GOAL 9

Industry, Innovation, and Infrastructure

1742	233	519	1
Research Projects	Publications	Patents	IPR Licensed to Industry

National Science and Technology Park (NSTP)

41 startups, 17 SMEs, 6 Anchor Tenants, 20+ Industrial Mentors

National Science & Technology Park (NSTP) is the first fully integrated science and technology park (STP) and the first university hosted STP of the country; the initiative is meticulously aimed at kindling the knowledge economy of Pakistan by stimulating and nurturing innovation-led germination and growth of hi-tech entities. NSTP, inaugurated on 9th December 2019 by the Prime Minister of Pakistan, H.E. Mr. Imran Khan, is the new national tech-pad where entrepreneurs and multinationals come together to discover, ideate, create, collaborate and break new ground. Kicking off with a portentous pilot, the NSTP is home to an ornate assortment of tech start-ups, established R&D companies and research branches of renowned national and international industry leaders.

Licensed to Industry

Industry: Arraytech

NUST transferred 1 X IPR of "S-Band TRR Module for Phased-Array Radars" to the local Industry, Arraytech. The project was related to the development of a Transmit-Receive-Receive (TRR) module for phased array mono-pulse radar for ground-based systems. This radar technique enables target detection with a single pulse, as opposed to conventional techniques of emitting multiple pulses in different directions and looking for maximum return. The team worked on sub-modules such as transmitter chain, high power amplifier, receiver chain, power supply, embedded system and mechanical chassis finally culminating into an integrated packaged system. The project was a successful indigenization effort for potential use in air-traffic control and surveillance applications through an academia-industry partnership between RIMMS-NUST and RWR (Pvt.) Ltd.

Faculty Placement 2019

21 faculty members, 11 Industries, 342 Industrial Research Projects Secured

NUST placed 21 faculty members in 11 industries from 14 institutions for two weeks during the summer breaks, under its Faculty Placement Programme in the year 2019. The programme enabled NUST to secure 48 internships, job positions and 14 professional training. On reciprocal basis, two members from each industry visited NUST for three days that resulted in furthering relationship with these industries. For the year 2019, 342 projects focusing on industrial needs, were secured from industries to be considered as Final Year Projects.

Industry-Academia Linkages

800+ Industrial Partnerships, 36 Technologies licensed to Industry, 100+ Industrial Consultancies/30+ Joint Research projects with Industry

At NUST, we strongly believe in knowledge transfer and open innovation to meet industrial needs. NUST has formulated an integrated, interdependent ecosystem that helps in establishing and consolidating industry-academia linkages and subsequently in commercializing research. The parts of this eco-system are:

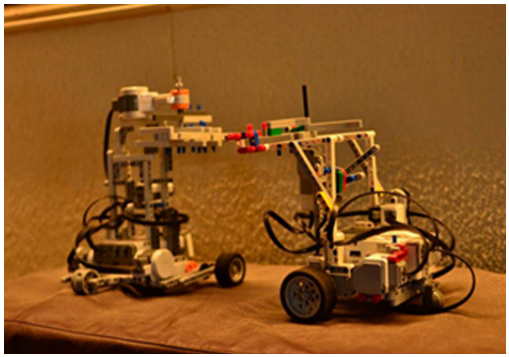
- Corporate Advisory Council (CAC)
- National Science & Technology Park (NSTP)
- Directorate of Research
- Intellectual Property Office (IPO)
- Technology Transfer Office (TTO)
- Professional Development Centre (PDC)
- Industrial Liaison Office (ILO)

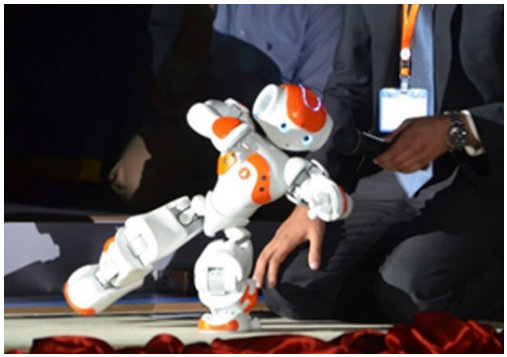
All of the above organs play a key role in establishing collaborations with industry and bridging the gaps between industrial needs and academic research.

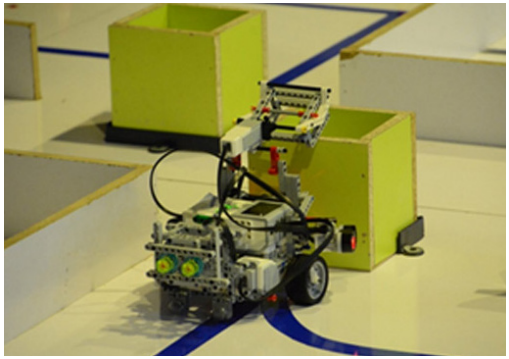
National Engineering Robotic Contest:

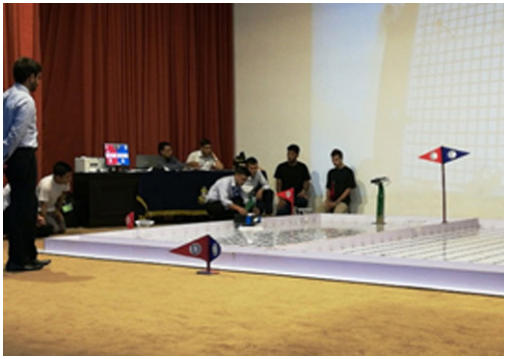
14 years, 1600+ Teams from all over Pakistan, 7000+ Students' Participation

College of Electrical and Mechanical Engineering (E&ME) is one of the leading constituent colleges of National University of Sciences and Technology (NUST). Department of Mechatronics at NUST, College of E&ME has been organizing this event for the last 14 years. The contest provides a great learning opportunity and exposure, assists in capacity building of youth, girls and students from all over Pakistan, even from remote areas, to learn about advance fields of Robotics and automation. So far, the contest has been able to attract talent from all over Pakistan and provided a platform to showcase their talent. A nominal fee is charged for participation, and all the funds for the event are arranged by NUST, with partial funding by supporting organizations and industries.









FFRC 2003-2004

Total Teams: 32
The first contest started back in 2003 as "Fire Fighting Robot Contest (FFRC)". The contest attained immediate acceptance among students and faculty. In 2004 the contest was reorganized with slightly change in theme but still remained as Fire Fighting Contest.

NERC 2005-2006

Total Teams: 36
The theme for 2005 was to pot tennis balls into the goal posts of similar heights.

NERC 2007

Total teams: 61
The theme for NERC 2007 was to pot the balls into the goal posts of different heights.

NERC 2008

Total teams: 78
The theme for this competition was to "pot the tennis balls in the goal posts of different heights".

NERC 2009

Total teams: 108
from 25 different national institutes
The contest consisted of two categories: Indigenous Robot category and Modular/Lego category.

NERC 2010

Total teams: 120
from 37 different national institutes
The contest consisted of two categories: Indigenous and Modular.

NERC 2011

Total teams: 157
from 36 different national institutes
Theme of the year's contest was to pick up colored blocks from various different locations and place them correctly in slots of their respective color.

NERC 2012

Total teams: 173
from 40 different national institutes
Theme of the year's contest was to place colored golf balls in colored boxes.

NERC 2013

Total teams: 163
from 40 different national institutes
The theme was to pot the colored golf balls in the respective colored boxed while travelling through a maze.

NERC 2014

Total teams: 133
from 40 different national institutes
The robots had to compete "heads on" potting all balls correctly and exiting the arena.

NERC 2015

Total teams: 60 from 31 different national institutes
The theme of NERC 2015 was to design and develop autonomous robots that can localize themselves in unknown environments, determine the location of colored boxes to pot balls and plan their motion accordingly with the help of a map provided in the form of an image file.

NERC 2016

Total teams: 181 from 47 different national institutes
The theme of NERC 2016 focused on "search and rescue". The aim was to design and develop autonomous robots that can localize themselves in unknown environments.

NERC 2017

Total teams: 167 from different national institutes
The theme of NERC 2017 focused on "disaster management". The aim was to design and develop autonomous robots that are able to supply much needed relief (water, food, medicine and hygiene kits) to a disaster stricken area, where all the bridges are broken.

NERC 2018

Total teams: 160 from different national institutes
The theme of NERC 2018 focused on designing autonomous robots that are able to move around valleys and canyons to explore the area for its geology, climate and water availability by placing different types of "sensors" at various designated "sites".

NERC 2019

Total teams: 200+ from 40 different national institutes
The focus of NERC 2019 theme was to create autonomous robot that was able to simulate Kitchen Recycling.

NUST Cyber Security Auditing and Evaluation Lab (NCSAEL)

NCSAEL is a part of the National Centre for Cyber Security (NCCS), one of the 4 national centres of excellence being established at Pakistani universities under an initiative of the government of Pakistan. NCCS aims to develop advanced tools and research technologies to protect Pakistan's cyberspace, sensitive data, and the local economy from cyber-attacks. NCSAEL is envisaged to be an internationally recognized lab and the nation's first source of expertise in the field of Information Security, with a focus on carrying out a security assessment of existing IT applications/OS, malware analysis for detection of Advanced Persistent Threats (APTs) and development of specialized secure indigenous IT products/ services.
The lab will also help organizations in preparation for IT security product evaluation before they formally apply for the internationally recognized Common Criteria Testing Lab's (CCTL) assessment.

Finding Innovative & Creative Solutions for Society (FICS)

2014-19

No. of Ideas Submitted: 1350

No. of successful startups: 28

NUST strongly believes in inculcating the spirit of entrepreneurship and innovation among students to tackle modern-day challenges head-on. Finding Innovative & Creative Solutions for Society (FICS) is an annual competition hosted by NUST in which students from around the country present their ideas and prototypes for funding and commercialization. This initiative aims to instill a spirit of social entrepreneurship amongst students, encouraging them to convert their creative ideas into value-adding solutions and thereby benefit themselves and society. The three-stage competition spans over two months in which projects are examined by industry leaders, innovators, and investors.
Some of the objectives of FICS are given below:

- To encourage students to become valuable members of society and contribute to societal / community development by deploying technical knowledge and scientific tools.
- To allow students to think creatively and develop the latest applications and innovative technology based-solutions, hence encouraging them to work on practical utilization of knowledge.

Year	FICS 2014	FICS 2015	FICS 2016	FICS 2017	FICS 2018	FICS 2019
Stage 1 – Idea / Synopsis Submission						
Project Synopses Submitted	77	179	263	205	328	298
Projects Shortlisted for Stage 2	56	103	183	122	306	131
Stage 2 – Standee, Presentation & Video						
Projects Displayed	56	79	93	122	137	90
Projects Shortlisted for Stage 3	38	57	61	52	54	35
Stage 3 – Prototype Display						
Projects Presented	29	54	57	49	47	34
Winners	3	5	5	4	3	9
Successful Start ups	-	4	3	6	9	6

International Conference on Nanoscience and Nanotechnology ICONN

International Conference on Nanoscience & Nanotechnology (ICONN) - a joint venture of NUST School of Chemical & Materials Engineering (SCME) and LUMS SBA School of Science & Engineering (SBASSE), was held at NUST. Various international speakers including Prof. Dr Mathias Brust (University of Liverpool, UK), Prof. Dr Walther Schwarzacher (University of Bristol, UK), Prof. Dr Churl-Hee Cho (Chungnam National University, Korea) & Dr Jan-Henrik Smatt (University, Turku, Finland) delivered lectures in interactive sessions on Nanomaterials for environmental remediation and monitoring, renewable energy technologies, bio-nanotechnology, porous materials, nano-devices and nanocomposites.