Facilities

Super Computing Research and Education Centre (ScREC)

Supercomputing Research and Education Facility is a Centre of Excellence in High Performance Computing with a mission to support the research and development efforts at National University of Sciences and Technology (NUST)

Services

- **1. Computational Access**

1.
    a. On Demand 24/7 Cluster Access
    b. Professional Technical Support for Application Installation and Maintainence

- **2. Software Development for hetrogeneous HPC Architectures**

- **3. Corporate Training**

1.
    a. Introduction to Parallel Programming using MPI and OpenMP (2 Days)
    b. Advanced Parallel Programming in MPI and OpenMP (2 Days)
    c. Introduction to GPU Programming (2 Days)
    d. Advanced GPU Programming (2 Days)
    e. Parallel Programming in Matlab (2 Days)

- **4. HPC Solution Design**

1.
    a. We provide consultancy for HPC solution design ranging from Data Centre Designing to Cluster Deployment and Cloud configuration.

Super Computing Lab

Supercomputing lab is a part of Supercomputing Research and Education Centre. This lab has a capacity of 20 computer desks. This lab provides computer terminals to researchers who run simulations on supercomputer. Researchers use these terminals to remotely access supercomputer for their research work. Lab is also utilized for dedicated training sessions on supercomputer.

MS Research Lab

MS Research Lab has a capacity of 60 research desks with a room for expansion to 70 desks. All the top-notch research facilities are available in the lab. The dedicated research lab for MS students provides congenial environment for education and research. Each student is allocated a dedicated research desk along with a locker to keep his belongings.

General Purpose Teaching Lab

General purpose computing lab has a capacity of 40 computer desks. The lab is primarily used to conduct teaching lab. SINES is a graduate school and a research centre with only MS and PhD degree programs with no credited teaching labs, however, our faculty encourages students to attend practical lab sessions to correlate theory with practical work. Lab is also utilized to conduct hands on trainings on research software, seminars, workshops etc.

Computational Aeronautics Lab (CAL)

The history of Computational Aeronautics Lab can be traced back to the origins of Research Centre for Modeling & Simulation. Prof. Dr. Khalid Parvez laid the foundation of this research group with the name of 'Fluid Flow & Structures'. Over the years, the group evolved and reorganized into Computational Aeronautics Lab (CAL). Currently, CAL is headed by Dr. Adnan Maqsood. The scope of CAL includes aerodynamics, flight mechanics and control related investigations in aeronautics, astronautics, aerospace, unmanned vehicle design, and wind energy. Allied topics are also visited from time to time.

Computational Drug Design Lab (CDD)

SINES commenced the journey of computational drug design back in 2012. Currently, Computational Drug Design (CDD) research team is composed of 06 doctoral and 12 master students. Following a holistic pharmacoinformatic approach, computational drug design research team combines multi-dimensional annotation, structural modeling of proteins, structure-based drug design, chemometric and machine learning approaches to develop predictive computational systems for transporters, proteins and ion channels. Major purpose of these activities is to design and optimize lead structures with respect to their efficacy and toxicity and to develop multiscale simulation systems for the prediction of drug-efficacy and drug-induced toxicity.

Brief introduction of the lab

SINES commenced the journey of computational drug design back in 2012. Currently, Computational Drug Design (CDD) research team is composed of 06 doctoral and 12 master students. Following a holistic pharmacoinformatic approach, computational drug design research team combines multi-dimensional annotation, structural modeling of proteins, structure-based drug design, chemometric and machine learning approaches to develop predictive computational systems for transporters, proteins and ion channels. Major purpose of these activities is to design and optimize lead structures with respect to their efficacy and toxicity and to develop multiscale simulation systems for the prediction of drug-efficacy and drug-induced toxicity.

Mission and vision (role)

Rational: Advances in medicine have led to many significant new discoveries, and new insights of the workings of cancers, neurological- , autoimmune- or cardiovascular-, and other devastating diseases. However, still, many of these diseases cannot be effectively treated by existing therapies. And the development of new innovative medicines remains therefore urgent and essential.

First, we need a better understanding of the human pathophysiology and biological pathways underlying specific diseases. This enables us to better predict where to focus time and work that will lead us to viable drugs.

This requires us to develop a better predictability of human pharmacology and drug safety, and much more advanced in vitro and in vivo models translating to the individual
patient. Finally in order to increase the optimal effectiveness, new and more innovative ways for drug delivery are crucial.

Mission:

At the CDD laboratory, we want to be at the leading edge of new fundamental research on the development of new drugs which are more effective and safer. And additionally develop new innovative ways to apply the right drugs, with the right dosage, at the right place. In this regard we focus on three main lines of research which are described below.

Moreover, as an academic institute, we also focus on the education and training of graduate students in our fields of expertise. And additionally with the added value of CDD being part of the NICHE, we seek active joint research projects.

Envisioned research areas (especially interdisciplinary ones)

Lines of Research: With our set goals, we focus on three main lines of research. Areas that have appeared more sharply into focus over the past few years, and which will steer our research efforts in the coming period.

1. Novel therapeutic modalities and novel concepts in early drug discovery

The first focused area is the development of novel therapeutic techniques and procedures. Including, new innovative concepts in early drug design and discovery in order to better predict ligand-target interactions. For this, we worked on cheminformatics-based identification of new chemical structures with optimal target affinity and specificity. Further, we aim to design cutting-edge formulations and strategies for drug administration. So we can optimize the specific targeting the site of the disease, maximise the desired therapeutic effect, while at the same time minimize the adverse reactions to drugs.

2. Translational Drug Research

Our second line of research is translational in nature. This means we aim at the optimization of the transition from preclinical research towards the stages of pharmacological interventions within the body. Specifically, we are working on innovative bio-pharmaceutical concepts to intervene in auto-immune-like disorders, using biologics such as vaccines and therapeutic proteins. Also, this requires our focus on developing better techniques and methods for predicting the efficacy and drug safety. To achieve this, we develop quantitative systems biology models of health and disease states.

3. Personalized Medicine

Most medical treatments have been designed for the “average patient”, often resulting in a “one-size-fits-all” approach. However, it has become increasingly clear that a much more effective approach is required that takes into account the differences between individuals, their genes, environments, lifestyles, all of which also influences their individual responses to treatment. This calls for a systems-level understanding of diseases, their onset and progressions, aimed at predicting the modulation of disease networks by drugs in cells, organs, and the body as a whole. We aim to develop computational systems pharmacology methods, which will enable us to take into account complex disturbances in biochemical and signaling networks.

Potential student/faculty, funded/non-funded projects of interdisciplinary nature

Lab PI: Dr. Ishrat Jabeen, 12 MS and 06PhD students
Projects:
1. Probing the Lipophilic Efficiency, Ligand Efficiency and Selectivity Profiles of

Inhibitors of Multidrug Transport Proteins" from Higher Education Commission of Pakistan 2012-2013
2. “Pharmacoinformatics Approaches to Design dual Inhibitors of Tyrosine Kinase Domain of IR and IGF-1R" from Higher Education Commission of Pakistan (Amount of PKR 1.3M). 2018-2021.
3. In Silico Modeling of hERG K+ Channel (2014-2020) HEC Funded Phd student Project.
4. Combined Ligand and Structure Based Studies of Modulators of Akt Kinases. NUST Funded Phd student Project.
5. In Silico strategies to predict drug metabolism and drug –drug interactions. HEC Funded Phd student Project.
6. Molecular Modeling Strategies to Design Novel Inhibitors of GAT1. HEC Funded Phd student Project.
7. Synthesis, biological evaluation and in silico studies on inhibitors of IP3R . NUST Funded Phd student Project.
8. Combined Ligand- and Structure- Based Strategies to Design Potential Inhibitors of Multidrug Resistance (MDR) Proteins. NUST Funded Phd student Project.

Key hardware, equipment, software, other resources in the lab (both available and planned)

1. 14 Computers

2. MOE Software

3. Schrodinger Software

4. Gold Software

5. GROMICS Software

6. AMBER Software

7. Pentacle Software

8. Modullar Software

Planned

1. Preparatory HPLC

2. Isolation extraction set-up for Venoms and Medicinal Plants

Lab staff and student strength (both available and planned)

Available: Students 18

Names of other NICHE labs with which interdisciplinary collaboration work is expected. Image Analysis Lab i. Any other relevant information

1. Graduates of CDD: More than 50% of the graduates of CDD teams secured fully funded PhD scholarship at top world universities. PhD graduates (05) of CDD are working as data scientists, faculty and Post-doctoral fellows at top local and international organizations.
2. Conferences/Workshops:
1. Symposium of Computer aided drug design approaches, 27 Sep, 2017
2. International Workshop on Rational Drug design approaches, June 15-17, 2021.
3. Webinar on High Performance Computing in Drug Design, May, 17, 2021
4. Invited Speaker at the Molecular Dynamics Simulations workshop at LUMS Lahore, 12-15 Feb 2020
5. Invited Speaker at Current trends in computational sciences seminar at the GCWU Faisalabad, 17 June, 2020
6. Speaker at the supercomputing in modeling and simulation webinar at SINES, NUST, May 2020

Internships:

The CDD lab offers internship to 5 students/YEAR from different universities. So far 20 students from COMSATS, ISLAMABAD, GC University Faisalabad, Quaid-e-Azam University, and Islamic International University have completed their internship at the CDD lAB

Immersive Interaction Lab

he gap between real world and the digital content has always existed but is narrowing rapidly. Human interaction with digital content in the cyberspace can be made more intimate through incorporation of senses that are not conventionally used in our everyday interaction with computers such as the sense of touch, balance, etc. Immersive interaction lab aims to investigate avenues of multimodal interaction for increased immersion in various application domains. We explore opportunities to generate enhanced and enriched experiences through immersive visualization and

multiple interaction channels. The areas of research interest of the lab members include virtual/augmented/mixed reality, haptic interaction, brain-computer interfaces for simulation, education and training.

Lab Description

The gap between real world and the digital content has always existed but is narrowing rapidly. Human interaction with digital content in the cyberspace can be made more intimate through incorporation of senses that are not conventionally used in our everyday interaction with computers such as the sense of touch, balance, etc. Immersive interaction lab aims to investigate avenues of multimodal interaction for increased immersion in various application domains. We explore opportunities to generate enhanced and enriched experiences through immersive visualization and multiple interaction channels. The areas of research interest of the lab members include virtual/augmented/mixed reality, haptic interaction, brain-computer interfaces for simulation, education and training.

Project Title

- Virtual reality based procedural memorization of general aviation light aircraft checklists
- Understanding the role of VR in asynchronous content delivery for chemistry education
- Game-induced emotion analysis using electroencephalography
- Effect of haptic feedback on pilot/operator performance during flight simulation
- Pseudo-Haptic feedback through mid-air action for learning of chemical bond strengths

Contact Directory

General Information

PA to Principal SINES

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SINES Finance

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SINES Departments:

Department of Engineering:

Computational Engineering uses computers and math algorithms to solve complex physical problems arising in engineering analysis and design. With the advent of high performance computing, computational approaches have become indispensable for characterizing, predicting and simulating physical events and engineering systems.

HEAD OF DEPARTMENT MESSAGE

Dr. Mian Ilyas Ahmad

It is a matter of pride and pleasure for me to introduce the Department of Engineering which is part of one of the best research centres within the ranked No1 university of Pakistan. The department only has graduate and post graduate students who are focused on devising innovative, correct solutions to real life problems. Our success is evident from high points such as high performance supercomputing facility, state of the art laboratories and highly professional, foreign qualified and experienced faculty. We have 08 full time PhD faculty members supervising in the diverse research domains such as Virtual Reality Aeronautical Engineering, Control, Fluid Dynamics Systems. These faculty and mentors push boundaries and advance ground-breaking and innovative ideas to solve real life problems. Their research has the potential to shape the future of our country. We welcome students who want to make an ace in their life with sheer commitment, dedication and hard work. I hope you will enjoy being a part of our proud family.

Department of Sciences

The department of sciences has three streams including: mathematics, bioinformatics and computer science; where we focus on research problems in these areas, producing high quality publications in international journals of repute.

HEAD OF DEPARTMENT MESSAGE

Dr Fouzia Perveen Malik

Welcome to the Department of Sciences at SINES. As computational Science is an exciting and rapidly evolving field that exploits the power of computation to major challenges in natural and social sciences as well as engineering fields; the department focuses on linking traditional sciences with the latest technological advances in computer science, informatics and big data analytics to produce cutting edge research in these fields. The department is the hub for outstanding graduates to pursue their passion and create impactful knowledge. I take enormous pride in our highly qualified faculty, state of the art laboratories and supercomputing facilities that have been provided by the school to us. The mission of my team is to prepare our graduates to apply

basic and advanced knowledge and skills to the design, analysis and research of biological systems to prepare them to complete successfully in today's job market and for lifelong learning. We have 08 full time PhD faculty members supervising in the diverse research domains such as Computer-aided drug design, Computational Chemistry, Computational Vaccinology, Translational Medicine. These faculty and mentors celebrate research and push boundaries to help and advance their students. Helping shape the potential of our country Lastly, it has never been more important for us to keep in contact with our alumni, former colleagues, and friends. You serve as role models for our students, guiding them where they can go and what they can do with a degree in Computational Sciences and Engineering, and we greatly appreciate your loyalty to NUST in general and SINES in particular.

SINES Faculty/ Staff Directory

hammad mehmood cheema

PRINCIPAL OF SCHOOL OF INTERDISCIPLINARY ENGINEERING & SCIENCES (SINES)

- School of Interdisciplinary Engineering & Sciences (SINES)
- 5190855701

- Academic Background

- **PhD** (Electrical Engineering)Eindhoven University of TechnologyMay 01, 2005 - January 25, 2010

- Honours and Awards

- **Best Univer Teacher Award:** Best University Teacher AwardMay 01, 2017
- **Institute Best Researcher**I: nstitute Level Best Researcher AwardDecember 13, 2020

Publication:

Beam Steerable Half Mode SIW Leaky-Wave Antenna Using FPMS October 09, 2023Shahinshah Ali, Hammad M. Cheema, Farhan A. Ghaffar,IEEE Journal of Microwaves - Volume 3, Issue 4, Pages 1187-1198

Segmented Radon Fourier Transform for Long-Time Coherent Radars May 01, 2023Musadiq Hussain, Rehan Ahmed, Hammad Cheema ,IEEE Sensors Journal - Volume:23, Issue:9, Page:9582-9594

Substrate Integrated Waveguide Antenna System for 5G In-Band Full Duplex Applications October 10, 2021Masaud Shah, Hammad Mehmood Cheema, Qammer H. Abbasi,Electronics - Volume 10, Issue 20, Article Number 2456

Ultra-wideband, wide angle, asymmetric transmission based chiral metasurface for C and X band applications June 03, 2021Syed Hussain Ali Bokhari, Hammad M. Cheema,Scientific Reports - Volume 11, Article Number: 11724

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EMI shielding properties of polymer blends with inclusion of graphene nano platelets September 01, 2019Muhammad Fayzan Shakir, Ahmad Nawaz Khan, Ramsha Khan, Sofia Javed, Asra Tariq, Muhammad Azeem, Adeel Riaz, Ahmed Shafqat, Hammad M. Cheema, Muhammad Aftab Akram, Imtiaz Ahmad, Rahim Jan,Results in Physics - Volume 14, Article Number 102365

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Weakly coupled directional coupler with simultaneous wide bandwidth and high directivity May 01, 2019M. Hammad Akhtar, M. Ayaz Zakir, Hammad M. Cheema,Microwave and Optical Technology Letters - Volume 61, Issue 5, Pages 1259-1262

A 5GHz Narrow-Beam Leaky-Wave Antenna Using Binomially Distributed Slot based Substrate Integrated Waveguide September 01, 2018Memoona Farooq, Muhammad Umer Khan , Hammad Mehmood Cheema,Microwave and Optical Technology Letters - Volume 60, Issue 9, Pages 2288-2293

RF Energy Harvesting for Ubiquitous, Zero Power Wireless Sensors April 22, 2018Warda Saeed, Nosherwan Shoaib, Hammad Mahmood Cheema, Muhammad Umer Khan ,International Journal of Antennas and Propagation - Article Number: 8903139

A high-gain inkjet-printed UWB LPDA antenna on paper substrate May 01, 2017Syed Muhammad Hamza, Farooq Ahmad Tahir, Hammad Mahmood Cheema,International Journal of Microwave and Wireless Technologies - Volume: 9, Issue: 4, Pages: 931-937

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A Compact Uniplanar Antenna for Nine-Band LTEWWAN Operation in Tablet Computers August 01, 2016Aqsa Ahmad, Farooq Ahmad Tahir, Dr. Hammad Mahmood Cheema,International Journal of RF and Microwave Computer-Aided Engineering - Volume 26, Issue 6, Pages 496–502

3.56 bits/cm2 Compact Inkjet Printed and Application Specific Chipless RFID Tag January 01, 2016Munawar Masood Khan, Farooq Ahmad Tahir, M. F. Farooqui, Atif Shamim, Hammad Mahmood Cheema,IEEE Antennas and Wireless Propagation Letters - Volume 15, Pages 1109-1112

A Compact Kapton-based Inkjet Printed Multiband Antenna for Flexible Wireless Devices April 20, 2015Sana Ahmed, Farooq Ahmad Tahir, A. Shamim, Hammad Mahmood Cheema,IEEE Antennas and Wireless Propagation Letters - Volume 14, Pages1802-1805

A low-power 802.11 ad compatible 60-GHz phase-locked loop in 65-nm CMOS March 01, 2015Hammad Mehmood Cheema, Muhammad Arsalan, Khaled N. Salama, Atif Shamim,Microwave and Optical Technology Letters - Volume 57, Issue 3, pages 660–667

Experience:

Postdoc: King Abdullah University of Science & Technology March 01, 2011 - August 01, 2013

mian ilyas ahmad

HOD DEPARTMENT OF ENGINEERING

- School of Interdisciplinary Engineering & Sciences (SINES)
- 0518865745

- Academic Background

- **PhD** (Control Engineering)Imperial College LondonOctober 28, 2007 - April 28, 2011

- Honours and Awards

- **Certificate of Merit** Cash award for having secured third position in Third Year Electrical Engineering Annual Examination.April 15, 2005
- **Imperial Volunteer Centre** Imperial Volunteer Centre Award in recognition of contributions to the local community as an Imperial College VolunteerOctober 20, 2010

Publications

Multivariate moment-matching for model order reduction of quadratic-bilinear systems using error bounds December 12, 2022Muhammad Altaf Khattak, Mian Ilyas Ahmad, Lihong Feng, Peter Benner,Advanced Modeling and Simulation in Engineering Sciences - Volume 9, Issue 1, Article Number 23

Development of Model Reduction Framework for Continuous-Time Weighted and Limited-Interval Systems June 14, 2022Sammana Batool, Muhammad Imran, Muhammad Imran, Mian Ilyas Ahmad,Arabian Journal for Science and Engineering - Pages 1-12

Development of Frequency Weighted Model Order Reduction Techniques for Discrete-Time One-Dimensional and Two-Dimensional Linear Systems With Error Bounds February 10, 2022Muhammad Imran, Muhammad Imran, Mian Ilyas Ahmad,IEEE Access - Volume 10, Pages 15096-15117

Accuracy Enhancing Model Reduction Technique for Weighted and Limited Interval Systems with Error Bound January 08, 2022Sammana Batool, Muhammad Imran, Muhammad Imran, Mian Ilyas Ahmad,Journal of Control, Automation and Electrical Systems - Pages 1-13

Computational techniques for H2 optimal frequency-limited model order reduction of large-scale sparse linear systems October 23, 2021Xin Du, Kife I. Bin Iqbal , M. Monir Uddin, A. Mostakin Fony , Md. Tanzim Hossain, Mian Ilyas Ahmad, Mohammad Sahadet Hossain,Journal of Computational Science - Volume 55, Article Number 101473

Development of model reduction technique for weighted and limited-intervals gramians for discrete-time systems via balanced structure with error bound September 12, 2021Sammana Batool, Muhammad Imran, Muhammad Imran, Mian Ilyas Ahmed,International Journal of Dynamics and Control - Pages 1-10

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A new two-sided projection technique for model reduction of quadratic-bilinear descriptor systems November 13, 2018Mian Ilyas Ahmad, Peter Benner, Lihong Feng,International Journal of Computer Mathematics - NULL

Interpolatory model reduction for quadratic-bilinear systems using error estimators October 31, 2018Mian Ilyas Ahmad, Peter Benner, Lihong Feng,Engineering Computations - NULL

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Experience:

Post Doctoral fellow: Max Planck Institute for dynamics of Complex Technical Systems MagdeburgJanuary 01, 2013 - December 31, 2015

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HOD DEPARTMENT OF SCIENCES

- School of Interdisciplinary Engineering & Sciences (SINES)
- 0519085574

Academic Background

- **PhD** (Physical Chemistry)Quaid-i-Azam UniversityJuly 05, 2007 - October 25, 2013

Honours and Awards

- **NUST entry test**Selected by Prorector Acad NUST for the preparation of NUST entry testFebruary 25, 2014
- **Poster prize**Awarded by firsr prize in Poster presentation in the Conference on “recent trends in chemical Research”. The Department of Chemsitry, SBA School of Sciences and Engineering, LUMS, Lahore and Quaid-i-Azam University Islamabad, Pakistan.September 27, 2013
- **Visiting Professor**Invited as Visiting Professor at Institute for Polymers, Composites and Biomaterials (IPCB-CNR) Via Campi Flegrei, 34 - 80078 Pozzuoli (Na) Italy for a research visit during 1st July2016-30th August 2016.July 01, 2016
- **IUPAC**Appointed as IUPAC National Representative for the year 2016-2017.August 09, 2015
- **National Representative**Selected as one of two IUPAC delegates by Chemical Society of Pakistan (CSP) as National Representator in 48th IUPAC General Assembly Meeting and 45th IUPAC conference at Busan, Korea 2015.July 13, 2015

Publications

Advancing nitrate reduction to ammonia: insights into mechanism, activity control, and catalyst design over Pt nanoparticle-based ZrO2 November 24, 2023Ayyaz Mahmood, Fouzia Perveen Malik, Tehmina Akram, Shenggui Chen, Ahmad Irfan, Huafu Chen,RSC Advances - Volume 13, Issue 49, Pages 34497-34509

In-situ formation of Azo dye capped-silver nanoparticles and their nanocomposite with reduced graphene oxide for dye degradation October 15,

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Experience:

Associat Prof. NUST, H-12 Campus IslmabadAugust 28, 2019 - February 26, 2022

Assistant Prof. NUST, H-12 Campus IslmabadAugust 28, 2019 - February 26, 2022

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- Summary

- Zartasha Mustansar earned her PhD from the University of Manchester, UK (Sponsored by Microsoft Research Cambridge(MSR) & Dorothy Hodgkin). Research Area: Image based modeling & Biomechanics

- Academic Background

- **PhD** (Computational Biomechanics Image Based Modeling)University of ManchesterJanuary 25, 2009 - May 09, 2015

- Honours and Awards

- **Microsoft-Dorothy Hodgkin**Awarded By Microsoft Research Cambridge under the scheme Microsoft Dorothy Hodgkin Postgraduate Award for PhD studies.January 01, 2009
- **Grace Hopper Scholarship**Grace Hopper Scholarship for Women in Computing co-sponsored by ACM - Microsoft - Google & Yahoo (Conf. Presentation) In USASeptember 23, 2009
- **NRPU-HEC**NRPU - HEC Award worth 1.45MJune 06, 2018
- **School / College Best Researcher Awards-2021**December 26, 2022

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Experience:

President Robotics Chapter University of Manchester, UKMarch 01, 2010 - July 30, 2011

Research Assistant University of ManchesterFebruary 01, 2009 - February 01, 2010

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Publications

Modelling and analysis of the complement 2 system signalling pathways: Roles of C3, 3 C5a and pro-inflammatory cytokines in 4 SARS-CoV-2 infection September 20, 2023Didar Murad, Rehan Zafar Paracha, Muhammad Tariq Saeed, Jamil Ahmad, Ammar Mushtaq, Maleeha Humayun,PeerJ - Vol:11, Articel Number: e15794

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Synthesis, Characterization, Theoretical and Experimental Anticancer Evaluation of Novel Cocrystals of 5-Fluorouracil and Schiff Bases against SW480 Colorectal Carcinoma July 11, 2023Farhat Jubeen, Ishrat Jabeen, Usman Aftab, Sadia Noor, Mah e Hareem, Misbah Sultan, Mohsin Kazi,Pharmaceutics - Volume 15(7), Article Number 1929

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Experience:

Associate ProfessorRCMS NUSTDecember 28, 2017 - March 02, 2022

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- Honours and Awards

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- Publications

- **System Level Modeling and Analysis of TNF-α mediated Sphingolipid Signaling Pathway in Neurological Disorders for the Prediction of Therapeutic Targets**January 06, 2024Sanam Banarus, Rehan Zafar Paracha, Maryum Nisar, Ayesha Arif, Jamil Ahmad, Muhammad Tariq Saeed, Zartasha Mustansar, Malik N Shuja,Frontiers in Physiology - Sec. Computational Physiology in Med
- **Modelling and analysis of the complement 2 system signalling pathways: Roles of C3, 3 C5a and pro-inflammatory cytokines in 4 SARS-CoV-2 infection**September 20, 2023Didar Murad, Rehan Zafar Paracha, Muhammad Tariq Saeed, Jamil Ahmad, Ammar Mushtaq, Maleeha Humayun,PeerJ - Vol:11, Articel Number: e15794
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- **Formal model of the interplay between TGF-β1 and MMP-9 and their dynamics in hepatocellular carcinoma**April 16, 2019Shifa Tariq Ashraf, Ayesha Obaid, Muhammad Tariq Saeed, Anam Naz, Fatima Shahid, Jamil Ahmad, Amjad Ali,Mathematical Bio sciences and Engineering - Volume 16, Issue 5, Pages 3285–3310
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Experience:

Assistant ProfessorNUSTFebruary 01, 2011 - February 24, 2022

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- Academic Background

- **PhD** (Computational Chemistry)Ruprecht-Karls-Universität HeidelbergNovember 11, 2008 - May 25, 2012

Publications

Arresting The Biosynthesis Of Lipid A To Hinder Escherichia Coli And Pseudomonas Aeruginosa Through Fatty Diglyceride March 11, 2023Hamdullah Khadim Sheikh, Tanzila Arshad, Uzma Habib, Seyedeh Zahra Mirmohammadi, Rafia Usman, Muhammad Mohtasheemul Hassan,Pakistan Journal of Pharmaceutical Sciences - Volume 36, No.2, Pages 409-415

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- Summary

- I am engaged in undergraduate, graduate teaching and research in NUST. I am doing research in applied statistics in general and estimation of extreme events in particular.

- Academic Background

- **PhD** (Applied Statistics)BZU, MultanJanuary 15, 2005 - October 22, 2012

- Publications

- **Modeling of flood extremes using regional frequency analysis of sites of Khyber Pakhtunkhwa, Pakistan**December 01, 2021Muhammad Shafeeq ul Rehman Khan, Zamir Hussain, Ishfaq Ahmad, Farzana Noor,Journal of Flood Risk Management - Volume14, Issue 4, Article Number e12751
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Experience:

Lecturer (BPS- 17) Pakistan Institute of Development EconomicsJanuary 11, 2010 - October 10, 2013

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Academic Background

- **PhD** (Virology And Immunology)NUST, IslamabadSeptember 02, 2009 - October 01, 2015

Honours and Awards

- **HEC Best Research Paper**HEC Best Research Paper Award, 2014-2015

Publications

- **System Level Modeling and Analysis of TNF-α mediated Sphingolipid Signaling Pathway in Neurological Disorders for the Prediction of Therapeutic Targets**January 06, 2024Sanam Banarus, Rehan Zafar Paracha, Maryum Nisar, Ayesha Arif, Jamil Ahmad, Muhammad Tariq Saeed, Zartasha Mustansar, Malik N Shuja,Frontiers in Physiology - Sec. Computational Physiology in Med
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- **Designing, synthesis and characterization of 2-aminothiazole-4-carboxylate Schiff bases; antimicrobial evaluation against multidrug resistant strains and molecular docking**September 14, 2019Saima Ejaz, Humaira Nadeem, Rehan Zafar Paracha, Sadia Sarwar, Sadaf Ejaz,BMC Chemistry - Volume: 13, Issue: 1, Article Number: UNSP 115

- **Systems-Level Understanding of Single-Cell Omics**July 11, 2019Anam Naz, Ayesha Obaid, Aqsa Ikram, Faryal Mehwish Awan, Maryum Nisar, Rehan Zafar Paracha, Amjad Ali,Book on Single-Cell Omics - Chapter 20, Volume 1 (Technological Advances), Pages 433-456
- **The Route to 'Chemobrain' - Computational probing of neuronal LTP pathway**July 03, 2019Ammad Fahim, Zaira Rehman, Muhammad Faraz Bhatti, Nasar um Minullah Virk, Amjad Ali, Amir Rashid, Rehan Zafar Paracha,Nature Scientific Reports - Volume 9, Article Number 9630
- **A systematic simulation-based meta-analytical framework for prediction of physiological biomarkers in alopecia**April 04, 2019Syed Aun Muhammad, Nighat Fatima, Rehan Zafar Paracha, Amjad Ali, Jake Y. Chen,Journal of Biological Research-Thessaloniki - Volume 26, Article Number 2
- **MicroRNAs and their target mRNAs as Potential Biomarkers among Smokers and Non-Smokers with Lung Adenocarcinoma**April 01, 2019Sumaria Malik, Rehan Zafar Paracha, Maryam Khalid, Maryum Nisar, Amnah Siddiqa, Zamir Hussain, Raheel Nawaz, Amjad Ali, Jamil Ahmad,IET Systems Biology - Volume 13, Issue 2, Pages 69–76
- **Parameter estimation of qualitative biological regulatory networks on high performance computing hardware**December 29, 2018Muhammad Tariq Saeed, Jamil Ahmad, Jan Baumbach, Josch Pauling, Aamir Shaf, Rehan Zafar Paracha, Asad Hayat, Amjad Ali,BMC Systems Biology - Volume 12, Article Number 146
- **Identification of Key Genes and Pathways Involved in Compensatory Pancreatic Beta Cell Hyperplasia During Insulin Resistance.**November 15, 2018Amnah Siddiqa, Jamil Ahmad, Zurah Bibi, Rehan Zafar Paracha, Amjad Ali,Advances in Computational Science and Computing - pp 420-427
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- **Color Atlas of Statistics**April 04, 2018Usman Zafar Paracha, Milena Popovic, Rehan Zafar Paracha,Amazon Books - 4 April, 2018
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- **Structural analysis and insight into Zika virus NS5 mediated interferon inhibition**July 15, 2017Hamza Arshad Dar, Tahreem Zaheer, Rehan Zafar Paracha, Amjad ali,Infection, Genetics and Evolution - Volume: 51 Pages: 143-152
- **Formal modeling of mTOR Associated biological regulatory network reveals novel therapeutic strategy for the treatment of cancer**June 13, 2017Zurah Bibi, Jamil Ahmad, Amnah Siddiqa, Rehan Zafar Paracha , Tariq Saeed, Amjad Ali, Hussnain Ahmed Janjua , Shakir Ullah, Emna Ben Abdallah , Olivier Roux,Frontiers in Physiology - Volume: 8, Article Number 416
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- **Phenotyping in Precision Medicine**January 01, 2017Rehan Zafar Paracha, Ayesha Obaid, Amjad Ali,Book on Progress and Challenges in Precision Medicine - Chapter 3, Pages 55-77
- **Formal modeling and analysis of the hexosamine biosynthetic pathway: role of O-linked N-acetylglucosamine transferase in oncogenesis and cancer progression**September 27, 2016Muhammad Tariq Saeed, Jamil Ahmed, Shahzina Kanwal, Andreana N. Holowatyj, Iftikhar A. Sheikh, Rehan Zafar Paracha, Muhammad Aamir Shafi, Amnah Siddiqa, Zurah Bibi, Mukaram Khan, Amjad Ali,PeerJ - Volume 4, Article Number e2348
- **Fusion molecules of heat shock protein HSPX with other antigens of mycobacterium tuberculosis show high potential in serodiagnosis of tuberculosis**September 21, 2016Rehan Zafar Paracha, Madeeha Afzal, Ruqyya Khalid, Sana Khurshid, Imran H. Khan, Muhammad Waheed Akhtar,PLOS ONE - Volume 11, Issue 9, Article Number e0163349

- **Pangenome and immuno-proteomics analysis of Acinetobacter baumannii strains revealed the core peptide vaccine targets**July 19, 2016Afreenish Hassan, Anam Naz, Ayesha Obaid, Rehan Zafar Paracha, Kanwal Naz, Faryal Mehwish Awan, Syed Aun Muhmmad, Hussnain Ahmed Janjua, Jamil Ahmad, Amjad Ali,BMC Genomics - Volume 17, Article Number 732
- **Characterization of evolutionary changes in hemagglutinin of influenza H1N1 virus: a computational analysis**March 01, 2016Zaira Rehman, Rehan Zafar Paracha, Uzma Amir, Umer H. K. Niazi, Ammad Fahim,Virus Disease - Volume 27, Issue 1, Pages 34-40
- **Structural characterization of ANGPTL8 (betatrophin) with its interacting partner lipoprotein lipase**January 25, 2016Rehan Zafar Paracha, Amnah Siddiqa, Jamil Ahmad, Amjad Ali, Zurah Bibi , Babar Aslam,Computational Biology and Chemistry - Volume 61, Pages 210-220
- **Prostratin: An Overview**November 01, 2015Ghulam Abbas Miana, Muhammad Riaz, Syed Shahzad-ul-Hussan, Rehan Zafar Paracha, Usman Zafar Paracha,Mini-Reviews In Medicinal Chemistry - Volume 15, Number 13, Pages 1122-1130
- **Fusion of selected regions of mycobacterial antigens for enhancing sensitivity in serodiagnosis of tuberculosis**August 01, 2015Madeeha Afzal, Sana Khurshid, Ruqyya Khalid, Rehan Zafar Paracha, Imran H. Khan, M. Waheed Akhtar,Journal of Microbiological Methods - Volume 115, Pages 104-111
- **Identification of putative vaccine candidates against Helicobacter pylori exploiting exoproteome and secretome: A reverse vaccinology based approach**June 01, 2015Anam Naz, Faryal Mehwish Awan, Ayesha Obaid, Syed Aun Muhammad, Rehan Zafar Paracha, Jamil Ahmed, Amjad Ali,Infection, Genetics and Evolution - Volume 32, Pages 280-291
- **Modeling and analysis of innate immune responses induced by the host cells against hepatitis C virus infection**May 01, 2015Ayesha Obaid, Jamil Ahmed , Anam Naz, Faryal Mehwish Awan, Rehan Zafar Paracha, Samar Hayat Khan Tareen, Sadia Anjum, Abida Raza, Jan Baumbach, Amjad Ali,Integrative Biology - Volume 7, Issue 5, Pages 544-559
- **Structural modeling and analysis of dengue-mediated inhibition of interferon signaling pathway**April 28, 2015Babar Aslam, Jamil Ahmad, Amjad Ali, Rehan Zafar Paracha, Samar Hayat Khan Tareen, Shah Khusro, Taseer Ahmad, S.A. Muhammad, Umar Niazi, V. Azevedo,Genetics and Molecular Research - Volume 14, Issue 2, Pages 4215-4237
- **Helicobacter pylori Virulence Regulatory Network: Insights into the Host-Environment and Pathogen Interactions**January 21, 2015Gul Sanobar, Jamil Ahmed, Rehan Zafar Paracha, Anam Naz, Babar Aslam, Ayesha Obaid, Afreenish Hassan, Amjad Ali,NUST Journal of Natural Sciences - Volume 3, Issue 1, Pages 65-77
- **On the modelling and analysis of the regulatory network of dengue virus pathogenesis and clearance**December 01, 2014Babar Aslam, Jamil

Ahmad, Amjad ali, Rehan Zafar Paracha, Samar Hayat Khan Tareen, Umar Niazi, Tariq Saeed,Computational Biology and Chemistry - Volume: 53 Pages: 277-291 Part: B

- **In-silico analysis of claudin-5 reveals novel putative sites for post-translational modifications: Insights into potential molecular determinants of blood-brain barrier breach during HIV-1 infiltration**October 01, 2014Faryal Mehwish Awan, Sadia Anjum, Ayesha Obaid, Amjad Ali, Rehan Zafar Paracha, Hussnain Ahmed Janjua,Infection, Genetics and Evolution - Volume 27, Pages 355-365
- **Formal Modelling of Toll like Receptor 4 and JAK/STAT Signalling Pathways: Insight into the Roles of SOCS-1, Interferon-β and Proinflammatory Cytokines in Sepsis**September 25, 2014Rehan Zafar Paracha, Jamil Ahmed , Amjad Ali, Riaz Hussain, Umar Niaz, Samar Hayat Khan Tareen, Babar Aslam,PLoS ONE - Volume 9, Issue 9, Article Number e108466
- **Structural evaluation of BTK and PKC delta mediated phosphorylation of MAL at positions Tyr86 and Tyr106**August 01, 2014Rehan Zafar Paracha, Amjad Ali, Jamil Ahmad, Riaz Hussain, Umar Niazi, Syed Aun Muhammad,Computational Biology and Chemistry - Volume: 51 Pages: 22-35
- **In silico study of anti-carcinogenic lysyl oxidase-like 2 inhibitors**August 01, 2014Syed Aun Muhammad, Amjad Ali, Tariq Ismail, Rehan Zafar Paracha, Umair Ilyas, Jamil Ahmed ,Computational Biology and Chemistry - Volume 51, Pages 71-82
- **Influence of positioning of carbohydrate binding module on the activity of endoglucanase CelA of Clostridium thermocellum.**October 01, 2012Muhammad Sajjad, Imran Mahmood Khan, Rehan Zafar Paracha, Sajjad Ahmad, Umar H. K. Niazi, Muhammad Waheed Akhtar,Journal of Biotechnology - Volume 161, Issue 3, Pages 206-212
- **Examining the Efficacy of Sorafenib-a Meta-Analysis.**June 02, 2011Usman Z. Paracha, Usman Z. Paracha, Rehan Z. Paracha, Waseem Hassan, Waseem Hassan, Ghulam Murtaza, Ghulam Murtaza,ADVANCES IN CLINICAL AND EXPERIMENTAL MEDICINE - Volume 20, Issue 3, Pages 335-342

Experience:

Assitant ProfessorNUSTJanuary 01, 2016 - October 01, 2020

Assistant Professor Shifa Tameer-e-Millat UniversityNovember 04, 2013 - December 31, 2015

Assistant Professor Margalla Institute of Health SciencesJune 07, 2010 - November 01, 2013

Senior Research Officer Faculty of Pharmacy, Gomal University, D.I Khan.February 08, 2008 - September 30, 2009

CEOWilson's PharmaceuticalsJune 01, 2004 - August 07, 2005

Production Pharmacist Gray's PharmaceuticalsDecember 10, 2003 - February 10, 2004

hafeez anwar

ASSOCIATE PROFESSOR

- School of Interdisciplinary Engineering & Sciences (SINES)
- 05190855746

- Academic Background

- **PhD** (Informatics)Technische Universität WienNovember 24, 2011 - September 30, 2015

Experience:

Postdoc/Junior Professor Friedrich Alexander UniversityFebruary 01, 2019 - January 31, 2020

Assistant Professor Department of Electrical and Computer Engineering, Comsats University Islamabad, Attock CampusFebruary 04, 2016 - September 03, 2023

Research Associate Vienna University of TechnologyNovember 24, 2011 - September 30, 2015

LecturerDepartment of Computer Systems Engineering, University of Engineering and Technology PeshawarMarch 14, 2011 - October 31, 2011

Research Assistant Myongji UniversityMarch 24, 2009 - December 20, 2010

muhammad usman shahid

ASSOCIATE PROFESSOR

- School of Interdisciplinary Engineering & Sciences (SINES)
-

absaar ul jabbar

ASSISTANT PROFESSOR

- School of Interdisciplinary Engineering & Sciences (SINES)
- 5190855725

- Academic Background

- **PhD** (Computational Fluid Dynamics)Technical University of DortmundNovember 01, 2011 - December 13, 2018

- Publications

- **Barrier function based adaptive sliding mode controller for the hybrid energy storage system of plugin hybrid electric vehicles**November 20, 2023Mubariz Ahmed, Usman Masood, Muhammad Kashif Azeem, Iftikhar Ahmad, Absaar Ul Jabbar,Journal of Energy Storage - Volume 72, Part B, Article Number 108051
- **Robust adaptive nonlinear control of plugin hybrid electric vehicles for vehicle to grid and grid to vehicle power flow with hybrid energy storage system**August 01, 2023Usman Masood, Muhammad Kashif Azeem, Iftikhar Ahmad, Absaar Ul Jabbar,ISA Transactions - Volume 139, Pages 406-424
- **Performance Evaluation of a Multi-Stage Gravitational Water Vortex Turbine with optimum number of Blades**May 27, 2022Aamer Sharif, Javed Ahmed Khan Tipu, Muhammad Arif, Muhammad Salman Abbasi, Absaar Ul Jabbar, Adnan Aslam Noon, Muftooh Ur Rehman Siddiqi,Journal of Mechanical Engineering Research and Developments - Volume 45, No. 3, Pages 35-43
- **Performance Investigation of a Single-Stage Savanious Horizontal Water Turbine with Optimum Number of Blades**April 22, 2022Irfan Ullah, Muftooh Ur Rehman Siddiqi, Muhammad Tahir, Aamer Sharif, Adnan Aslam Noon, Javed Ahmed Khan Tipu, Muhammad Arif, Absaar Ul Jabbar, Shahana Mujeeb Siddiqi, Naveed Ullah, Tufail Habib,Journal of Mechanical Engineering Research and Developments - Volume 45, No. 2, Pages 29-42
- **Performance Enhancement of Centrifugal Pump through Cavitation Reduction using Optimization Techniques**October 14, 2021Adnan Aslam Noon, Muhammad Arif, Javed Ahmed Khan Tipu, Absaar Ul Jabbar, Muftooh Ur Rehman Siddiqi, Aamer Sharif,International Journal of Thermofluid Science and Technology - Volume 8, Issue 4, Article Number 080404

- **Strive to Reduce Slurry Erosion and Cavitation in Pumps through Flow Modifications, Design Optimization and Some Other Techniques: Long Term Impact on Process Industry**January 21, 2021Adnan Aslam Noon, Absaar Ul Jabbar, Hasan Koten, Man-Hoe Kim, Hafiz Waqar Ahmed, Umair Mueed, Ahmad Adnan Shoukat, Bilal Anwar,Materials - Volume 14, Issue 3, Article Number 521

Experience:

Research Associate Technical University Dortmund, GermanyNovember 01, 2011 - December 13, 2018

Assistant Professor University of Engineering and Technology, LahoreFebruary 01, 2008 - May 10, 2008

Mechanical Engineer Packages LimitedFebruary 02, 2004 - September 30, 2005

Mechanical EngineerNESPAKDecember 01, 2003 - February 01, 2004

salma sherbaz

ASSISTANT PROFESSOR

- School of Interdisciplinary Engineering & Sciences (SINES)
- 5190855738

- Academic Background

- **PhD** (Fluid Mechanics)Harbin Engineering UniversitySeptember 01, 2010 - June 30, 2014

- Honours and Awards

- **Key Note Speaker**Spoke as a key note speaker in 17th International Conference on High Performance Marine Vessels, April 20-21, 2012, Shanghai, China.April 22, 2012

- Publications

- **Large Eddy Simulation of the Flow Past a Soccer Ball**January 18, 2022Sarmad Iftikhar, Salma Sherbaz, Hafiz Ali Seole , Adnan Maqsood, Zartasha Mustansar,Mathematical Problems in Engineering - Volume 2022, Article ID 3455235, 13 pages
- **Design and Optimization of a Diffuser for a Horizontal Axis Hydrokinetic Turbine using Computational Fluid Dynamics based Surrogate Modelling**April 20, 2020Waleed Khalid, Salma Sherbaz, Adnan Maqsood, Zamir Hussain,Mechanika - Volume 26(2), Pages 161-170
- **Drag reduction of supersonic blunt bodies using opposing jet and nozzle geometric variations**October 01, 2017AtiqaBibi, Adnan Maqsood, Salma Sherbaz, LaurentDala,Aerospace Science and Technology - Volume 69, Pages 244-256
- **Machinery Options for Green Ship**November 01, 2015Salma Sherbaz, Adnan Maqsood, Jawad Khan,Journal of Engineering Science and Technology Review - Vol. 8(3), Pages 169-173
- **Calculation of Effect of Viscous and Pressure Forces on Trimming Moments**June 02, 2014Salma Sherbaz, Wen Yang Duan,Applied Mechanics and Materials - Volume 590
- **Operational Options for Green Ships**September 18, 2012Salma Sherbaz, Wenyang Duan,Journal of Marine Science and Application - Volume 11, Issue 3, Pages 335–340
- **Radar cross section prediction and reduction for naval ships**June 09, 2012Jawad Khan, Wenyang Duan, Salma Sherbaz,Journal of Marine Science and Application - Volume 11, Issue 2, Pages 191–199

shahzad rasool

ASSISTANT PROFESSOR

- School of Interdisciplinary Engineering & Sciences (SINES)
- 0518865737

- Academic Background

- **PhD** (Computer Engineering (Haptics))Nanyang Technological UniversityJanuary 11, 2010 - December 12, 2014

- Honours and Awards

- **Best Paper Award**International conference on Cyberworlds, Visby, SwedenOctober 09, 2015

- Publications

- **Virtual Reality as a Medium of Asynchronous Content Delivery for Teaching about Enzymes**February 08, 2023Irsa Abbasi, Shahzad Rasool, Uzma Habib,Journal of Chemical Education - Volume 100, Issue 3, Pages 1203-1210
- **Game induced emotion analysis using electroencephalography**June 01, 2022Amna Khan, Shahzad Rasool,Computers in Biology and Medicine - Volume 145, Article Number 105441
- **Grey is the new RGB: How good is GAN-based image colorization for image compression?**January 01, 2021Aroosh Fatima, Aroosh Fatima, Wajahat Hussain, Shahzad Rasool,Multimedia Tools and Applications - Volume 80, Pages 3775–3791
- **Effect of Haptic Feedback on Pilot/Operator Performance during Flight Simulation**June 03, 2020Hassam Ahmed Malik, Shahzad Rasool, Adnan Maqsood, Rizwan Riaz,Applied Sciences - Volume 10 (11), Article Number 3877
- **Interactive 3D Visualization of Chemical Structure Diagrams Embedded in Text to Aid Spatial Learning Process of Students**March 04, 2020Amal Fatemah, Shahzad Rasool, Uzma Habib,Journal of Chemical Education - Volume 97(4), Pages 992-1000
- **Image-Driven Haptic Rendering**March 01, 2014Shahzad Rasool, Alexei Sourin,Transactions on Computational Science XXIII - Pages 58-77

Experience:

Resesarch Associate/Research Fellow Fraunhofer IDM@NTUDecember 17, 2012 - August 12, 2016

mehak rafiq

ASSISTANT PROFESSOR

- School of Interdisciplinary Engineering & Sciences (SINES)
- 5190855733

Academic Background

PhD (Computational Biology)University of GreenwichJanuary 16, 2012 - February 27, 2015

Honours and Awards

NRPU-HEC Understanding the role of iRhoms in EGFR signalling pathway and its role in Breast and Colorectal Cancer Amount: 1.5 Million PKRNovember 01, 2018

Publications

Cross talk of tumor protein D52 (TPD52) with KLF9, PKCε, and MicroRNA 223 in ovarian cancer October 13, 2023Khushbukhat Khan, Sameen Zafar, Yasmin Badshah, Naeem Mahmood Ashraf, Mehak Rafiq, Lubna Danish, Maria Shabbir, Janeen H. Trembley, Tayyaba Afsar, Ali Almajwal, Suhail Razak,Journal of Ovarian Research - Volume 16, Issue 1, Article Number: 202

Investigating Isoform Switching in RHBDF2 for its role in Human Neoplastic Growth in Breast Cancer November 25, 2022Mehar Masood, Madahiah Bint E Masood, Noor Us Subah, Maria Shabbir, Rehan Zafar Paracha, Mehak Rafiq,PeerJ - Volume 10, Article Number e14124

Integrated analysis of microarray and RNA-Seq data for the identification of Hub genes and networks involved in the pancreatic cancer June 23, 2021Maryum Nisar, Rehan Zafar Paracha , Iqra Arshad, Sidra Adil, Sabaoon Zeb, Rumeza Hanif , Mehak Rafiq , Zamir Hussain ,Frontiers in Genetics - Volume 12, Article Number 663787

Evaluation of pro-apoptotic potential of taxifolin against liver cancer May 25, 2021Sania Safdar Butt, Khushbukhat Khan, Yasmin Badshah, Mehak Rafiq, Maria Shabbir,PeerJ - Volume 9, Article Number e11276

Unravelling Structure, Localization, and Genetic Crosstalk of KLF3 in Human Breast Cancer December 28, 2020Khushbukhat Khan, Sadia Safi, Asma Abbas, Yasmin Badshah, Erum Dilshad, Mehak Rafiq, Kainat Zahra, Maria Shabbir,BioMed Research International - Volume 2020, Article ID 1354381, 15 pages

Molecular Docking Using Chimera and Autodock Vina Software for Nonbioinformaticians June 19, 2020Sania Safdar Butt, Yasmin Badshah, Maria Shabbir, Mehak Rafiq,JMIR Bioinformatics and Biotechnology - Volume 1(1), Article Number e14232

Computational Characterization of the Binding Energy and Interactions between CB1 Receptor and Its Classical Agonist and Negative Allosteric Modulators (NAMs) August 08, 2019Saba Shabber, Uzma Habib, Mehak Rafiq,Acta Scientific Pharmaceutical Sciences - Volume 3, Issue 9, Pages 3-11

Bridging the gap by discerning SNPs in linkage disequilibrium and their role in breast cancer August 15, 2018Sundus Naila Maqbool, Sadia Haleema Nazir, Mehak Rafiq, Aneela Javed, Rumeza Hanif,Gene - Volume 679, Pages 44-56

Experience:

PostDoctoral Fellow University of GreenwichFebruary 01, 2012 - August 31, 2012

masood ur rehman kayani

ASSISTANT PROFESSOR

- School of Interdisciplinary Engineering & Sciences (SINES)
- 0518865744

- Summary

- My current research focuses on the role of the human microbiome in health and disease and developing improved methods for microbiome data analysis. Specifically, my group is investigating the links between microbiome imbalances and conditions such as obesity, diabetes, and cancers, among others. Our goal is to uncover novel connections and identify biomarkers for early diagnosis, treatment response, and personalized medicine. Through our research, we hope to contribute to a deeper understanding of the complex interactions between the microbiome and human health, with the ultimate aim of improving disease diagnosis and treatment.

- Academic Background

- **PhD** (Bioinformatics)Tsinghua UniversitySeptember 17, 2012 - October 10, 2018

- Publications

- **Longitudinal analysis of exposure to a low concentration of oxytetracycline on the zebrafish gut microbiome**September 22, 2022Masood ur Rehman Kayani, Kan Yu, Yushu Qiu, Xiaogang Yu, Lei Chen, Lisu Huang,Frontiers in Microbiology - Volume 13, Article Number 985065
- **Genome-Resolved Characterization of Structure and Potential Functions of the Zebrafish Stool Microbiome**June 15, 2022Masood ur Rehman Kayani, Syed Shujaat Ali Zaidi, Ru Feng, Kan Yu, Yushu Qiu, Xiaogang Yu, Lei Chen, Lisu Huang,Frontiers in Cellular and Infection Microbiology - Volume 12, Article Number 910766
- **Patients with Primary and Secondary Bile Duct Stones Harbor Distinct Biliary Microbial Composition and Metabolic Potential**April 25, 2022Ru Feng, Tianyu Zhang, Masood ur Rehman Kayani, Zhengting Wang, Yao Shen, Kenn Liu Su, Kouken Bielike, Lei Chen,Frontiers in Cellular and Infection Microbiology - Volume 12, Article Number 881489
- **Soil pH: a key edaphic factor regulating distribution and functions of bacterial community along vertical soil profiles in red soil of pomelo orchard**February 01, 2022Muhammad Atif Muneer, Wei Hou, Jian Li, Xiaoman Huang, Masood ur Rehman Kayani, Yuanyang Cai, Wenhao Yang, Liangquan Wu, Baoming Ji, Chaoyuan Zheng,BMC Microbiology - Volume 22, Issue 1, Article Number 38
- **Characterization of the Gastrointestinal and Reproductive Tract Microbiota in Fertile and Infertile Pakistani Couples**December 28, 2021Ammara Manzoor, Saira Amir, Farzana Gul, Muhammad Abubakar Sidique, Masood ur Rehman Kayani, Syed Shujaat Ali Zaidi, Sundus Javed, Syed Tahir Abbas Shah, Arshan Nasir,Biology - Volume:11, Issue:1,
- **Genome-resolved metagenomics using environmental and clinical samples**September 01, 2021Masood ur Rehman Kayani, Wanqiu Huang, Ru Feng, Lei Chen,Briefings in Bioinformatics - Volume 22, Issue 5, Pages 1-20
- **Environmental concentrations of antibiotics alter the zebrafish gut microbiome structure and potential functions**June 01, 2021Masood ur Rehman Kayani, Kan Yu, Yushu Qiu, Yao Shen, Caixia Gao, Ru Feng, Xinxin Zeng, Weiye Wang, Lei Chen, Huang Li Su,Environmental Pollution - Volume 278, Article Number 116760
- **Prediction and analysis of metagenomic operons via MetaRon: a pipeline for prediction of Metagenome and whole-genome opeRons**January 19, 2021Syed Shujaat Ali Zaidi, Masood ur Rehman Kayani, Xuegong Zhang, Younan Ouyang, Imran Haider Shamsi,BMC Genomics - Volume 22, Issue 1, Article Number: 60

- **DNA phosphorothioate modification facilitates the dissemination of mcr-1 and blaNDM-1 in drinking water supply systems**January 01, 2021Hira Khan, Mingkun Liu, Masood ur Rehman Kayani, Shakeel Ahmad, Jingdan Liang, Xiaohui Bai,Environmental Pollution - Volume 268, Part A, Article Number 115799
- **Dynamics of the Salivary Microbiome During Different Phases of Crohn's Disease**October 06, 2020Tianyu Zhang, Masood ur Rehman Kayani, Liwen Hong, Chen Zhang, Jie Zhong, Zhengting Wang, Lei Chen,Frontiers in Cellular and Infection Microbiology - Volume 10, Article Number 544704
- **Genome Sequences and Comparative Analysis of Two Extended-Spectrum Extensively-Drug Resistant Mycobacterium tuberculosis Strains**December 18, 2018Masood ur Rehman Kayani, Yong-Chang Zheng, Fu-Cun Xie, Kai Kang, Han-Yu Li, Hai-Tao Zhao,Frontiers in Pharmacology - Volume 9, Article Number 1492
- **Metagenomic analysis of basal ice from an Alaskan glacier**July 05, 2018Masood ur Rehman Kayani, Shawn M. Doyle, Naseer Sangwan, Guanqun Wang, Jack A. Gilbert, Brent C. Christner, Ting F. Zhu,Microbiome - Volume 6, Issue 1, Article Number 123
- **Comprehensive analysis of circRNA expression bprofiles in humans by RAISE**December 01, 2017Lin Li, Yong-Chang Zheng, Masood ur Rehman Kayani, Wen Xu, Guanqun Wang, Pei Sun, Ning Ao, Li-Na Zhang, Zhao-Qi Gu, Liang-Cai Wu, Hai-Tao Zhao,International Journal of Oncology - Volume 51, Issue 6, Pages 1625-1638
- **The essential mycobacterial amidotransferase GatCAB is a modulator of specific translational fidelity**August 26, 2016Hong-Wei Su, Jun-Hao Zhu, Hao Li, Rong-Jun Cai, Christopher Ealand, Xun Wang, Yu-Xiang Chen, Masood ur Rehman Kayani, Ting F. Zhu, Danesh Moradigaravand, Huang Hairong, Bavesh D. Kana, Babak Javid,Nature Microbiology - Volume:1, Article Number 16147
- **Transmitted extended-spectrum extensively drug-resistant tuberculosis in Beijing, China, with discordant whole-genome sequencing analysis results**August 01, 2015Hao Li, Masood ur Rehman Kayani, Yunting Gu, Xiaobo Wang, Ting F. Zhu, Hongfei Duan, Yifang Ma, Hairong Huang, Babak Javid,Journal of Clinical Microbiology - Volume 53, Issue 8, Pages 2781-2784
- **Rapid identification of multi-strain HBV infection in patient by high-throughput DNA sequencing**June 16, 2015Yongchang Zheng, Masood ur Rehman Kayani, Ting F. Zhu,Quantitative Biology - Volume 3, Issue 2, Pages 103-106
- **Role of miRNAs in Breast Cancer**December 01, 2011Masood ur Rehman Kayani, Mahmood Akhtar Kayani, Faraz Arshad Malik, Rani Faryal,Asian Pacific Journal of Cancer Prevention - Volume 12, Issue 12, Pages 3175-3180
- **Lack of Germ Line Changes in KISS1 and KAI1 Genes in Sporadic Head and Neck Cancer Patients of Pakistani Origin**October 01, 2011M Nazir, Masood ur Rehman Kayani, Faraz Arshad Malik, Nosheen Masood, Mahmood Akhtar

Kayani,Asian Pacific Journal of Cancer Prevention - Volume 12, Issue 10, Pages 2767-2772

Experience:

Assistant Professor Capital University Of Science and Technology (CUST)November 15, 2022 - January 31, 2023

Belt and Road Young Scientist Xinhua Hospital, Shanghai ChinaDecember 01, 2019 - September 30, 2022

International Exchange Postdoctoral Researcher Shanghai Institute of Immunology, School of Medicine, Shanghai Jiao Tong UniversityFebruary 01, 2019 - May 29, 2021

umer asgher

ASSISTANT PROFESSOR

- School of Interdisciplinary Engineering & Sciences (SINES)
- 0515444447

- Academic Background

- **PhD** (Artificial Intelligence and Brain computer Interface)NUST, IslamabadSeptember 08, 2014 - September 21, 2020

- Publications

- **The application of Fuzzy Delphi Method for evaluating biopsychosocial factors for prioritization of patients**June 05, 2023Hassan Sikandar Rana, Muhammad Umer, Uzma Hassan, Umer Asgher, Faheem Qaisar Jamal, Afshan Naseem, Nadeem Ehsan,IISE Transactions on Healthcare Systems Engineering - Pages 1-14
- **Cerebellar connectome alterations and associated genetic signatures in multiple sclerosis and neuromyelitis optica spectrum disorder**May 27, 2023Yuping Yang, Junle Li , Ting Li, Zhen Li, Zhizheng Zhuo, Xuemei Han, Yunyun Duan, Guanmei Cao, Fenglian Zheng , Decai Tian, Xinli Wang, Xinghu Zhang, Kuncheng Li, Fuqing Zhou, Muhua Huang, Yuxin Li, Haiqing Li, Chun Zeng, Ningnannan Zhang, Jie Sun,

Chunshui Yu, Fudong Shi, Umer Asgher, Nils Muhlert, Yaou Liu , Jinhui Wang,Journal of Translational Medicine - Volume 21, Article Number: 352

- **Recognition of Children's Facial Expressions Using Deep Learned Features**May 26, 2023Unqua Laraib, Arsalan Shaukat, Rizwan Ahmed Khan, Zartasha Mustansar, Muhammad Usman Akram, Umer Asgher,Electronics - Volume: 12 Issue: 11, Article Number:2416
- **Application of fuzzy TOPSIS for prioritization of patients on elective surgeries waiting list - A novel multi-criteria decision-making approach**April 09, 2023Hassan Sikandar Rana, Muhammad Umer, Uzma Hassan, Umer Asgher, Fabián Silva-Aravena, Nadeem Ehsan,Decision Making: Applications in Management and Engineering - Volume 6(1), Pages 603-630
- **Application of hybrid SFLA-ACO algorithm and CAM softwares for optimization of drilling tool path problems**January 20, 2023Nasir Mehmood , Muhammad Umer, Umer Asgher,SN Applied Sciences - Volume 5, Issue 2, Article Number 61
- **Multi-Hole Drilling Tool Path Planning and Cost Management through Hybrid SFLA-ACO Algorithm for Composites and Hybrid Materials**December 02, 2022Nasir Mehmood , Muhammad Umer, Umer Asgher,Journal of Composites Science - Volume 6, Issue 12, Article Number 364
- **Application of hybrid SFLA and ACO algorithm to omega plate for drilling process planning and cost management**September 30, 2022Nasir Mehmood , Muhammad Umer, Umer Asgher,Archives for Technical Sciences - Volume 26(1), Pages 1-12
- **A novel multi-criteria decision-making approach for prioritization of elective surgeries through formulation of "weighted MeNTS scoring system"**August 01, 2022Hassan Sikandar Rana, Muhammad Umer, Uzma Hassan, Umer Asgher,Heliyon - Volume 8, Issue 8, Article Number e10339
- **Novel fNIRS study on homogeneous symmetric feature-based transfer learning for brain–computer interface**February 24, 2022Khurram Khalil, Umer Asgher, Yasar Ayaz,Scientific Reports - Volume 12, Issue 1, Article Number 3198
- **Motor Training Using Mental Workload (MWL) With an Assistive Soft Exoskeleton System: A Functional Near-Infrared Spectroscopy (fNIRS) Study for Brain–Machine Interface (BMI)**March 18, 2021Umer Asgher, Muhammad Jawad Khan, Muhammad Hamza Asif Nizami , Muhammad Hamza Asif Nizami, Khurrum Khalil, Riaz Ahmad, Yasar Ayaz, Noman Naseer,Frontiers in Neurorobotics - Volume 15, Article Number 605751
- **A Preliminary Study on Effectiveness of a Standardized Multi-Robot Therapy for Improvement in Collaborative Multi-Human Interaction of Children With ASD**June 24, 2020Sara Ali, Faisal Mehmood, Muhammad Jawad

Khan, Yasar Ayaz, Umer Asgher, Haleema Sadia, Ernest Edifor, Raheel Nawaz,IEEE Access - Volume 8, Pages 109466-109474

- **Enhanced Accuracy for Multiclass Mental Workload Detection Using Long Short-Term Memory for Brain-Computer Interface**June 23, 2020Umer Asgher, Khurram Kahlil, Muhammad Jawad Khan, Riaz Ahmad, Shahid Ikram Ullah Butt, Yasar Ayaz, Noman Naseer, Salman Nazir,Frontiers in Neuroscience - Volume 14, Article Number: 584
- **Assessment and Classification of Mental Workload in the Prefrontal Cortex (PFC) using Fixed-Value Modified Beer-Lambert Law**October 01, 2019Umer Asgher, RIAZ AHMAD, Noman Naseer, Yasar Ayaz, Muhammad Jawad Khan, Muhammad Kamal Amjad,IEEE Access - Volume 7, Pages 143250-143262
- **Recent Research Trends in Genetic Algorithm based Flexible Job Shop Scheduling Problems**February 28, 2018Muhammad Kamal Amjad, Shahid Ikramullah Butt, Rubeena Kousar, Riaz Ahmad, Mujtaba Hassan Agha, Zhang Faping, Naveed Anjum, Umer Asgher,Mathematical Problems in Engineering - Article Number 9270802, 32 pages
- **Intelligent Machine Vision based Modeling and Positioning System in Sand Casting Process**February 08, 2017Shahid Ikramullah Butt, Umer Asgher, Umar Mushtaq, Riaz Ahmad, Faping Zhang, Yasar Ayaz, Mohsin Jamil, Muhammad Kamal Amjad,Advances in Materials Science and Engineering - Volume 2017, Article Number 3192672
- **Computational fluid dynamics for the nordic combined skiing jump**October 07, 2015Nicolas Gardan, J. Laheurte, E. Gouy, Nilanjan Dey, E. Abdi, Umer Asgher, M. A Choukou, A. Schneider, R. Taiar,Series on Biomechanics - Volume 29, No. 2-3, Pages 31-38
- **Environmental Impact Assessment for an Industrial Solid Waste Deposit Located in Constanta Harbour**May 01, 2015Octavian Valerian Bold, Roland Iosif Moraru, Janusz Grabara, Umer Asgher,Annals of Faculty Engineering Hunedoara - International Journal of Engineering - Volume 13, No. 2, Pages 61-67,

Experience:

Asst Professor College of Electrical and Mechanical Engineering (CEME), National University of Sciences and Technology (NUST)September 15, 2021 - February 23, 2022

Adjunct ProfessorSMME NUSTDecember 04, 2020 - September 15, 2021

Manager Tech National Logistics Cell (NLC) Ministry of Planning ,Development & Special InitiativesFebruary 17, 2018 - September 05, 2021

Temporary Visiting FacultySADA NUSTFebruary 01, 2015 - February 02, 2016

Major (Officer Technical Operations and Engineering management)) Min of DefenceOctober 07, 2004 - August 17, 2018

muhammad munir butt

ASSISTANT PROFESSOR

- School of Interdisciplinary Engineering & Sciences (SINES)
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muhammad waseem
ASSISTANT PROFESSOR

- School of Interdisciplinary Engineering & Sciences (SINES)
-

usman zia

ADJUNCT FACULTY

- School of Interdisciplinary Engineering & Sciences (SINES)
- 0515121917

PhD (Deep Learning NLP)NUST, IslamabadOctober 14, 2015 - November 29, 2022

Publications

Deep-view linguistic and inductive learning (DvLIL) based framework for Image Retrieval November 01, 2023Ikhlaq Ahmed, Dr Naima Iltaf, Zafran Khan, Dr Usman Zia0,Information Sciences - Volume 649, Article Number: 119641

An Effective Model for Indirect Trust Computation in Pervasive Computing Environment April 01, 2014Naima Altaf, Abdul Ghafoor, Usman Zia, Mukhtar Hussain,Wireless Personal Communications - Volume: 75 Issue: 3 Pages: 1689-1713 Special Issue: SI

A mechanism for detecting dishonest recommendation in indirect trust computation July 13, 2013Naima Iltaf, Abdul Ghafoor, Usman Zia,EURASIP Journal on Wireless Communications and Networking - Article Number: 189

Experience:

Lt ColGHQApril 13, 2003 - April 29, 2023

ume rubab

LAB ENGINEER

- School of Interdisciplinary Engineering & Sciences (SINES)
- 0518865781

- Academic Background

- **MS** (Computational Sciences and Engineering)NUST, IslamabadJune 01, 2022 - June 01, 2024

Experience:

Research AssociateIAL, SINESJune 01, 2022 - August 30, 2023

Frontend DeveloperIAL, SINESNovember 01, 2021 - April 30, 2022

NetSuite Developer Magna Food ServicesMarch 01, 2021 - October 30, 2021

Faculty on leave

israr ud din

ASSISTANT PROFESSOR

- School of Interdisciplinary Engineering & Sciences (SINES)

- 5190855726

- Summary

- Dr. Israr Ud Din is currently Assistant Professor at RCMS, NUST, Pakistan. He received his PhD degree from (LTI), Université de Picardie Jules Verne, France. His area of research is composites.

- Academic Background

- **PhD** (Composites Damage Modeling)Université de Picardie Jules-VerneSeptember 01, 2014 - November 30, 2018

- Honours and Awards

- **Silver Medal**BISE SWAT
- **PhD Funding**PhD Scholarship
- **PIEAS MS Fellowship**Fully Funded MS Fellowship for two yearsJuly 01, 2006

- Publications

- **Heat Transfer Augmentation and Entropy Generation Analysis of Microchannel Heat Sink (MCHS) with Symmetrical Ogive-Shaped Ribs**March 17, 2023Kareem Akhtar, Haseeb Ali, Israr Ud Din, Azed Abbas, Muhammad Zeeshan Zahir, Faraz Ahmad, Fayyaz Alam, Nasir Shah, Muhammad Aamir,Energies - Volume 16(6), Article Number 2783
- **Experimental investigation on the quasi-static crush performance of resin-infused thermoplastic 3D fibre-reinforced composites**December 01, 2021S.Z.H Shah, PSM. Megat-Yousaf, R.S. Choudhry, Zubair Sajid, Israr Ud Din,Composites Communications - Volume 28, Article Number 100916
- **Effect of Cutting Parameters and Tool Geometry on the Performance Analysis of One-Shot Drilling Process of AA2024-T3**May 23, 2021Muhammad Aamir, Khalid Giasin, Majid Tolouei-Rad, Israr Ud Din, Muhammad Imran Hanif , Ugur Kuklu, Danil Yuriech Pimenov, Muhammad Ikhlaq,Metals - Volume 11(6), Article Number 854
- **Compression and buckling after impact response of resin-infused thermoplastic and thermoset 3D woven composites**February 15, 2021S.Z.H Shah, PSM. Megat-Yousaf, S. Karuppanan, R.S Choudhry, Israr Ud Din, A.R. Othman, K. Sharp, P. Gerard,Composites Part B: Engineering - Volume 207, Article Number 108592

- **Sequential damage study induced in fiber reinforced composites by shear and tensile stress using a newly developed Arcan fixture**November 01, 2020Israr-ud-Din, Shanshan Tu, Pei Hao, Stephane Panier, Kamran Ahmed Khan, Rehan Umer, S.Z.H. Shah, Gerald Franz, Muhammad Aamir,Journal of Materials Research and Technology - Volume 9, Issue 6, Pages 13352-13364
- **Processing and out-of-plane properties of composites with embedded graphene paper for EMI shielding applications**July 01, 2020Israr-ud-Din, K. Naresh, R. Umer, K.A Khan, L.T Drzal, M. Haq, W.J Cantwell,Composites Part A: Applied Science and Manufacturing - Volume 134, Article Number 105901
- **Design of a New Arcan Fixture for In-plane Pure Shear and Combined Normal/Shear Stress Characterization of Fiber Reinforced Polymer Composites**April 01, 2020Israr-ud-Din, Pei Hao, Stephane Panier, K.A Khan, M. Aamir, G. Franz, K. Akhtar,Experimental Techniques - Volume 44, Pages 44, 231–240
- **Finite element modeling of indentation and adhesive wear in sliding of carbon fiber reinforced thermoplastic polymer against metallic counterpart**July 01, 2019Israr Ud Din, Stephane Panier, Pei Hao, Gerald Franz, Jayashree Bijweb, Li Hui,Tribology International - Volume 135, Pages 200-212
- **Performance of SAC305 and SAC305-0.4La lead free electronic solders at high temperature**April 01, 2019Muhammad Aamir, Majid Tolouei-Ra, Israr Ud Din, Khaled Giasin, Ana Vafadar,Soldering & Surface Mount Technology - Volume 31, Issue 4, Pages 250-260
- **FEM implementation of the coupled elastoplastic/damage model: Failure prediction of Fiber Reinforced Polymers (FRPs) composites**April 01, 2019Israr-ud-Din, Pei Hao, M. Aamir, Gerald Franz, Stephane Panier,Journal of Solid Mechanics - Vol. 11, No. 4, Pages 842-853
- **Elastoplastic CDM model based on Puck's theory for the prediction of mechanical behavior of Fiber Reinforced Polymer (FRP) composites**October 01, 2018I. Ud Din, Pei Hao, Gerald Franz, Stephane Panier,Composite structures - Volume 201, Pages 291-302

Experience:

Teacher Assistant University of Picardie Jules VerneSeptember 01, 2015 - October 30, 2018

ManagerAdvanced Engineering Research Organization (AERO)October 30, 2008 - September 30, 2014

hafiz ali haider sehole

- School of Interdisciplinary Engineering & Sciences (SINES)
- 0518865781
- https://www.researchgate.net/profile/Hafiz-Ali-Haider-Sehole

- Summary

- He is employed as a lab Engineer at the SINES computing facility. SINES host the supercomputing facility. His responsibilities include cluster machine management, installation, and troubleshooting. He is an experienced CFD person in the department, in addition to his HPC management skills, his research interests include combustion modelling, turbulence, and combustion engines.

- Academic Background

- **MSc** (Applied Mechanics Combustion Modelling)NUST, IslamabadSeptember 11, 2017 - April 14, 2021

About SINES

School of Interdisciplinary Engineering & Sciences is a top-notch research institute, one of its own kinds in the country; parented by National University of Science and Technology Islamabad.

It was established in 2007 and is famous for its supercomputing facilities which provide its technical studies with a cutting edge resources. SINES NUST's supercomputer once made to the list of top 500 supercomputers worldwide

Facilitated by the enabling environment the faculty and students at SINES developed a multi-disciplinary approach to research and education. The result oriented research by our faculty and students has made significant contributions in the socio-economic growth of the country.

The education, training and research activities of SINES have been divided into two main streams, namely: Computational Sciences; and Computational Engineering.

At SINES, students are encouraged and facilitated to involve themselves in specialized topics with faculty members who are on the forefront of innovation in their fields and the practitioners who bring real-world, real-time experience to the classroom.

The SINES community is driven by a shared purpose: to make a better world through **education**, **research**, and innovation.

Vision and Mission

SINES: Vision
To be known for interdisciplinary education and research in engineering and sciences, commitment to discovery and dissemination of knowledge, developing technical, managerial, inter-personal and communication skills and contributing in socio-economic growth of the country through innovative solution methodologies for problems in a variety of fields via modeling & simulation

SINES: Mission
To provide excellent interdisciplinary wholesome education and research opportunities of modelling & simulation in engineering and sciences to students from diverse background through competent faculty, adaptive mechanisms and enabling environment in collaboration with various constituencies of the society

SINES : Core Values

- Integrity

- Innovation
- Teamwork

History and Establishment

History and Establishment

The School of Interdisciplinary Engineering & Sciences (SINES) was established at NUST in 2007 to set up modeling and simulation facilities for design and development in various disciplines through education, training and research. The centre was founded to act as a platform to integrate design and development efforts by the government, academia and industry. Progress in this direction could only be made through cross-disciplinary research and educational programmes in collaboration with industry and government. Specifically, there was a need for integrating analytical and computational techniques with advances in computer hardware and software.

SINES started its first MS programme in Computational Science and Engineering in Fall 2008, with specialisations in “Fluid Flow and Structures” and “Computational Infrastructures and Visualisation”.

In Fall, 2010, the programme was extended to PhD in Computational Science and Engineering. During the first four years, the educational and research programmes at SINES grew on the foundation of ten interrelated thrust areas, each focusing on mathematical modeling and simulation of a particular domain: structures; fluids; electrical systems; communication systems; computer and network architecture; operations research; and human behavior.

In 2011, computational biology and drug design were added as new concentration areas both in MS and PhD.

In 2012, a Centre of Excellence titled ‘Super Computing Research and Education Center (SCREC)’ was established at SINES. SCREC houses a supercomputing facility and is presently being utilised in computation-intensive research projects in the areas of fluid dynamics and biosciences.

Recently, the education, training and research activities have been divided into two main streams or departments, namely: Sciences; and Engineering. These departments have been further divided into divisions to keep the activities focused, better managed as well as synergised. Sciences comprises Computer Science, Bio-informatics, and Computational & Applied Mathematics. Similarly, Engineering division is divided into Engineering Sciences, Systems Engineering and Operations Research.

Why SINES?

World's Top Universities and Departments
NUST is placed at number 400 in the QS World University Ranking 2019. Moreover, in the subject ranking, the university is placed at number 367 in Aeronautical Engineering and at number 273 in Computer Science and Information Systems. SINES improved scores in academic reputation, citations per faculty, faculty/student ratio has helped further consolidate its position this year.

SUPERCOMPUTING RESEARCH AND EDUCATION CENTRE (SCREC)
Supercomputing Research and Education Facility is a Centre of Excellence in High-Performance Computing with a mission to support the research and development efforts at the National University of Sciences and Technology (NUST).

Expert Faculty Members
SINES takes pride in its faculty members that have completed their education from highly ranked universities worldwide. Their experience from these universities allows the school to offer current content being delivered by domain experts. We have unique faculty, a total of 19 faculty members, including associate professors, assistant professors, RVFs and uniform faculty.

Finest learning environment
At SINES, students are encouraged and facilitated to involve themselves in specialized topics with faculty members who are at the forefront of innovation in their fields and the practitioners who bring real-world, real-time experience to the classroom.

Academic Programmes:

UNDERGRADUATE PROGRAMS:

BS BIOINFORMATICS

Course Curriculum:

Semester-1						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	HU-101	Islamic Studies	2+0			
2	HU-107	Pakistan Studies	2+0			
3	HU-114	Functional English	3+0			
4	CH-104	Chemistry	2-1			
5	CS-108	Application of Information & Communication Technologies	2-1			
6	XXX-000	Deficiency-I	3+0			
7	XXX-000	Deficiency-II	3+0			
8		Total CHs	17+2= 19			

Semester-2						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	CS-110	Fundamentals of Computer Programming	3+1	9		
2	MATH-101	Calculus & Analytical Geometry	3+0			
3	MATH-161	Discrete Mathematics	3+0	4,9		
4	BIT-115	Cell Biology	2+1	4		
5	CS-220	Database Systems	3+1			
6		Total CHs	14+3=17			

Semester-3						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	HU-222	Professional Ethics	2+0	1,3,4,5,8,9,10,11,12,15,16,17		
2	MATH-222	Linear Algebra	3+0			
3	MATH-234	Multivariable Calculus	3+0	9	MATH-101	
4	CS-212	Object Oriented Programming (OOP)	3+1	4,8,9	CS-114 / CS-110	
5	CS-116	Digital Logic Design	2-1			
6	BI-301	Evolutionary Biology	2+1			
7		Total Chs	15+3=18			

Semester-4						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	MATH-361	Probability & Statistics	3+0	4,8,9,12		
2	CS-250	Data Structures and Algorithms	3+1	8,9	CS-114 / CS-212	
3	MGT-164	Introduction To Management	2+0			
4	CS-273	Computer Organization & Assembly Language	2+1		CS-116	
5	CS-272	Artificial Intelligence	2+1			
6	BI-311	Intro to Bioinformatics & Computational Biology	2+1			
7		Total CHs	14+4=18			

Semester-5						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	CS-251	Design & Analysis of Algorithms	3+0	9	CS-250	
2	SE-200	Software Engineering	3+0	9		
3	BIT-116	General Genetics	2+1			
4	ENGL-104	Expository Writing	3+0		HU-114	
5	CS-313	Operating Systems	2+1			
6	BIO-3XX	Elective-I	2+1			
7		CHs	15+3=18			

Semester-6						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	CS-314	Computer Networks	2+1			
2	CS-315	Parallel and Distributed Computing	2+1			
3	BI-3XX	Elective-2	2+1			
4	BI-3XX	Elective-3	2+1			
5	AB-XXX	Elective Supporting Course	3-0			
6	BI-4XX	Elective-4	2+1			
7		CHs	13+5=18			

Summer Semester						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	BI-488	Summer Internship	3+0			
Semester-7						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	MGT-271	Entrepreneurship	2+0	8		
2	BI-498	Final Year Project - I	0+2			
3	CS-412	Information Security	2+1			
4	AB-XXX	Natural Science Subject (Quantum Computing)	2+1			
5	BI-4XX	Elective-5	2+1			
6	BI-4XX	Elective-6	2-1			
7		Total CHs	10+6=16			

Semester-8						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	CCE-401	Civic and Community Engagement	1+1			
2	HU-210	Technical Writing	3+0	4,8		
3	BI-499	Final Year Project-II	0+4		BI-498	
4	HU-210	Technical Writing	3+0		HU-114	
5	BI-3XX	Elective - 7	2+1			
6		Total CHs	6+6=12			

List of Elective						
Sr.No	Course Code	Subjects	Credit Hours	Related SDG	Pre Requisite	Course Content
1	BI-421	Next Generation Sequencing	2+1			
2	BI-422	Artificial Intelligence in Healthcare	2+1			
3	BI-423	Computational Vaccinology	2+1			
4	BI-424	Pharmacoinformatics	2+1			
5	BI-425	Methods in Protein Modeling	2+1			
6	BI-426	Epigenetics and Gene Regulation	2+1			
7	BI-427	Modern Programming Languages	2+1			
8	BI-428	Personalized Medicine	2+1			
9	BI-429	Introduction to Big Data in Biology	2+1			
10	BI-430	Deep Learning in Life Sciences	2+1			
11	BI-431	Genomics	2+1			
12	BI-432	Ethical & Legal Issues in Bioinformatics	2+1			
13	BI-433	HCI & Computer Graphics	2+1			
14	BI-434	Virtual Reality	2+1			
15	BI-435	Biostatistics	2+1			
16	BI-436	Special Topics in Bioinformatics	3+0			
17	BIO-207	Molecular Biology	3+0			
18	BI-437	Recombinant DNA technology	3+0			
19	BI-438	Systems Biology	3+0			

POSTGRADUATE PROGRAMS:

1. MS COMPUTATIONAL SCIENCE AND ENGINEERING

Course Curriculum:

CORE COURSES						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	CSE-881	Applied Mathematics for Computational Science & Engineering	3+0	4,8,9		
2	CSE-880	Computational Linear Algebra & Optimization	3+0	4,8,9		
3	CSE-899	MS Thesis	6+0	17		
4	CSE-887	Computing for Computational Science & Engineering	3+0	4,17		
5	CSE-883	Data Analysis & Statistics	3+0	4,17		

Elective Courses Computational Engineering (CE)						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	BMES-832	Biomechanics	3+0	3,4,9,10,15		
2	CSE-801	Computational Fluid Dynamics	3+0	4,7,9,11,12		
3	CSE-843	Performance Analysis of Communication Systems	3+0	8,9,11		
4	CSE-844	Performance Analysis of Networks	3+0	9,11,15		
5	CSE-872	Non-Newtonian Fluid Mechanics	3+0	4,7,9		
6	CSE-906	Boundary Layer Theory	3+0	4,7,9,12		
7	EE-829	System Identification	3+0	4		
8	EE-831	Advanced Digital Signal Processing	3+0	4,8,9		
9	EE-851	Advanced Digital Communication Systems	3+0	4,8,9		
10	EE-976	Optimal & Multivariable Control Systems	3+0	4,9,12		
11	IT-877	Advanced Computer Networks	3+0	4,8,9,11		
12	ME-802	Finite Element Methods	3+0	4,7,9		
13	ME-833	Computational Fluid Dynamics-II	3+0	3,4,7,9,11		
14	ME-881	Advanced Fluid Mechanics	3+0	4,7,8,9,11		
15	SYSE-821	Unmanned Aircraft Systems	3+0	9,11		
16	SYSE-822	Applied Aerodynamics	3+0	9,11		
17	CSE-885	Anatomy and Physiology for CSE	3+0	3,4,14,15		
18	CSE-888	Computational Modeling of Physiological Systems	3+0	3,4,9		
19	CSE-890	Analysis of Biomechanical Systems	3+0	3,4,15		
20	CSE-879	Model Order Reduction	3+0	4		
21	CSE-847	Biomedical Engineering	3+0	3,4,10,15		
22	CSE-931	Advanced Numerical Methods	3+0	4,7,9		

Computational Sciences(CS)						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	CSE-840	Computational Modeling of Materials	3			
2	ENV-820	Environmental Chemistry	3			
3	CH-807	Coordination Chemistry	3+0	1,4,6,7,9		
4	CH-810	Nanochemistry	3+0	3,9		
5	CSE-878	Computational Chemistry	3+0	6,7,14,15		
6	CSE-871	Chemical Kinetics and Reaction Dynamics	3+0	4,6,14		
7	CSE-914	Computational Enzymology	3+0	1,3,4,15		
8	CSE-917	Concepts In Supramolecular Chemistry	3+0	4		
9	CSE-811	Parallel Computing For Heterogeneous Platforms	3+0	4,17		
10	CSE-913	Modeling of Cluster Compounds	3+0	4		
11	CSE-918	Modeling Polymeric Materials	3+0	1,3,6		
12	CSE-867	Virtual Reality	3+0	9,11		
13	CSE-868	Human Computer Interaction	3+0	3,4,8,9,17		
14	CSE-865	3D Geometric Modeling and Reconstruction	3+0	4, 8		
15	CSE-884	Quantum Chemistry	3+0	4		

Common Electives						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	DME-811	Product Design And Development	3+0	4,9,11,12,15		
2	CSE-920A	Advanced Partial Differential Equations	3			
3	CSE-848	Generative AI and Applications	3			
4	CSE-845	Applied Machine Learning	3+0	4,9,11,15		

Additional Courses						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	RM-898	Research Methodology	2+0	4,6,8,9,11,13,16,17		

Deficient Courses						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	CSE-800	Fundamentals of Computational Science & Engineering	3-1	4		

1. MS BIOINFORMATICS

Course Curriculum:

CORE COURSES						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	CSE-899	MS Thesis	6+0	17		
2	BI-801	Computing for Bioinformatics	3+0	4,17		
3	BI-802	Mathematics for Bioinformatics	3+0	3,4,9		
4	CSE-883	Data Analysis & Statistics	3+0	4,17		

Elective Courses (Specialization wise) Computational Drug Design						
Sr.No	Course Code	Subjects	Credit Hours	Related SDG	Pre Requisite	Course Content
1	CSE-873	Computational Drug Design	3+0	3,4,15		
2	CSE-874	Molecular Modeling and Drug Design	3+0	3,4		
3	BI-811	Machine Learning in Drug Design	3+0	3,4		

Common Electives						
Sr.No	Course Code	Subjects	Credit Hours	Related SDG	Pre Requisite	Course Content
1	ABS-933	Principles Of Molecular Biology	3+0	2,3,4,9,15,17		
2	CSE-870	Petri Nets	3+0	4,17		
3	CSE-877	Statistics in BioInformatics	3+0	4,17		
4	CSE-880	Computational Linear Algebra & Optimization	3+0	4,8,9		
5	CSE-952	Advanced Model Checking	3+0	4,8		
6	CSE-953	Advanced Computational Biology	3+0	4,17		
7	HCB-811	Cancer Genetics	3+0	3,4,9,15		
8	HCB-813	General & Molecular Immunology	3+0	3,4		
9	ABS-839	Proteomics	3+0	4,9		
10	HCB-841	Molecular Medicine	3+0	3,4,9		
11	BI-851	Computational Immunology	3+0	3,4,14,15		
12	BI-852	Computational Vaccinology	3+0	3,4,14,15		
13	CSE-845	Applied Machine Learning	3+0	4,9,11,15		
14	CSE-876	Biochemistry	3+0	3,15		

Translational Bioinformatics						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	CSE-896	Translational Bioinformatics Applications	3+0	4,17		
2	CSE-895	Microarray and RNA Sequencing	3+0	3,4		
3	BI-831	Microarray Analysis	3+0	4		
4	BI-832	Next Generation Sequencing Analysis	3+0	4,17		

Additional Courses						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	RM-898	Research Methodology	2+0	4,6,8,9,11,13,16,17		
2	SEM/WKSP-897	Seminar / Workshop	1+0	4,5,9,11,16,17		

3. MS SYSTEMS ENGINEERING (2023)

Course Curriculum:

Additional Courses						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	RM-898	Research Methodology	2+0	4,6,8,9,11,13,16,17		
2	SEM/WKSP-897	Seminar / Workshop	1+0	4,5,9,11,16,17		

CORE COURSES						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	SYSE-804	Modeling, Simulation & Optimization	3+0	4,7,8,9		
2	SYSE-805	System Engineering Project Management	3+0	12		
3	SYSE-899	MS Thesis	0+6	17		
4	SYSE-818	Product Development & Systems Engineering	3			

Concentration Elective Courses (at least 1 course is mandatory)						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	SYSE-802	System Architecture and Design	3+0			
2	SYSE-803	System Integration & Validations	3+0	8,9		
3	SYSE-817	Design and Analysis of Experiments	3+0	4,8,9,11		
4	SYSE-819	Model-based Systems Engineering	3			
5	SYSE-866	Quantitative Operations Research	3			

Application Electives Courses						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	CSE-843	Performance Analysis of Communication Systems	3+0	8,9,11		
2	CSE-844	Performance Analysis of Networks	3+0	9,11,15		
3	EE-829	System Identification	3+0	4		
4	SYSE-821	Unmanned Aircraft Systems	3+0	9,11		
5	SYSE-822	Applied Aerodynamics	3+0	9,11		
6	CSE-867	Virtual Reality	3+0	9,11		
7	CSE-868	Human Computer Interaction	3+0	3,4,8,9,17		
8	CSE-865	3D Geometric Modeling and Reconstruction	3+0	4, 8		
9	CSE-845	Applied Machine Learning	3+0	4,9,11,15		
10	CSE-878	Deep Learning	3+0			

4. MS CLIMATE CHANGE & SUSTAINABLE DEVELOPMENT

Course Curriculum:

Core Courses						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	CCSD-899	MS Thesis	6			
2	ESE-832	Energy and Climate Change	3+0	7,8,9,11,13,15		
3	ECO-775	Topics in Sustainable Development	3+0	11,17		
4	ENS-807	Climate Change Science	3	11,13		
5	CCSD-801	Geo-Spatial Statistical Analysis	3	8,13		

Elective Courses						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	ECO-682	Economics Of Environment and Natural Resources	3+0	7,8,9,12,13,15		
2	CE-834	Climate Change and Hydrological Cycle	3+0	11,13		
3	ESE-809	Modeling of Energy Systems	3+0	7,9,11		
4	ENS-827	Climate Change Adaptation & Mitigation	3+0	11,13		
5	CSE-845	Applied Machine Learning	3+0	4,9,11,15		
6	AGB-845	Sustainable Agriculture: Practices and Perspectives	3+0	2,8,11,15		
7	GPP-810	International Climate Law, Policy and Governance	3	8,11,16		
8	ABS-960	Population Health and Environment	3	3,15		
9	CCSD-802	Innovative Technologies for Climate Change Resilience	3	9,11		

5. PHD COMPUTATIONAL SCIENCE AND ENGINEERING

Course Curriculum:

PhD Courses						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	BMES-832	Biomechanics	3+0	3,4,9,10,15		
2	CSE-801	Computational Fluid Dynamics	3+0	4,7,9,11,12		
3	CSE-843	Performance Analysis of Communication Systems	3+0	8,9,11		
4	CSE-844	Performance Analysis of Networks	3+0	9,11,15		
5	CSE-872	Non-Newtonian Fluid Mechanics	3+0	4,7,9		
6	CSE-881	Applied Mathematics for Computational Science & Engineering	3+0	4,8,9		
7	CSE-880	Computational Linear Algebra & Optimization	3+0	4,8,9		
8	CSE-906	Boundary Layer Theory	3+0	4,7,9,12		
9	CSE-999	Phd Thesis	30+0			
10	DME-811	Product Design And Development	3+0	4,9,11,12,15		
11	CSE-840	Computational Modeling of Materials	3			
12	ENV-820	Environmental Chemistry	3			
13	CSE-920A	Advanced Partial Differential Equations	3			
14	CSE-848	Generative AI and Applications	3			
15	EE-829	System Identification	3+0	4		
16	EE-831	Advanced Digital Signal Processing	3+0	4,8,9		

PhD Courses						
Sr.No	Course Code	Subjects	Credit Hours	Related SDG	Pre Requisite	Course Content
17	EE-851	Advanced Digital Communication Systems	3+0	4,8,9		
18	EE-976	Optimal & Multivariable Control Systems	3+0	4,9,12		
19	IT-877	Advanced Computer Networks	3+0	4,8,9,11		
20	ME-802	Finite Element Methods	3+0	4,7,9		
21	ME-833	Computational Fluid Dynamics-II	3+0	3,4,7,9,11		
22	ME-881	Advanced Fluid Mechanics	3+0	4,7,8,9,11		
23	SYSE-821	Unmanned Aircraft Systems	3+0	9,11		
24	SYSE-822	Applied Aerodynamics	3+0	9,11		
25	CSE-885	Anatomy and Physiology for CSE	3+0	3,4,14,15		
26	CH-807	Coordination Chemistry	3+0	1,4,6,7,9		
27	CH-810	Nanochemistry	3+0	3,9		
28	CSE-888	Computational Modeling of Physiological Systems	3+0	3,4,9		
29	CSE-878	Computational Chemistry	3+0	6,7,14,15		
30	CSE-871	Chemical Kinetics and Reaction Dynamics	3+0	4,6,14		
31	CSE-914	Computational Enzymology	3+0	1,3,4,15		
32	CSE-917	Concepts In Supramolecular Chemistry	3+0	4		
33	CSE-811	Parallel Computing For Heterogeneous Platforms	3+0	4,17		
34	CSE-913	Modeling of Cluster Compounds	3+0	4		
35	CSE-918	Modeling Polymeric Materials	3+0	1,3,6		
36	CSE-890	Analysis of Biomechanical Systems	3+0	3,4,15		
37	CSE-887	Computing for Computational Science & Engineering	3+0	4,17		
38	CSE-879	Model Order Reduction	3+0	4		
39	CSE-867	Virtual Reality	3+0	9,11		

PhD Courses						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
40	CSE-868	Human Computer Interaction	3+0	3,4,8,9,17		
41	CSE-865	3D Geometric Modeling and Reconstruction	3+0	4, 8		
42	CSE-845	Applied Machine Learning	3+0	4,9,11,15		
43	CSE-847	Biomedical Engineering	3+0	3,4,10,15		
44	CSE-883	Data Analysis & Statistics	3+0	4,17		
45	CSE-931	Advanced Numerical Methods	3+0	4,7,9		
46	CSE-884	Quantum Chemistry	3+0	4		

Additional Courses						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	SEM/WKSP-997	Seminar / Workshop	1+0	2,4,9,11,17		
2	AWS-898	Academic Writing Skills and Practicum	2+0			

6. PHD BIOINFORMATICS

Course Curriculum:

PhD Bioinformatics						
Sr.No	Course Code	Subjects	Credit Hours	Related SDG	Pre Requisite	Course Content
1	ABS-933	Principles Of Molecular Biology	3+0	2,3,4,9,15,17		
2	CSE-870	Petri Nets	3+0	4,17		
3	CSE-873	Computational Drug Design	3+0	3,4,15		
4	CSE-874	Molecular Modeling and Drug Design	3+0	3,4		
5	CSE-877	Statistics in BioInformatics	3+0	4,17		
6	CSE-880	Computational Linear Algebra & Optimization	3+0	4,8,9		
7	CSE-952	Advanced Model Checking	3+0	4,8		
8	CSE-953	Advanced Computational Biology	3+0	4,17		
9	HCB-811	Cancer Genetics	3+0	3,4,9,15		
10	HCB-813	General & Molecular Immunology	3+0	3,4		
11	CSE-896	Translational Bioinformatics Applications	3+0	4,17		
12	CSE-895	Microarray and RNA Sequencing	3+0	3,4		
13	CSE-887	Computing for Computational Science & Engineering	3+0	4,17		
14	CSE-920	Computational Bio-pharmaceuticals and pharmacokinetics	3+0	3,4,9		
15	ABS-839	Proteomics	3+0	4,9		
16	HCB-841	Molecular Medicine	3+0	3,4,9		
17	BI-801	Computing for Bioinformatics	3+0	4,17		
18	BI-802	Mathematics for Bioinformatics	3+0	3,4,9		
19	BI-811	Machine Learning in Drug Design	3+0	3,4		
20	BI-832	Next Generation Sequencing Analysis	3+0	4,17		
21	BI-851	Computational Immunology	3+0	3,4,14,15		
22	BI-852	Computational Vaccinology	3+0	3,4,14,15		
23	CSE-845	Applied Machine Learning	3+0	4,9,11,15		
24	CSE-883	Data Analysis & Statistics	3+0	4,17		
25	CSE-876	Biochemistry	3+0	3,15		
26	BI-999	PhD Thesis	30			

Additional Courses						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	SEM/WKSP-997	Seminar / Workshop	1+0	2,4,9,11,17		
2	AWS-898	Academic Writing Skills and Practicum	2+0			

7. PHD CLIMATE CHANGE & SUSTAINABLE DEVELOPMENT

Course Curriculum:

PhD Courses						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	CCSD-999	PhD Thesis	30			
2	ECO-682	Economics Of Environment and Natural Resources	3+0	7,8,9,12,13,15		
3	CE-834	Climate Change and Hydrological Cycle	3+0	11,13		
4	ESE-809	Modeling of Energy Systems	3+0	7,9,11		
5	ENS-827	Climate Change Adaptation & Mitigation	3+0	11,13		
6	ESE-832	Energy and Climate Change	3+0	7,8,9,11,13,15		
7	CSE-845	Applied Machine Learning	3+0	4,9,11,15		
8	AGB-845	Sustainable Agriculture: Practices and Perspectives	3+0	2,8,11,15		
9	ECO-775	Topics in Sustainable Development	3+0	11,17		

10	ENS-807	Climate Change Science	3	11,13		
11	CCSD-801	Geo-Spatial Statistical Analysis	3	8,13		
12	GPP-810	International Climate Law, Policy and Governance	3	8,11,16		
13	ABS-960	Population Health and Environment	3	3,15		
14	CCSD-802	Innovative Technologies for Climate Change Resilience	3	9,11		

Additional Courses						
Sr.No	**Course Code**	**Subjects**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Course Content**
1	SEM/WKSP-997	Seminar / Workshop	1+0	2,4,9,11,17		
2	AWS-898	Academic Writing Skills and Practicum	2+0			

SINES Labs Data

Biomechanics lab

General Introduction of the Lab
The focused areas are gait analysis, sports biomechanics, and muscle mechanics

Name of the Lab Supervisor(s)
Dr. Zartasha Mustansar

Department of Lab Supervisor
SINES

Projects which are currently on going in the Lab
Gait analysis, sports biomechanics

Major Equipment of the Lab
High resolution cameras, force plates

Number of students who are currently working in the lab
8

Number of PC's in the Lab
4

Data Analytics Lab

General Introduction of the Lab
The lab works on projects related to Data Analytics and Big Data Analytics projects involving AI. The domain of interest range from Bioinformatics to Ecommerce and Smart Grid Power Generation Forecasting.

Name of the Lab Supervisor(s)
Dr. Mehak Rafiq

Department of Lab Supervisor
SINES

Projects which are currently on going in the Lab
Smart Grid Power Generation Forecasting, Cancer Genetics, and NGS

Major Equipment of the Lab
Computer systems only

Number of students who are currently working in the lab
10

Number of PC's in the Lab
6

Aero structure lab

General Introduction of the Lab
Undergraduate experiment lab. Demonstration purposes

Name of the Lab Supervisor(s)
Dr. Munim

Department of Lab Supervisor
SMME

Projects which are currently on going in the Lab
None

Major Equipment of the Lab
Utm (universal testing machine), tortional testing. Fatigue testing. Impacting. Hardness tester. F7 jet fighter engine. Bending test machine. Compression testing. Tensile testing

Number of students who are currently working in the lab
None except for undergraduate classes

Number of PC's in the Lab
2

Computational Aeronautics Lab

General Introduction of the Lab
Aero-Flight Dynamics, Computational Fluid Dynamics, Designing, and Control Systems of different Aircrafts, Jets, Drones, and UAVs.

Name of the Lab Supervisor(s)
Principal Investigator is Dr. Adnan Maqsood
Co-Principal Investigator is Dr. Ammar Mushtaq

Department of Lab Supervisor
SINES

Projects which are currently on going in the Lab
None

Major Equipment of the Lab
HPC Cluster, Flight Simulator Seat, 4x Quad Copter, Ducted Fan Apparatus, and Insect Swarming Box

Number of students who are currently working in the lab
13

Number of PC's in the Lab
15

Smart AgriTech Lab

General Introduction of the Lab

"The Smart Agri Tech Lab, located on the 3rd floor of the SINES (School of Integrated Social Sciences and Natural Sciences) at the National University of Sciences and Technology (NUST), is at the forefront of innovative research and development in the field of agriculture and technology. The lab is involved in various ongoing projects that leverage cutting-edge technologies to address diverse challenges in agriculture, attendance systems, smart drones, and healthcare.

One of the key projects underway in the lab is the integration of facial recognition and sentiment analysis into the attendance system. This initiative aims to enhance attendance tracking by incorporating advanced technologies, making the process more efficient and accurate. The lab is collaborating with organizations such as RIC (Research and Innovation Circle) and Cotton Web Limited to implement these solutions and streamline attendance management.

The lab is actively engaged in a project focused on managing registered and unregistered cars within the NUST campus. By employing modern technologies, the lab aims to create a comprehensive system that efficiently monitors and manages vehicle registration on the campus.

In the realm of agriculture, the lab is making strides in the development of smart drones. These drones are equipped with advanced features to revolutionize farming practices, offering precision agriculture solutions for increased efficiency and productivity in the agricultural sector.

The lab is contributing to the healthcare sector through its work on Explainable AI. By incorporating transparency and interpretability into artificial intelligence systems, the lab aims to improve decision-making processes in healthcare. This initiative holds the potential to enhance the understanding of AI-generated insights, making them more accessible and trustworthy in medical applications."

Name of the Lab Supervisor(s)

Dr. Shahzad Younis

Department of Lab Supervisor

SEECS

Projects which are currently on going in the Lab

facial recognition and sentiment analysis into the attendance system, registered and unregistered cars and smart drones

Major Equipment of the Lab

3D printer, all kind of tools, solding machine, temperature detector

Number of students who are currently working in the lab

10

Number of PC's in the Lab

8

Image Analysis Lab

General Introduction of the Lab
In this lab, mostly work is done using satellite imagery and state-of-art machine learning approaches for any kind of change or anomaly detection.

Name of the Lab Supervisor(s)
Dr. Muhammad Tariq Saeed

Department of Lab Supervisor
SINES

Projects which are currently on going in the Lab
Serena Green

Major Equipment of the Lab
PCs and high end workstations

Number of students who are currently working in the lab
7

Number of PC's in the Lab
7

Environment & Agriculture lab

General Introduction of the Lab
Water and soil analysis (pH, EC, TDS , Hardness , Alkalinity, nitrates , phosphate, chloride, nitrite , phosphate , COD, BOD, Ammonia, etc

Name of the Lab Supervisor(s)
Prof Dr.Muhammad Arshahd

Department of Lab Supervisor
IESE

Projects which are currently on going in the Lab
DCI Islamabad

Major Equipment of the Lab
Spectrophotometer

Number of students who are currently working in the lab
14

Number of PC's in the Lab
3

NCDC Lab

General Introduction of the Lab
NUST Chip Design Centre, work on training human resource for IC industry in Pakistan and also main role is to do research and IP production.

Name of the Lab Supervisor(s)
Dr. Hammad M. Cheema
Dr. Waqar Ahmad

Department of Lab Supervisor
SINES

Projects which are currently on going in the Lab
LDO, EIT

Major Equipment of the Lab
None

Number of students who are currently working in the lab
12

Number of PC's in the Lab
10

XR HIVE Lab

General Introduction of the Lab

"Welcome to the cutting-edge world of our state-of-the-art laboratory, where innovation meets imagination. At XR HIVE, we embark on a journey into the realms of Virtual Reality (VR), Brain-Computer Interfaces (BCIs), and Haptics, pushing the boundaries of technological exploration to redefine human-machine interaction.

In the realm of Virtual Reality, we delve into immersive simulations that transport users to new dimensions. From virtual environments that replicate real-world scenarios to fantastical realms limited only by creativity, our VR research explores the vast potential of this technology to revolutionize industries such as gaming, education, healthcare, and beyond.

Haptics, the science of touch, is a cornerstone of our research, where we strive to replicate and enhance tactile sensations in the virtual realm. Our haptic systems enable users to feel, touch, and interact with virtual objects, bridging the gap between the digital and physical worlds for a more immersive and realistic experience.

Within our laboratory, the synergy of these three domains creates a unique ecosystem where we explore the wonders of VR, BCIs, and Haptics. By seamlessly integrating these technologies, we aim to redefine the boundaries of human perception, cognition, and interaction."

Name of the Lab Supervisor(s)

Dr. Shahzad Rasool

Department of Lab Supervisor

SINES

Projects which are currently on going in the Lab

VR Simulator of an aircraft, Gamified Experience in VR for chemistry learning, Haptics and Brain computer Interfaces, VR and AI

Major Equipment of the Lab

VR headsets, Haptic Devices, Leap Motion Controllers.

Number of students who are currently working in the lab

10

Number of PC's in the Lab

11

Computational Drug Design Lab

General Introduction of the Lab
The lab and its occupants work on computational drug design and related topics.

Name of the Lab Supervisor(s)
Dr. Ishrat Jabeen

Department of Lab Supervisor
SINES

Projects which are currently on going in the Lab
Drug design, regulatory network studies, metagenomics analysis, modelling and simulation.

Major Equipment of the Lab
Personal computers

Number of students who are currently working in the lab
15

Number of PC's in the Lab
15

Heat and Mass Transfer Lab

General Introduction of the Lab
Undergraduate lab for Aerospace Engineering students, associated with the heat and mass transfer course. The experiments performed in the lab demonstrate the modes of heat transfer practically

Name of the Lab Supervisor(s)
Muhammad Talha Yousaf

Department of Lab Supervisor
SMME - Aerospace Engineering Department

Projects which are currently on going in the Lab
None

Major Equipment of the Lab
Thermal Conductivity of Liquid and Gases machine, linear heat transfer conduction unitâ€™, linear and radial heat transfer unit, cut downmodels of 2stroke and 4 stroke engine

Number of students who are currently working in the lab
None except for undergraduate classes

Number of PC's in the Lab
1

Thermodynamics Lab

General Introduction of the Lab
Undergraduate experiment lab. Demonstration purposes

Name of the Lab Supervisor(s)
Muhammad Talha Yousaf

Department of Lab Supervisor
SMME - Aerospace Engineering Department

Projects which are currently on going in the Lab
None

Major Equipment of the Lab
Steam Power Plant with Steam Engine, Mechanical Heat Pump machine, Heat exchange service unit, Marcet Boiler, Oxygen Bomb Calorimeter, Pressure measurement bench, and Temperature measurement bench

Number of students who are currently working in the lab
None except for undergraduate classes

Number of PC's in the Lab
2

Aerodynamics Lab

General Introduction of the Lab

Aerodynamics lab is an aerospace engineering lab, associated with the UG course fundamentals of incompressible flows. In this lab, student Learn the fluid mechanics over different bodies.

Name of the Lab Supervisor(s)

Muhammad Talha Yousaf

Department of Lab Supervisor

SMME - Aerospace Engineering Department

Projects which are currently on going in the Lab

None

Major Equipment of the Lab

Smoke tunnel, flight demonstration wind tunnel, air bench apparatus, fan performance equipment, laminar turbulenent fluid flow apparatus, fluid friction apparatus

Number of students who are currently working in the lab

None except for undergraduate classes

Number of PC's in the Lab

1

Radar Research Lab

General Introduction of the Lab
Radar systems

Name of the Lab Supervisor(s)
Dr. Hammad Cheema

Department of Lab Supervisor
SINES

Projects which are currently on going in the Lab
Radar detection for safe rails and Portal (portable radar)

Major Equipment of the Lab
FPGA board, SDR (software defined radio), radar antenna

Number of students who are currently working in the lab
4

Number of PC's in the Lab
16

AIMS (Artificial Intelligence for Mechanical Systems) Lab

General Introduction of the Lab
Artificial intelligence for mechanical systems

Name of the Lab Supervisor(s)
Dr. Muhammad sajid

Department of Lab Supervisor
SMME

Projects which are currently on going in the Lab
Solar and wind energy forecast

Major Equipment of the Lab
Solar simulator, HVAC chamber, IoT devices

Number of students who are currently working in the lab
4

Number of PC's in the Lab
6

Biosensors and therapeutic Lab

General Introduction of the Lab
Focused on developing Biosensors and Drug delivery constructs

Name of the Lab Supervisor(s)
Dr Shah Rukh Abbas

Department of Lab Supervisor
ASAB

Projects which are currently on going in the Lab
TB biosensor and ultrasound contrast agents

Major Equipment of the Lab
Electrochemical Set up, Ultrasound Machine, Centrifuge, Fridge

Number of students who are currently working in the lab
10

Number of PC's in the Lab
0

Map of SINES (Lab locations, etc)

Ground Floor													
A-Wing		B-Wing		C-Wing		D-Wing		Central Area	Between A & B	Between C & B	Between D & C	Between A & D	
Entrance		Entra e		Entrance		Entrance		**Sitting Area:** Sofas for 15 people	Left: Stairs Biometric Attendance Right: Reception Desk	Aerial Robotics Lab	Left: Elevator Right: Stairs	Jazz 5G Innovation Lab Vending Machine	
		Small Library and sitting area		Lockers		Sitting bench							
Left	Right	Left	Right	Left	Right	Left	Right						
Emergency Switch	HoD SINES Associate Professor Dr. Zartasha Muntasar	Supercomputing Lab	Conference Room	Makers Lab	Biomechanics Lab	Aerostructure Lab	Unoccupied Space						
Principal Meeting Room	Principal and Dean	IT Support	System Administrator			Emergency Stairs	Unoccupied Space						
Kitchen	PA to Principal	Fire Hose Two Fire Extinguishers	Female Washroom			Two Fire Extinguishers	Female Washroom						
HoD BE Aerospace Professor Dr. Riaz Ahmad	HoD Engineering Professor Dr. Mian Ilyas Ahmad	Emergency Stairs	Male Washroom										
AD Administrator and Coordinator **Admin Office**													
Admin Staff - BE Aerospace	HoD Sciences Professor Dr. Fouzia Parveen Malik												
Senior AD Administrator and Coordinator: Kamran Akbar Khan													
SINES Admin Staff													
Two Fire Extinguishers													

First Floor

A-Wing	B-Wing	C-
Entrance	Entrance	Ent

Notice Board

Left	Right	Left	Right	Left
Emergency Switch Computing Lab - I (For Classes)	Nothing	Classroom - 1	Emergency Switch Classroom - 2	Emergency Swtich Two Fire Extinguishers
Computing Lab - II (MS Research Lab)		Classroom - 3	Classroom - 4	Thermodynamics Lab
		Fire Hose Two Fire Extinguishers Emergency Stairs	Female Washroom	Propulsion Lab
		Emergency Switch	Male Washroom	

First Floor

Wing	D-Wing		Central Area
rance	Entrance		**Indoor Sports Facilities:** Two Table Tenis Billiard Board Two sitting benches
	Notice Board Fire Hose		
Right	**Left**	**Right**	
Heat and Mass Transfer Lab	Emergency Switch Unoccupied Space	Classroom - 5	
Aerodynamics Lab	Unoccupied Space	Classroom - 6	
	Emergency Stairs	Male Washroom	
	Emergency Switch Two Fire Extinguishers		

Between A & B	Between C & B	Between D & C
		Exams and Program Coordinator Sections: Right - Program Coordinator Section Left - Exam Section
Reserved for NDRMF <u>Left:</u> Stairs	Girls Common Room Lockers	<u>Left:</u> Notice Board Sitting bench Elevator <u>Right:</u> Stairs

Between A & D

Boys Common Room/Mosque

Right:
Sitting bench

Second Floor

A-Wing		B-Wing
Entrance		Entrance
Left	Right	Left
Turkish Aerospace Industries Pakistan		Electrical and Electronics Lab (For Bachelor of Aerospcase Engineering) Aerospace Engineering Department Library (Timings: Monday 9am - 10am) Emergency Switch Fire Hose Two Fire Extinguishers Emergency Stairs

	C-Wing	D-W
	Entrance	Entr

Fire

Right	Left	Right	Left
Unoccupied Space	DreamBig Semiconductor		Artificial Intelligence for Mechanical Systems
Deep Learning Lab			**GIS Mobility Lab:** Associate Professor Dr. M. Ali Tahir
Female Washroom			Emergency Stairs Two Fire Extinguishers
Male Washroom			

Second Floor

ing	Central Area	Between A & B
		Rapids AI
ance	SINES Library Electric Vehicle Lab Seminar Hall - 1	Left: Stairs Two Fire Extinguishers

Hose

Right

Emergency Switch

Image Analysis Lab:
Associate Professor Dr. Tariq Saeed
Female Washroom
(Washroom only for industry people)

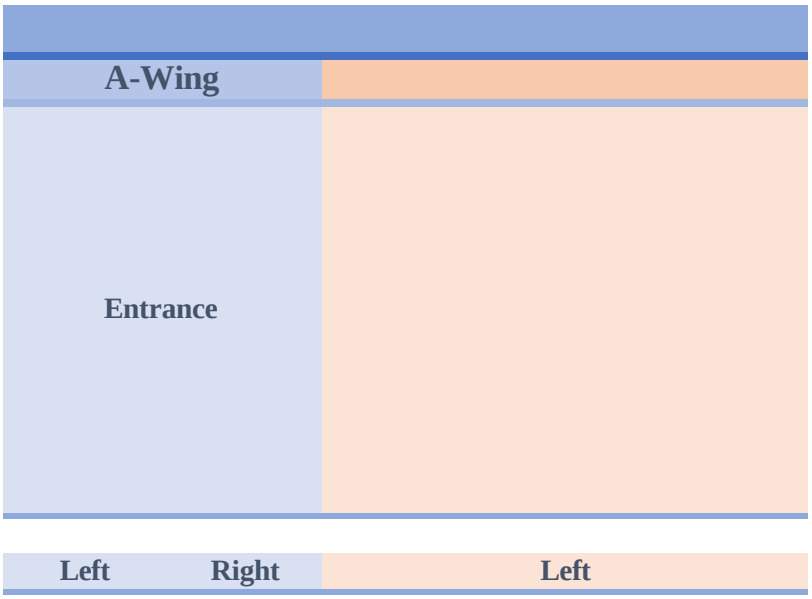
Male Washroom

Between C & B	Between D & C
Radar Research Lab: Principal Investigator: Dr. Hammad M. Cheema	**Data Analytics Lab:** Assistant Professor Dr. Mehak Rafiq <u>Left:</u> Elevator

Between A & D

Computational Aeronautics Lab:
Professor Dr. Adnan Maqsood
Associate Professor Dr. Ammar Mushtaq

Third Floor



USAID:
University of Utah
University of Alabama

Nanoscience and Technology Lab 1:
Dr. Mohsin Saleem

Fire Hose
Two Fire Extinguishers
Emergency Stairs

B-Wing	
Entrance	

Right	Left
Emergency Switch Biosensors and Theraoeutics Lab	Emergency Switch Two Fire Extinguishers **ARCELIK Islamabad R&D Center (AIRC):** Dawlance
Nano Biotechnology Lab	
Female Washroom (Washroom only for USAID HESSA Project Team)	
Male Washroom	

Third Floor	
C-Wing	**D**
Entrance	**E**

Fi

Right	Left

Thermal and Energy Storage Technology (TEST) Lab:

PIs:

Professor Dr. Syed Rizwan Hussain (SNS)
Dr. Faheem Amin (SNS)
Dr. Ghulam Ali (USPCAS-E)
Dr. Muhammad Talha Masood (SCME)
Dr. Zeeshan Ali (SCME)

XR HIVE:

Assistant Professor
Dr. Shahzad Rasool

Emergency Switch
Two Fire Extinguishers
Emergency Stairs

-Wing	Central Area	Between A & B
r trance	Cove 3 Cove 2 Seminar Hall - 2	**Advanced Integrated Energy Lab (USPCAS-E):** Principal Investigator: Dr. Abeera Ayaz Ansari Co Principal Investigator: Dr. Muhammad Yousif Left: Stairs Two Fire Extinguishers
re Hose		
Right		

NUST Chip Dsign Center:
Design Lab

Male Washroom

Between C & B	Between D & C
	National Cyber Security Auditing and Evaluation Lab (SINES): Erasmus + Re:Cypher
System on Chip Lab (SoC)	
	Left: Emergency Switch Elevator

Between A & D

Smart AgriTech Lab

Adaptive Signal Processing Lab

Fourth Floor

Fourth Floor							
A-Wing				Wing		C-Wing	
Entrance				Entrance		Entrance	
Left	Center	Right	Left	Right	Left	Right	Left
Emergency Switch Two Fire Extinguishers	Meeting and TVF Room	Assistant Professor Dr. Muhammad Irfan Zafar	Emergency Switch Microfluidics Lab	**Environment and Agriculture Lab:** Professor Dr. Muhammad Arshad GIS Mobility Lab	Emergency Switch Two Fire Extinguishers	Resolve Unoccupied space	
Assistant Professor Dr. M Salman Khan Two Printers		Dy Controller Exams Dr. Absaar ul Jabbar	Reserved for MOOCs Studio	Female Washroom	Under Development		Unoccupied space
Assistant Professor Dr. M Asim Waris							
Associate Professor Dr. Zamir Hussain		Associate Professor Dr. Rehan Zafar Paracha	Interdisciplinary Design Lab	Male Washroom			Unoccupied space
Assistant Professor Dr. Masood ur Rehman		Associate Professor Dr. Hafeez Anwar	Emergency Switch Emergency Stairs Fire Hose Two Fire Extinguishers				Unoccupied space
Associate Professor Arshan Nasir		Associate Professor Dr. Uzma Habib					
Assistant Professor Dr. Salma Sherbaz		Professor Dr. Ibraheem Haneef					
Associate Professor Dr. Abdul Munem Khan		Assistant Professor Dr. M. Jawad Khan					

D-Wing	Central Area	Between A & B	Between C & B	Between D & C	Between A & D
Entrance Fire Hose **Right**	Auditorium Door 1 Auditorium Door 2	Unoccupied Space Left: Stairs	**Computational Drug Design Lab:** Professor Dr. Ishrat Jabeen	Defence Research and Innovation Lab Left: Elevator Right: Stairs	Faculty Lounge

Emergency Switch
Reserved for MOOCs Studio

Reserved for MOOCs Studio

Kitchen Hood Duct

Washroom

Two Fire Extinguishers
Emergency Stairs

Industrial Labs Data

Resolve Lab

- Year of Establishment
  2023
- Employees currently working
  21
- Main roles and expertise
  AI Tech, Compilation, Automation and Sensor Conditioning, Data Analytics, Antenna Design
- Overall work culture
  Its workplace fosters a robust and supportive environment that values well-being, collaboration, and growth.
- Notable achievements or breakthroughs the center has accomplished in the past year
  As a newly established company, its in the initial stages of our journey, focusing on building a strong foundation. At this early phase, they're yet to reach measurable milestones, but they're diligently working toward our goals.
- Partnerships or collaborations with external organizations or industries
  They've initiated collaborations with several external organizations, including NESCOM, NECOP, and Other private/ public sectors, fostering valuable partnerships to support their endeavors.
- Details about the internship programs
  Their internship program targets specific areas outlined above. They welcome applicants to submit their CVs either in person at our office or through email at resolve.contactus@gmail.com for consideration. They're excited to explore opportunities for growth and learning together
- Departments or areas that typically host interns within the company
  AI Tech, Compilation, Automation and Sensor Conditioning, Data Analytics, Antenna Design (Based on available seats)

Turkish Aerospace Industries (TAI) Lab

- Year of Establishment
  1973
- Employees currently working
  36
- Main roles and expertise
  Aircraft design and manufacturing
- Overall work culture
  Company follows same work ethics and culture as established by Turkish head office.
- Notable achievements or breakthroughs the center has accomplished in the past year
  Pakistani TA office has made significant contributions to the ongoing development programs.
- Partnerships or collaborations with external organizations or industries
  They collaborate with PAF, Pak Army, NAVY and NESCOM.
- Details about the internship programs
  There are two internship programs. They take interns in their NUST office and they offer internships in Ankara Turkey head-office as well. Turkey internships are managed by NUST placement office.
- Departments or areas that typically host interns within the company
  Engineering and business operations offices.

RapidsAI Lab

- Year of Establishment
  2022
- Employees currently working
  7
- Main roles and expertise
  MACHINE LEARNING and Computer Vision
- Overall work culture
  1. Respect and Inclusivity: Valuing diversity and ensuring a respectful environment for all employees.
  2. Open and Honest Communication: Encouraging transparent dialogue and feedback at all levels.
  3. Work-Life Balance: Recognizing the importance of personal time and offering flexible work arrangements.
  4. Employee Development: Providing opportunities for professional growth and acknowledging achievements.
- Notable achievements or breakthroughs the center has accomplished in the past year
  They worked on a project of Pfizer in collaboration with team from the New Zealand.
- Partnerships or collaborations with external organizations or industries
  They are working with multiple international organizations.
- Details about the internship programs
  They offer internships in MACHINE LEARNING, Web Development and Android development
- Departments or areas that typically host interns within the company
  MACHINE LEARNING

Dreambig Semiconductor Lab

- Year of Establishment

  2022

- Employees currently working

  40

- Main roles and expertise

  DreamBig World Leading "MARS" Open Chiplet Platform Enables Scaling of Next Generation Large Language Model (LLM), Generative AI, and Automotive Semiconductor Solutions

- Overall work culture

  Good

- Notable achievements or breakthroughs the center has accomplished in the past year

  The company has raised the technology bar to lead the semiconductor industry by delivering the next generation of open chiplet solutions such as Large Language Model (LLM), Generative AI, Datacenter, and Automotive solutions for the global mass market.

- Partnerships or collaborations with external organizations or industries

  Multinational Company

- Details about the internship programs

  None

- Departments or areas that typically host interns within the company

  SEECS Department

HESSA Lab

- Year of Establishment

  2021

- Employees currently working
  10
- Main roles and expertise
  Trainings
- Overall work culture
  Good
- Notable achievements or breakthroughs the center has accomplished in the past year
  HEC Policy Reform
- Partnerships or collaborations with external organizations or industries
  Yes
- Details about the internship programs
  None
- Departments or areas that typically host interns within the company
  None