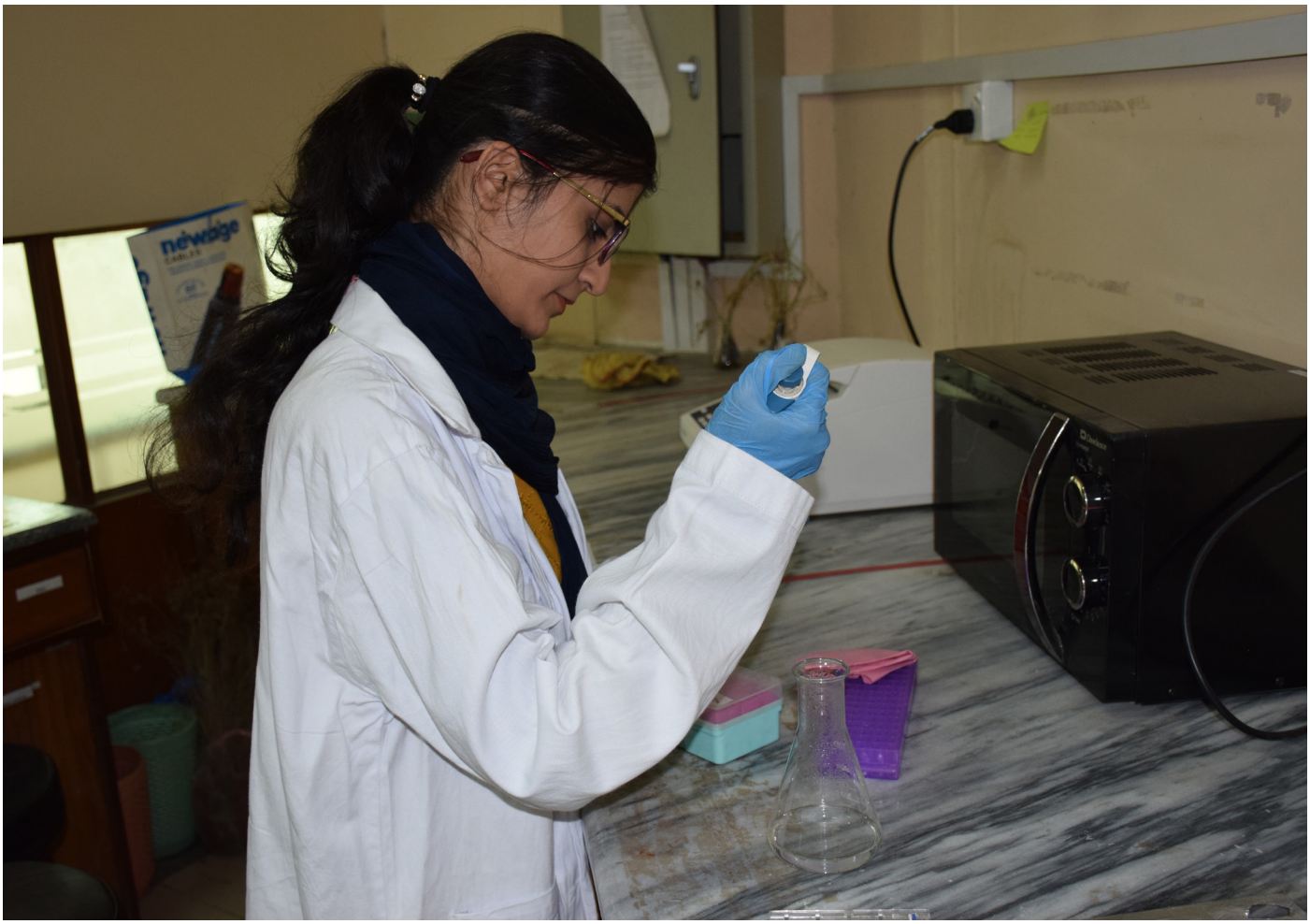
Course Code	Course Title	Credits
BIT-417	Principles of Biomedical Engineering	(2+1)
CHE-202	Chemical Process Technology	(3+1)
ENE-422	Industrial Waste Management	(3+0)
FAB-368	Fermentation Biotechnology	(2+1)
GIE-103	Introduction to GIS	(2+1)
MSE-385	Biomaterials and Applications	(3+0)

Fact file

ASAB has established international collaboration with 14 universities of repute in USA, China and European countries. It has active linkages with 6 reputed universities in Pakistan.

A state-of-the-art diagnostic laboratory at ASAB is rendering community services based on the philosophy that no one should be denied adequate healthcare due to lack of means. Special discounts ranging between 40 to 50% are available on the already reduced prices for each test.

ASAB plans to add new programmes to its already impressive portfolio such as Forensic Biology, Cancer Biology, Organ Transplantation, Plant Virology and Medicinal Plant Biology.



MS Healthcare Biotechnology

Programme Description

The Virology and Immunology programme provides students a unique opportunity to study all aspects of pathogenesis using a spectrum of cutting-edge molecular and cellular techniques that look at effects, treatment and cure at the level of the organism. The programme provides an opportunity to tailor coursework and research activities to fit the career goals of individual students.

Research

The ASAB interdisciplinary research programmes reflect the richness and diversity of our research endeavors. ASAB programmes focus on understanding the molecular organization, structure and associated gene expression profile of viruses. This understanding can help curb major viral pathogenesis in the animal and plant kingdoms because the hallmark of all viruses is to induce molecular gene expression leading to aberrant cellular alterations, the cause of over 500 major viral diseases.

Career Opportunities

Our degree programmes fully meet employers' needs and so our graduates enjoy excellent career prospects. Our graduates are well-equipped to tap the vast opportunities available in academia, biotechnology, the pharmaceutical industry and research and diagnostic domains.

Scheme of Studies

Programme Code: A747

Core Courses

Course Code	Course Title	Credits
ABS-831	Gene and Cell Technology	3
HCB-810	Human Health and Disease	3
ABS-933	Principles of Molecular Biology	3
HCB-812	Molecular Genetics	3
ABS-899	**MS Thesis**	**6**

Elective Course (Any three)

Course Code	Course Title	Credits
ABS-830	Molecular Biochemistry	3
ABS-832	Biosafety & Ethics of Biotechnology	3
ABS-833	Biostatistics & Biometry	3
ABS-834	Contemporary Biology and Biotechnology for Innovation	3
ABS-839	Proteomics	3
ABS-930	Molecular Phylogenetics	3
ABS-931	Trends in Cell Biology	3
ABS-936	Genomics and Transcriptomics	3
ABS-937	Physiology of Ion Channels	3
ABS-938	CRISPR Gene Editing	3
HCB-811	Cancer Genetics	3
HCB-813	General & Molecular Immunology	3
HCB-814	Immunogenetics	3
HCB-815	Advances in Immunology	3
HCB-816	Membrane Topology and Signal Transduction	3
HCB-817	Cancer Biology	3
HCB-818	Molecular Microbiology	3
HCB-819	Gene Therapy	3
HCB-840	Introduction to Public Health	3
HCB-841	Molecular Medicine	3

HCB-842	Forensic Biology	3
HCB-910	Cell Cycle Regulation	3
HCB-911	DNA Damage and Repair	3
HCB-912	Molecular Virology	3
HCB-913	Viral Pathogenesis	3
HCB-914	Neurobiology	3
HCB-915	Neuropharmacology	3
HCB-916	Nervous System Disorders	3
HCB-917	Biopharmaceuticals	3
HCB-918	Molecular Pharmacology	3
HCB-943	Clinical Virology	3
HCB-944	Metabolomics: Methods & Applications	3
HCB-945	Behavioural Neuroscience	3
Additional Course		
RM-898	Research Methodology	2
SEM/WKSP-897	Seminar / Workshop	1

MS Industrial Biotechnology

Scheme of Studies

Programme Code: A748

Core Courses

Course Code	Course Title	Credits
IBT-820	Industrial Biotechnology & Microbiology	3
ABS-933	Principles of Molecular Biology	3
IBT-822	Bioprocess Engineering	3
IBT-827	Immunization and Vaccine Development	3
ABS-899	**MS Thesis**	**6**

Elective Course (Any three)

Course Code	Course Title	Credits
ABS-831	Gene and Cell Technology	3
ABS-832	Biosafety and Ethics of Biotechnology	3
ABS-833	Biostatistics & Biometry	3
ABS-834	Contemporary Biology and biotechnology for Innovation	3
ABS-836	Microbial Genomics	3
ABS-837	Biosensors and Chip Technologies	3
ABS-838	RNA Biology	3
ABS-930	Molecular Phylogenetics	3
ABS-931	Trends in Cell Biology	3
ABS-932	Genomics, Proteomics and Bioinformatics	3
ABS-934	Synthetic Biology	3
ABS-938	CRISPR Gene Editing	3
IBT-821	Protein: Structure, Function and Engineering	3
IBT-823	Food Microbiology	3
IBT-824	Biochemistry and Enzymology	3
IBT-825	Environmental Toxicology and Risk Management	3

IBT-826	Advance Computational Biology	3
IBT-829	Nanobiotechnology: Concepts and Applications	3
IBT-920	Tissue Engineering And Biomaterials Science	3
IBT-922	Cell Therapy Bioprocessing	3
IBT-923	Mammalian Cell Processing	3
IBT-926	Probiotics, Prebiotics and Functional Foods	3
IBT-927	Food Safety and Public Health	3
Additional Course		
RM-898	Research Methodology	2
SEM/WKSP-897	Seminar / Workshop	1

MS Plant Biotechnology

Scheme of Studies

Programme Code: A749

Core Courses

Course Code	Course Title	Credits
PBT-800	Plant Biotechnology and Genetic Engineering	3
PBT-902	Plant Functional Genomics	3
PBT-900	Techniques in Plant Molecular Biology	3
PBT-806	Plant Biochemistry	3
ABS-899	**MS Thesis**	**6**

Elective Course (Any three)

Course Code	Course Title	Credits
PBT-801	Plant Virology	3
PBT-802	Entrepreneurship in Agriculture	3
PBT-803	Medicinal Plants	3
PBT-804	Biology of Weeds and Invasive Plants	3
PBT-805	Plant Immunology	3
PBT-807	Plant Breeding & Genetics	3
PBT-808	Fungal Biology	3
PBT-809	Fungal Virology	3
PBT-903	Plant Systematics and Evolution	3
PBT-904	Plant Cell Signaling	3
ABS-931	Trends in Cell Biology	3
ABS-831	Gene and Cell Technology	3
ABS-832	Biosafety & Ethics of Biotechnology	3
ABS-834	Contemporary Biology and Biotechnology for Innovation	3
ABS-933	Principles of Molecular Biology	3
ABS-932	Genomics, Proteomics and Bioinformatics	3
PBT-901	Advance Plant Physiology	3
IBT-921	Principles of Fermentation Processes	3
ABS-930	Molecular Phylogenetics	3
ABS-938	CRISPR Gene Editing	3

MS Agribusiness Management

MS Agribusiness Management will be offered in two principal modes i.e. MS by coursework and MS with Industry Project. Students who opt for coursework will have to take two elective courses (3 credit hours each) in lieu of industry project (6 credit hours).

Scheme of studies

Programme code: A778

Semester I		
Course Code	**Course Title**	**Credits**
AGB-842	Agribusiness Management (Core)	3 (3-0)
	Elective-I	3 (3-0)
	Elective-II	3 (3-0)
Semester II		
Course Code	**Course Title**	**Credits**
AGT-950	Strategic Technological Innovation Management (Core)*	3 (3-0)
	Elective- III	3 (3-0)
	Elective- IV	3 (3-0)
Semester III		
Course Code	**Course Title**	**Credits**
AGB-840	Strategic Marketing (Core)*	3 (3-0)
RM-898	Additional Mandatory: Research Methodology*	2 (2-0)**
	Elective- V	3 (0-3)
	Semester IV	
AGB-841	Strategic Finance (Core)*	3 (3-0)
	Elective- VI	3 (3-0)
	Elective- VII	3 (3-0)
	Total	**33+2**

* As per HEC requirement, **Non Credit Mandatory by NUST for all students in all MS degree programmes

MS by Industry Project

MS Coursework

Programme code: A778

Semester I		
Course Code	**Course Title**	**Credits**
AGB-842	Agribusiness Management (Core)	3 (3-0)
AGB-840	Strategic Marketing (Core)*	3 (3-0)
	Elective-I	3 (3-0)
	Elective-II	3 (3-0)
Semester II		
Course Code	**Course Title**	**Credits**
AGB-841	Strategic Finance (Core)*	3 (3-0)
AGT-950	Strategic Technological Innovation Management (Core)*	3 (3-0)
	Elective- III	3 (3-0)
	Elective- IV	3 (3-0)

Semester III		
RM-898	Additional Mandatory: Research Methodology*	2 (2-0) *
	Elective- V	3 (3-0)
AGT-899	Industry Project Synopsis	2 (0-2)
Semester IV		
AGT-899	Industry Project Report	4 (0-4)
	Total	**33+2**

*As per HEC requirement, **Non Credit Mandatory by NUST for all students in all MS degree programmes

List of Elective Courses

Course Code	Course Title	Credits
AGE-860	Principles of Agri economics	3 (3-0)
AGB-845	Sustainable Agriculture: Practices and Perspectives	3 (3-0)
AGB-940	Quality Management System in Agriculture	3 (3-0)
PBT-802	Entrepreneurship in Agriculture	3 (3-0)
AGB-844	Agribusiness Project Management	3 (3-0)
AGE-861	Agricultural Credit and Financing	3 (3-0)
AGE-960	International Trade in Agricultural Commodities	3 (3-0)
AGB-847	Agricultural Communications	3 (3-0)
AGB-848	Business Management	3 (3-0)
OTM-739	Global Logistics and Transportation	3 (3-0)
AGB-843	Agrochemicals	3 (3-0)
AGT-851	Farm Machinery and its Management	3 (3-0)
AGT-850	Digital Technologies in Agriculture	3 (3-0)
OTM-809	Agribusiness Supply Chain Management	3 (3-0)
AGB-943	Animal Health	3 (3-0)
AGB-945	Climate Change and the Response of Agriculture Business	3 (3-0)
AGB-946	Farm Management	3 (3-0)
AGB-947	Livestock and Dairy Management	3 (3-0)
AGB-948	Value Chain Management in Agriculture	3 (3-0)
AGB-949	Agriculture Marketing	3 (3-0)
AGE-862	Microeconomic theory	3(3-0)
AGE-863	Macroeconomic theory	3(3-0)
AGE-864	Econometrics for Agribusiness	3(3-0)
AGE-961	Food and Agriculture Policy Analysis	3(3-0)
AGE-866	Natural Resource Economics	3(3-0)
AGE-962	Supply and Demand Analysis	3(3-0)
AGE-963	Consumer Behavior	3(3-0)
AGT-852	Postharvest Processing and Management	3(3-0)
AGT-853	Farm Structures and Management	3(3-0)
AGT-854	Energy Resources and Management	3(3-0)
AGT-855	Water Quality Management	3(3-0)
AGT-856	Solid Waste Management	3(3-0)
AGB-849	Project Planning and Management	3(3-0)

Applying to NUST

Undergraduate Programmes

National Students

Dates to Remember

Commencement of Courses:

SNS,ASAB November 15, 2021

Submission of SAT Results: July 15, 2021

SAT Subject test scores from College Board, USA should reach NUST by July 15, 2020. It is the responsibility of the candidate to provide the SAT scores by due date.

Salients of NUST Entry Test-2021

Mode of Test

- **Computer Based Test**
  Computer Based Entry tests for all disciplines will be held in multiple sessions at NUST Campus Islamabad according to the following schedule:

NET-2021 (Series-1)	January 2021
NET-2021 (Series-2)	March 2021
NET-2021 (Series-3)	June 2021
NET-2021 (Series-4)	July / Aug 2021

- During an admission cycle, candidates can appear in Entry test more than once to improve their score with their best score consider for admission.
- The result of NET will remain valid for the current admission cycle only which will culminate in Fall 2021.

- **Paper Based Test**
  Karachi and Quetta March and July/Aug 2021

- Candidates will have an option to appear either in Computer Based Test at Islamabad or the Paper Based Test at Karachi and Quetta in April and July 2021.
- Candidates will have an option to change their programme preferences after the announcement of NET results within the time-frame to be specified after the test.

Eligibility Criteria

- A minimum of 60% aggregate marks each in SSC and HSSC / equivalent exams.
- O & A level and other non-FSc stream candidates need to obtain equivalence certificates from Inter Board Committee of Chairmen (IBCC), Pakistan.
- Candidates can apply on the basis of NUST Entry Test (NET) or SAT or both.

BS Biotechnology

HSSC (Pre- Medical Group) from any Board of Intermediate and Secondary Education OR an equivalent qualification like A level OR any other foreign qualification with three (3) subjects out of which Biology and Chemistry are essential subjects.

- Candidates of FSc stream can apply for the NUST Entry Test on the basis of FSc Part – I but merit will be generated after provision of complete FSc marks.
- Candidates of O / A Level stream can apply on the basis of O Level equivalence certificate duly issued by IBCC, but merit will be generated after provision of A-level equivalence marks. Valid O Level equivalence certificate is mandatory at the time of applying to NUST.
- Candidates of Biotechnology programme must enter their complete FSc or equivalent exam marks (as per IBCC) in online application form after the announcement of their results. This requirement is mandatory for merit generation.
- Due to COVID-19 pandemic, candidates of FA /FSc stream who are in Part II, can apply on basis of Matric marks for session 2021 only.

Natural Sciences

- Candidates of FA/FSc stream can apply for the NUST Entry Test on the basis of FA / FSc Part – I but the confirmation of their admission is subject to provision of FA / FSc certificate or Detailed Marks Certificate (with a minimum of 60% aggregate marks) before the commencement of the relevant programme of study.
- Candidates of O / A Level stream can apply on the basis of O Level equivalence certificate duly issued by IBCC, but the confirmation of their admission is subject to provision A Level equivalence certificate before the commencement of the relevant programme of study. Valid O Level equivalence certificate is mandatory at the time of applying to NUST.
- Due to COVID-19 pandemic, candidates of FA /FSc stream who are in Part II, can apply on basis of Matric marks for session 2021 only.

BS Mathematics

HSSC from any Board of Intermediate and Secondary Education OR an equivalent qualification like A level OR any other foreign qualification with Mathematics as one of the major subject.

BS Physics

HSSC (Pre- Engineering Group / General Science Group) from any Board of Intermediate and Secondary Education OR an equivalent qualification like A level OR any combination with Physics and Mathematics as two of the major subjects.

BS Chemistry

HSSC (Pre-Engineering Group / Pre-Medical group) from any Board of Internmediate and Secondary Education OR an equivalent qualification like A level OR any combination with Chemistry as mandatory subject along with Physics or Mathematics.

Ineligibility

Candidates with any of the following deficiencies are NOT eligible to apply for admission in UG programmes:

- Having secured less than 60% marks in Matric and FSc.
- Having failed / not appeared in any subject in FSc Part-I / II.
- Having secured less than 60% marks in O/A level as per the equivalence certificate issued by IBCC.
- In case of O & A level / equivalent foreign qualification, those not in possession of valid O level or equivalent qualification certificate issued by IBCC at the time of applying to NUST.
- Expelled from NUST on disciplinary grounds.

Submission of Online Applications

NUST accepts only online application forms for UG programmes. A candidate can fill and submit the application form, available online at:
https://ugadmissions.nust.edu.pk/
For subsequent correspondence with NUST, the following address may be used:

Admissions Directorate,
National University of Sciences and Technology (NUST),
Sector H-12, Islamabad, Pakistan.
Tel: +92-51-90856878
email: ugadmissions@nust.edu.pk

Application Processing Fee

NUST Entry Test (per exam)	Rs. 3,500/- or USD 35/-
SAT National Seat	Rs. 5,000/- or USD 40/-
SAT International Seat	Rs. 10,000/- or USD 80/-

Admission Process

Submission of online application at http://ugadmission.nust.edu.pk

Confirmation of receipt of application from NUST by e-mail (within 24 hours of submission)

Printing of Fee Invoice
Fee deposit through any online branch of Habib Bank Ltd (HBL)

Confirmation of receipt of payment by NUST by e-mail (within 5 days of payment)

For computer based test, selection of Test Date and Session by Re-Login to candidate's NET account

- For Islamabad test centre, confirmation of Test Date, Test Session and allocation of Roll Number, Log-in ID, Password for Computer Based NUST Entry Test
- For Paper Based Test at Karachi and Quetta, issuance of Roll Numbers and allocation of test centres through email (within 24 hours of payment confirmation).

Printing of Admit Cards by all candidates by login in to individual accounts

Conduct of the test as per the schedule i.e., computer based at Islamabad and paper based test at Karachi and Quetta

Desirous candidates may apply in another NET series before the completion of admission cycle

Issuance of Selection List on NUST website

Printing of Provisional Selection Letter, Medical Certificate Form and Admission Dues Fee Invoice by the selected candidates
Deposit of Admission dues (in any online branch of HBL) and submission of required documents to the UG Section, Registrar Directorate, NUST, Sector H-12, Islamabad

Issuance of Joining Instructions to the selected candidates who have completed admission formalities by the respective institution

Successful candidates join their respective programmes

To do list for candidates To do list for NUST

Instructions for Online Application Form

- Visit https://ugadmissions.nust.edu.pk and get registered by providing valid e-mail address.
- Candidate will be allotted a login ID and password to access the online application form.
- Fill the online form, upload recent (not more than 6 months old) passport size photograph (with plain background), and submit the form. Successful submission of form will be confirmed through an e-mail by NUST.
- Re-Login to your account and print Fee Invoice for depositing processing fee from My Account page.
- Candidates can deposit fee with any branch of HBL. Fee deposit will be verified through e-mail within 5 days of payment.
- Candidates of computer based test will have to choose Test Date and Session out of the available options.
- Allocation of Test Date and Session will be made on 'First Come First Served' basis.
- Candidates of computer based test will be allocated Roll Number, Test Centre, Test Session, Log-in ID and Password.
- For Paper Based Test at Karachi and Quetta, candidates will be informed through email regarding printing of Admit Card containing exact time and centre for Entry Test.
- Candidates are required to print their Admit Cards and bring the same to the Test Centre along with original CNIC/ family registration certificate/passport/original matric/FSc certifcate bearing photograph as proof for identification.
- Candidates can appear more than once to improve their score. Best score will be picked by the system for merit generation.
- The seats becoming available as a result of drop-outs will be re-allocated and filled through the up-gradation of candidates who have confirmed their willingness by depositing admission dues in time.
- Candidates failing to deposit admission dues within the given time will not be considered for admission any further.
- Closing merit of session 2020 for different programmes will be available on the website for guidance
- Admit Cards will be retained at the Test Centres for further verification.
- Candidates with any disability are required to mention the same in the online application form.

Misrepresentation of facts or false information will lead to cancellation of candidature/admission at any stage.

Equivalence Certificate

Candidates submitting A Level, 12th Grade, International Baccalaureate or Advanced Placement certificates are also required to submit equivalence certificates, obtained from the Inter Board Committee of Chairmen (IBCC), within two weeks after joining the respective programme. Offices of the IBCC are located in all the provincial capitals. The address of IBCC office at Islamabad is as under:

Inter Board Committee of Chairmen,
Plot # 25, St # 38, G-10/4, near Federal Government Employees Housing Foundation (FGEHF), Islamabad
Phone# 051 923 5018
Website: http://www.ibcc.edu.pk

Note:
Candidates are advised to contact IBCC for their eligibility regarding issuance of equivalence certificate of relevant category as per their subjects of study in O/A level or any other foreign qualification.

Important Note

Candidates applying for BS Biotechnology Programme, who are appearing or have appeared in any of the above prerequisite examinations during the current year, can apply. However, such candidates are required to enter their complete FSc/Equivalent marks in online application form after declaration of final result by the respective Board of Intermediate and Secondary Education.

NUST Entry Test (NET)

NUST Entry Test will be Computer-based for the candidates of Islamabad centre, conducted in two sessions daily on different dates whereas for the candidates of Karachi and Quetta centres, it will be conducted in paper based format.

The standard of test will be that of intermediate level education, aimed at evaluation of factual knowledge, comprehension and its application.

Instructions to attempt computer based Entry test along with mock test module is available on NUST website for guidance of candidates.

For paper based Entry test, correct filling of answer sheets is essential. Detailed instructions for the same are given in the NET section to help the candidates.

Entry Test for BS Biotechnology and Natural Sciences Programmes will be held in the following subjects along with their weighting:

BS Biotechnology

» Biology	-	40%
» Chemistry	-	30%
» Physics	-	15%
» English	-	10%
» Intelligence *	-	5%

BS Mathematics

» Mathematics	-	85%
» English	-	10%
» Intelligence*	-	05%

BS Physics

» Physics	-	45%
» Mathematics	-	40%
» English	-	10%
» Intelligence *	-	5%

BS Chemistry

» Chemistry	-	85%
» English	-	10%
» Intelligence	-	5%

*Intelligence questions will pertain to Mathematical Reasoning, Critical Thinking, Analytical, Problem Solving and Creativity.
Note:Biotechnology candiaites can opt for BS Chemistry programme in online form without paying additiona fee

Re-checking of NET Papers

Re-checking of paper based Entry Test papers may be requested within 5 days of the declaration of result along with a fee of Rs.500/- in the form of a bank draft/pay order in favour of NUST. The original bank daft / pay order should be dispatched to Admissions Directorate, NUST, Sector H-12, Islamabad, along with written application. Re-checking involves the verification of paper for any unmarked answers and error free totaling of marks.

Provision of Entry Test Results

Desirous candidates may obtain the result details of their test from the link available on NUST website.

Selection Procedure

Final merit for BS Biotechnology, BS Maths and BS Physics programmes will be prepared by assigning weighting as follows:

BS Biotechnology

» NUST Entry Test	75 %
» Matriculation / O Level	25 %

Natural Sciences (BS Maths, BS Physics & BS Chemistry)

» NUST Entry Test	75%
» Matric/O Level*	25%

* O/A Level candidates who are in A Level (final year) will be assigned 25% weighting to their O Level equivalence marks as per equivalence certificate issued by IBCC. Similarly HSSC candidates who are in Part II of FA /FSc will be assigned 25% weighting to their Matric marks due to non-availability of FA/ FSc Part I marks (only for session 2021)

Note

- The above policy may be reviewed by the University whenever deemed necessary.
- It is the responsibility of the candidate to provide his/her academic record in time to the University as per the deadline.
- NUST will not be responsible if result of FSc/equivalent exams is not declared in time.

SAT Seats for National Students

NUST has few reserved seats in BS Biotechnology and Natural Sciences programmes for induction through SAT scores to facilitate admissions of candidates from O/A Level background. Pakistani candidates of both O/A Level and FSc streams can exercise this option and compete for SAT seats by taking SAT subject test and submitting the following results in addition to academic qualification requirements already spelled out.

BS Biotechnology
SAT Subject Test in
» Biology (M)

BS Mathematics
SAT Subject test in:
» Mathematics Level-II

BS Physics
SAT Subject test in:

- Physics
- Mathematics Level-II

BS Chemistry

SAT Subject test in

- Chemistry

Note: A minimum of 550 score is required in each subject.

SAT Subject Test

SAT Subject Test is a computer-based test held under the management of College Board, USA. For more information on SAT and how to apply, please visit their website at www.collegeboard.com

Last date for SAT scores to reach NUST is July 15, 2021. Scores received after the deadline will not be entertained.

NUST institutional code to receive SAT scores is 2790.

Merit list for candidates applying on the basis of SAT for national seats is prepared separately.

Medical Fitness

Selected candidates will be required to provide Medical Certificate, certifying that the candidate is mentally and physically fit to undertake undergraduate studies and do not require any kind of assistance in this regard, upon joining the relevant programme. Medical Fitness Certificate proforma form will be sent to the selected candidates along with the Provisional Selection Letter for endorsement from any Government Hospital or a Registered Medical Practitioner.

Rejection of Application

The University may reject any application for admission without assigning any reason.

Submission of Documents

Candidates are required to print the Provisional Selection Letters and send attested photocopies of the following documents along with paid Challan Form (NUST copy) of admission dues to **UG Section, Registrar Directorate, NUST, H-12, Islamabad:**

- Matric/equivalent certificate along with Detailed Marks Certificate
- Detail marks certificate of FA/FSC part 1 FA/ FSc/ equivalent
- Equivalence certificate(s) from IBCC in case of equivalent examinations

Allocation of Programmes

Selection and allotment of programme will be carried out strictly according to the merit position

Names of those candidates who do not deposit admission dues will not be considered any further.

Cancellation of Admission

Admission is liable to be cancelled if the candidate is found guilty of suppression or misrepresentation of material facts at any stage. The University can further debar him/her from seeking admission elsewhere. Other universities in the country will also be informed about the same.

The seats of those candidates who, after submission of admission dues, do not join within 15 days of commencement date of programmes will be declared vacant and filled up by candidates next on merit.

Migration and Transfer

Under extraordinary circumstances, on the recommendations of the Principal, the Rector may allow migration of a student from other foreign/Pakistani universities/colleges of repute, generally under the following conditions:

- After completion of first year and before the beginning of final year
- Possesses good academic record
- Courses to be transferred have a minimum of B Grade
- Transfer within NUST will be allowed to students admitted on the basis of NUST selection process
- Inter/intra-institutional transfers of students within NUST will be managed and processed on the basis of laid down procedure in vogue.

Provisions of NUST Migration Policy, as amended/updated from time to time, will be applicable in processing of all migration cases.

Migration/Transfer Fee	**PKR**
Processing Fee	5,000
Migration from foreign universities	250,000
Migration from local universities	100,000
Transfer within NUST	5,000

Note: For migration application form and details of migration policy and procedure, please visit http://www.nust.edu.pk

International Students

Undergraduate Programmes

National University of Sciences and Technology (NUST) has some SAT specific seats in undergraduate programmes for international candidates.

NUST encourage and facilitate both foreign as well as Pakistani origin dual nationality holder students, to seek admission in NUST.

General Eligibility Criteria

The following categories can only apply for international seats:

- Foreigners and Pakistanis having dual nationality, irrespective of the place of their study of HSSC or equivalent, Pakistan or abroad.
- Pakistani students studied abroad for HSSC or equivalent but appearing in the Pakistani board from abroad.
- Pakistani national students having passed an examination, equivalent to intermediate level of Pakistan, from a foreign education system.

- Desirous candidates can avail the facility accordingly, provided they meet the specified eligibility criteria and are willing to pay tuition fee and allied charges of the category.
- Separate application form will be used for applying on SAT basis, available on NUST website.
- The applicant must have passed Higher Secondary School Certificate (HSSC) or equivalent qualification like

Cambridge Overseas Higher School Certificate, British General Certificate of Education (Advanced Level), American High School Graduation Diploma (9-12th Grade) or any other equivalent qualification in relevant category showing twelve years of school education with minimum 60% cumulative marks.

- In case of any foreign qualification, candidates have to obtain equivalence certificates from IBCC, Pakistan with required subjects and minimum 60% marks, Which is a mandatory requirement.
- Valid TOEFL or IELTS with score of 500 or 5.5. (not applicable for those students whose medium of instruction is English at HSSC level).
- For all Programmes, a minimum of 550 SAT score is required in each subject. SAT scores are valid for two years only.
- All Bachelor programmes at NUST are taught in English.
- The candidate should also possess adequate mental and physical health to continue his/her course of studies.

Academic Requirements

BS Biotechnology
HSSC (Pre- Medical Group) from any Board of Intermediate and Secondary Education OR an equivalent qualification like A level OR any other foreign qualification with three (3) subjects out of which Biology and Chemistry are essential subjects.

BS Mathematics
HSSC from any Board of Intermediate and Secondary Education OR an equivalent qualification like A level OR any other foreign qualification with Mathematics as one of the major subject.

BS Physics
HSSC (Pre- Engineering Group / General Science Group) from any Board of Intermediate and Secondary Education OR an equivalent qualification like A level OR any combination with Physics and Mathematics as two of the major subjects.

BS Chemistry
HSSC (Pre-Engineering Group / Pre-Medical group) from any Board of Intermediate and Secondary Education OR an equivalent qualification like A level OR any combination with Chemistry as mandatory subject along with Physics or Mathematics.

SAT Requirements

BS Biotechnology
SAT Subject Test in

- Biology (M)

BS Mathematics
SAT Subject test in:

- Mathematics Level-II

BS Physics
SAT Subject test in:

- Physics
- Mathematics Level-II

BS Chemistry
SAT Subject test in

- Chemistry

Note: A minimum 550 score is required in each subject.

- SAT scores from College Board, USA should reach directly to NUST by July 15, 2021. NUST institutional code to receive SAT scores is 2790.
- It is the responsibility of the candidate to enter their SAT scores in online application form by due date.

For correspondence:
Undergraduate Section, Registrar Directorate, National University of Sciences and Technology (NUST),
Main Office, Sector H-12, Islamabad, Pakistan.
Email : satadmissions@nust.edu.pk

Merit List

Merit list of international students is prepared separately.

Provisional Admission

On fulfillment of the requirements mentioned, a candidate will be admitted to the University as per policy in vogue. This admission shall, however, be provisional until all the original degrees or certificates submitted by him / her have been checked and verified. In case any document proves to be false, fake, or fabricated at a later stage, a provisionally admitted student shall be liable to expulsion from the University at any stage or to any other disciplinary or legal action the University may deem necessary.
On receipt of university admission / acceptance letter, foreign nationality holders will approach the Pakistani mission abroad for the visa and submit the following documents:-

- Application Form (Student Visa Form)
- Photocopy of passport
- No Objection Certificate (NOC) issued by the home country for studying in Pakistan.
- Photograph
- Educational Documents
- Admission letter of university

For more details, please visit the under mentioned link of Higher Education Commission (HEC), Pakistan:
http://www.hec.gov.pk/InsideHEC/Divisions/ AECA/Pages/AdmissionofForeignStudents.aspx

Final Approval

Cases of the international students, finally selected for admission, will be referred to Higher Education Commission and relevant Government department(s) for final approval as per policy in vogue.

Accommodation

Hostel accommodation to international students is guaranteed.

Postgraduate Programmes

National Students

Dates to Remember

Commencement of online admission –April 2021
Commencement of Programmes – 13 September , 2021

Submission of GRE (Gen) score July, 2021
NUST will accept the scores of GAT (General) conducted by NTS on or after August 2019.
NUST will accept the scores of HAT (Higher Aptitude Test) conducted by ETC(HEC) in or after March 2020.

- **Atta ur Rahman School of Applied Biosciences (ASAB)**
  - MS Healthcare Biotechnology (Morning)
  - MS Plant Biotechnology (Morning)

- MS Agribusiness Management (Morning)
- MS Industrial Biotechnology (Morning)

- **School of Natural Science (SNS), Islamabad**
  - MS Mathematics (Morning)
  - MS Physics (Morning)
  - MS Chemistry (Morning)
  - MS Statistics (Morning)

Note:
Candidates who are awaiting final result can also apply for postgraduate admission provided their CGPA/Percentage till last semester is equal to 2.0/4.0 or 55% marks and they submit their final result before commencement of classes.

Masters Programme Eligibility Criteria

- Bachelors (4 year)/Masters degree (16 years of schooling) from an PM&DC/HEC recognized institution of Pakistan or abroad.
- For all Masters programmes minimum 50 accumulative score in GAT (Gen) test conducted by NTS or HAT conducted by ETC (HEC) or GRE (Gen) with following minimum accepted scores:

Quantitative	151/170
Verbal	146/170
Analytical Writing	3.5/6.0

Programme Specific Requirements

MS Programmes

Applied Biosciences (Healthcare Biotechnology/ Industrial Biotechnology/Plant Biotechnology)

- MSc in Life Sciences/BSc (4 years) in Biotechnology/ Biochemistry/Molecular Biology/Biosciences/ Bioinformatics/MBBS/DVM/BDS with CGPA 2.0 out of 4 / 2.5 out of 5 or 55% marks in aggregate.

Agribusiness Management

- MSc in Agricultural Sciences /DVM/ BS (4 years) degree in Agriculture, Agricultural Economics, Agricultural Marketing, Agricultural Engineering, Applied Biosciences, Agribusiness (Bachelor's), Business Administration and other related disciplines are eligible to apply.

MS Natural Sciences (Mathematics / Physics/ Chemistry)

- MSc/BS (4 years)/equivalent qualification in Mathematics/ Physics/Chemistry or related field from HEC recognized institutions with CGPA 2.0 out of 4 / 2.5 out of 5 or 55% marks in aggregate.

Statistics

- Masters / Bachelors (4 years) in Statistics / Mathematics / Data Science / Actuarial Science or equivalent.
- Masters / Bachelor's degree must be recognized by HEC.

PhD Programmes

Applied Biosciences/Natural Sciences

- For admission into the PhD minimum CGPA 3.0/4.0 or 3.75/5.0 (in the Semester System) or First Division (in the Annual System) in MPhil/MS/Equivalent degree is required. Percentage will be valid only if the CGPA is not mentioned in degree/transcript.
- Completed degree with minimum of 30 credit hours out of which 6 credit hours of thesis/research is mandatory.
- **For National Students:** GAT Subject for direct PhD Programme by NTS (score ≥ 60 %) and if NTS subject is not offered then NUST PhD admission (Score≥70 %) is required.
- **For International Students:** GRE (General) conducted by ETS, USA with following minimum score separately in each section:

Description	Scale
Quantitative	151/170
Verbal	146/170
Analytical Writing	3.5/6.0

Note

- Desirous candidates for PhD programmes (all types) may apply to PGP Dte online form according to the advertised schedule of admissions. All the instructions to fill the same are given in the form. Each candidate finally selected for admission to the direct PhD programme will be informed formally.
- Before applying, candidates are to ensure that they are eligible for the applied programme(s) by referring to the eligibility criteria given in the prospectus or on NUST website. Candidates are advised to avoid misrepresentation of facts, which may lead to cancellation of their candidature/admission at any stage.

Selection and Admission Procedure

Admission of Masters students in various programmes of Applied Biosciences/Natural Sciences will be based upon GAT (Gen) conducted by NTS or HAT conducted by ETC (HEC) or GRE (Gen) International, previous academic record and interview conducted by the respective Institute.

Admission in MS programme will be based on the following weighting:

- CAT/HAT/GRE/GMAT Score - 65%
- Previous Academic Record - 35%

Submission of Online Applications

MS Programmes

Only online applications will be accepted

Instructions for Online Application Form

- Visit www.pgadmission.nust.edu.pk and register with valid e-mail address.
- Candidate will be allotted a password to access the
- application form.
- Fill the application form.
- Enter CGPA only, If both percentage and CGPA are mentioned on Bachelors/Masters Degree/Transcript.
- Enter earned percentage/CGPA of last term/semester, in case final results are awaited.
- Upload recent photograph (with plain background).
- Upload scanned copies of the following documents with the online application:
  - Matric/equivalent certificate
  - Intermediate/equivalent certificate
  - Undergraduate degree along with final transcript(s) showing the exact duration
  - Masters degree along with transcript showing the exact duration (if applicable).
  - Computerized National Identity Card
- Consult eligibility criteria before opting for the programme(s). Candidates will not be considered for the programmes for which they are not eligible.
- Candidates can deposit the fee either through credit card or make online deposit, after taking print of Challan Form,

in any branch of HBL.

Misrepresentation of facts or false information will lead to cancellation of candidature/admission at any stage.

PhD Programmes

Desirous candidates for PhD programmes (all types) may apply to PGP Directorate NUST online according to the advertised schedule of admissions. All the instructions to fill the same are given in the form. Each candidate finally selected for admission to the PhD programme will be notified formally.

Note

Before applying, candidates are to ensure that they are eligible for the applied programme(s) by referring to the eligibility criteria given in the prospectus or on NUST website. Candidates are advised to avoid misrepresentation of facts which may lead to cancellation of their candidature/admission at any stage.

Admission Process

- Submission of online application form through web link www.pgadmission.nust.edu.pk along with scanned copies of required documents.
- Confirmation of receipt of application form through e-mail within 24 hours.
- Deposit application fee online in any branch of HBL.
- Confirmation of receipt of payment via e-mail within 15 days
- Confirmation of status through e-mail/website within 2 days of scrutiny of documents receipt.
- GAT Score submitted by candidates will be verified from NTS
- Selection list uploaded on NUST website, by first week of August 2018
- Selected candidates take printout of Provisional Selection Letter, Willingness Certificate, Medical Certificate and Admission Dues Challan Form from NUST website
- Candidates can deposit admission dues in any branch of HBL and submit the required documents to the PGP Directorate, University Main Office, H-12, Islamabad by hand or through courier service.
- Issuance of joining instructions to the selected candidates by the respective Institutions
- Successful candidates join the respective programmes

To do list for candidate | To do list for NUST

Postgraduate Programmes

International Students

International students, Pakistanis holding foreign nationality and Pakistanis living abroad can apply for postgraduate programmes. They have to compete with the local students for admission on merit.

Eligibility Criteria

Eligibility criteria is the same as for national students. International students are only eligible for programmes at H-12 Campus Islamabad.

Processing

- Cases of the international students, finally selected for admission will be processed through Higher Education Commission and respective government departments.
- International students have to obtain NOC from their respective Embassy in Pakistan

Accommodation

Hostel accommodation to international students is guaranteed.

Strategic Thrusts at NUST

- Excellence in teaching and education
- Focus on research
- Spirit of enterprise
- Internationalisation & global vision
- Discernible social impact.

Note:

Admission at NUST can be cancelled at any stage of studies if any document/information provided by a student is found to be fake/incorrect or not meeting the eligibility criteria, with no liability on NUST.

For correspondence: Masters Section, PGP Directorate, National University of Sciences & Technology (NUST), Main Office, Sector H-12, Islamabad, Pakistan.
E-mail: regn_pg@nust.edu.pk

Fee & Funding

National Students

Undergraduate Programmes

Fee Structure

Admission Dues	PKR
» Admission Processing Fee (Non-refundable)	35,000
» Security Deposit (Refundable) to be paid at the time of admission	10,000

Tuition Fee	
» BS Biotechnology (per semester)	108,000
» BS Mathematics / BS Physics / BS Chemistry (per semester)	108,000
» Miscellaneous Dues (Per Semester)	2,700

Payment of Dues

- At the time of admission students have to pay the admission processing fee, security and full semester fee in advance. Dues have to be paid on semester basis.
- Invoice/Challan for admission charges along with first semester fee and Provisional Selection Letter will be available on NUST website.
- Tuition fee will be payable on semester basis. Students have to pay their fee in advance before the commencement of semester.

Note: All fees are subject to revision.

Merit-based Financial Assistance

- A fixed amount is allocated for financial assistance, and will be provided to top 3 position holders of each section of a batch / class as per policy in vogue. Qualifying GPA is 3.5 or above in a semester.

Need-based Scholarship/Fee Waiver

NUST has launched a need-based scholarship scheme to enable financially under-privileged but talented students to acquire higher education. Salient features of the scheme are:

- Scholarships will be awarded to needy students of the new batch every year.
- The scholarship will be for full on-campus duration of the programme in which the student is enrolled.
- The scholarship will cover full tuition fee.
- All financial challenged candidates are required to apply for NUST Need Based Scholarship by filling NUST financial aid application form (NFAAF) along with online admission application form

Deferred Payments

- Financially under-privileged students, who cannot pay their fees and also do not qualify for merit-based scholarship are allowed deferred payment, on case-to case basis on completion of 1st academic year / semester of their studies

Other Opportunities for Financial Assistance

- PEEF, CMEEF (KPK), FEF and certain philanthropic organizations provide scholarships to the Financially challenged students studying at NUST. Such students will be informed on “how to apply?” once they are selected.
- Students may also apply on their own for other scholarships such as those offered by:
  - > HEC Ehsaas Scholarship
- Further details are available on NUST web portal and with the respective institutions.

Note: The award of scholarship/financial assistance is subject to availability of funds, high performance and good conduct of the student.

Tution Fee Refund Policy Applicable to both UG and PG Students

% age of Tuition Fee	Timeline for Semester/Trimester System
Full (100%) of Tuition Fee Refund	Apply upto 7th day of convening of classes
Half (50%) of Tuition Fee Refund	From 8th – 15th day of convening of classes
No Fee (0%) Refund	From 16th day of convening of classes

- Admission Processing Fee is not refundable under any circumstances.
- University will not accept any claim of refund after 3 years of the completion of degree / withdrawn from university and the amount of security will be transferred to the NUST Endowment Fund.

Fines/Penalties on Late Payments

Period	National Students	International Students
After the due date till start of semester	5 % of the total payable amount	USD 35
From start of semester till 15th day*	10 % of the total payable amount	USD 70
16th day from start of semester *	Registration shall be suspended. For re-activation of registration, the student will be required to pay the Admission Processing Fee again along with all outstanding dues.	Student will not be allowed to attend classes till the payment of dues. Registration shall be suspended. For re-activation of registration, the student will be required to pay the Admission Processing Fee again along with all outstanding dues.

*In any case student will not be able to attend classes till clearance of dues.

Postgraduate Programmes

MS

Admission Dues	PKR
» Admission Processing Fee (Non refundable)	10,000
» Security Deposit (Refundable)	10,000
Tuition Fee per semester	77,000
» Miscellaneous Dues (Per Sementer)	2,700

PhD

Admission Dues	
» Admission Processing Fee (Non refundable)	5,000
» Security Deposit (Refundable)	10,000
Tuition Fee per semester	77,000
» Miscellaneous Dues (Per Sementer)	2,700

»

Note: All fees are subject to revision.

Payment of Dues

- At the time of admission students have to pay the admission processing fee, security and full semester fee in advance. Dues have to be paid on semester basis.
- Invoice/Challan for admission charges along with first semester fee and Provisional Selection Letter will be available on NUST website.
- Tuition fee will be payable on semester basis. Students have to pay their fee in advance before the commencement of semester.

Supervisor's Fee and Research Fund

- **Sponsored Students:**
  As per scholarship/sponsorship award.
- **Non-sponsored Students:**
  To be paid by the University as per policy in vogue

HEC and Other Sponsorships

HEC will bear the cost of its scholarship awardees, as per the scholarship award details. For other sponsored students, all charges as per the details provided above, will be borne by their sponsoring agency. Students will be responsible for timely deposit of dues by their sponsoring agency. Scholarship provisions for postgraduate studies for candidates from FATA and Balochistan are also available through HEC for which they may apply directly to HEC.

Merit-Based Scholarship/Tuition Fee Waiver

MS Programmes

- Selected students are awarded monthly stipend of Rs 18000/- pm and tuition fee waiver.

PhD Programmes

- NUST sponsored PhD students will be paid monthly stipend of Rs 30,000/- pm and tuition fee waiver in addition to supervisor remuneration.
- There are numerous opportunities for additional academic pursuits, e.g. students will be provided financial support for attending seminars, conferences and making presentations/publication of research papers within Pakistan and abroad.
- During research phase of PhD studies at NUST, students can also get an opportunity for collaborative/joint research training programmes with other well-reputed foreign universities.
- Full time PhD students can also be exempted from payment of tuition fee, if they are willing to do Teaching Assistant (TA)/Research Assistant (RA) duties and fulfilled other conditions.

Bond for NUST Sponsored Students

- NUST sponsored MS/PhD students will be required to complete the programme.
- NUST sponsored MS/PhD Students will work as TA/RA, as and when required.
- The students who fail or do not fulfil the undertaking, will have to reimburse the total amount spent on them (including Tuition Fee, Stipend, Supervisor's Fee and Research Expenditure, etc).

Need-based Scholarship/Fee Waiver

NUST has launched a need-based scholarship scheme to enable financially under-privileged but talented Masters students to acquire higher education. Salient features of the scheme are:

- Scholarships will be awarded to needy students of the new batch every year.
- The scholarship will be for full duration (2 years) of the programme in which the student is enrolled.
- Awardees are given half/full tuition fee waiver

Other Opportunities for Financial Assistance

- PEEF, CMEEF (KPK), FEF and certain philanthropic organizations provide scholarships to the Financially challenged students studying at NUST. Such students will be informed on "how to apply?" once they are selected.

International Students

Undergraduate Programmes

Finances (UG Programmes)

Students selected through this process will be required to pay their fees and other charges in USD.

Fee Structure

Applied Biosciences (Biotechnology) and Natural Sciences (Math, Physics & Chemistry)	**USD**
» Admission Processing fee (Non-refundable)	600
» Tuition Fee per annum	5100
» Security Deposit (Refundable)	250
» Health Facilities (per annum)	120

- Tuition fee for the first academic year (two semesters) will be deposited as per selection letter.
- Tuition fee will be payable on annual basis. Students have to pay their fee in advance before the commencement of the academic year.
- **All fees are subject to revision from time to time.**

Postgraduate Programmes

Finances (PG Programmes)

International students selected through this process will be required to pay the applicable charges in USD. Please note that admission is granted only to those candidates who come up to the required position on the merit list meant for open merit.

Fee Structure

The fee structure of the programmes of study is as under:

Applied Biosciences (Biotechnology) and Natural Sciences (Maths, Physics and Chemistry) **USD**	
» Admission Processing Fee (Non refundable)	60
» Tuition Fee (per Semester)	933
» Security Deposit (Refundable)	60
» Course Repeat Fee (per credit hour)	40

Monthly Accommodation Charges (H-12 Campus)

Single Students

» Single occupancy (with attached bath)	USD 70
» Double occupancy (with attached bath)	USD 60
» Double occupancy (with community bath)	USD 50
» Tripple occupancy with community bath	USD 40

Married Students

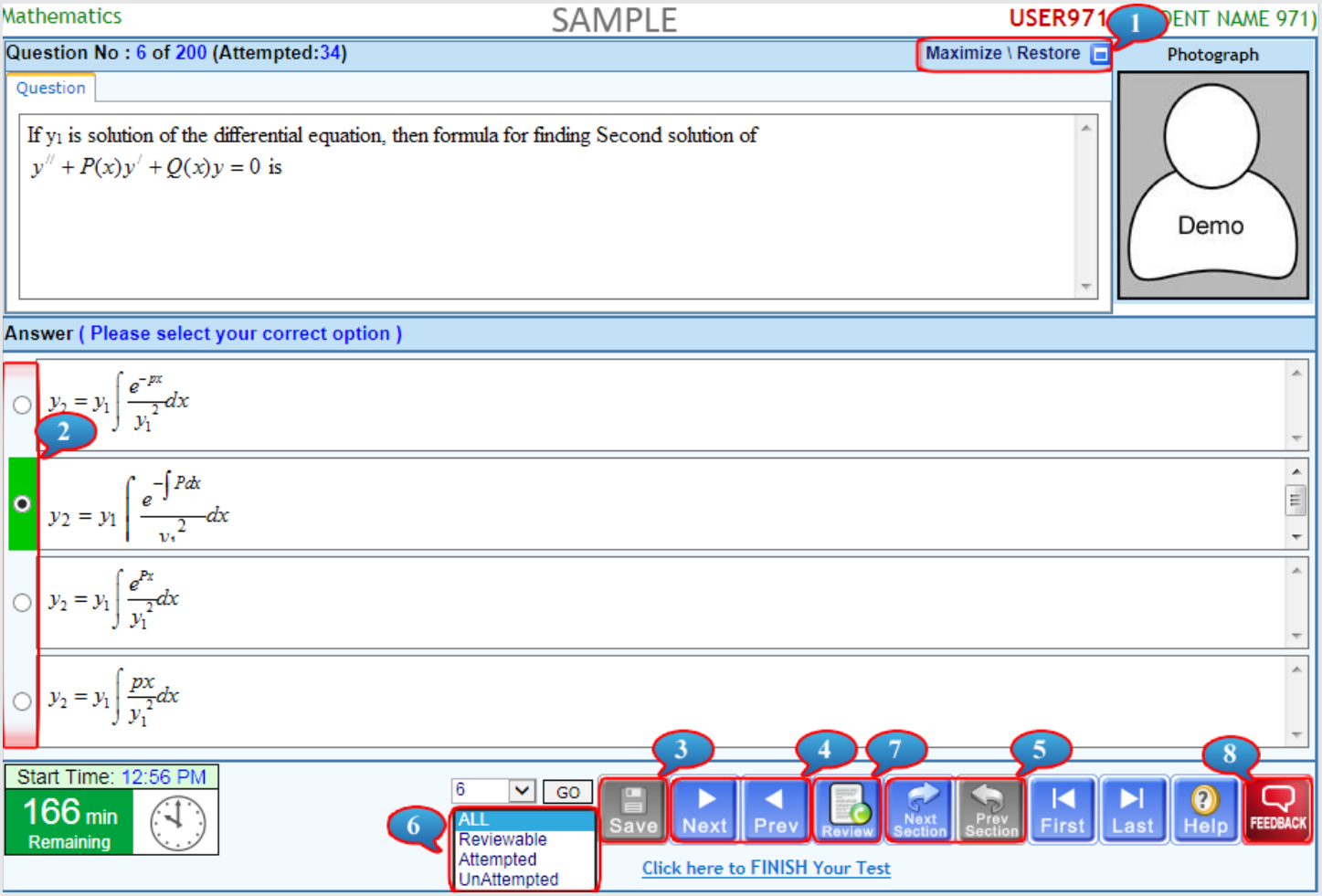
» One-bedroom apartment	USD 120
» Two-bedroom apartment	USD 170

Note

- Security Fee of USD 117 (Refundable) is charged at the time of allotment.
- Hostel includes accommodation charges only.
- All fees are subject to revision from time to time.

NUST Entry Test (Computer-based)

- NUST Entry Test (computer based) will be held in multiple sessions. Paper based test will be held in Karachi and Quetta twice a year (April and July).
- Computer-based test is designed in accordance with the internationally practiced system of on-line examinations. It is easy to attempt with minimal practice. Instructions to attempt computer-based Entry test alongwith sample test module will be available on NUST website for guidance.
- The pattern and the standard of question papers for both types of tests is the same.
- All kinds of data carriers and calculators, including mobile phone, Bluetooth, hands free devices, etc, are strictly prohibited inside the examination hall.



1. Expand question area to read the complete question
2. Select Answer Option
3. Click to save selected Answer Option
4. Go to the Next or Previous Question
5. Go to the Next or Previous Section
6. Choose the desire filter to view question(s) in Reviewable, Attempted and Unattempted folders
7. Click Review button to mark question reviewable (This button will be enabled on saving the answer)
8. Provide FEEDBACK on displayed questions

NUST Entry Test (Paper-based)

Instructions for Paper-based Entry Test of Applied Biosciences

The Entry Test will comprise the following subjects:
a. Biology **b. Chemistry** **c. Physics** **a. English** **e. Intelligence**

These instructions deal with multiple choice answer sheets, which will be provided for examination. The answer sheets will have two parts, i.e., personal information and answers. A filled in answer sheet is printed on the next page for illustration and guidance. Answer sheets are marked through computer, therefore, it is important that the candidates read and understand these instructions thoroughly before taking the exam. Non-compliance will affect scoring adversely.

PERSONAL INFORMATION (See appropriate block in the specimen answer sheet). Exam superintendent will brief on filling in of this portion before start of the exam.

- Clearly write your name in Capital Letters in the box titled **FULL NAME**. Fill corresponding circles. If the name is longer than the space provided, fill in as much as fits in the given space. (In the specimen answer sheet, **Ali Nawaz** is the name of a candidate).
- Write your Roll No in the box titled **ROLL No**. (In the specimen answer sheet, the Roll No of the candidate is **167245016**).
- In the **SUBJECT** column, use "**333**" as subject code for Applied Bio-sciences.
- In the **SEQ CODE** column, write NET Code written inside the question booklet. (SEQ Code 01 is marked In the specimen answer sheet)
- In the **CITY/CENTRE** column, use the following codes and fill in the corresponding circles. (In the specimen sheet, **KI** is marked for Karachi).

  KI: Karachi **QA**: Quetta **IS**: Islamabad

- Put your date of birth in the column **Date of Birth**. 11-04-85 is marked as the Date of Birth on the specimen sheet.
- In the **SEX** column, fill **M** for male candidates and **F** for female candidates and **O** for other candidates. (In the example a male candidate is marked).

MARKING Of ANSWER SHEET
In the specimen answer sheet, first 6 questions have been attempted. See the specimen sheet and the following instructions:

- Mark your choice with **2B lead pencil** by filling in the appropriate circle completely, making it a dark black circle as shown below.

- Some examples of improper marking are shown below:

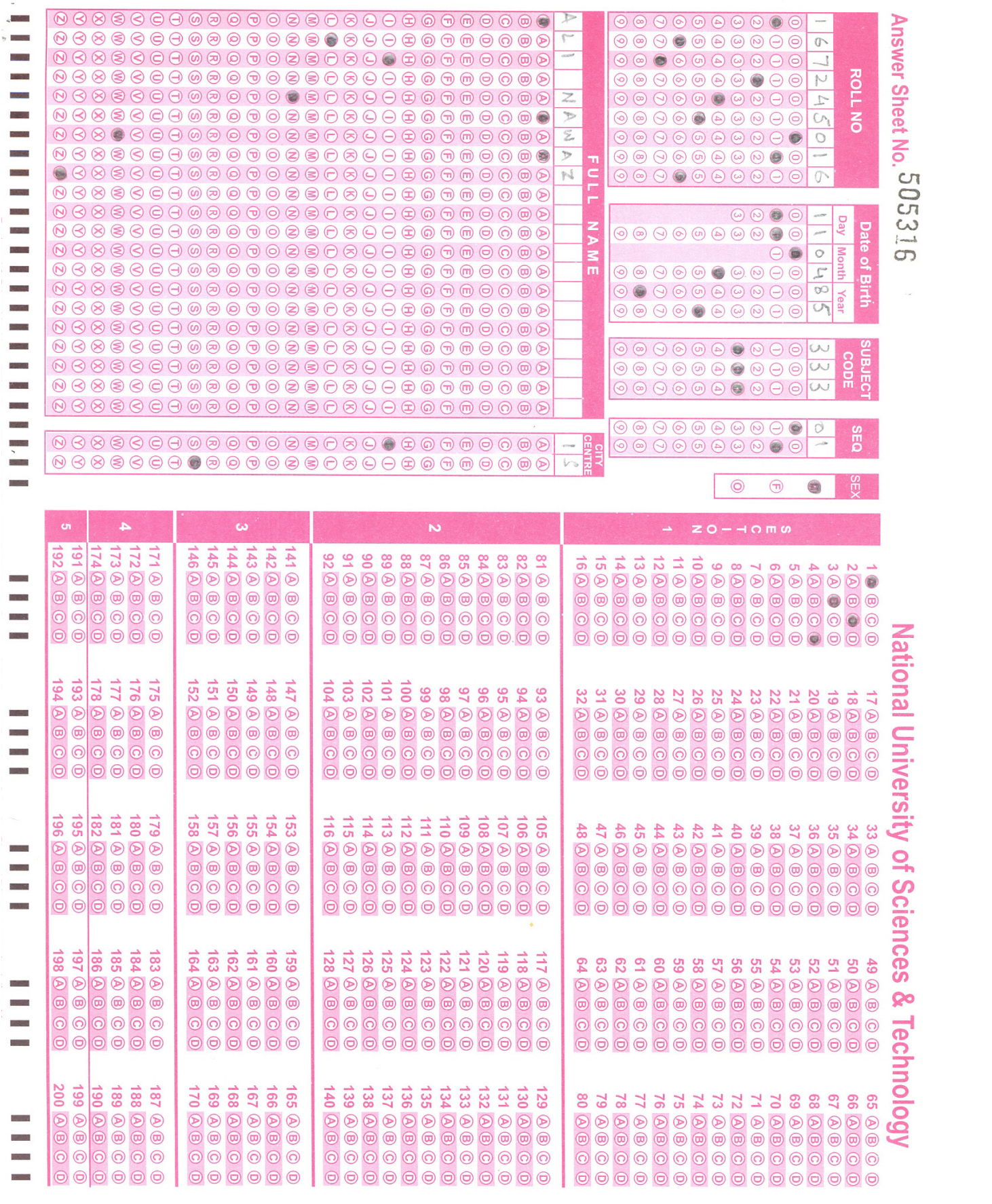
(The computer will mark improperly filled circle as wrong answer)

- Do not mark more than a single circle for an answer choice. Multiple answers for a single question will be regarded as an unanswered question.
- If you need to erase an answer, do so clearly/cleanly, using a good quality eraser.
- Do not bend/fold your answer sheet, make stray marks or mark any area outside the provided circles.

MISCELLANEOUS

- **Answer sheet is to be signed both by the invigilator as well as by the candidate, in respective blocks, with ballpoint pen only.**
- **PLEASE DON'T FORGET TO BRING A CLIPBOARD ALONG.**
- **USE 2B lead pencil only. DO NOT USE ink pens**, ballpoint pens or felt-tip pens on the answer sheet.
- You are allowed to bring along clipboard, pencils, eraser and sharpener only.
- Use your time effectively. Do not spend too much time on one question, otherwise you will run short of time for other questions.

- Write your **Roll No** on the front page of the **QUESTION BOOKLET** and the back side of the answer sheet in the given blocks. Do not write elsewhere.
- **Return the complete questions booklet along with the answer sheet** on completion of the test.
- You are not allowed to take away any part of the question booklet or note questions elsewhere. Non-compliance will be regarded as use of unfair mean.
- You are **NOT ALLOWED** to use any device which could assist in calculation such as a **calculator, tables, digital watch, mobile phone, electronic diary, Palm Pilot, etc.**
- **There is no negative marking.**



Instructions for Paper-based Entry Test of BS Mathematics

The Entry Test will be held for applicants in the following subjects:
a. Mathematics **b. English** **c. Intelligence**

These instructions deal with multiple choice answer sheets, which will be provided for examination. The answer sheets will have two parts, i.e., personal information and answers. A filled in answer sheet is printed on the next page for illustration and guidance. Answer sheets are marked through computer, therefore, it is important that the candidates read and understand these instructions thoroughly before taking the exam. Non-compliance will affect scoring adversely.

PERSONAL INFORMATION (See appropriate block in the specimen answer sheet). Exam superintendent will brief on filling in of this portion before start of the exam.

- Clearly write your name in Capital Letters in the box titled **FULL NAME**. Fill corresponding circles. If the name is longer than the space provided, fill in as much as fits in the given space. (In the specimen answer sheet, **Sidra Shah** is the name of a candidate).
- Write your Roll No in the box titled **ROLL No**. (In the specimen answer sheet, the Roll No of the candidate is **107624161**).
- In the SUBJECT column, use "**666**"as subject code for BS Mathematics.
- In the **SEQ CODE** column, write NET Code written inside the question booklet. (SEQ Code 02 is marked In the specimen answer sheet)
- In the **CITY/CENTRE** column, use the following codes and fill in the corresponding circles. (In the specimen sheet, **KI** is marked for Karachi).

KI: Karachi **QA**: Quetta **IS:** Islamabad

- Put your date of birth in the column **Date of Birth**. 11-04-92 is marked as the Date of Birth on the specimen sheet.
- In the **SEX** column, fill **M** for male candidates, **F** for female candidates and **O** for other candidates. (In the example a female candidate is marked).

MARKING Of ANSWER SHEET

In the specimen answer sheet, first 6 questions have been attempted. See the specimen sheet and the following instructions:

- Mark your choice with **2B lead pencil** by filling in the appropriate circle completely, making it a dark black circle as shown below.

- Some examples of improper marking are shown below:

(The computer will mark improperly filled circle as wrong answer)

- Do not mark more than a single circle for an answer choice. Multiple answers for a single question will be regarded as an unanswered question.
- If you need to erase an answer, do so clearly/cleanly, using a good quality eraser.
- Do not bend/fold your answer sheet, make stray marks or mark any area outside the provided circles.

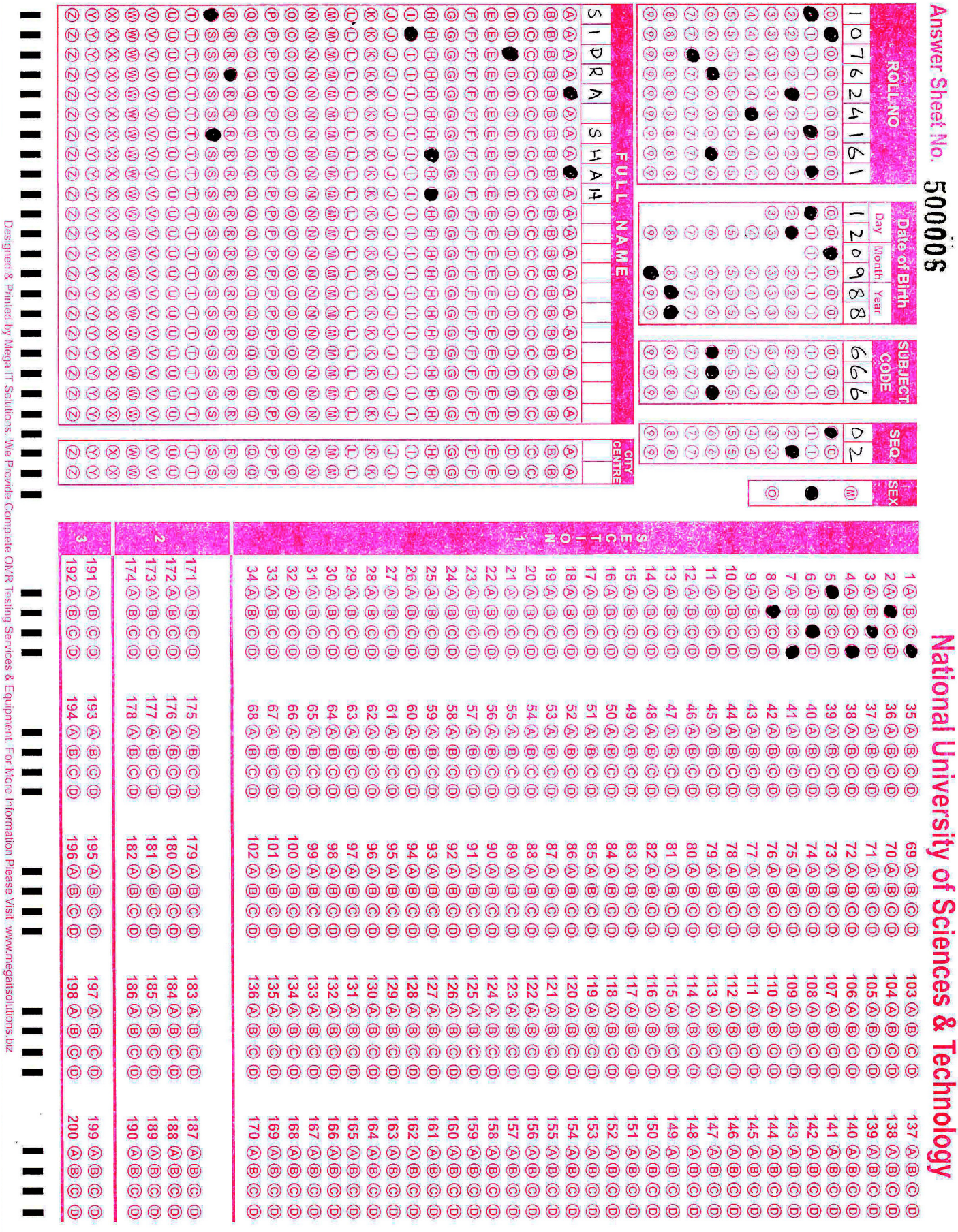
MISCELLANEOUS

- **Answer sheet is to be signed both by the invigilator as well as by the candidate, in respective blocks, with ballpoint pen only.**
- **PLEASE DON'T FORGET TO BRING A CLIPBOARD ALONG.**
- **USE 2B lead pencil only. DO NOT USE ink pens**, ballpoint pens or felt-tip pens on the answer sheet.
- You are allowed to bring along clipboard, pencils, eraser and sharpener only.
- Use your time effectively. Do not spend too much time on one question, otherwise you will run short of time for other questions.
- Write your **Roll No** on the front page of the **QUESTION BOOKLET** and the back side of the answer sheet in the given blocks. Do not write elsewhere.
- **Return the complete questions booklet along with the answer sheet** on completion of the test.

» You are not allowed to take away any part of the question booklet or note questions elsewhere. Non-compliance will be regarded as use of unfair mean.

» You are **NOT ALLOWED** to use any device which could assist in calculation such as a **calculator, tables, digital watch, mobile phone, electronic diary, Palm Pilot, etc.**

» **There is no negative marking.**



Instructions for Paper-based Entry Test of BS Physics

The Entry Test will be held for applicants in the following subjects:

a. Physics **b. Maths** **c. English** **d. Intelligence**

These instructions deal with multiple choice answer sheets, which will be provided for examination. The answer sheets will have two parts, i.e., personal information and answers. A filled in answer sheet is printed on the next page for illustration and guidance. Answer sheets are marked through computer, therefore, it is important that the candidates read and understand these instructions thoroughly before taking the exam. Non-compliance will affect scoring adversely.

PERSONAL INFORMATION (See appropriate block in the specimen answer sheet). Exam superintendent will brief on filling in of this portion before start of the exam.

- Clearly write your name in Capital Letters in the box titled **FULL NAME**. Fill corresponding circles. If the name is longer than the space provided, fill in as much as fits in the given space. (In the specimen answer sheet, **Ayesha Fatima** is the name of a candidate).
- Write your Roll No in the box titled **ROLL No**. (In the specimen answer sheet, the Roll No of the candidate is **147523161**).
- In the SUBJECT column, use "**777**"as subject code for BS Physics.
- In the **SEQ CODE** column, write NET Code written inside the question booklet. (SEQ Code 02 is marked In the specimen answer sheet)
- In the **CITY/CENTRE** column, use the following codes and fill in the corresponding circles. (In the specimen sheet, **KI** is marked for Karachi).

KI: Karachi **QA**: Quetta **IS:** Islamabad

- Put your date of birth in the column **Date of Birth**. 20-08-90 is marked as the Date of Birth on the specimen sheet.
- In the **SEX** column, fill **M** for male candidates, **F** for female candidates and **O** for other candidates. (In the example a female candidate is marked).

MARKING Of ANSWER SHEET

In the specimen answer sheet, first 6 questions have been attempted. See the specimen sheet and the following instructions:

- Mark your choice with **2B lead pencil** by filling in the appropriate circle completely, making it a dark black circle as shown below.

- Some examples of improper marking are shown below:

(The computer will mark improperly filled circle as wrong answer)

- Do not mark more than a single circle for an answer choice. Multiple answers for a single question will be regarded as an unanswered question.
- If you need to erase an answer, do so clearly/cleanly, using a good quality eraser.
- Do not bend/fold your answer sheet, make stray marks or mark any area outside the provided circles.

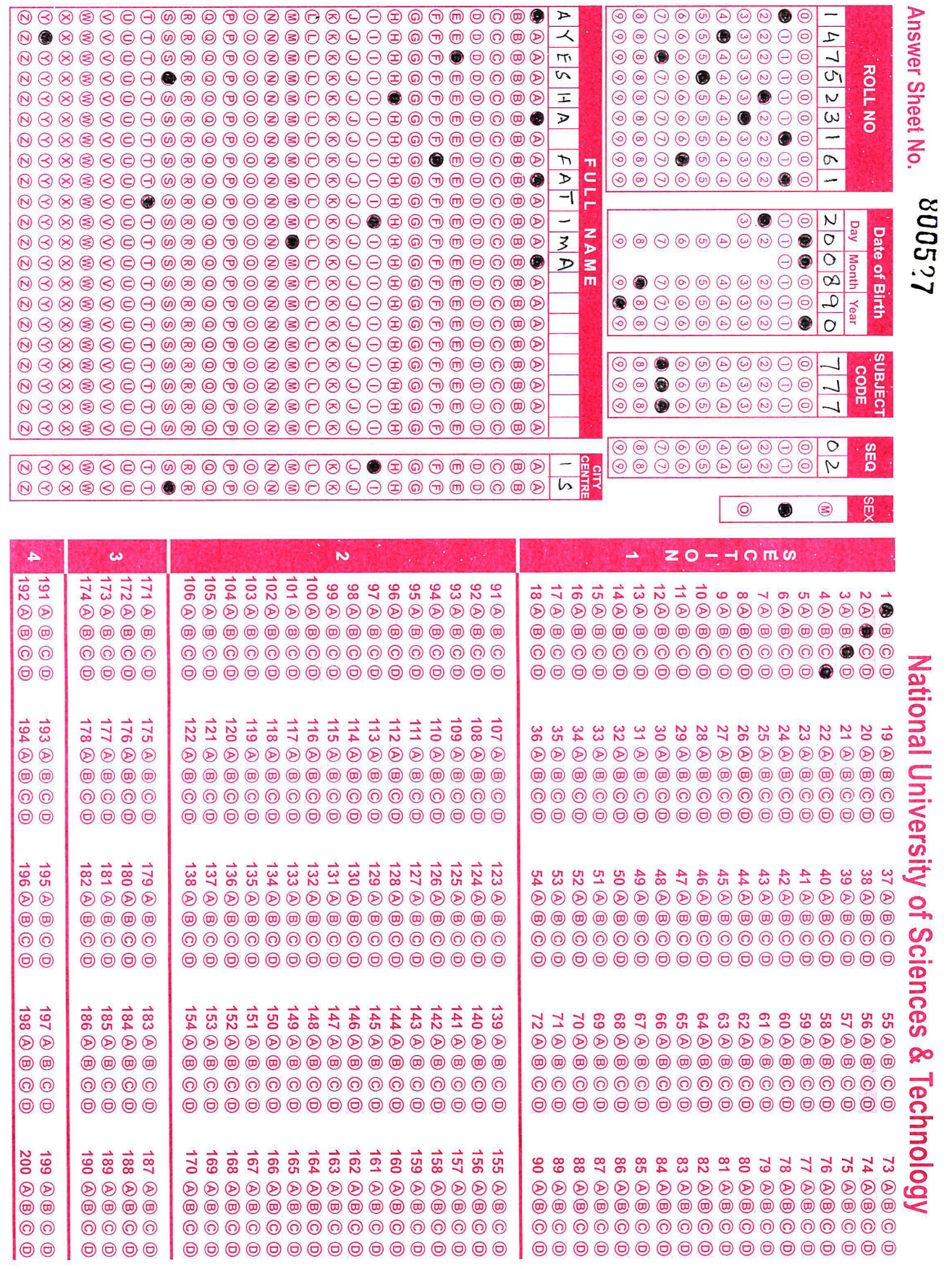
MISCELLANEOUS

- **Answer sheet is to be signed both by the invigilator as well as by the candidate, in respective blocks, with ballpoint pen only.**
- **PLEASE DON'T FORGET TO BRING A CLIPBOARD ALONG.**
- **USE 2B lead pencil only. DO NOT USE ink pens**, ballpoint pens or felt-tip pens on the answer sheet.
- You are allowed to bring along clipboard, pencils, eraser and sharpener only.
- Use your time effectively. Do not spend too much time on one question, otherwise you will run short of time for other questions.
- Write your **Roll No** on the front page of the **QUESTION BOOKLET** and the back side of the answer sheet in the given blocks. Do not write elsewhere.
- **Return the complete questions booklet along with the answer sheet** on completion of the test.

» You are not allowed to take away any part of the question booklet or note questions elsewhere. Non-compliance will be regarded as use of unfair mean.

» You are **NOT ALLOWED** to use any device which could assist in calculation such as a **calculator, tables, digital watch, mobile phone, electronic diary, Palm Pilot, etc.**

» **There is no negative marking.**



Instructions for Paper-based Entry Test of BS Chemistry

The Entry Test will be held for applicants in the following subjects:
a.Chemistry **b. English** **c. Intelligence**

These instructions deal with multiple choice answer sheets, which will be provided for examination. The answer sheets will have two parts, i.e., personal information and answers. A filled in answer sheet is printed on the next page for illustration and guidance. Answer sheets are marked through computer, therefore, it is important that candidates read and understand these instructions thoroughly before taking the exam. Non-compliance will affect scoring adversely.
PERSONAL INFORMATION (See appropriate block in the specimen answer sheet). Exam superintendent will brief on filling in of this portion before start of the exam)

- Clearly write your name in Capital Letters in the box titled FULL NAME. Fill corresponding circles. If the name is longer than the space provided, fill in as much as fits in given space. (In the specimen answer sheet, SIDRA SHAH is the name of a candidate).
- Write your Roll No in the box titled ROLL No. (in the specimen answer sheet, the Roll No of the candidate is 107624161)
- In the SUBJECT column, use “666” as subject code.
- In the SEQ CODE column, write NET Code written inside the question booklet. (SEQ Code 02 is marked in the specimen answer sheet).
- In the CITY/CENTRE column, use the following codes and fill in the correspondence circles.
  KI: Karachi **QA:** Quetta **IS:** Islamabad
- Put your date of birth in the column Date of Birth. 12-9-88 is marked as Date of Birth on the specimen sheet.
- In the SEX column, fill M for male candidates, F for female candidates and O for other candidates. (in the example a female candidate is marked).

MARKING Of ANSWER SHEET

In the specimen answer sheet, first 6 questions have been attempted. See the specimen sheet and the following instructions:

- Mark your choice with **2B lead pencil** by filling in the appropriate circle completely, making it a dark black circle as shown below.

- Some examples of improper marking are shown below:

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- If you need to erase an answer, do so clearly/cleanly, using a good quality eraser.
- Do not bend/fold your answer sheet, make stray marks or mark any area outside the provided circles.

MISCELLANEOUS

- **Answer sheet is to be signed both by the invigilator as well as the candidate, in respective blocks, with ball point pen only.**
- **PLEASE DON’T FORGET TO BRING A CLIPBOARD ALONG.**
- **USE 2B lead pencil only. DO NOT USE ink pens**, ball point pens or felt-tip pens on the answer sheet.
- You are allowed to bring along clipboards, pencils, eraser and sharpener only.
- Use your time efficiently. Do not spend too much time on one question, otherwise you will run short of time for the other questions.
- Write your **Roll No** on the front page of **QUESTION BOOKLET** and the back side of the answer sheet in the given blocks.
- Do not write elsewhere.
- **Return the complete questions booklet along with the answer sheet on completion of the test.**

The NUST Emblem

The Book of Knowledge lights up the darkness, through the Vine of Wisdom which bears the two moons and stars facing towards the East and the West, symbolising the diversity of disciplines and the fruit of knowledge.

The Rising Sun brings change, hope and enlightenment. It emanates inspiration and from the light of knowledge, four birds take wing from the nests of light, and spread out to the four corners of the world, symbolising the quest for spiritual gratification through knowledge and wisdom.

The NUST Blue is a colour that represents the future. It carries all the characteristics of the colour blue, like dignity, grace, freshness, professionalism, prudence and resolve.

National University of Sciences & Technology

ISLAMABAD RAWALPINDI RISALPUR KARACHI QUETTA

UAN: 111-116-878 | nust.edu.pk