Postgraduate Programmes
2020

NED UNIVERSITY
of Engineering & Technology
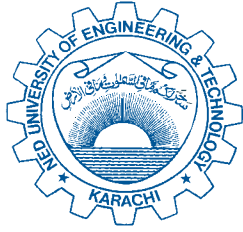
NED UNIVERSITY
OF ENGINEERING & TECHNOLOGY
KARACHI-75270, PAKISTAN

PROSPECTUS FOR
POST GRADUATE PROGRAMMES

LEADING TO THE DEGREE OF
M. ENGG., MEM, MS, M. Arch, MURP

2020

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2020 Postgraduate Programmes

1   HISTORICAL BACKGROUND OF THE UNIVERSITY

1.1   Brief History of the University

The NED University of Engineering & Technology, was established in March 1977 under an Act of the Provincial Assembly of Sindh after upgrading of the former NED Government Engineering College, which was set up in 1921. The NED University is thus one of the oldest institutions in Pakistan for teaching and producing Engineering graduates. Prior to this, the D.J. Science College, used to run classes to train subordinates for the Sindh P.W.D., the Municipalities and Local Boards.

On August 29, 1921 College Principal C.S Shahani made a concerted effort to get Engineering Degree classes started to meet demands of Civil Engineers on the project for completion of the Sukkur Barrage. Application to this effect was made to the University of Bombay through the Commissioner of Sindh, who was ex-officio president of Sindh Collegiate Association (a registered society of subscribers for providing higher education in Sindh). The Bombay University, however, rejected the application on the grounds of insufficient finances and insisted on entirely separate buildings, laboratories for the engineering college as a separate institution. After collection of donations from the Puribai and Becharbai Trust, Vishandas Fatehchand Brothers and one huge donation (for that time) of Rs.150,000 from the heirs of Mr. Nadirshaw Edulji Dinshaw, the new college buildings and laboratories were constructed on a separate land. The new college was originally the Prince of Wales Engineering College but later renamed in memory of Nadirshaw Edulji Dinshaw. The NED College was provisionally granted affiliation on 23-05-1923 by the University of Bombay for the First and Second Year courses in Civil Engineering and 78 students were provisionally admitted into first year classes in 1922. Permanent affiliation followed in February 1927.

The first-full time Principal of NED Engineering College was Mr. G.N.Gokhale who joined on 1st July 1923. Prior to this, Rai Sahib Bhupatrai had acted as Honorary Principal. The first professor (and Vice Principal) was Mr. S.B. Jannarkar who, along with Mr. Gokhale, did all the spadework in organizing and equipping the various departments and ordering the equipment for the Power House, Boiler Room, Hydraulics Laboratory, Engine Room and Machine Shops.

The original NED Engineering College was housed in four blocks of buildings and two sheds. The main block was named as Seth Fatehchand Dewandas Khilnani Hall. The block housing the Power House, Electrical and Hydraulics Laboratories, and Workshops was named after Bai Puribai and Bacharbai. Further additions were made to this block to provide accommodation for the Machine Shop on the ground floor and a (Mechanical) Drawing Hall on the first floor. The fourth block, completed in 1945, contained a Classroom and Clerk's Office on the ground floor and another (Civil) Drawing Hall on the first floor.

Two sheds were also built, one to house the Carpentry and Smithy Shops, and the other, alongside the Electrical Laboratory and Engine Room, to train technicians. The total cost of the buildings was just over Rs. 265,000 and the

cost of equipment (including machinery, electrical instruments; models, steam, gas and oil engines; surveying and leveling instruments), books and furniture was just under Rs. 400,000.

The college remained affiliated to the University of Bombay from its inception in 1922 to 1947, after which it was taken over by the Government of Sindh; renamed as NED Government Engineering College and affiliated to the University of Sindh. After establishment of the University of Karachi in 1951, the affiliation of the College was transferred to this University. In 1964, a comprehensive plan was prepared to shift the college from its location in the congested downtown area (where no expansion was possible) to a new site adjoining the University of Karachi. The project was carried out with the assistance of the World Bank which provided Rs.118 millions in two phases and the College was shifted to its new 40 hectares Main Campus in 1975.

On the 1st of March, 1977 the NED Government Engineering College became the NED University of Engineering and Technology. From an enrolment of 50 students in 1923, the student population, at undergraduate, graduate and Ph.D. levels, has now gone up to nearly 13881. The Departments of Biomedical Engineering and Food Engineering are located at NED LEJ Campus for which the land and building - estimated value Rs. 350 million - was donated by (Late) Latif Ebrahim Jamal, a well-known philanthropist.

The first Vice Chancellor of the University was Mr. A. M. Akhoond who was succeeded in sequential order by Prof. Dr. A. T. Khan, Prof. Dr. Jameel Ahmed Khan, Prof. Dr. M. Munir Hasan, Prof. Dr. A. Q. Qazi Engr. Abul Kalam and Prof. Dr. M. Afzal Haque, Dr. S. H. Lodi is the present Vice Chancellor.

1.2   Thar Institute of Engineering, Sciences and Technology (TIEST)

TIEST is established at Mithi, Tharparkar which is around 350 km towards East from Karachi. The main purpose of establishing this institute was to provide direct access of quality education to the deprived students of this district as well as producing qualified workforce for the future need of this rapidly developing area of the Province.

TIEST is currently established in a temporary building which will eventually be shifted to its main campus which is going to be established at a land of around 300 acres on the main road leading to Islamkot and is almost in the mid of Mithi and Islamkot. It is also at reasonable distance from the Airport. At TIEST currently bachelor of Computer Science programme is offered with 60 seats. First Principal of TIEST is Prof. Dr. Muhammad Raza Mehdi.

1.2   Administration & Academic Support

Vice-Chancellor

Dr. S. H. Lodi
B.E. (Civil) NED; M.S. Oregon State University, USA;
Ph.D. Heriot-Watt University, (UK)

Pro Vice-Chancellor

Prof. Dr. Muhammad Tufail
B.E. (Mech) NED;
M.Sc. (Manufacturing System) Nottingham University, UK;
Ph.D. Nottingham University, UK; C.Eng; FIMechE, Mem ASME

Dean Faculty of Civil and Petroleum Engineering, Dean (CPL)

Prof. Dr. Asad-Ur-Rehman Khan
B.E. (Civil) NED;M.S. (Civil) KFUPM, Saudi Arabia;
Ph.D. (Civil) KFUPM, Saudi Arabia.

Dean Faculty of Mechanical & Manufacturing Engineering, Dean (MME)

Prof. Dr. Syed Amir Iqbal
B.E. (Mech); M.E.(Mech.) with
Mfg. Engg. Specialization; Ph.D. (UK)

Dean Faculty of Electrical & Computer Engineering, Dean (ECE)

Prof. Dr. Saad Ahmed Qazi
B.E. (Electrical) NED UET; M.Sc. (DSP) UK;
Ph.D. (UK), MIEE (UK); MIEEE (USA)

Dean Faculty of Chemical & Process Engineering, Dean (CPE)

Prof. Dr. Asif Ahmed Shaikh
B.E. (Civil) NED Uni; M. Engg. (Civil) Nagasaki Uni, Japan;
Ph.D. (Civil/Environmental Engg); Nagasaki Uni, Japan.

Dean Faculty of Information, Sciences & Humanities, Dean (ISH) (Acting)

Prof. Dr. Noman Ahmed
B.Arch; M.C.P.; (METU, Turkey);
Ph.D. (UK); MPCATP

Dean Faculty of Architecture & Managemetn Sciences, Dean (AMS)

Prof. Dr. Noman Ahmed
B.Arch; M.C.P.; (METU, Turkey);
Ph.D. (UK); MPCATP

Principal, Thar Institute of Engineering, Sciences and Technology (TIEST)

Prof. Dr. Muhammad Raza Mehdi
B.E. (Civil) NED; M.S. (Transportation);
Ph.D. (Environmental Science)
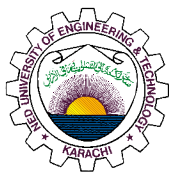
Registrar (Acting)

Mr. Ghazanffar Hussain
M.Phil / PhD in progress (UoK);
M.Sc.(Physical Chemistry) (UoK) (Gold Medal)

Additional Registrar (Academic)

Syed Imtiaz Ahmed
M.B.A.; M.A. (Eco); M.A. (Islamic Studies);

Deputy Registrar (Academic)

Syed Muhammad Tarique
M.A. (Economics)

Deputy Registrar (Academic) (Acting)

Mr. Irfan Ali
M.A. (Economics)

Deputy Registrar (Security & General) / Coordination

Mr. Makhdoom Khalid Hashmi
M.A. (Economics)

Controller of Examinations (Acting)

Mr. Safi Ahmed Zakai
B.E (Elect.) [NED]; MBA (Marketing) IBA Karachi;
M.Engg (Telecom.) NED; M.Phil (Management) UoK

Director of Finance

Mr Muhammad Sajeeruddin
B.Com KU; L.L.B. KU; A.C.M.A. (Accounts) ICMAP;
F.C.M.A. (Accounts) ICMAP.

Resident Auditor (Acting)

Mr. S. M. Hassan Shamsie
B.Com KU; M.A. (Economics) KU

Director (Planning & Projects) (Acting)

Engr. Ashfaq Ahmed Khan
B.Sc., B.Sc. Engg. (Civil)
Member S.A.M.E. (U.S.A.); P.E.

Chief Librarian (Acting)

Ms. Huma Sardar
B.Sc. (Microbiology) UoK; B.L.I.S. (Library and Info. Science) UoK;
M.L.I.S. (Special Libraries) UoK

Director, QEC

Prof. Dr. Asif Ahmed Shaikh
B.E. (Civil) NED Uni; M. Engg. (Civil) Nagasaki Uni, Japan;
Ph.D. (Civil/Environmental Engg); Nagasaki Uni, Japan.

Director of Works & Services and Provost

Engr. S Wasi Uddin
B.E. (Civil); M.Engg.(Env.)

Controller Student Affairs (Acting)

Dr. Ali Hasan Mahmood
B. E. (Textile Engg); M. Engg (Textile);
Ph.D. (Textile, The University of Manchester, UK)

Director Procurement

Mr. Abdul Wahab
M.B.A. (Finance and Accounting)

Director Industrial Liaison (Acting)

Dr. Muhammad Amir Qureshi
B.E. (Textile Engg.) [NED]; M.Engg. (Textile Engg.) [NED];
Ph.D. (Heriot-Watt Uni) [UK]

Director, Information Technology Department (Acting)

Dr. Muhammad Asad Arfeen
B.E (Comp. & Info. Sys.); M. Engg (Comp. Sys);
Ph.D. (Teletraffic Engineering) New Zealand

Director General, NED Academy (Acting)

Prof. Dr. Rizwan-ul-Haque Farooqui
B.E(Civil) NED; M.S. (Civil) National Uni. of Singapore;
Ph.D. (Civil) Florida International University, USA

Director, Office of Research, Innovation & Commercialization (ORIC) (Acting)

Dr. Syed Mehmood Hasan
M.Sc. Engg. Management (SCM) Uni. of Greenwish, UK;
Ph.D. (Integration of SCM) Uni. of Greenwish, UK;

Principal Medical Officer, Medical Department

Dr. Mariam Alam
M.B.B.S (Baqai MedicalUniversity)

Technical Assistant to the Vice Chancellor

Engr. Danish Ur Rehman Khan
B.E. (Computer Systems) NED; M.Engg. (Electrical) NED;
M.Engg. (Comp. Networks & Performance Evaluation) NED;
Ph.D (In Progress) NED
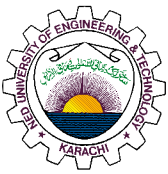
CHEMICAL ENGINEERING DEPARTMENT

3. DEPARTMENTS

3.1 DEPARTMENT OF CIVIL ENGINEERING

The Department of Civil Engineering has been offering a broad based four-year programme leading to Bachelor of Engineering (Civil) and Bachelor of Engineering (Specialization in Construction) over the past several decades. The graduates from this department have not only earned distinctions in the practical field but many of them also have distinguished themselves as known researchers and scholars throughout the globe. Many of the final year projects have been of high academic and research value, and quite a few research papers have been published through these undergraduate research projects.

The Department of Civil Engineering has the honour to become the first department of the University to offer a programme leading to the Master of Science in Civil Engineering from the session 1979-80 and also has the honour to start the Master of Engineering Programme for the first time in Transportation Engineering in Pakistan.

3.1.1 Departmental Facilities

Apart from undergraduate laboratories for Materials Testing, Structures and Soil Mechanics, which house the basic testing facilities, new postgraduate laboratories have been developed.

Advanced Structural Engineering testing facility already exists with the Department, where research work and postgraduate studies leading to Ph.D. are being undertaken. The laboratories are equipped with state-of-the-art Times Group 2000 kN Universal Testing Machine, (Shimadzu 500kN / 1000kN Universal Testing Machine, Forney Compression Testing Machine of 2000 kN capacity, Tinus Olsen Universal Testing Machine of 60,000 pounds, a Forney Pipe Testing Machine of 300 kN capacity, apart from other equipment for testing and data acquisition. The laboratory equipment have been over-hauled and calibrated.

Advanced Material Testing facility has recently been commissioned. It is equipped with state-of-the-art equipment, reaction floor and reaction wall, which is being used for testing of structures subjected to vertical and lateral loads. The laboratory has the facility to test pre-stressed girders up to 110 ft. long. Equipment includes a Portal Frame designed to work with the 5000 kN Pseudo Dynamic Test System. This system consists of 2 large structural H beams to provide the vertical support and is mountable to reaction floor. Complete system includes 5000 kN actuator, Hydraulic Power Supply, Hydraulic Service

Manifold, Digitally supervised analogue servo controls, Pseudo dynamic application software, and a 300 channel data acquisition system. Other equipment includes Dynamic Hydraulic Linear Actuator 55 kip (250 kN), Dynamic Hydraulic Linear Actuator 110 kip (500 kN), Structural Test Hydraulic Actuator 220/335 kip (1000/1500kN), Hydraulic Linear Actuator 450/600 kip (2000 kN/2670 kN), 300 Channel Data Acquisition System, LVDTs, Load Cells. New addition in lab facility includes 06 hydraulic cylinders (600kN / 750kN / 1500kN / 1600kN). The facility is now shared and being administered by the Department of Earthquake Engineering.

The postgraduate Geo-technical laboratory has acquired a Seismograph along with the already existing facilities comprising of Triaxial Testing Machine and Plate Loading Test equipment. The laboratory has been extensively utilised for postgraduate research leading to Ph.D.

Fluid Mechanics and Hydraulic Laboratory features 12.5m long open channel to test various hydraulic structures. Newly procured hydraulic bench allows testing of pumps and pelton turbine at variable flows and configurations. Pipe network and pipe friction laboratory apparatus provide an opportunity to test various pipe materials and configuration of pipes in water supply network. Rainfall Simulator provides an opportunity to study the surface water rainfall-runoff relationships.

Irrigation and Water Resources Engineering Laboratory has been established recently. Time Domain Reflectometry for irrigation scheduling, Channel loop for sediment transport, Acoustic Velocity meter for on spot flow measurement in stream, automatic water level recorder, GPS and computerised laboratory with GIS capabilities provide opportunities for conducting postgraduate studies and research.

Laboratories' facilities of other departments may also be utilised for research purposes as well as other departments are also being benefited by the facilities mentioned.

Computing Facilities

The Department of Civil Engineering has special computing facilities housed in Postgraduate Computational Centre. The centre contains modern computing facilities, scanners, plotter, and laser printing facilities. The centre also contains a state-of-the-art Structural Engineering Software Library, which comprises of packages for analysis and design of RC structures including CSI software and TNO Diana. The CSI Package with network license consists of SAP 2000, ETABS, SAFE, CSI Section Builder and Perform 3D.

The Department has its main computer centre which runs under a System Manager and is equipped with 70 workstations along with scanning and printing facilities. It has a large number of licensed software related to Civil Engineering and its various specializations.

Research Centres and Linkages

Department of Civil Engineering has also the honour of being the country's Information Node on FERROCEMENT. Ferrocement International Network (FINPAKISTAN) was established in the Department through International funding in 1990, and since then has been serving as National Node for disbursing research material, disseminating related knowledge and imparting know-how in ferrocement. The National node working under INTERNATIONAL NODE at IFIC-AIT-BANGKOK, has access related to the research endeavours in Ferrocement, and has links with researchers, and resource Persons in this field.

The Department of Civil Engineering established Cowasjee Earthquake Study Centre (CESNED) in year 2001 after the devastating Bhuj earthquake. The objectives of this endeavour include housing national and global data pertaining to earthquakes and act as a centre for disseminating accumulated knowledge, as well to respond to emergency needs and be able to provide guiding principles for pre and post-earthquake mitigation. Recently, CESNED has been strengthened with the installation of a 3m × 3m Shore Western Seismic Table and Syscom Strong Motion Recorder. Earthquake shaking tables is used extensively in seismic research, as they provide the means to excite structures in such a way that they are subjected to conditions representative of true earthquake ground motions. The shake table system has been used to simulate earthquake loading on masonry structures. A scaled model of a typical block masonry house was recently tested to assess the seismic behaviour of block masonry construction. The activities of CESNED are now administered by the Department of Earthquake Engineering.

Virtual Reality Center (VRC)

The Department of Civil Engineering established Virtual Reality Center (VRC). Virtual reality is a computer-generated environment that presents its users a true to life illusion bringing him/her a sensation of being inside an artificial world. Replicating the real (actual) or imagined (planned) enviroment to an interactive immersive multimedia or simulated reality. It allows user to interact with the created environment and make changes to it for analyzing different aspects. The VR systems are exceptionally helpful in establishing a realistic learning and development environment for both academic institutions and professional practices. It has open-ended utilization in research and development based on the concept of innovation.

The NED University of Engineering and Technology, Karachi has established a state-of-the art facility for integrating virtual reality in the education, research and practice.

The facility that is housed at the Department of Civil Engineering is named as "NED University Virtual Reality Center" is the first of its kind in the entire region (sub-continent). The facility houses three major systems including, virtual teaming systems, walking VR systems and Projection VR systems. The major objectives of VR Center is to gear up the performance delivery by being a capacity builder, solution provider and knowledge innovation hub.

Building Information Modeling Center (BIMC)

The Department of Civil Engineering also established Building Information Modeling Centre (BIMC). BIMC will provide free service to industrialists for resolving pre-construction issues of high rise and complex structured buildings related to wind zones, emergency exists, temperature through developing visual models of the projects at the center.

Water Modelling Centre (WMC)

The Water Modelling Centre (WMC) is new addition to the Department of Civil Engineering at NED University. The purpose of WMC is to develop modelling skills for fellow researchers and students to resolve water related issues, enhance water and environmental conditions throughout the country, perform flood and watershed management practices, and develops models for the upcoming environmental challenges due to climate change. The WMC has capability of simulating different models including surface water models, coastal hydrodynamic and morphodynamic models, and groundwater models. Surface water modelling includes hydrological and hydraulic modelling. Groundwater models can evaluate the water quality and quantity present under the surface. The WMC has continuously improved since its inauguration in March 2013 in terms of modelling expertise, software, and infrastructure to help students and researchers for solving water problems around the province and country.

NED-CEST (NED-Centre for Engineering Software and Training) is also established which works in collaboration with the ACECOMS, AIT, Bangkok.

The Department has formed a number of linkages with other Universities around the world. An
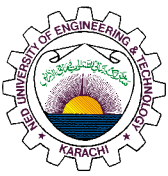
international linkage has been established between the Faculties of Civil and Petroleum Engineering WEDC, Loughborough University, UK, through joint funding provided by the Higher Education Commission-Pakistan and the British Council.

American Concrete Institute (ACI) Pakistan Chapter has been established in the department to promote research activities in the area of concrete technology and reinforced concrete. The ACI chapter provides a platform to disseminate knowledge about concrete and latest development about the codes and specifications. Recently, the department has achieved ACI Outstanding University Award.

The Department has shown significant progress in the area of earthquake engineering over the last several years. It is part of several projects related to capacity building funded by UNDP and UNESCO on topics related to earthquake engineering, seismology and impact of tsunamis. These endeavours have led to the establishment of the Department of Earthquake Engineering.

Department of Civil Engineering subscribes to a number of international research journals to support the academics and research at the postgraduate level.

3.1.2 Research Fields
The current research interests of the Department are as follows:

Structural Engineering
- Re-strengthening and repair techniques
- Constitutive modelling of reinforced concrete and ferrocement
- Tensile and compressive membrane action
- Behaviour of reinforced concrete in mixed moment field
- Post cracking tensile strength
- Bond in reinforced concrete
- Structural behaviour of cold formed steel sections
- Models for shear and flexural strength of ferrocement
- Ferro-cement application and its use
- Infilled masonry panels subjected to lateral loads
- Non engineered construction in the rural areas
- Ductility of reinforcing bars produced in Pakistan
- Structural use of recycled concrete aggregates
- Finite element analysis of reinforced concrete structures
- Impact loads on reinforced concrete structures
- Fire resistance of concrete structures
- Fibre reinforced polymers in Construction
- Behaviour and assessment of masonry structures

Materials Engineering
- Design, development, production and assessment of materials in the transportation industry
- Design, development, production and assessment of materials in the construction industry
- Durability of bituminous materials under tropical conditions
- Evaluation of engineering properties of mineral compounds, super plasticisers, binders, polymeric compounds and stabilising agents
- Determination of rheological properties of cement pastes and bitumen
- Mechanical properties of recycle concrete aggregates
- Cement replacement materials
- Properties of locally manufactured reinforcing bars
- High strength and high performance concrete

Geo-technical Engineering
- Numerical / Constitutive modelling of soils
- Evaluation of static and dynamic parameters of different soil strata
- Evaluation of sub soil geological conditions
- Indigenous methodologies for ground improvement techniques
- Development of indigenous methodologies and equipment to carry out experiments in the field and laboratories
- Static and dynamic stiffness of pile foundation

Transportation Engineering
- Pavement distress evaluation and material characterisation
- Redesign and signal optimisation of roundabouts
- Capacity improvements of major urban and rural routes
- Road condition monitoring and development of remedial strategies
- Road design techniques in arid and coastal areas
- Geometric and structural design of flyovers in Karachi using software packages
- Stability analysis of highway embankments under waterlogged conditions
- Use of expert systems in geometric design of highways
- Analysis and design of urban road drainage systems
- Mechanistic and finite element analysis of major national highways in Pakistan
- Pavement condition monitoring and evaluation of roads and airport airside
- Non-linear behaviour of pavements under heavy axle loads
- Development of travel demand forecasting models

for urban areas

- Economic appraisal of highway projects using HDM and RTIM models
- Application of Geographic Information System (GIS) for facility management

Construction Management

- Building Information Modelling
- Sustainable Engineering and Construction
- Information and Communication Technology
- Risk Management in Pakistani Construction Industry
- Health and Safety Management in Pakistani Construction Industry
- Quality Assurance in Pakistani Construction Industry
- Application of Artificial Intelligence to Construction Engineering and Management Issues
- Assets Management
- Productivity Improvement in Pakistani Construction Industry
- Cost Analysis and Control in Construction Projects
- Advance Methods in Construction Procurement
- Construction Contracts, Claims and Dispute Resolution
- Legal and Regulatory Environment in Construction Industry
- Financial Management and Economics in Construction Industry
- Construction Jobsite Management
- Crime Prevention through Environmental Design
- Surveying Applications in Construction Engineering and Management
- Construction Industry Stakeholder Management
- Innovation and Entrepreneurship in Construction Industry
- Management and Leadership Development in Construction Industry
- Capacity Building of Pakistani Construction Industry

Coastal and Harbour Engineering

- Morphology of Coastal Processes (waves, currents, tides, dredging, etc.)
- Port Planning Method and Models
- Development of Containerisation
- Computer Application in Port Containerisation
- Environmental Impact of Port development
- Port Economics

Water Resources Engineering and Management

- Sectoral Water Allocation, Releases and Performance
- Barrage and Canal System, Watercourse Lining

- Water Supply: Domestic, Industrial, Agriculture, etc.
- Modelling Groundwater System
- Water Balance, Recharge/Discharge Areas Delineation
- Monitoring and Evaluation, Climatology
- Hydrologic and Hydraulic Modelling
- Simulation and Optimisation Modelling
- Tertiary Level Irrigation System in Indus Basin
- Water Accounting and Irrigation Scheduling
- Surface and Subsurface Drainage System

Programme Structure

The Department currently offers two programme streams at the Master's level: Master of Engineering (Civil) and Master of Engineering Management (Civil). Under these two programme streams, a number of specializations are currently in the offering as shown below:

Programme Streams	Specializations
M.Engg. (Civil)	Structural Engineering Geotechnical Engineering Transportation Engineering Coastal and Water Resources Engineering Construction Engineering Law
MEM (Civil)	Construction Management Water Resources Management

All these specializations are offered as part-time programmes i.e. classes being conducted during weekdays in the evening hours. Students enrolled in the part-time stream have an option to complete their degree requirements in a minimum duration of 2.5 years if they choose to take the coursework only option, or they may complete their degree requirements in a minimum duration of 2 years if they choose to take the coursework plus Thesis option.

Some of these specializations are also offered as full-time programmes, wherein the students get involved with the Department on full-time basis during morning hours, thereby getting an opportunity to undertake dissertation research along with their coursework. This option is more suited for students who appreciate the importance of full-time study and are willing to spend a minimum of 1.5 years with the University to complete their degree requirements.

A limited number of specializations are also offered as Weekend programmes, wherein the students get the option of completing their degree requirements in a minimum duration of 1.5 years through coursework only. Classes for this stream are conducted on Saturdays and Sundays during daytime.
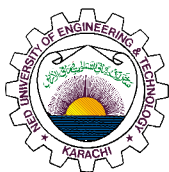
3.1.3 Principal Faculty for the Programme

Chairperson

Prof. Dr. Rizwan-Ul-Haque Farooqui

Professors Emeritus

Prof. Dr. Sahibzada Farooq Ahmad Rafeeqi
B.E. (Civil); M.S. (Civil) KFUPM, Saudi Arabia;
Ph.D. (Structures; Heriot-Watt, UK)

Professors

1. Dr. Sarosh Hashmat Lodi
B.E. (Civil) NED;M.S. (Civil) Oregon State University, USA;
Ph.D. Heriot-Watt University, UK.

2. Dr. Muhammad Shafqat Ejaz
B.E. (Civil) NED; M.S. (Civil) NED;
Ph.D. Utah State University, USA.

3. Dr. Asad-ur-Rehman Khan
B.E. (Civil) NED;M.S. (Civil) KFUPM, Saudi Arabia;
Ph.D. (Civil) KFUPM, Saudi Arabia.

4. Dr. Syed Imran Ahmed
B.E. (Agri. Engg) SAU, Pakistan;
M.S. (Bio Resource Engg) Oregon State University, USA;
M.S. (Bio Systems Engg) IOWA State University, USA;
Ph.D. (Bio Systems Engg) IOWA State University, USA

5. Dr. Rizwan-Ul-Haque Farooqui
B.E. (Civil) NED; M.S.(Civil) National Uni. of Singapore;
Ph.D. (Civil) Florida International University, USA

6. Dr. Abdul Jabbar Sangi
B.E.(Civil)NED; M.Engg.(Civil)NED
Ph.D. Heriot-Watt University, UK

7. Dr. Amanullah Marri
B.E.(Civil)QUEST; M.E.(Civil) Asian
Institute of Technology, Thailand;
Ph.D. (Civil) University of Nottingham, UK

8. Dr. Shuaib Haroon Ahmed (JPC Chair)
B.E.(Civil) NED; M.S.(Civil) Kensas Stat University, USA
Ph.D. (Civil) University of Illinois, Chicago, USA

Associate Professors

1. Dr. Haider Hassan
B.Sc. (Hons) (Math & Computing) Kingston University;
M.Sc. (Ind. Env. & Modeling) Uni. of Bristol UK;
Ph.D. (Civil) University of Nottingham, UK

2. Dr. Arjumend Masood
B.E.(Civil)NED; M.Engg.(Env.) NED;
M. Engg. (Civil) NED; Ph.D. (Civil Engg.) NED

3. Dr. Huma Khalid
B.E.(Civil)NED; M.Sc.(Computer Science) NED;
Ph.D. (Computational Mechanics) Imperial College, UK;
Post-Doc (Structural Health Monitoring) University
of Manitoba, Canada

4. Dr. Tehmina Ayub
B.E.(Civil)NED; M.Engg.(Civil) NED
Ph.D. (Civil) Uni Teknologi PETRONAS, Malaysia

5. Dr. Farrukh Arif
B.E. (Civil) NED; MEM (Construction) NED
Ph.D. (Civil) Florida International University, USA
Post-Doc, (Construction) Florida International Uni, USA

6. Dr. Sadaf Qasim
B.E.(Civil) NED; M.Sc. (Env. Sc.) UoK;
M.Engg. (Civil) NED; Ph.D. (Civil), UTP, Malaysia

Assistant Professors

1. Dr. Farnaz Batool
B.E. (Civil) NED;M. Engg. (Civil) NED
Ph.D. (Materials Structure) Uni. of Alberta, Canada

2. Dr. Syed Salman Mobeen
B.E. (Civil) NED; M.Sc. (Structure) Uni. of Alberta, Canada;
Ph.D. (Structure) Uni. of Alberta Canada

3. Dr. Syeda Saria Bukhary
B.E. (Civil) NED; M.Engg. (Civil) NED;
M.S. (Civil) Uni. of Nevada, Reno, USA;
Ph.D. (Civil) Uni. of Nevada, USA

4. Engr. Farhan Saleem *(On study leave)*
B.E. (Civil) NED; M.C.S. UoK;
M.S (Construction Management) Florida Int. Uni. USA

5. Engr. Muhammad Saqib
B.E. (Civil) NED; MCS UoK;
MS(IT) PIMSAT, Karachi; MEM (Construction) NED

6. Engr. Haris Akram Bhatti
B.E. (Civil) NED; M.Engg. (Civil Water Resources) NED

7. Dr. Muhammad Aslam Bhutto
B.E. (Civil) QUEST; MEM (Civil) NED;
Ph.D. (Civil) Heriot-Watt University, UK.

8. Dr. Aslam Faqeer Mohammad
B.E. (Civil) NED; M.Engg. (Civil) NED
Ph.D. (Civil) Sapienza University of Rome, Italy

9. Engr. Fawad Masood
B.E. (Civil)NED; M.Engg.(Civil) NED

10. Engr. Muhammad Umer
B.E. (Urban) NED; MEM (Construction) NED

11. Dr. Shamsoon Fareed
    B.E. (Civil) SSUET; M. Engg (Civil) NED
    Ph.D. (Civil) Heriot-Watt University, UK

12. Engr. Shoaib Ahmed
    B.E. (Urban) NED; M. Engg (Civil) NED

13. Engr. Sajjad Ali
    B.E. (Civil) NED; M. Engg (Civil) NED

14. Engr. Syed Muhammad Noman
    B.E. (Urban) NED; M.S (Transportation) Hasselt Uni, Belgium

In addition to regular faculty members, qualified personnel in other departments and in the industry may be engaged for post-graduate teaching.

Applications in response to advertisement for Master of Engineering (Civil) shall be duly completed and submitted, personally or by registered post to:

The Chairperson
Department of Civil Engineering
NED University of Engineering & Technology
Karachi 75270, Pakistan
Ph. No: +92-21-99261261-8 Ext: 2205
Fax No: +92-21-99261255
E-mail: civilchr@neduet.edu.pk

PERSPECTIVE ON WOMEN DEVELOPMEN
Held on 20th - 21st December, 2019. 9:30 A.M. - 04:30 P.M.
A DITORIUM NED UNIVERSITY AIN CAMPUS
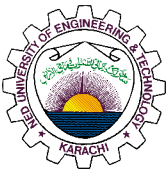
3.2 DEPARTMENT OF URBAN AND INFRASTRUCTURE ENGINEERING

A fundamental need of civilization in the 21st Century is the development of urban habitats that are both environmentally sustainable and functionally dependable for people and society. To meet these challenges, the Department of Urban and Infrastructure Engineering had been introduced in 2008. This department aims to provide the students, background of planning, design and management of urban communities. Its objective is to deliver capacity building and value addition to the youths of the society in the form of "Urban & Infrastructure Engineer". This objective is well served with state-of-the-art teaching facilities and dedicated faculty members. The department also keeps close coordination with other local and international stakeholders such as City District Government, Karachi (CDGK), Jinnah Post-graduate Medical centre and University of Mississipi (USA) for research-based sharing of knowledge and service oriented activities. In December 2012, the department signed a MOU with Transport Research Institute University of Hasselt, Belgium, Instituut voor Mobiliteit (IMOB) that includes collaborative research in the fields of traffic congestion, faculty and student exchange (using virtual environment teaching), value addition short courses, joint PhD programmes, as well as the reduction of the annual tuition fee (equivalent to European nationals) for students of NED for their Master's study at Instituut voor Mobiliteit (IMOB), Belgium.

The Department of Urban and Infrastructure Engineering, has taken another initiative by introducing a post graduate degree programme (MEM) in Transportation Infrastructure Management. The major idea behind this programme is to link the concepts of management with the deriving engineering fields to produce professionals that are better capable of managing the engineering projects than the conventional business managers. Transportation Infrastructure Management is an attempt to strengthen the nation with another much needed derivative. Considering the wide scope of the field, this masters program is focused towards the management of transportation systems and their sustainable operation.

3.2.1 Departmental Facilities

The Department of Urban and Infrastructure Engineering manages the following facilities:

- Surveying & Geomatics lab possesses modern digital theodolites, digital levels, Electronic distance meters, Total stations and GPS equipment. The department has in-house capabilities to handle these sophisticated instruments and at number of occasions, department has provided their services for various infrastructure projects within the University and outside.

- Project Library was funded by NEDAT to facilitate students in their research activities. It consists of 11 computer and also provides facilities such as; printers, scanner and photocpier. Moreover, provides a research friendly environment.

- Pavement Material Testing and Advanced Asphalt Concrete laboratories possesses all types of basic testing facilities for pavement materials. Recently, the laboratory is equipped with a state-of-the art wheel tracking device and number of research projects have been initiated to use this machine for testing of pavement defects.

- RSGIS Lab has been established for to envision ITS and Traffic Engineering as well as GIS and Geospatial Laboratories to carry out dedicated research in these emerging fields that are well connected to Transportation Infrastructure Management.

- Recently, Advanced Traffic Lab (ATLAS) is established with the aim of providing solutions to traffic problems especially those of developing cities by carrying out innovative research. This lab practices state-of-the-art methods and techniques such as use of latest software and equipment. It continuously targets to fill the gap between industry and academia..

Laboratories of other departments are also utilized for research purposes as well as other departments are also being benefited by our facilities.

Computing Facilities

The Department of Urban and Infrastructure Engineering has special computing facilities housed in its computer centre. The centre contains good computing facilities, scanners, plotters, colour and black & white laser printing facilities. The centre also contains state-of-the-art transportation

modelling softwares such as EMME/2, S- PARAMICS and GIS softwares such as ARC GIS etc.

Research Fields

The current research interests of the department relevant to the Transportation Infrastructure Management Masters Programme are as follows:-

• Impact Assessment of Roadway Traffic on Urban Air Quality.
• Assessment of Carbondioxide Emission from Freight Transportation.
• Development of an ITS–based Traffic Management Model for Metropolitan Areas of Pakistan.
• Incorporation of Traffic Heterogeneity in Capacity Analysis of Multi-Lane Urban
• Arterials of Karachi through Development of a Simulation Mode
• Road Safety and Crash Investigation Research.
• Incorporating rutting potential in pavement performance evaluation methodologies
• Traffic Congestion Costing
• Establishing Trips rate and Parking Ratios for selected Area of Karachi
• Development of Highway Pavement Maintenance Management System for Pakistan
• Pavement asset maintenance management through use of innovative materials.

3.2.2. Principal Faculty for the Programme

Chairperson

Prof. Dr. Adnan Qadir

Professors

1. Prof. Dr. Adnan Qadir
   B.E. (Civil) NED; M.Sc.(Civil) NED
   Ph.D. (Middle East Technical University, Ankara, Turkey)

2. Prof. Dr. Muhammad Raza Mehdi
   B.E.(Civil) NED; M.S.(Transportation);
   Ph.D. (Environmental Science)

Associate Professors

1. Mrs. Mah Talat Mirza
   B.E.(Civil) NED; M.Sc. (Civil) NED

2. Dr. Sadaqat Ullah Khan
   B.E(Civil)NED; M.E.(Structures) NED
   Ph.D. (Civil Engg.) UTP, Malaysia

Assistant Professors

1. Dr. Ashar Ahmed
   B.E. (Civil) NED; M.Engg. (Civil) NED
   Ph.D.(Civil) USM, Malaysia

2. Dr. Sana Muqeem
   B.E. (Civil) NED; M.Engg. (Civil) NED; Ph.D. (Malaysia)

3. Dr. Nida Azhar
   B.E.(Civil)NED; M.Engg.(Civil) NED
   Ph.D. (Construction Management) USA

4. Syeda Madiha Zaidi
   B.E.(Civil)NED; M.Engg.(Civil) NED

5. Dr. Afzal Ahmed
   B.E. (Urban) NED; M.S. (Civil) Uni. of Mississippi, USA;
   Ph.D. (Institute of Transportation Studies, Leeds, UK)

6. Ms. Madiha
   B.E.(Urban)NED; M.Engg(Civil) NED

7. Mr. Muhammad Ahmed *(PhD Scholar, NED)*
   B.Sc. Hons. (Geography) UoK;
   M.Sc. (Geography), UoK; M.Phil (RSGIS), UoK

8. Syed Muhammad Fahad Abdullah
   B.E. (Civil) NED; MEM (Water Resources Management)

9. Mr. Shoaib Yaqub
   B.E. (Civil) SSUET; M.Engg. (Geotechnical Engg.), NED

In addition to regular faculty members, qualified personnel in other departments and in the city are engaged for post-graduate teaching.

Applications in response to advertisement for Master of Engineering Management (Transportation Infrastructure Management) shall be duly completed and submitted, personally or by registered post to:

The Chairperson
Department of Urban and Infrastructure Engineering
NED University of Engineering & Technology,
University Road Karachi- 75270, Pakistan.
Ph. No: +92-21-99261261-8 Ext: 2354
Fax No: +92-21-99261255
E-mail: cuid@neduet.edu.pk
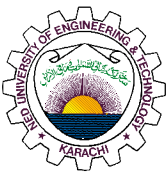
3.3 DEPARTMENT OF EARTHQUAKE ENGINEERING

Large scale natural hazards cause enormous damage and transform socioeconomic setup of a given region. This is particularly true for earthquakes owing to their spatial and temporal unpredictability. While developed nations have achieved the minimum required levels to mitigate earthquake disaster, countries like Pakistan lag significantly behind, resulting in unprecedented human and monetary losses in earthquake events. These loses have emphasized the need of better preparedness in order to reduce the seismic threat faced by the Country. One of the key components of hazard preparedness is capacity building of professionals working in the construction industry by providing them necessary training and by transforming the indiginous research into best practice.

Recognizing the need of capacity building for pre- and post-earthquake disaster mitigation, the Department of Earthquake Engineering has initiated Master Degree programmes in Earthquake Engineering and Disaster Management and Sciences. The intent of these programmes is to produce professionals who are current with the latest developments in different aspects of disaster mitigation so that they are able to provide safer and economical built environment. Furthermore, it also aims at producing graduates who are well equipped to undertake research in earthquake engineering and disaster management both at national and international levels. These aims are reflected in the courses that have been designed for the programmes and in different research activities being conducted by the Department. A list of current research projects is available on our website.

3.3.1 Masters in Earthquake Engineering

Earthquake Engineering is a specialized field of knowledge that deals with understanding and implementation of ideas related to generation and propagation of earthquakes through various geological features and response of structures subjected to seismic loading. This field can be divided in three branches, namely: Structural Earthquake Engineering (SEE), Geotechnical Earthquake Engineering (GEE), and Engineering Seismology (ES). SEE comprises of the study of elastic and inelastic response of structures subjected to ground motion excitation and deals with seismic design and assessment of structures. GEE, on the other hand, comprises of the study of elastic and inelastic behaviour of seismic waves as they travel through the earth's crust and surficial geology. ES deals with the core aspects of seismology which includes theoretical seismology, movement of active faults, signal processing and strong motion seismology, etc. The Department currently offers Masters Degree in Structural Earthquake

Engineering; however, the plans to start the other two degree programmes are also under consideration.

3.3.2 Masters in Disaster Management and Sciences

Disaster management aims to reduce or avoid the losses from hazards. It also ensures that prompt and appropriate assistance to victims of disaster is provided to enable rapid and effective recovery. The disaster management is an ongoing process which enables the governments, businesses, and civil society to plan for the reduction of the impact of disasters by quickly responding to a disaster and taking steps to recover from it. The essential components of a disaster management programme include shaping of public policies and plans so that they either modify the causes of disasters or mitigate their effects on people, property, and infrastructure. This leads to greater preparedness, better warnings, reduced vulnerability or the prevention of disasters. The Programme of Master of Science in Disaster Management and Sciences aims at creating human resource with a solid and holistic knowledge base so that they are able to understand the complex context of activities required before, during and after a disaster and are able to take up the challenge of minimising the losses.

3.3.3 Departmental Facilities

The Department currently owns two most modern laboratories in the Country. These include Shake Table Laboratory (STL) and Advanced Material Testing Laboratory.

The Shake Table Laboratory (STL) consists of a 3M x 3M seismic simulation table. The table has a linear hydraulic actuator with a fatigue rating of 110 kip (500 kN) which is guided by linear bearings. The stroke capability of the unit is ± 300 mm (± 12 in.) with a nominal peak velocity of 1 m/sec (40 in./sec) and average velocity of 1/2 m/sec (20 in./sec). The linear guide bearings are sized to test a 20 MT payload with a CG 3 M off the table surface. This may include 60 MT-M over turning moment at 1g.

The new Advanced Material Testing Laboratory is equipped with state-of-the-art testing equipment and is one of its kinds in the region. It has a 1m thick reaction floor and 1.3m thick reaction wall which can be used for testing of structures subjected to vertical and lateral loads. The Lab has the facility to test prestressed girders of up to 110 ft. length. The equipment include a portal frame designed to work with the 5000 kN pseudo dynamic test system. This system consists of 2 large structural H beams to provide the vertical support and is mounted on reaction floor. Complete system includes 5000 kN actuator, hydraulic power supply, hydraulic service manifold, digitally

supervised analog servo controls, pseudo dynamic application software, and a 300 channel data acquisition system. Other equipment include dynamic hydraulic linear actuators of capacity of 55 kip (250 kN) and 110 kip (500 kN), structural test hydraulic actuator of 220/335 kip (1000/1500 kN), hydraulic linear actuator of 450/600 kip (2000/2670 kN), LVDTs, load cells.

CESNED is also a part of the Department of Earthquake Engineering. The objectives of the Center include housing national and global data pertaining to earthquakes, acting as a centre for disseminating knowledge as well as to respond to emergency needs and to provide guiding principles for post-disaster mitigation.

In addition, the Department shares laboratory facilities in Material Testing Laboratory administered by the Department of Civil Engineering. Similarly, laboratory facilities of other departments may also be utilized for research purposes.

3.3.4   Computing Facilities

The Department of Earthquake Engineering shares the computing facilities housed in Postgraduate Computational Centre with the Department of Civil Engineering. The centre also contains a state-of-the-art structural engineering software library including analysis and design of RC Structures using CSI Package and TNO DIANA. The CSI Package with network licenses consists of SAP 2000, ETABS, SAFE and CSI Section Builder.

3.3.5 Principal Faculty for the Programme

Chairperson

Prof. Dr. Muhammad Masood Rafi

Professors

1. Prof. Dr. Muhammad Masood Rafi
    B.E. (Civil) NED; M.Sc. (Civil) NED
    Ph.D. (University of Ulster, UK)

2. Prof. Dr. Rashid Ahmed Khan
    B.E. (Civil) NED;M.Sc. (Civil) NED
    Ph.D. (Heriot-Watt University, UK)

Associate Professor

Dr. Mukesh Kumar *(On Ex-Pakistan Leave)*
B.E.(Civil) NED;
M.E.(Res) (Engineering Seismology) NED;
M.Engg. (Earthquake) Italy;
Ph.D. (Imperial College London, UK)

In addition to regular faculty members, qualified personnel in other departments and in the city may be engaged for post-graduate teaching.

Applications in response to advertisement for Master of Engineering (Earthquake) and Master of Science (Disaster Management and Sciences) shall be duly completed and submitted, personally or by registered post to:

The Chairperson
Department of Earthquake Engineering
NED University of Engineering & Technology
University Road, Karachi 75270, Pakistan
Ph. No: +92-21-99261261-8   Ext: 2605
Fax No: +92-21-99261255
E-mail: rafi-m@neduet.edu.pk
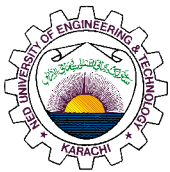
3.4 DEPARTMENT OF PETROLEUM ENGINEERING

Energy sector in Pakistan play a vital role in the development and economic growth of the country. Oil & Gas from bulk of primary commercial energy supply mix of Pakistan. Depletion of exciting resources combined with an increased demand of energy in the country, requires a strong technological base and expertise for meeting the energy challenges of the country.

Established in 2005 on the request of Petroleum industry, the Department of Petroleum Engineering at NED University of Engineering & Technology has been offering a competitive undergraduate programme in the country. With high qualified & motivated faculty, sate-of-the art facilities, an exclusive Petroleum advisory Board, PPL Academic Chair, strong linkages with the industry, collaboration with universities of international repute and meritorious students, the department had been recognized for the quality education in Petroleum Engineering.

The new addition of Norwegian Centre of Excellence in Petroleum studies (NCEPS) is aimed to provide excellence in education, research and trainings.

Considering the competitive energy scenario on locals and global levels, new trends in energy productions and technological innovations, a Master programme is now being offered in Petroleum engineering. The programme has been designed in collaboration with Norwegian University of Science and Technology (NTNU) under the umbrella of "Norwegian Center of Excellence in Petroleum Studies" with active support from the petroleum industry and professionals from petroleum engineering departments around the globe.

The programme is focused on the professional development in the upstream-oil industry that includes drilling, reservoir and production engineering. The new trends of unconventional reservoirs have also been targeted.

3.4.1 Departmental Facilities

The Department of Petroleum Engineering possesses state-of-the-art Laboratory facilities that include the following:

1. Mud and Cementing Laboratory
2. PVT Laboratory
3. Petrophysics Laboratory
4. Core Laboratory
5. Drilling Simulation Laboratory
6. Computing Laboratory

The above laboratories cater the need of teaching and research for both undergraduate and graduate programmes and also satisfy the international standards.

Computing Facilities

The Department of Petroleum Engineering has specious and resourceful computing laboratory. It houses latest computers, scanning and printing facilities, multimedia and affective sound system. The laboratory contains state-of-the-art industry licensed software including Eclipse, Petrel, IPM suite, KAPPA suite, Bicep Open Flow, Pan System & others for simulation modeling and analysis.

Video Conferencing Facilities

NCEPS offers HD Video conferencing Facilities that are used not only for making live connections with far distant local and international academic practitioners and industry experts, but also for live video lectures offered for the students and faculty members by well known researchers and scholars around the globe.

Research Fields

NCEPS is being geared up to start research in collaboration with universities of international repute. The research will be oriented towards the unconventional hydrocarbon resources in the areas of drilling, reservoir and production engineering.

Linkages with Universities and Industry

The department is able to develop strong and sustainable linkages with Norwegian University of Science and Technology (NTNU) and Portsmouth University, UK.

In addition to this the department also enjoys strong linkage with petroleum industry in Pakistan. The above linkages have been very fruitful in the following achievements:

- Undergraduate Curriculum Revision.
- Post-graduation from NTNU.
- Development of Master's Programme.
- Training of Faculty members & Lab engineers abroad.
- Establishment of Norwegian Center of Excellence in Petroleum Studies (NCPES)
- Organizing international conferences and workshops.

The First ever international conference on Unconventional Hydrocarbon Resources (ICOUR-1) in Pakistan was organized by the department under the auspices of NCEPS.

Professor on PPL Chair

PPL Chair has been established by the foremost E&P Company of the country, Pakistan Petroleum Limited. Currently department is looking for the most suitable personel, who can develop and enhance the research and industry collaboration.

Petroleum Engineering Advisory Board

The Petroleum Advisory Board of the department represents members from the Academia, Foreign University Faculty and Multinational Oil & Gas Companies. The Advisory Board ensures the quality of the programme and provides regular review of the curriculum in order to meet the requirements of the growing Petroleum Industry around the globe.

Programme Structure

The Department currently offers Master of Engineering (Petroleum). The students will have the wide variety of choosing the different courses from the list of elective courses and common electives besides taking their compulsory ones. The classes will be conducted during weekdays / weekends in the evening hours in the Department of Petroleum Engineering.

3.4.2   Principal Faculty of the Programme

In-Charge

Dr. Javed Haneef
BE. (Mechanical) NED;
M.Sc. (Petroleum Tech); MCS, UoK;
M.E. (Petroleum) Uni of Alberta CA;
Ph.D. (Petroleum) University of Leeds,UK

Assistant Professors

1. Dr. Javed Haneef
    BE. (Mechanical) NED;
    M.Sc. (Petroleum Tech); MCS, UoK;
    M.E. (Petroleum) Uni of Alberta CA;
    Ph.D. (Petroleum) University of Leeds,UK

2. Dr. Abdul Majeed
    BE (Petroleum) MUET;
    M.Sc. (Petroleum) Heriot Watt Uni, UK;
    Ph.D. (Petroleum) University of Leeds, UK

3. Engr. Faizan Ali
    B.E. (Petroleum) NED;
    MS (Petroleum) NTNU, Norway

4. Engr. Syed Adnan-ul- Haque
    BE (Petroleum) MUET;
    MS (Petroleum) NTNU, Norway

5. Engr. Aftab Hussain Arain *(On Study Leave)*
    BE (Petroleum) MUET;
    MS (Petroleum) NTNU, Norway

6. Engr. Shaine M. Ali Lalji
    BE (Petroleum) NED;
    MS (Petroleum) NTNU, Norway

7. Engr. Muhammad Noman Khan
    BE (Petroleum & Natural Gas Engg) MUET Jamshoro;
    MS (Petroleum Engg.) UTM, Malaysia

8. Dr. Ayesha Abbas
    Ph.D. (Oil and Natural Gas Engineering)

In addition to regular faculty members, qualified personnel from other departments and in the petroleum industry are engaged for post graduate teaching as visiting faculty.

Application in response to advertisement for Master of Engineering Programme (Petroleum) shall be dully completed and submitted, personally or by registered post to:

The Chairperson
Department of Petroleum Engineering
**NED University of Engineering & Technology,**
University Road Karachi, 75270. Pakistan
Ph. No: +92-21-99261261-8, Ext: 2345
Fax No: +92-21-99261255
E-Mail: cpd@neduet.edu.pk
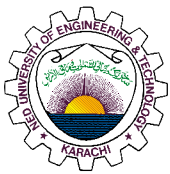
3.5   MECHANICAL ENGINEERING DEPARTMENT

The Department of Mechanical Engineering is one of the oldest and well established departments of NED University. Currently both undergraduate and post-graduate programs are offered by the department. The undergraduate program is based on four years instructional education at the main campus of the University leading to the degree of Bachelor of Engineering (Mechanical). Theoretical instruction is reinforced with adequate laboratory and computational work. In addition to undergraduate program, Master of Engineering (M.Engg.) degrees with specialization in Design, Energy Systems, Renewable Energy and Mechatronics, and Master of Engineering Management (MEM) in Energy and Plant Management are offered. The department has also started weekend programs from Fall Semester 2016 in M.Engg. (Energy System) and MEM (Energy and Plant Management). The programs are aimed at preparing students to shoulder their professional responsibilities and enable them to pursue higher studies and research in Mechanical Engineering related fields.

The department also offers Ph.D. program. Interested candidates may enroll under the supervision of PhD supervisors through applications on forms as prescribed by the University in research areas mentioned afterwards.

3.5.1 Departmental Facilities

Laboratory and Computational Facilities

The Department of Mechanical Engineering has laboratories and workshops with a built-up area of about 5000 square meters besides teaching and faculty rooms covering an area of around 2000 square meters.

The department is equipped with a Computational Laboratory that has more than 50 PCs. All computers are connected through LAN to two HP-Compaq servers with high-speed network support and a separate user profile with full security for each user. Internet access is also available on all computers. Several licensed software like ANSYS, ProE, Solid Edge, Unigraphics, FLUENT, Matlab and AutoCAD are available for use by students. Many of these softwares are introduced as part of the curriculum in various courses in the Master of Engineering program.

Post-graduate laboratories in the areas of Solar and Wind Energies, Desalination, Fluid Mechanics. Heat Transfer, Acoustics and Vibrations, Materials Engineering, Hydrogen Energy and Energy Conservation exist in the department and are open for students desirous of carrying out experimental research in these fields. In addition to the above laboratories the department has free access to all the facilities provided by the High Performance Computation Centre such as parallel computing and access to more than 40 licensed softwares.

Research Fields

Some of the research areas in which our faculty is currently engaged include: Solar and Hydrogen Energy, Energy conservation, Refrigeration and Airconditioning, Desalination, Computational Fluid Dynamics, Fracture Mechanics, Mechanical Vibrations, Computer Aided Design and Manufacturing, Composite Materials and Mechanical Properties of Metals & Metallic Coatings.

3.5.2 Principal Faculty for the Program

Chairperson

Prof. Dr. Nasir Uddin Shaikh

Professors

1.   Prof. Dr. Nasir Uddin Shaikh
      B.E.(Mech.) NED; M.Sc(Mech.)NED;
      Ph.D.(Thermofluids) Canada

2.   Prof. Dr. Mubashir Ali Siddiqui
      B.E.(Mech.) NED; M.S(Mfg) USA ;
      Ph.D. (Industrial/Mech) USA

3.   Prof. Dr. Murtaza Mehdi
      B.E (Mech.) NED; M.Engg. (Mech.) NED;
      Ph.D. (Mech.) South Korea

4.   Prof. Dr. Muhammad Ali Khan
      B.E (Mech.) NED; Ph.D. (Mech.) United Kingdom

Associate Professors

1. Mr. S. M. Rizwan Azeem
   B.E (Mech.) NED; M. Sc. (Engg. Science) UK

2. Dr. Muhammad Shakaib
   B.E (Mech.) NED; M.Sc. (Mech.) NED;
   Ph.D. (Desalination) NED

3. Dr. Maaz Akhtar
   B.E (Mech.) NED; M.Engg. (Industrial Mfg.) NED;
   Ph.D. (Mech.) Oman

Assistant Professors

1. Ms. Amber Fishan Zafar
   B.E (Mech.) NED; M.S.(Mech.) NUST

2. Mr. Imran Sikandar
   B.E (Mech.); MS (Mech.) USA

3. Dr. Muhammad Ehtesham ul Haque
   B.E (Mech); MS (Mech.) NED; Ph.D. (Mech.) Malaysia

4. Dr. Muhammad Uzair
   B.E (Mech.) NED; M. Engg.(Mech.) NED;
   Ph.D. (Mech) New Zealand

5. Mr. Masood Ahmed Khan
   B.E (Mech.) NED;M. Sc. (Computer Science) NED;
   M. Engg (Mfg.) NED

6. Mr. Kashif Noor
   B.E (Mech.)NED; M. Engg(Mech.) NED; MBA

7. Ms. Erum Khan
   B.E (Mech.) NED; M. Engg(Mech.) NED

8. Dr. Tariq Jamil
   B.E (Mech.) NED; M. Engg(Mech.) NED;
   Ph.D. (Mech.) USA

9. Dr. Mahrukh
   B.E (Mech.) NED; M. Engg(Mech.) NED;
   Ph.D. (Mech) UK

10. Mr. Mumtaz Hussain Qureshi *(On study leave)*
    B.E. (Mech) NED; M. Engg. (Mech) NED

11. Syed Ahmad Raza *(On study leave)*
    B.E (Mech.) NED; M. Engg (Mech.) NED

12. Mr. Muhammad Muzammil *(On study leave)*
    B.E. (Materials) NED; M.Engg. (Mech.) NED

13. Mr. Saqib Sharif
    B.E. (Mech.) NED; M.Engg. (Mech.) NED

14. Mr. Adeel Ahmed Khan
    B.E. (Mech.) NED; M.Engg. (Mech.) NED

15. Dr. Ing. Usman Allaudin
    B.E. (Mech) NED; M.Engg. (Mech) NED;
    Ph. D (Mech) Germany

16. Syed Aun Ali Rizvi
    B.E. (Mech) NED; M.Engg. (Mech) NUST

17. Mr. Arshad Siddiqui
    B.E. (Mech) NED; M.Engg. (Mech) Canada

In addition to regular faculty members qualified personnel in other departments and in the city may be engaged for post-graduate teaching.

Applications in response to advertisement for Master of Engineering (Mechanical) shall be duly completed and submitted, personally or by registered post to:

The Chairperson
Mechanical Engineering Department
NED University of Engineering & Technology
Karachi 75270, Pakistan
Ph. No: +92-21-99261261-8   Ext: 2206
Fax No: +92-21-99261255
E-mail: cmed@neduet.edu.pk

3.6 DEPARTMENT OF INDUSTRIAL & MANUFACTURING ENGINEERING

Industrial and Manufacturing Engineering education has become pivotal in establishing a competitive posture across the entire spectrum of Metal working and Manufactured parts' industry in Pakistan. Both the reality and perception of domestic production points to the need for a stronger, more productive manufacturing industry in this country producing high quality parts at low cost. In view of the fast changing technology and scenario the University started this separate Department. Industrial and Manufacturing Engineering spans a broad spectrum of engineering topics such as: Computer Aided Design (CAD); Computer Aided Manufacturing (CAM); Numerical Control (NC); Computer Integrated Manufacturing (CIM); Flexible Manufacturing System (FMS); Robotics & Automation; Product Design; Tools and Machines; Manufacturing Processes; Quality Control; Production and Inventory Control; and Economics Analysis.

This Department was initially started under the auspices of Mechanical Engineering Department in October 1999 and started as a separate Department in October 2000 with the name of Industrial & Manufacturing Engineering Department. The Department is offering Master of Engineering (by course work) with the specializations in Manufacturing Engineering and Engineering Management. The Engineering Management program further offers choices of specialization in Industrial Management and Quality Management. The Department of Industrial & Manufacturing Engineering has highly qualified and experienced regular and visiting faculty members.

3.6.1 Departmental Facilities

Department of Industrial & Manufacturing Engineering have following laboratories:

- CAD
- Metrology & Gauging
- Industrial Automation
- CAE
- Advance Manufacturing
- Methods Engineering
- CAM
- Computation Laboratory
- Industrial Safety
- Tool Design

These laboratories are equipped with sophisticated equipment and state of the art software. EDM Machine, Wire-Cut EDM, Five-axis Machining Centre, Injection Moulding Machine and Robotic Arm with five degrees of freedom, are some of the equipment available in these laboratories. Flexible Manufacturing Cell is in process and soon be available at the Department. Industrial Automation related equipment including PLC's are available at the Department.

Computer Language laboratory is equipped with personal computers with P IV & Core-2 Duo processors along with Scanning, Printing and Plotting facility. Advanced Designing & Simulation software including Unigraphics, Pro-E, Solid Edge, AutoCAD, Mechanical Desktop, ANSYS, Lathe CAM Designer, Mill CAM Designer are also available in the Department & being fully utilized by the students at undergraduate & postgraduate level.

Other Supporting Facilities

Department of Industrial & Manufacturing Engineering have been facilitated with PRODUCT DEVELOPMENT CENTRE (PDC). This centre is fully equipped with complete range of sophisticated equipment and software to be used for REVERSE ENGINEERING. Starting from CKD part to its 2D drawing and 3D model, further to its prototype up to making the mould using CNC machines, this state of the art facility is a right place for the industry.

Product Development Centre is facilitated with a 3D scanning system and Rapid prototyping system.

Research Field

The current Research interests of the Department are as follows:
- CAD / CAM / CAE
- Industrial Automation & Robotics
- Operations Research
- Advanced Manufacturing Processes
- Rapid Prototyping (Reverse Engineering)
- Composite Materials
- Computer Aided Project Planning
- Simulation and Modeling
- Supply Chain Management
- Project Management
- Sustainable Manufacturing Processes

3.6.2 Principal Faculty for the Programme

Chairperson

Dr. Maqsood Ahmed Khan

Professors

1. Prof. Dr. Muhammad Tufail
   B.E. (Mech) NED;
   M.Sc. (Manufacturing System) Nottingham Uni, UK;
   Ph.D. Nottingham University, UK; C.Eng; FIMechE, Mem ASME

2. Prof. Dr. Syed Amir Iqbal
   B.E. (Mech.) NED; M.Engg. (Mfg. Engg) NED; Ph.D. (UK)

Associate Professor

1. Dr. Maqsood Ahmed Khan
   B.E.(Mech); M. Engg. (Mfg. Engg); Ph.D. (Canada)

2. Dr. Muhammad Fahad
   B.E. (Ind.& Mfg.); M.Sc. with Mfg. Mgt. Specialization (U.K);
   Ph.D. (UK)

Assistant Professors

1. Mr. Ali Zulqarnain
   B.E.(Mech); M.Engg. (Mfg. Engg); Ph.D (In Progress)

2. Ms. Sadia Majeed
   B.A. (Hons); M.A. (Eco);
   MAS (Industrial Eco.); M. Phil (KU)

3. Dr. Muhammad Wasif
   B.E. (Mech Engg); M. Engg. (Mfg. Engg); Ph.D. (Canada)

4. Dr. Syed Mehmood Hasan
   B.E. (Ind. & Mfg. Engg); M.S (Engg. Mgt.) UK;
   Ph.D. United Kingdom

5. Dr. Asim Zaheer
   B.E.(Mech.); M.S (Engg. Mgt.); Ph.D. (UK)

6. Ms. Shaheen Perween
   B.E.(Mech.); M.Engg (Mfg. Engg.); Ph.D. (In Progress)

7. Dr. Aqeel Ahmed
   B.E. (Mech. Engg); M. Engg (Mfg. Engg); Ph.D. (Canada)

8. Dr. Shakeel Ahmed
   B.E. (Ind & Mfg. Engg); M. Engg. (Energy Systems);
   Ph.D. (UK)

9. Ms. Rabia Siddiqui
   B.E. (Ind & Mfg. Engg); M. Engg. (Mfg. Engg);

10. Dr. Anis Fatima
    B.E. (Ind. & Mfg. Engg); M.Engg (Mfg. Engg); Ph.D. (UK)

11. Dr. Shehryar Mohsin Qureshi
    B.E. (Ind. & Mfg. Engg); M.Engg (Engg. Mgt.) Ph.D. (Korea)

12. Ms. Rabiya Zubair
    B.E. (Ind & Mfg Engg); M. Engg. (Mfg. Engg)

13. Ms. Javeria
    B.E. (Ind & Mfg Engg); M. Engg. (Mfg); Ph.D. (In Progress)

14. Ms. Naima Javed
    B.E. (Ind & Mfg Engg); M. Engg. (Mfg Engg)

In addition to regular faculty members qualified personnel in other departments and in the city may be engaged for post-graduate teaching.

Applications for M. Engg. (Manufacturing Engineering) & MEM (Industrial Management, Quality Management and Supply Chain Management Programmes duly completed are required to be submitted, personally or by registered post to:

The Chairperson
Department of Industrial & Manufacturing Engineering
NED University of Engineering & Technology
Karachi – 75270, Pakistan
Phone No. 92-21-99261261-8
Fax No. 92-21-99261255
Email: cid@neduet.edu.pk
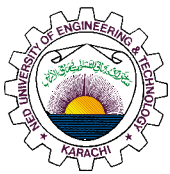
3.7 DEPARTMENT OF TEXTILE ENGINEERING

The Textile Enginering Department was established in NED University in 1996, department has been offering program of Bachelor of Engineering (BE) in Textile since 1996. At Postgraduate level, department offers three programs i.e. Master of Engineering (M.Engg.) in Textile, Master of Engineering Management (MEM) in Textile Management and Master of Science (MS) in Textile Management. Department has eighteen (18) faculty members out of which Thirteen have doctoral degrees and Five have M. Engg. (Textile) degrees.

The postgraduate programs are evening programs designed to accomodate working textile engineers who are in quest of broadening their knowledge and deepening their technical & managerial skills to work out problems of Textile Industry.

The programme of Master of Engineering (MEngg) in Textile was started in year 2005. The courses of this program are designed to incorporate the advance contents of physical and chemical aspects of Textile Engineering and Technology, and are at par with any similar program offered in developed countries. The progam aims to produce qualified textile professionals who would not only take-up maintenacne / operational functions of a Textile mill but would cover other aspects such as product development, process analysis, quality assurance and environment. Courses are designed to meet the requirements of Pakistan Textile Industry in particular and the textile business sector at large.

The Textile Engineering graduates come across various managment responsibilities during their professional career. In today's world it s getting difficult for organisations to remain competitive and profitable. Today's market requires not only technically sound engineers but also excellent managers who can work in competitive and tough environment and still produce desired results. Realizing the importance of management skills for Textile Engineers, the department has introduced programs of Master of Engineering Management (MEM) and Master of Science in Textile Management. These program aim to educate the next generation of engineers as well as other Textile Professional to plan and manage the textile industry, improve the production and quality of textile products and lead the industry. The courses are structured in such a way to provide technical knowledge along with management skills to

empower the textile engineer to lead the team and manage complex textile industries.

3.7.1 Departmental Facilities

The Department has following functional laboratories:

- Yarn Manufacturing Laboratory
- Fabric Manufacturing Laboratory
- Dyeing and Finishing Laboratory
- Fibre Testing Laboratory
- Yarn Testing Laboratory
- Fabric Testing Laboratory
- Textile Chemistry Laboratory
- Computer Laboratory

Computing Facilities

The Department has two computing facilities, the general purpose "Computer Laboratory" and the specialized "Computation, Simulation & Design-CSD Laboratory" equipped with a cumulative node count of more than sixty high-end workstations. These workstations have been installed with the latest software packages for scientific and engineering problem solving including Matlab©, Autodesk Inventor©, Ansys Fluent, DesignScope Victor© Jacquard etc. The laboratories are connected with the national HEC-PERN network through high speed fibre optic link and all online information resources including the University Portal and the National Digital Library are accessible from within the Departmental LAN.

RESEARCH FIELDS

The current research interests of the Department are as follows:

- Conventional textiles
- Technical textiles
- Novel wet processing techniques
- Conductive textiles
- Textiles sensors
- Protective Textiles
- Textiles composites
- Finite modelling & simulation
- Biomechanical engineering of textiles
- Yarn texturing process using Air-Jet technique
- Nonwovens development
- Image processing in textiles
- Thermal properties of textiles

3.7.2 Principal Faculty for the Programme

Chairperson

Dr. Salma Farooq

Associate Professor

1. Dr. Sheraz Hussain Siddique
   B.E (Textile Engg); M.Sc. (Textile & Clothing, Germany);
   Ph.D. (Textile, University of Manchester UK)

2. Dr. Salma Farooq
   B.Sc. (Textile Engg); M.Engg. (Textile);
   Ph.D. (Textile, Heriot Watt University, UK)

3. Dr. Ali Hasan Mahmood
   B.E (Textile Engg); M.Engg. (Textile);
   Ph.D. (Textile, University of Manchester, UK)

4. Dr. Bilal Zahid
   B.E. (Textile Engg.); M.Engg. (Textile);
   Ph.D. (Textile Science & Technology, Uni. of Manchester, UK)

5. Dr. Muhammad Dawood Husain
   B.E. (Textile Engg); M.Sc. (Textile & Clothing, Germany);
   Ph.D. (Textile, University of Manchester, UK)

6. Dr. Fareha Asim
   B.E (Textile Engg); M.Engg. (Textile);
   Ph.D. (Textile, NED University)

7. Dr. Muhammad Ali
   B.E. (Textile Engg); M.Engg. (Textile);
   Ph.D. (Textile, The University of Leeds, UK)

8. Dr. M. Owais Raza Siddiqui
   B.E. (Textile Engg); M.Engg. (Textile);
   Ph.D. (Textile, Heriot Watt University, UK)

Assistant Professors

1. Mr. Farriduddin Ahmed
   B.Sc. (Hons); M.Sc. (Applied Chemistry)

2. Dr. Agha Deedar Hussain
   B.Sc. (Textile Engg); M.Engg. (Textile);
   Ph.D. (Supply Chain Management, Uni of Minho, Portugal)

3. Dr. Saira Faisal
   B.E (Textile Engg); M.Engg. (Textile);
   Ph.D. (Textile, University of Leeds, UK)

4. Dr. Shenela Naqvi
   B.E (Textile Engg); M.Engg. (Textile);
   Ph.D. (Textile, University of Manchester, UK)

5. Dr. Farhana Naeem
   B.E (Textile Engg);M.Engg. (Textile);
   Ph.D. (Textile Engineering)

6. Dr. Muhammad Amir Qureshi
   B.E (Textile Engg); M.Engg. (Textile);
   Ph.D. (Textile, Heriot Watt University, UK)

7. Mr. Muhammad Zubair (On study leave)
   B.E. (Textile Engg); M.Engg. (Textile);
   Ph.D. (In Progress)

8. Dr. Quratulain Mohtashim
   B.E. (Textile Engg); M.Engg. (Textile);
   Ph.D. (Textile, University of Manchester, UK)

In addition to regular faculty members qualified personnel from other departments and from outside the university may be engaged for post-graduate teaching.

Applications in response to advertisement for Master of Engineering (Textile) shall be duly completed and submitted, personally or by registered post to:

The Chairperson
Textile Engineering Department
NED University of Engineering & Technology
Karachi 75270, Pakistan
Ph #:   (092) - (021) - 99261261-8
Fax #:   (092) - (021) - 99261255
E-mail: ctd@neduet.edu.pk
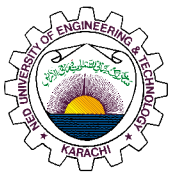
3.8 DEPARTMENT OF AUTOMOTIVE & MARINE ENGINEERING

The Department of Automotive & Marine Engineering was established in 2005 at the NED University of Engineering and Technology, Karachi, primary to cater the needs of the growing automotive sector in Pakistan with Karachi being considered the hub of the automotive industry. Soon the need of a Masters programme was felt and it was decided to launch the Masters in Automotive Engineering programme, which started from June 2009. This programme offers a focused postgraduate study covering several aspects of Automotive Engineering. These aspects range from the inner working of the automobile engine to external aspects such as vehicle aerodynamics, and from the properties of the material used in automobiles to transportation analysis. The department offers two specialisations in 'Automotive Design' and 'Automotive Manufacturing' which are designed to achieve the following goals:

- Provide automotive engineers with practical experience in team building, carrying out projects in interdisciplinary areas and in developing and managing projects.
- Provide automotive engineers with an enhanced understanding of related disciplines as well as management and human factor issues related to the design and marketing of automotive systems.
- Strengthen the technical competence and depth of automotive engineers by teaching them advanced courses in their respective specialisation.
- Broaden the horizons of automotive engineers by exposing them to the wide spectrum of interdisciplinary engineering activities involved in the process of development, design and manufacturing of complex automotive systems.

3.8.1 Departmental Facilities

To support the programme, the Department is equipped with several state-of-the-art functioning laboratories, which includes Combustion & Emission Lab, Body & Suspension Lab, Auto-Electronics Lab, Basic Electronic Lab, Computer Lab, and Fuel Cell Lab. For the research purpose, highly sophisticated equipments are available in the department. 'Hydra Research Engine' is one of the good examples. This Engine test bed has a single cylinder engine for both diesel and petrol along with high tech instrumentation panel. The environmental concerns has forced us to work on the alternative clean energy technologies for this purpose the department has a Fuel Cell Laboratory with a Fuel Cell testing system. For Numerical simulations, the Department has the license for Fuel Cell Module of FLUENT. In teaching advanced level subjects, dedicated software's are frequently used in the department by course teachers.

The prospective students of this programme would primarily consist of graduate engineers currently employed in automotive sector as well as those having bachelor's degrees in Automotive, Mechanical, or Industrial & Manufacturing Engineering.

3.8.2 Principal Faculty for the Programme

Chairperson

Prof. Dr.-Ing. Syed Mushahid Hussain Hashmi

Professor

Prof. Dr.-Ing. Syed Mushahid Hussain Hashmi
B.E (Mechanical);M.Sc. (Mechanical) NED;
Ph.D. (Mechanical) Germany

Associate Professor

Dr. Faraz Akbar
B.E (Mechanical) NED; Ph.D. (Mechanical) UK

Assistant Professors

1. Mr. Munir Ahmed
   B.E (Mechanical) NED; MASc. (Mechanical) University of Toronto, Canada; CSCP; APICS, USA
2. Dr. Saqib Jamshed Rind
   B.E (Industrial Electronics) IIEE-NED
   M.Sc. (Automation & Control) Uni of Newcastle, England.
   Ph.D. (Motor Drives for Electric Vehicles) University of Liverpool, England; MPEC (PAK); MIEEE(USA)
3. Dr. Noman Uddin Yousuf
   B.E (Mechanical) NED; M.S (Mechanical) Bradley, USA;
   Ph.D. (Mechanical) Auckland Uni of Tech. Newzealand
4. Mr. Assad Anis
   B.E (Mechanical) NED; M.S.(Mechanical) Finland, PE
5. Engr. Dr . Muhammad Aamir Qureshi
   B.E (Electrical) NED; M.Engg. (Electrical) NED
   Ph.D. (Communication & Information Systems)
   Beijing Institute of Technology, Beijing, P.R. China



In addition to regular faculty members qualified personnel from other departments and from outside the university may be engaged for postgraduate teaching.

Applications in response to advertisement for Master of Engineering (Automotive) shall be duly completed and submitted, personally or by registered post to:

The Chairperson
Department of Automotive & Marine Engineering
NED University of Engineering & Technology
Karachi 75270, Pakistan
Phone#: +92-21-99261261-8, Ext. 2539, 2239
Fax #: +92-21-99261255
E-mail: camd@neduet.edu.pk

3.9 DEPARTMENT OF ELECTRICAL ENGINEERING

The Department of Electrical Engineering is rich-both in its history as well as in what it currently has in offers. The undergraduate programme in Electrical Engineering may be traced back to 1934 when the former NED Engineering College introduced a three year Bachelor of Engineering degree course. It was modified to 3-1/2 years duration in 1943-44. A full four year Bachelor of Engineering (Electrical) degree programme was introduced in 1961.

The undergraduate programme has since been expanding continuously- both internally as well as in contributing and collaborating with industry sector. The once lonely Department of Electrical Engineering has contributed in the development of three other engineering disciplines namely, Computer and Information Systems, Electronic and Telecommunications – thus strengthening the faculty. Our undergraduate internship programme is intense which gives adequate exposure to the students.

The Department also holds a strong post-graduate setup. A M.Sc. in Electrical Engineering degree (Evening Programme) by course work / Project has been offered by this department since 1984. The programme has seen modifications at various stages and currently offers a semester based M.Engg. degree programme in various specialisations.

The Department, having felt the need of industry for having human resource with refined management skills – acknowledged and timely launched a well-balanced Masters Programme in Engineering Management (MEM). It currently emphasises on energy management specialisation.

3.9.1 Departmental Facilities

The Department infrastructure comes complete with all educational and academic supporting aid and satisfactory environment necessary for intuitive learning. Extensive computing and laboratory facilities also exist in the department and more importantly are accessible by students most of the time. A number of separate computer laboratories are currently functioning with qualified staff to provide technical assistance to the users and maintenance work.

These facilities occasionally also support external departments and centres for the conduction of special workshops and seminars. Advanced simulation software is also provided for researchers and enthusiasts.

The Department is connected through high speed internet and its webpage to external customers for resource sharing, centralised management and information spread.

Using these facilities, a number of people are pursuing their research interests which span the following areas:

- Load Flow Studies of Power Systems
- Variable Speed Drive Systems
- Alternative Energy
- Voltage / Current Mode Circuits
- Novel Measurement Techniques / Instruments
- Chaotic Circuits and Simulation
- Digital Control Systems
- Digital Signal Processing
- Time-Frequency Analysis
- Image and Radar Signal Processing

3.9.2 Principal Faculty for the Programme

Chairperson

Prof. Dr. Attaullah Khawaja

Professors

1. Prof. Dr. Saad Ahmed Qazi
   B.E.(Electrical)NEDUET
   M.Sc.(DSP) UK; Ph.D.(UK)

2. Prof. Dr. Attaullah Khawaja
   B.E. (Electrical) MUET; M.Engg. (Electrical) NED;
   Ph.D. (Comm. & Info. Sys) (B.I.T) China

Associate Professors

1. Dr. Muhammad Ali Memon
   B.E.(Electrical); M.Engg.NEDUET;
   MBA (MIS); Ph.D. (USA)

2. Dr. Muhammad Mohsin Aman
   B.E.(Electrical); M. Engg. (Electrical) NED
   Ph.D.(Malaysia)

Assistant Professors

1. Mr. Muhammad Javed
   B.E.(Electrical); M.Sc (Electrical) NED
   Ph.D. (In Progress)

2. Ms. Shahnaz Tabassum
   B.E.(Electrical); M. Engg(Electrical) NED

3. Mr. Shoaib Siddiqui
   B.E.(Electrical); M. Engg. (Electrical) NED

4. Dr. Raja Masood Larik
   B.E.(Electrical); M. Engg. (Electrical) NED
   Ph.D. (Electrical) University of Malaysia

5. Dr. Umbrin Sultana
   B.E.(Electrical) NED; M. Engg. (Electrical) NED
   Ph.D. (Malaysia)

6. Ms. Arjumand Samad
   B.E.(Electrical) NED; M. Engg.(Electrical)NED

7. **Dr. Abdurrahman Javed Sheikh**
   B.E.(Electrical); M. Engg.(EE) NEDUET
   Ph.D. (Malaysia)

8. **Dr. Riazuddin**
   B.E. (Electrical), NED; M.Engg. (Electrical) NED;
   Ph.D (Mechatronics), GIST, South Korea.

9. **Mr. Umar Sajid**
   B.E.(Electrical) NED; M.Sc. (Comm. Engg. & SP) UK;
   Ph.D. (In Progress)

10. **Dr. Abul Ghani Abro**
    Ph.D. (Electrical Engg.)

11. **Dr. KirshanLal Khatri**
    B.E.(Electrical) MUET; MSEE (Telecom) SSUET;
    Ph.D. (USA); Professional Diploma Project
    Management, PIM Karachi.

12. **Dr. Mirza Muhammad Ali Baig**
    B.E.(Electrical); M. Engg. (Electrical) NED; Ph.D. (NED)

13. **Ms. Samiya Zafar**
    B.E. (Electrical); M. Engg. (Electrical) NED; Ph.D. (In Progress)

14. **Dr. Beenish Sultana**
    B.E.(Electrical); M. Engg. (Electrical) NED;
    Ph.D. (Malaysia)

15. **Mr. Adnan**
    B.E.(Electrical) NED; M. Engg. (Electrical) NED;

16. **Mr. Hassan-ul-Haq**
    B.E.(Electrical); M. Engg. (Electrical) NED;

17. **Mr. Shariq Shaikh**
    B.E.(Electrical) NED; M. Engg. (Electrical) NED

18. **Mr. Fezan Rafique** *(On Study Leave)*
    B.E.(Electrical) NED; M. Engg. (Electrical) NED
    Ph.D. (In Progress)

19. **Mr. Muhammad Hammad Uddin** *(On Study Leave)*
    B.E.(Electrical) NED; M. Engg. (Electrical) NED
    Ph.D. (In Progress)

In addition to our faculty members, qualified personnel from other departments and prestigious institutions are often engaged for post-graduate teaching.

Applications in response to advertisement for Master of Engineering (Electrical) and Master of Engineering Management (Energy Management) Programmes shall be duly completed and submitted, personally or by registered post to:

The Chairperson
Department of Electrical Engineering
NED University of Engineering & Technology
Karachi-75270, Pakistan
Phone No. 92-21-99261261-8   Ext. 2207
Fax No.   92-21-99261255   FAO: CED
E-mail: ced@neduet.edu.pk

3.10 DEPARTMENT OF COMPUTER AND INFORMATION SYSTEMS ENGINEERING

The Masters programme in Computer Engineering of Department of Computer and Information Systems Engineering was started in 2000. It is offered as Day as well as Evening Programme to facilitate a supportive environment for researchers and professionals alike. Enthusiastic students prefer to be admitted in this programme because of the high quality of education and the wide demand of Computer Engineers in the industrial community.Following the modern engineering trends two areas of specializations are offered namely; **Computer Architecture & Systems Design and Computer Networks & Systems Security**. These specialized streams are designed to meet the need of the industry and indigenous research activities.

The Department of Computer and Information Systems Engineering also offers **Masters of Science Programme in Data Engineering and Information Management**. This program is intended to develop sound professionals with adequate skills and knowledge to meet the latest challenges of big data and information management. The compulsory and elective courses are designed to give broad-based knowledge of the field along with developing creative and analytical thinking ability. The graduates of the program will be better able to provide logical and ingenious solutions to critical problems, data analytics, data-mining and enterprise resource management.

The Department of Computer and Information Systems Engineering provides a vibrant andencouraging environment for the passionate students to get themselves involved in state-of-the-art research. This department hasa pool of experienced faulty to help motivate and supervise the students taking up this endeavour. Students with inclination towards research can opt to get enrolled in the Day programme. In the Day programme, students are facilitated to do supervised research projects except the course work and are encouraged to publish their work in national and international conferences and journals.Besides enhancing their expertise in this field, research publications helps our students to continue their studies at post graduate and doctoral levels.

3.10.1 DEPARTMENT FACILITIES

The department has following fully functional laboratories.

1. Computation Laboratory
2. Logic Design & Switching Theory Laboratory
3. Research Laboratory
4. Computer Networks Laboratory
5. Artificial Intelligence and Robotics Laboratory
6. Parallel Processing Laboratory
7. Computer Engineering Workshop
8. Microprocessor Laboratory
9. Network Security Laboratory

The aforementioned laboratories are equipped with the latest hardware equipment and software. These lab facilities also provide adequate opportunities to post graduate students to undertake research projects. The laboratories are fully air-conditioned and provide a serene and stimulating environment for learning.

RESEARCH FIELDS

The department currently offers research positions in following research areas:

- VLSI Design and Testing
- High Performance Computing
- Distributed Systems
- Computer Networks
- Multicore Architecture Design
- Robotics and Artificial Intelligence
- Embedded System Design
- Computer Vision &Image processing
- Software Defined Communication Systems
- Internet of Things and Web of Things

RESEARCH CENTERS

Computer & Information Systems Engineering Department is successfully running two research centers with state-of-the-art R&D projects and collaboration with academia and industry.

1- High Performance Computing Centre

High Performance Computing Centre manages high performance computational resources to address the miscellaneous computational needs. With 10 TFLOPS of computational power and various scientific software along with related expertise, the centre provides an excellent state-of-the-art R&D and business opportunities for its users.The centre is equipped with all basic parallel computing
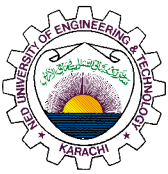
platforms / architectures including Shared Memory (SMP), Multi-cores, Distributed Memory (Cluster), GPGPUs and Cloud Infrastructure. The centre has 10 TFLOPS of com putational power consisting of Intel Xeon 3xxx and 5xxx series, AMD Opteron and Nvidia / AMD Radeon GPGPU cards.

2- National Center in Big Data and Cloud Computing
Exascale OpenData Analytics Lab

Exascale Open Lab is a unique public private partnership concept which will provide framework through which NEDUET can collaborate with leading ICT companies and national and international academia to accelerate the development and deployment of the cutting edge ICT solutions related to big data and its analytics on cloud using Open source platforms.

Currently Exascale OpenData Analytics Lab is working on Cloud Computing, Big Data Analytics, Block Chain, Machine Learning, Image Processing, Software Define Networks (SDN), Quantum Computing, and Computational Finance. Along with this the center has four (4) Application Domains which are 1. Computational Astrophysics, 2. Tsunami Modeling, 3. Geonomics and 4. Traffic Modeling.

3- National Center for Artificial Intelligence
Smart City Lab and Neuromorphic lab

The National Centre of Artificial Intelligence, NCAI was inaugurated at the main campus of National University of Sciences & Technology (NUST) on 16th March 2018. The core purpose of NCAI is to apply Artificial Intelligence to solve the indigenous problems of the country; for this purpose, NCAI has selected six universities including NED University.

At NED University, there are two labs under NCAI. The SMART CITY LAB and the NEUROMORPHICE LAB which are focusing on new techniques to improve the quality of life and to provide ease to the people using AI.

To accomplish the goal, the team is doing research based on huge data collection and converting it into a useful visualization using AI. The lab is currently developing different modules and making new applications through machine learning, deep learning and cloud computing.

4- National Centre for Cyber Security
(Internet Security Lab, Digital Forensic Lab and Quantum Computing Lab)

Due to rapid development in digital technologies and design of smart devices, the boundary between physical and digital world has become inseparable. As the physical security is of utmost importance and cannot be risked, the development of efficient algorithms, protocols, frameworks, and products for securing the cyber environment is highly required.

The National Center for Cyber Security is a huge platform which mainly serves as a bridge between academia and industry in order to develop state-of-the-art cyber security products for both national and international customers. It is an opportunity for NED University to produce specialized human resource in the field of cyber security.

Currently NCCS is working on End Point Security, Internet Security, Digital Forensic and Quantum Cryptography

3.10.2 PRINCIPAL FACULTY FOR THE PROGRAMME

Chairperson

Prof. Dr. Muhammad Ali Ismail

Professors

1. Prof. Dr. Muhammad Ali Ismail
    B.E.(Comp & Info. Sys.); M.Engg.(Comp Sys.);
    Ph.D. (High Performance Computing);
    Post Doctrate (ADSE) Romania

2. Prof. Dr. Muhammad Khurram
    B.E. (Comp. Sys.); M.Engg. (Comp. Sys.);
    Ph.D. (IC Design) New Zealand

3. Prof. Dr. Syed Abbas Ali
    B.E.(Comp. Sys.); M.Engg.(Electrical)
    Ph.D. (Automatic Speech Recognition & Machine Learning)

Associate Professors

Dr.-Ing. Shehzad Hasan
B.E.(Comp Sys.); M.Engg.(Comp Sys.);
Ph.D. (VLSI Testing) Germany

Assistant Professors

1. Mr. Shahab Tahzeeb
   B.E.(Comp Sys.) ; M.Engg.(Comp Sys.); Ph.D. (In Progress)

2. Syed Zafar Qasim
   B.E. (Comp. Sys.); M. Engg. (Comp. Sys.); Ph.D. (In Progress)

3. Ms. Anita Ali
   B.E.(Comp Sys.); M.Engg.(Comp Sys.)

4. Dr. Muhammad Asad Arfeen
   *B.E. (Comp. & Info. Sys.); M. Engg. (Comp. Sys.);
   Ph.D. (Teletraffic Engineering) New Zealand*

5. Ms. Hina Danish Khan
   B.E.(Comp & Info. Sys.); M.Engg.(Comp Sys.)

6. Dr. Maria Waqas
   *B.E.(Comp Sys.); M.Engg.(Comp Sys.);
   Ph.D. (Computatioal Biology)*

7. Ms. Urooj Ainuddin
   B.E.(Comp Sys.) ; M.S.(Comp Sys.); Ph.D. (In Progress)

8. Ms. Zareen Sadiq
   *B.E.(Comp & Info. Sys.); M.Engg.(Comp Sys.);
   Ph.D. (In Progress)*

9. Mr. Gul Munir Ujjan *(On study leave)*
   B.E.(Comp Sys.); M.Engg.(Comp Sys.);

10. Dr. Majida Kazmi
    *B.E. (Elect.); M. Engg. (Elect.);
    Ph.D. (VLSI Design for Digital Image Processing)*

11. Dr. Saad Qasim
    *B.E. (Comp & Info. Sys.); M. Engg. (Comp Sys.);
    Ph.D. (Artificial Intelligence / Neuromorphic Hardware)*

12. Ms. Sumayya Zafar
    B.E. (Comp & Info. Sys.); M. Engg. (Comp Sys.); Ph.D. (In Progress)

In addition to regular faculty members, qualified personnel from other universities and industry may be engaged for post-graduate teaching.

Applications in response to the advertisement for Master of Engineering (Computer Systems)shall be duly completed and submitted, personally or by registeredpost to:

**The Chairperson
Department of Computer and
Information Systems Engineering
NEDUniversity of Engineering & Technology
Karachi75270, Pakistan
Phone No. 92-021-99261261-8
E-mail: chaircsd@neduet.edu.pk**
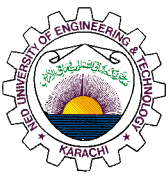
3.11   DEPARTMENT OF ELECTRONIC ENGINEERING

The Department of Electronic Engineering, Established in 1998, is currently administering two Major Engineering streams namely Electronic Engineering and Telecommunication Engineering. The department has well-established infrastructure and facilities to satisfy student needs in these areas. The undergraduate programmes in Electronic and Telecommunication Engineering are accredited by Pakistan Engineering Council.

The Department of Electronic Engineering started its Master of Engineering Programme in Electronic Engineering in January 2004 with two specializations namely (i) Micro System Design and (ii) Industrial Electronics. The Department is also administering the Master of Engineering in Telecommunication Engineering since January 2008. The Master of Engineering programmes offered in the department are fulfilling the local industry demands to produce the highly skilled man-power.

Starting from fall 2017 semester, the Department is also offering weekend programme of Master of Science (M.S.) in Telecommunication Systems. Candidates coming from the non-engineering Background are also eligible to get admission in the M.S. programme.

In addition to above mentioned Master's Programmes, the department is offering PhD programme in allied fields since spring 2014. Currently there are twenty five (32) PhD Scholars enrolled in the department working on variety of research areas.

3.11.1 Departmental Facilities

The Department of Electronic Engineering is located in the J-3 Block of the University. The Department contains twelve class rooms, eleven Electronics and six Telecommunication laboratories with latest equipment, three computer centers, one conference room, three research labs, eighteen faculty offices, one departmental library, one departmental office and one Instrumentation Center.

Laboratories of department of electronic engineering are: Basic Electronics, Electronic Devices and circuits, Integrated Circuits, Digital Electronics, Power & Industrial Electronics, Amplifiers & Oscillators, Programmable & Logic Controllers, VLSI, PCB Fabrication Laboratory and Project Laboratory.

Additionally, there are six well equipped Telecommunications Laboratories PHS/WLL, Advanced Telecommunications, Antenna & Microwave Engineering, Telematics, Optical Fiber Communications and Radio Engineering Laboratory.

Computing Facilities

Air-conditioned computer laboratories of Department of Electronic Engineering are equipped with 55 Computers running licensed operating systems plus other licensed software. The Telecommunications programme is also supported with a separate computer center containing 34 computers with licensed software.

There is access to email, internet, intranet and other online sources of information and services. Access to the internet is provided via a high speed connection through fiber-optic network. Printing and scanning facilities in the laboratory have been provided for the facilitation of students. In addition the department has procured various types of software and a software library is available to students for multipurpose engineering needs.

Electronic Design Center

Electronic Design Center consists of two researches Labs: Device Characterization Lab (DC Lab) and Radio Frequency Lab (RF Lab). The Device Characterization (DC) Lab is a multi-purpose laboratory for DC Characterization of semiconductor devices and Integrated circuits. The Radio Frequency (RF) Lab is Equipped with advanced equipment for measurement of RF and microwave circuits. Besides these two Labs Circuit level and device level simulation tools, software packages and libraries are also available at EDC.

Research Interests

Faculty and the postgraduate students of the department are actively engaged in the research under the umbrella of a multi-disciplinary research group named "Emerging Technologies Research Group (ETRG)" in all allied areas such as (but not limited to):

- Solid State Devices system
- VLSI Design and Fabrication, test and Reliability
- Microfabrication
- Micro-electro-mechanical system
- Optoelectronics Integrated circuits
- Laser and optical fiber
- Instrumentation and Calibration
- Mechatronics
- Power Electronics, Industrial Electronics
- Embedded System Design
- Digital and Analog Signal Processing
- Fuzzy Logic and Intelligent Control Systems
- Radio Frequency Integrated Circuits
- Wireless Communications
- Cognitive radios
- Antenna arrays
- Optical Devices and networks
- Communication Networks
- Microwave Systems
- Point of care devices
- Robotics
- Internet of Things

3.11.2 Principal Faculty for the Programme

Chairperson

Prof. Dr. Syed Muhammad Usman Ali Shah

Professors

Prof. Dr. Syed Muhammad Usman Ali Shah
B.E (Electronic) NED; M.Sc (Electrical) NED;
Ph.D. (Nano-Electronics) Linkoping Uni (Sweden);
HEC appoved Ph.D. Supervisor

Associate Professors

1. Dr. Ghous Bakhsh
   B.E(Electronic) ; M.Engg(Electronic)
   Ph.D.(Electrical) Michigan Tech, University USA

2. Dr. Muhammad Imran Aslam
   B.E (Electrical) NED; M.Engg (Electrical) NED;
   Ph.D. (Electrical) Michigan Tech, USA

Assistant Professors

1. Dr. Sadia Muniza Faraz
   B.E (Electrical)NED; M.Engg (Electronic) NED;
   Licentiate of Engg. (Semiconductor Physics) Linkoping
   Uni (LiU) Sweden; Ph.D (Electronic Engg.) NED

2. Dr. Hashim Raza Khan
   B.E (Electrical) NED; M.Sc (Communication) RWTH
   Aachen, Germany; Ph.D (Electronic) NED

3. Dr. Syed Riaz-un-Nabi Jafri
   B.E. (Industrial Electronic) IIEE (NED);
   M.Engg (Electronic Engg) NED; Ph.D. (Robotics) IIT, Italy
   Postdoctorate (ITC-Nederland)

4. Dr. Amir Zeb
   B.E (Electrical) NED; M.Engg (Telecommunication) NED;
   Ph. D. (Wireless Communication/Cognitive Radio) NED

5. Dr. Tahir Malik
   B.E (Electrical) NUST; M.Sc (Telecommunications &
   Info. System) Essex, UK; Ph.D. (Electrical & Electronic
   Engg.) Uni of Canterbury, NewZealand

6. Mr. Shahzad Siddiqi
   B.E (Electrical) NED; M.Engg (Telecommunications) NED

7. Mr. Safi Ahmed Zakai
   B.E (Electrical) NED; MBA (Marketing) IBA Karachi;
   M. Engg. (Telecommunications) NED;
   M.Phil (Management) UoK.

8. Ms. Nida Nasir
   B.E (Electronic) NED; M.Engg (Telecommunications) NED

9. Dr. Sana Arshad
   B.E. (Electronic) NED; M.Engg. (Electronic) NED;
   Ph.D. (Electronic Engg.) NED

10. Ms. Saba Ahmed
    B.E. (Electrical) NED; M. Engg (Telecommunications) NED

11. Mr. Abdul Raheem Qureshi *(On study leave)*
    B.E (Electronic) NED; M.Sc (Communications) LiU Sweden
    Ph.D. (Electronic Engg.)TU Delft, The Netherlands (In Progress)

12. Dr. Sunila Akbar
    B.E. (Electrical) NED; M.Engg (Telecomm.) NED;
    Ph.D. (Telecommunications) NED

13. Ms. Uzma Afsheen
    B.E. (Electrical) NED; M.Engg (Telecommunications) NED
    Ph.D. (In Progress)

14. Dr. Fahim Ull Haque
    B.E. (Telecommunications) NED
    M.Engg (Telecommunications) NED
    Ph.D. (Electrical Engg.) Linkoping University, Sweden

15. Dr. Yawar Rehman
    B.E. (Electronic) MUET;
    M.Engg. (Telecommunication) Hamdard University;
    Ph.D (Electronics & Communication) Hanyang
    University South Korea

16. Dr. Bushra Tasaduq (On Leave)
    B.E. (Electronic) NED; M.Engg (Electronic) NED;
    Ph.D (Nanotechnology and MEMS) Georgia Institute
    of Tech. Graduate School, USA

17. Dr. Rizwan Aslam Butt
    B.E. (Electronic) NED; MCIT NED; M.Engg (Telecom) NED;
    Ph.D (Communication Engg.) Malaysia

18. Dr. Sundus Ali
    B.S. (Telecommunications) FAST-NU;
    M.Engg (Telecommunications) Hamdard University;
    Ph.D. (Telecommunications) NED

19. Dr. Amna Shabbir
    B.E. (Telecomm) NED; M.Engg. (Telecomm) NED;
    Ph.D (Telecommunication) NED

20. Ms. Saleha Bano
    B.E. (Electronic) NED; M.Engg. (Electronic) NED
    Ph.D (Electronic) NED

In addition to regular faculty members, the qualified faculty members available in other departments and in the city are engaged for the graduate teaching.

Applications are invited in response to the advertisement for the admission in the following programmes offered by the department should be duly completed and submitted, personally or by registered post to the below mentioned address.

(i) Master of Engineering (Electronic Engineering) with specialization in Micro System Design
(ii) Master of Engineering (Electronic Engineering) with specialization in Industrial Electronics
(iii) Master of Engineering (Telecommunication Engineering) with specialization in RF Engineering.
(iv) Master of Engineering (Telecommunication Engineering) with specialization in Telecommunication Networks.
(V) Master of Science (Telecommunication Systems) Weekend programme.

The Chairperson
Department of Electronic Engineering
NED University of Engineering & Technology
Ph. No: +92-21-99261261-68 Ext: 2270
Fax No: +92-21-99261255
Email: cld@neduet.edu.pk
Karachi 75270, Pakistan
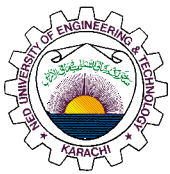
3.12 DEPARTMENT OF BIOMEDICAL ENGINEERING

Biomedical Engineering, a discipline at the confluence of physical and biological sciences has uncovered new horizons for solving complex biological problems by exploiting engineering principles and techniques. It is the fastest growing field in the world that has evolved from being an interdisciplinary specialisation to establishing itself as an independent field. The purpose of Biomedical Engineering remains well-grounded in refining the standard of living of individuals', and more comprehensively extends to breakthroughs in improved diagnostic and therapeutic tools, design of medical instruments and prostheses, micro and nano implants; from regenerative cell tissue modalities to tailor made drugs employing the human genome, to gene therapies addressing genetic diseases.

Addressing present day intricacies and keeping at pace with the world, NED University of Engineering & Technology has taken an imperative step in establishing Biomedical Engineering Department at LEJ campus with the aim to produce healthcare professionals who through their in-depth understanding of living systems and technology essentials will not only be able to address existing problems but will also transform the health industry with innovative ventures. Recently, the sixth batch of Biomedical Engineering has graduated.

In Pakistan, Biomedical Engineering is generally regarded as an extension of Electronics Engineering and doctors in large also subscribe to this view. The reality is very different. Almost all branches of engineering have a share in the development of this new field.

The Masters Programme is being offered to essentially raise the level of knowledge in Biomedical Engineering. The courses offered would have strong inclination towards research and development in this field. The type of courses offered would enable medical professionals to teach and carry out research alongside with engineers.

3.12.1 Departmental Facilities

The department is equipped with following laboratories:

1. Computing Laboratory
2. Gait Laboratory
3. Robotics Laboratory
4. Anatomy Laboratory
5. Physiology Laboratory
6. Biochemistry Laboratory
7. Bioinstrumentation Laboratory
8. Biomechanics Laboratory
9. Neuro-Computation Laboratory

Research Fields

The current research interests of the department are as follows:

- Clinical Gait Analysis
- Bioinstrumentation
- Rehabilitation
- Prosthetics & Orthotics
- Biomaterials & Tissue Engineering
- Bioinformatics
- Neuromodulation
- Physiological Systems Modeling

3.12.2 Principal Faculty for the Programme

Chairperson

Pro. Dr. Ali Raza Jafri

Professors

1. Prof. Dr. Ali Raza Jafri
   B.E. (Mech) NEDUET; M.Engg. (Mech) NEDUET; Ph.D. (Mechatronics) BIT, China

2. Prof. Dr. Farzana Yasmin
   Ph.D. (Biochemistry) UoK; Post-Doctorate (State University of New York, USA)

Associate Professors

Dr. Engr. Eraj Humayun Mirza
B.S. (Biomedical Engineering) SSUET; M.S. (Biomedical Engineering), Uni of Dundee, UK Ph.D. (Biomedical Engineering) University of Malaya

Assistant Professors

1. Dr. Syed Muhammad Wasim Raza
   M.B.B.S., PGDPA., MAS Sindh Medical College, UoK; Ph.D (Biomechanics, Orthopedic & Motion Analysis) University of Dundee, UK

2. Ms. Rehana Kousar
   B.Sc. (Biology) Shah Abdul Latif Uni Khairpur; M.Sc. (Biological Science) Qaid-e-Azam Uni Islamabad; M.Phil. (Developmental Biology) Qaid-e-Azam Uni Islamabad;

3. Dr. Furqan Ahmed
   M.B.B.S. (SMC); R.M.P; Ph.D. (Biomaterials/Tissue Engineering); Australia

4. Dr. Muhammad Abul Hasan
   B.E.(Electonics) NEDUET; M. Engg. (Ind. Electronic) NEDUET Ph.D. (Biomedical Engineering); University of Glasgow UK

5. Dr. Bilal Ahmed Usmani
   M.Sc. (Mathematics) (Pure) UoK; M.Phil (Mathematics) UoK; Ph.D (Mathematical Epidemiology); Uni of Glasgow, UK

In additional to regular faculty members, qualified personnel in the city are engaged for postgraduate teaching.

Applications in response to advertisement for Master of Engineering (Biomedical) shall be duly completed and submitted, personally or by registered post to:

The Chairperson
Department of Biomedical Engineering
NED LEJ Campus
81-A, Block-3, Memon Cooperative Housing
Society, Karachi-74800
Phone: 99230602; 99230604
Fax: 99230602
Email: cbm@neduet.edu.pk

3.13 DEPARTMENT OF MATERIALS ENGINEERING

The evolution and development of materials had led to the development of human cultures and industries. Every product is an aggregate of materials made in various types. Materials Engineering is an interdisciplinary field that addresses the structure, processing, and property relationships in materials for engineering applications. Basic principles of chemistry and physics are applied to provide an understanding of the structure of materials and the manner in which the structure determines the properties. Engineering processing methods are then applied to yield the necessary properties, which then can be integrated with, and designed to accommodate the needs of modern technology. In particular, as an academic field with great industrial fundamentality and importance, it has a large ripple effect on all industries as well as a very broad and intensive scope of study.

The Department of Materials Engineering was established in 2006 at NED University, and is offering programmes for the award of Bachelors, Masters and Ph.D. degree in the field of Materials Engineering. The Masters programme is offered with specialisation in many innovative fields of Materials Engineering. The structure of the programme is designed to provide an interesting and stimulating learning experience to study the manufacturing, processing and characterisation of not only conventional iron and steels but also new innovative materials made with advanced properties.

The curriculum for Master's degree is specifically designed to commensurate with the need of the industry and R&D at home and keeping in view of the recent research trends abroad in the field to impart quality education at standards equal to that of any international university in the field of materials. The Masters degree is awarded after successful completion of 30-credit hour's course work. The Ph.D. programme in various advanced fields of the Materials Engineering is by full time research.

3.13.1 Departmental Facilities

The Department of Materials Engineering has modern teaching facilities and state of the art laboratories having equipment related to every field of materials engineering to complement its extensive in-class teaching, such as, but not limited to Processing and Characterisation of Materials and its synthesis etc.

The department has following fully functional state of the art laboratories:

1. Metallography
2. Optical Microscopy
3. Mechanical Testing
4. Hardness Testing
5. Impact Testing Materials
6. Heat Treatment
7. Corrosion
8. Rapid Alloy Analysis
9. Non Destructive Microscopy Testing (NDT)
10. Joining of Materials
11. Composite Materials
12. Magnetic Materials
13. Thermal Analysis
14. Nano Materials
15. Advanced Coatings
16. Surface Engineering
17. X-Ray Diffraction (XRD)
18. Advanced Ceramic
19. Powder Materials Characterization
20. Biomaterials Lab
21. Scanning Electron
22. Advanced Materials Characterisation
23. Computer Modelling and Simulation
24. Sample Preparation

Research Areas

Department of Materials Engineering offers Master's Program (M. Engg. (Materials) and Ph.D. Program in following research areas of materials engineering:

- Advanced Steel
- NDT
- Functional Materials
- Nano-materials Materials
- Advanced Coatings
- Biomaterials
- Composite Materials
- Magnetic Materials
- Corrosion
- Superalloys
- Superconducting
- Failure Analysis of Materials
- Aerospace Materials

3.13.2 Principal Faculty for the Programme

Acting Chairperson

Dr. Fayaz Hussain

Associate Professor (Materials Engineering)

1. Dr. Fayaz Hussain
   B.E. (Metallurgical) MUET; M.Engg. (Materials) NED PhD (Functional Materials and Devices), The University of Sheffield, UK.

2. Dr. Muhammad Sohail
   B.E. (Ind. & Mfg.) NED; M.Engg. (Materials) NED; Ph.D. (Welding Simulation) South Koera

Assistant Professor (Materials Engineering)

1. Dr. S. M. Sajid Ali Asghar
   B.E. (Metallurgy and Materials) MUET;
   M.Engg. (Materials) NED; Ph.D. (UK)

2. Engr. Humair Ahmed Siddiqui (On study leave)
   B.E. (Materials) NED; M.Engg. (Materials Engg.) NED
   Ph.D. (In Progress) UK

3. Engr. Muhammad Faizan (On study leave)
   B.E (Materials) NED; M.Engg. (Materials) NED;
   Ph.D. (In Progress) South Korea

4. Engr. Abdul Rauf Jamali
   B.E (Metallurgy & Materials) MUET;
   M.Sc. (Materials Engg.) Germany

5. Dr. Faaz Ahmed Butt
   B.E (Metallurgical) NED; M.Engg. (Materials) NED;
   Ph.D. (Turkey)

Associate Professor (Metallurgical Engineering)

1. Dr. Ali Dad Chandio
   B.E. (Metallurgy & Materials) MUET;
   M.E. (Materials Engg.) NED
   Ph.D. (High Temperature Materials for Aero-engine Applications) UK

2. Dr. Shahid Hussain
   B.E. (Metallurgy & Materials) MUET;
   M.Engg. (Materials) NED;
   Ph.D. (Nano and Functional Materials) South Korea

3. Dr. Nafis-Ul- Haque
   B.E. (Metallurgy & Materials) MUET;
   M.E. (Materials Engg.) NED;
   Ph.D. (Metallurgy & Materials Engg.) UK

Assistant Professor (Metallurgical Engineering)

1. Dr. Iftikhar Ahmed Channa *(On study Leave)*
   B.E (Metallurgy & Materials) MUET
   M.E (Materials Engg.) NED; Ph.D. (In Progress)

2. Engr. Aqeel Ahmed Shah
   B.E. (Metallurgy & Materials) MUET;
   M.S. (Nano Materials) South Korea; Ph.D. (In progress)

3. Dr.-Ing. Laraib Sarfraz Khanzada
   B.E. (Metallurgy & Materials) MUET;
   M.E. (Materials Engg.) NED; Ph.D. (Materials Engg. Materials for Electronics & Energy Technologies)

4. Engr. Muhammad Ali Siddiqui *(On study Leave)*
   B.E. (Metallurgy & Materials) MUET;
   M.E. (Materials Engg.) NED

5. Engr. Muhammad Samiuddin *(On study Leave)*
   B.E. (Materials)NED; M.E. (Materials)NED

6. Engr. Waseen Khan
   B.E.(Metallurgical)NED; M.E. (Materials) NED;
   Ph.D. (In progress)

7. Engr. Sajida Shaikh
   B.E. (Materials)NED; M.E. (Materials)NED;
   Ph.D. (In progress)

8. Dr. Muhammad Rizwan
   B.E. (Materials)NED; M.E. (Materials) NED
   Ph.D. (Material Engg. Biomaterials) University of Malaysia, Malaysia

In addition to regular faculty members, qualified personnel from other departments of NED University, industry and R&D organisations in the city are also engaged for post-graduate teaching.

Applications in response to advertisement for Master of Engineering (Materials) Programme should be duly completed are required to be submitted, personally or by registered post to:

The Chairperson
Department of Materials Engineering,
NED University of Engineering and Technology,
Karachi-75270, Pakistan.
Ph. No: + 92-21-99261261-8, Ext: 2388
+ 92-21-99261251
Fax No: + 92-21-99261255
Email: cmm@neduet.edu.pk
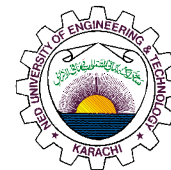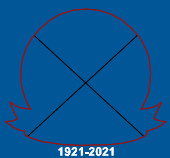
3.14 DEPARTMENT OF CHEMICAL ENGINEERING

Chemical Engineering retains a special position of great importance in modern economies; along with its role in the older industries, such as heavy chemicals, hydrocarbon processing, petrochemicals etc., it has emerged as discipline of key importance in new technologies including life sciences/bio-technology, food processing, plastics and polymers, fibers, ceramics, metals, glass and specialty chemicals. In addition, with concern over environmental degradation, the skills of chemical engineers are increasingly important for private business, government and international institutions.

Chemical Engineers with graduate qualifications contribute immensely to the establishment of industrial projects at several stages including product market studies, evaluation and selection of feedstock's, process design, basic and detailed engineering, plant installation, testing, commissioning, and operation. There is an ever increasing place for post graduate chemical engineers in research.

Realizing the importance of Chemical Engineering, the department of Chemical Engineering was established under Mega Project. At present we are offering both Undergraduate and Postgraduate Programmes.

The Postgraduate Programme is an evening Programme designed to accommodate working graduate engineering professional who are seeking to broaden their knowledge and deepen their technical skills to solve problems of local chemical and processing industries with greater responsibility. Students will apply their new skills immediately in their workplace environments. The Programme is also aimed to produce quality researchers and faculty members for local universities and institutions.

3.14.1 Departmental Facilities

Department of Chemical Engineering has fully equipped laboratories. Computer lab has the latest state-of-the-art software. The infrastructure consists of multimedia facilities, computer laboratories, software and related facilities

Research Fields

The research interests of the department are mainly in the fields of CFD, Bio-Diesel Technology, Fuel Cell Technology, Fluidized Bed Reactors, Coal Gasification and Liquefaction of Synthetic gast to synthetic Diesel.

3.14.2 Principal Faculty for the Programme

Chairperson

Prof. Dr. Inayatullah Memon

Professor

Prof. Dr. Inayatullah Memon
B.E (Chemical), NEDUET
Ph.D (Chemical), LEEDS, UK

Assistant Professors

1. Dr. Faizan Raza
   B.E. (Chemical) UoK;
   Ph.D. (Fusion Chemical) Hanyang University, South Korea

2. Mr. Rizwan Ahmed Qamar
   B.Sc. (Chemical) BZU Multan; M.Engg. (Chemical) NED

3. Mr. Sajid Muhbat
   B.E (Chemical), MUET; M.Engg. (Chemical), NED
   Ph. D. (Chemical) NED (In Progress)

4. Mr. Saad Nadeem
   B.E (Chemical), DCET; M.Engg (Chemical), NED
   Ph. D. (Chemical) Universiti Teknologi PETRONAS, Malaysia.

5. Dr. Syed Ali Ammar Taqvi
   B.E (Chemical), NED; M.E (Chemical), NED;
   Ph. D. (Chemical)

6. Dr. Fahim Uddin
   B.E (Chemical), NED; M.E (Chemical) NED;
   Ph. D. (Chemical)

In addition to regular faculty members, qualified personnel from the other departments and in the city may be engaged for graduate teaching.

Applications in response to advertisement for Master of Engineering (Chemical) should be duly completed and submitted, personally or by registered post to:

The Chairperson
Department of Chemical Engineering,
NED University of Engineering & Technology,
Karachi-75270, Pakistan.
Ph. No. +92-21-99261261-68 Ext: 2286
Fax No. +92-21-99261255
Email: cec@neduet.edu.pk
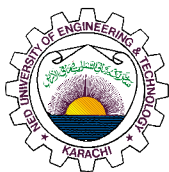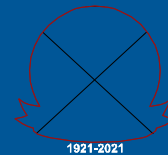
3.15 DEPARTMENT OF POLYMER & PETROCHEMICAL ENGINEERING

Polymer engineering is a multidisciplinary and extremely important discipline in the current scenario of Pakistan's industries. Polymers (plastics & composites) being the frontier materials for today's civilization. The course curriculum is especially designed to fulfill the current needs of the polymer industry, research institutes and academia. It covers the practical problems of manufacturing, processing, and characterization of polymeric materials & composites. The main objective of the course on polymer engineering is to improve the knowledge of the undergraduate students to get better jobs in the relevant field or even start up their own business and produce quality researchers and faculty members for local and international universities and institutes.

The Department of Polymer & Petrochemical Engineering was established in 2007 at NED University. The department is offering Bachelors and Masters programme in the field of Polymer & Petrochemical Engineering. The department intends to start Ph. D programme also very soon. The Masters programme is offered with specialization in many advanced fields of the polymer engineering. As the programme is offered in evening it can easily accommodate working engineering professionals who want to broaden their knowledge and deepen their technical & computing skills notably related to the polymer industries.

3.15.1 Departmental Facilities

The department has in-house laboratory facilities in addition to the laboratory facilities available from the other departments of the NED University. Following laboratories are presently accessible to the department:
- XRD and Crystallography Lab
- Optical and Scanning Electron Microscopy Labs
- Advanced Materials Processing Lab
- Thermal Analysis Lab
- Mechanical Testing Lab
- Advanced Coatings Lab
- Nano Materials Lab
- Computer Modeling and Simulation Lab

Research Fields
- Polymeric Hollow Capsules for Controlled Released Applications
- Polymerization in Confined Spaces
- Controlled Radical Polymerization (RAFT)
- Polymer Rheology and Implication of Structure Development
- Polymer (Nano)Composites
- Bio-Polymers
- Polymeric Membranes

3.15.2 Principal Faculty for the Programme

Chairperson

Prof. Dr. Kausar Ali Syed

Professor

1. Prof. Dr. Kausar Ali Syed
   Ph.D. (Polymer Science)
   University of Louis Pasteur, Strasbourg, France

2. Prof. Dr. Zahoorul Hussain Awan
   B.E. (Mechanical), NED; M.Engg. (Chemical), NED
   Ph. D. (Chemical), Chonkbuk Uni, South Korea

Associate Professors

1. Dr. Saud Hashmi
   Ph. D. (Chemical), Chonkbuk Uni, South Korea

2. Dr. Asim Mushtaq
   B.E. (Chemical Engg.) NED; M.E. (Env. Engg.) NED;
   Ph.D. (Chemical Engg) Universiti Teknologi PETRONAS,
   Malaysia; Mem. PEC, PASSP

Assistant Professors

1. Engr. Raza Muhammad Khan
   B.E. (Polymer Engg) Hamdard University;
   M.Sc. (Advanced Materials Engg); Uni of Bradford UK
   CEng MIMechE

2. Dr. Rafiq Ahmed
   Ph.D. (Polymer Tech.) Eindhoven University
   of Technology, The Netherlands

3. Dr. Junaid Akhlas
   Ph.D(Chemical) University of Padua, Italy

4. Engr. Nadia Khan
   B.E.(Chemical) NED; M.E. (Chemical) NED

In addition to the regular faculty members qualified personnel from other departments of NED UET, industry and R & D organizations in the city are also engaged for post-graduate teaching.

Applications in response to the advertisement for Masters of Engineering (Polymer) programme should be duly completed and submitted personally or by registered post to:

The Chairperson
Department of Polymer & Petrochemical Engineering
NED University of Engineering & Technology, Karachi-75270, Pakistan
Ph. No.: 021-99261261-8   Ext. 2404
Fax No.: 021-99261255
Email: cpp@neduet.edu.pk
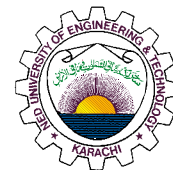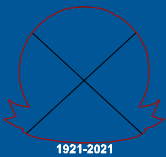
3.16 DEPARTMENT OF ENVIRONMENTAL ENGINEERING

Established as the Institute of Environmental Engineering and Research thirty three years ago to cater for the national need of professional training in environmental assessment and improvement at postgraduate level, the Department of Environmental Engineering has been effectively contributing in academics, research, training, and community based activities since its inception.

The Department administers postgraduate programme leading to the degrees of Masters of Engineering (Environmental) and Master of Engineering Management (MEM) in Environmental Management. The programme is conducted both in morning and evening times and also a weekend programme has started from Fall Semester 2015. The degree programme is structured so as to deepen and broaden the student's knowledge in the field of Environmental Engineering. The Department of Environmental Engineering has the honour to start the master programme for the first time in Environmental Engineering in Pakistan and also has the honour to be one of the first departments of NED University to successfully offer Masters of Engineering programme in the morning. Though the Department is not administering any undergraduate level programme, it is providing all necessary support to its sister engineering disciplines in assessing, designing, and synthesising environmental impacts of engineering developments through class room training and laboratory practices.

Emphasis of the postgraduate programme is to equip students and practicing professional with advanced knowledge, information and data base so that they can cope with ever increasing environmental degradation of the country in general and of the city in particular. During these studies a student completes a number of courses in water, air, noise, and land pollution, industrial and municipal solid waste management, EIA, water quality management, marine pollution, sustainable development and other major and minor topics related to environment. Course work is supplemented with field investigation, seminars, and guest lectures to enable students to broaden their understanding of issues and remedies related to environment.

The students graduated with Environmental Engineering degree from the Department are actively participating in the development works at regional, national and international levels. They are holding key positions in public and private sectors in Pakistan and abroad utilising the knowledge gained during their studies in the Department.

The Department is also offering the postgraduate degree programme in Master of Engineering Management (MEM) in Environmental Management. The programme is conducted in morning, evening and on weekends. Some of the broad objectives of the programme are to equip students and future Environmental Managers with the ability to clearly understand and interact in Engineering as well as Management related activities and roles in Environmental Studies.

The Department is actively participating in community-based activities working together with Sindh EPA, NGOs, City District Government and other relevant organizations in different development works aimed at restoring and improving public sector services and infrastructures. In future also, the Department intends and plans to work in the advisory capacity for agencies responsible for environmental management of urban areas as well as the natural resources.

3.16.1 Departmental Facilities

The Department maintains Environmental Engineering Laboratories having adequate facilities to carry out essential environmental analysis and monitoring. These include air quality / emission monitoring, water chemistry analysis, water pollution and water quality monitoring and process design studies. A computer Lab for postgraduate students provides access to professional software in Environmental Engineering, internet surfing and retrieving data from other resources outside University. Department library contains selected books on various related topics, database, case studies and research documents of national interest for ready reference during course of studies.

Research Fields

The current fields of research encompass low-cost water and wastewater treatment, bio energy production from sustainable anaerobic digestion and bio diesel. Independent research projects in the fields described above are being carried out under supervision of foreign qualified faculty members. Moreover, the department is also working on industry based problems and is in the process of establishing research collaborations with world class International Universities.

3.16.2 Principal Faculty for the Programme

Chairperson

Dr. Atif Mustafa

Professor

Prof. Dr. Asif Ahmed Shaikh
B.E. (Civil) NED University;
M. Engg. (Civil) Nagasaki University, Japan.
Ph.D. (Civil/Environmental Engineering) Nagasaki University, Japan.

Associate Professors

1. Dr. Atif Mustafa
    B.E. (Civil) NED University;
    M. Engg. (Environmental Engineering) NED University.
    Ph.D. (Environmental Engineering) University of Edinburgh, U.K.

2. Dr. Mehmood Ali
    B.E. (Mechanical) NED University;
    M. Engg. (Environmental Engineering) NED UET.
    Ph.D. (Mechanical Engineering) Uni of Glasgow UK

3. Dr. Sadia Khan
    M.Sc. (Microbiology) University of Karachi.
    M. Phil (Molecular Medicine) University of Karachi.
    Ph.D. (Civil & Environmental Engineering) University of Strathclyde Glasgow, U.K.

Assistant Professors

1. Dr. Zuhaib Siddiqui *(On Ex-Pakistan Leave)*
    B.E. (Civil) MUET, Jamshoro;
    M.E (Environmental Engg. & Management) Thailand.
    Ph.D. (Waste/Industrial Waste Treatment) University of Leeds, U.K.

2. Dr. Abdul Ghaffar
    B.S. (Microbiology) Sindh University.
    MEM (Environmental Management) NED University.
    Ph.D. (Environmental Science & Engineering) Tsinghua University, China

In addition to regular faculty members, qualified professionals from other Departments and institutions of Karachi may be engaged for post-graduate teaching.

Applications in response to advertisement for Master of Engineering (Environmental) and Master of Engineering Management (MEM) Programme in Environmental Management shall be duly completed and submitted, personally or by registered post to:

The Chairperson
Department of Environmental Engineering
NED University of Engineering & Technology
University Road, Karachi-75270, Pakistan
Ph. No.   +92-21-99261261-8   Ext. 2211
Fax No.   +92-21-99261255
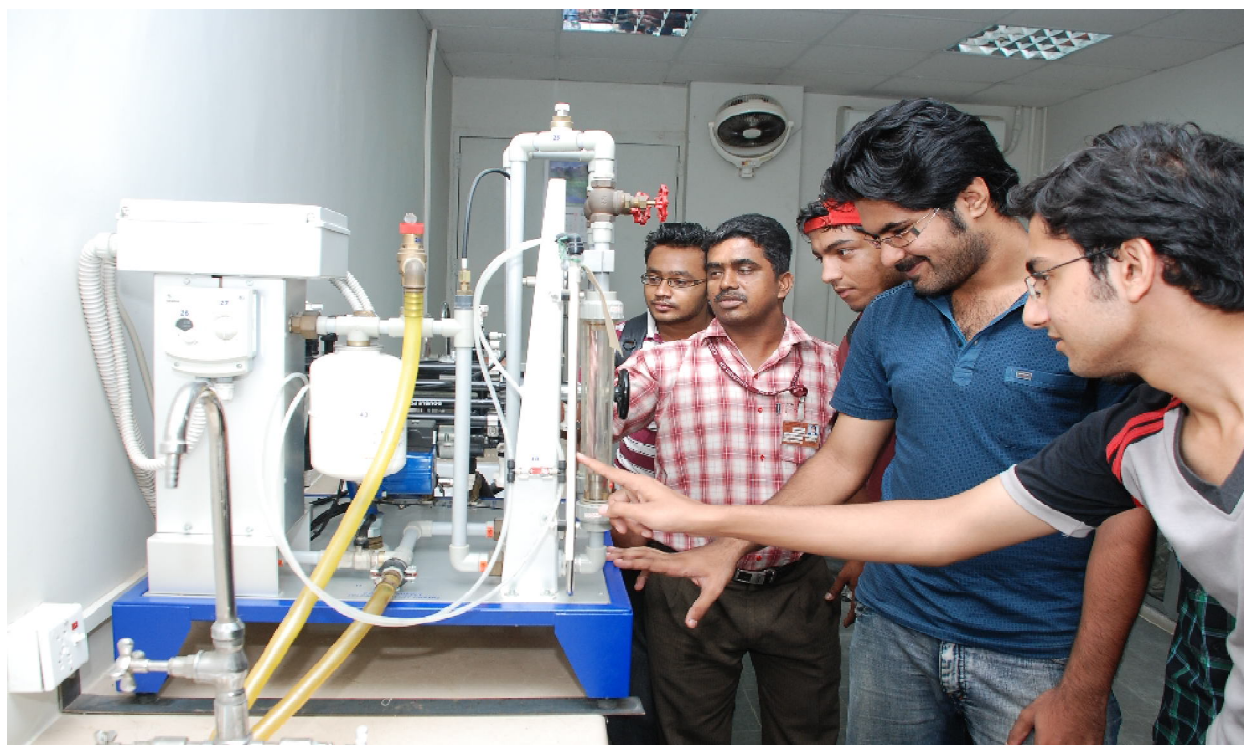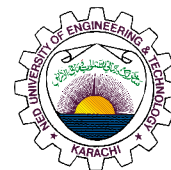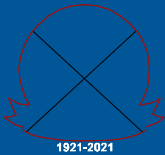
3.17 DEPARTMENT OF ARCHITECTURE AND PLANNING

The NED University has remained the foremost institution in professional education in engineering and related disciplines. In its working, the university had developed a regulatory, academic and administrative framework for architecture and planning education which today provides a useful opportunity for appropriate education in these disciplines. The working strength of architects is much less than what is practically needed. Given the vast professional sphere in which the architects operate, the numerical strength is simply minimal. A technically sound and socially responsive breed of architects and planners need to be produced to fill this widening gap. Architecture and Planning Department at NED University has been attempting to address these and serveral other related challenges in the professional domain.

The creation of a Department of Architecture and Planning has been a part and parcel of NED's Master Plan. The present resources, facilities, spaces and technological backup are ample and adequate to support this purpose. Besides, the presence of various disciplines at the university act as a supportive factor for the Architecture Department. Ever since its creation in 2000, the Department has undertaken numerous research and outreach activities. The Journal of Research in Architecture and Planning, launched in 2001, has now been regularly published on bi-annual basis. The department was a collaborative partner with four international universities from Europe and South Asia in the European Commission funded Asia-Link and Asia-Urbs Programmes between 2004 and 2007. This linkage produced several research outputs in the field of urban design. Besides, the Department is the Secretariat of International Council of Monuments and Sites (ICOMOS). The Department collaborated with the United Nations Centre for Human Settlements (UN-HABITAT) for preparation of City profiles and plans of Larkana, Kech-Turbat, Sialkot, Gilgit, Mingora, Mansehra, Landi Kotal and Muzzaffarabad (in Azad Jammu and Kashmir) in 2011-12. The department collaborated with Internatinal Institute of Enviroment and Development (IIED) to undertake Karachi Land Study published as a monograph in 2013.

The Department has been conducting a Master of Urban and Regional Planning Programme since 2002. This programme was launched with the active assistance from University of Western Sydney, Australia. A significant need, was also found for the initiation of Master of Architecture Programme due to diversifying job market, enhanced demand of specialised capacity in the domains of theoretical and applicational spheres and development of teaching faculty in architectural theory and design pedagogy. Master of Architecture Programme, initiated in 2009, is aimed at serving a need of the country.

3.17.1 Department Facilities

The Architecture and Planning Department is located at NED City Campus on Maulana Din Muhammad Wafai Road. It possesses adequately equipped computer labs with up-to-date hardware and relevant softwares. The Department also possesses an archive which houses the most recent literature, reading material and audio-visual aids related to architecture and urban and regional planning studies. A reference library is also available for the access of post graduate students to fulfil the need of text books, reference books, periodicals and journals. Due to links and networking of the department, the post graduate students can also obtain useful information material from private institutions such as the Urban Resource Centre.

3.17.2 Number of seats to be offered for Admission to the Programme

Total number of seats to the maximum of 25 each shall be offered by the Department for each programme. The admission to Master of Urban and Regional Planning shall be open to degree holders in the disciplines of Architecture, Urban Planning, Urban or Civil Engineering, however the maximum number of admissions to be offered shall not exceed a total of 10 per discipline. Candidates possessing M.Sc. in Geography and MA in Geography (with Mathematics background at undergraduate level) are also eligible to apply they will however, be required to take at least Two Non-Credit Courses. For Master of Architecture Programme, candidates should possess a Bachelor of Architecture or equivalent degree.
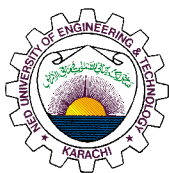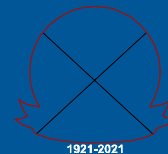
3.17.3   Principal Faculty for the Programme

Chairperson

Prof. Dr. Anila Naeem

Professors

1. Prof. Dr. Noman Ahmed
   B. Arch; M.C.P.;(METU, Turkey);
   Ph.D. (UK);MPCATP

2. Prof. Dr. Anila Naeem
   B. Arch; M.S. in Restoration Historic Preservation (METU, Turkey);
   Ph.D. (UK); MPCATP

Associate Professors

Ms. Fariha Amjad Ubaid
B.Arch; MCPUD (METU, Turkey); MPCATP

Assistant Professors

1. Ms. Fahmida Bano Sheikh
   B.Arch; MURP; MPCATP

2. Mr. Ravindar Kumar Ravi
   B.Arch; MUD.; MPCATP

3. Mr. Salman Manzoor Hasan
   B.Arch; M.Arch; MPCATP

4. Dr. Masooma Mohib Shakir
   B.Arch; M.Arch (KU-Leuven,Belgium); MPCATP
   Ph.D. (Germany)

5. Dr. Suneela Ahmed
   B.Arch; MUM (Canbura, Australia); Ph.D.(UK); MPCATP

6. Ms. Saadia Bano
   B.Arch; MEM; MPCATP

7. Dr. Saeed Ud Din Ahmed
   B.Arch; MURP; Ph.D. (UK); MPCATP

8. Ms. Rabela Junejo *(On study leave)*
   B.Arch; M.S. (History of Architecture) METU, Turkey;
   MPCATP

9. Ms. Farida Abdul Ghaffar
   B.Arch; MURP; MPCATP

10. Ms. Sarah Ather Khan
    B.Arch; MURP; MPCATP

In addition to regular faculty members, qualified personnel in the city are engaged for postgraduate teaching.

Applications in response to advertisement for Master of Architecture Programme and Master of Urban and Regional Planning Programme shall be duly completed and submitted, personally or by registered post to:

The Chairperson
Department of Architecture and Planning
NED University of Engineering & Technology
(City Campus)
Maulana Din Mohammad Wafai Road
Karachi-74200, Pakistan.
Ph. No: +92-21-99213058
**   +92-21-32620793**
Fax No: +92-21-99213058
E-mail: crd@neduet.edu.pk
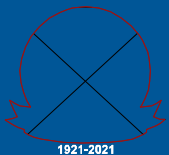
3.18 DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

NED University, responding to the growing demand of computer professionals, introduced in 1985 a postgraduate programme leading to the degree of M.Sc. in Computer Science under the Department of Mathematics & Basic Sciences. Furthermore, to address the rapidly evolving technology and human resource requirements, a four-year Bachelor of Computer Science & Information Technology (BCIT) programme was also introduced in 1998. Realizing the importance of advancement in Computer Science and Information Technology and to meet the requirement of the fast-growing field, the Department of Mathematics & Basic Sciences was bifurcated in 2002 and a separate department, the Department of Computer Science & Information Technology (CS & IT) was established.

The first batch of BCIT programme passed out in 2003. Our graduates are well perceived and sought after by the industry where they have been successful in securing suitable positions. Good numbers have obtained admission in Master's programmes in foreign universities. The demand for Computer Science graduates in the flourishing IT industry continues to multiply, providing excellent prospects for those with high quality skillsets. To augment this academic level and to improve the quality of IT skills, the postgraduate programme Master of Computer Science and Information Technology (MCIT) was initiated in 2003 by CS & IT department.

The MCIT programme covers the state-of-the-art technology in Computing and IT Industries, the strong computing and software engineering foundations of the discipline and the ability to contribute in large software engineering projects. It is designed to meet the needs of students who want to improve core computing skills, or who are working IT professionals and want to strengthen their computing foundations with a view towards new and emerging technologies. In 2014, the MCIT programme was renamed as MS (CSIT) for batches 2014 and onwards. Additionally, a new specialization stream was initiated in the MS programme, thus two specialization streams are offered; Computer Science and Information Technology i.e. MS (CSIT), and Information Security i.e. MS (IS).

The MS (IS) specialization stream was conceived as a result of rapidly increasing challenges to the security of national information systems and frequently occurring incidents of cybercrimes in national and international horizon. To meet these challenges there is a severe shortage of Information Security specialists in the country. Commenced from Fall-2014 semester, the MS (IS) stream enables students to attain in-depth knowledge of system and managerial aspects of information security, so that they can actively contribute to the prevention of IT infrastructures from latest security threats, and the development of secured systems.

Realizing the growing demand of data scientists in the global IT industry a new specialization stream MS (Data Science) – MS (DS) has been launched under the CS & IT department from Fall-2019 semester. This new programme equips students to transform data into actionable insights that enable one to make complex business decisions, process large and complex data sets through computational, statistical and machine learning techniques. This program provides exposure to the latest trends and technologies in data science and thus producing the manpower to fuel national and international emerging market of data science products.

All three specializations are offered both as evening and weekend programmes.

3.18.1 Departmental Facilities

The Department has the following physical resources:

Infrastructure:

The Department is housed in three blocks:
1. Chairman and Faculty Offices
2. Lecture rooms
3. Laboratories

Computing Facilities:

The Department currently possesses six spacious computer laboratories, equipped with latest state of the art resources which are constantly upgraded with evolving trends and emerging technologies as needed.
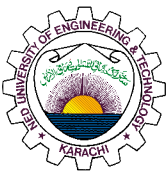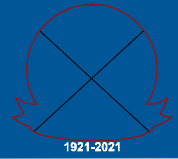
Computer laboratories are equipped with the following:

1. Fujitsu/Siemens TX300 Servers with adequate software and accessories.
2. SUN Enterprise 250 Server with adequate accessories and software.
3. Windows 2012 Servers with Share point Services.
4. Apple Core2 Duo iMac Computers with latest graphics software.
5. Intel Core i5/i7 Computers.
6. High speed Laser Printers and Scanner.
7. Multimedia/Overhead Projectors and other audio visual facilities.
8. CISCO Laboratory with varied routers, switches, PIX firewall, ISDN Simulators and related software.
9. HUAWEI Networking Lab equipment with latest routers and switches.
10. High speed wired/wireless LAN connectivity.
11. High speed Internet facility.

3.18.2 Number of seats and eligibility requirement

For admission in Master's programme there are (30) seats available in each specialization i.e. MS (CSIT), MS (IS) and MS (DS).

For admission in MS (CSIT) and MS (IS) candidates must have HEC recognized degree with First division or CGPA 2.4 / 4.0 in any of the following:

a) BS (CSIT) or equivalent
b) Any Engineering/ Architecture degree or equivalent
c) BS Electronics / Telecommunications / Software Engineering
d) M.Sc / BS Applied Mathematics/ Applied Physics/Statistics

For admission in MS (DS) students having a degree of BS (CS) or equivalent as per HEC curriculum or 16 years of education in the domains of Information Technology, Software Engineering, Computer Engineering, Electrical Engineering, Statistics, or Mathematics and other relevant disciplines with at least First Division or 2.4 / 4.0 CGPA are eligible to apply, provided they take deficiency courses where applicable.

Admission in MS (IS) and MS (DS) will be on open merit policy for all eligible candidates without any specific quota. However, for MS (CSIT) available seats are distributed under the following categories:

a) BS (CSIT), four (04) years programme from NED University of Engineering and Technology or an equivalent qualification. **(20) Seats**
b) All eligible degrees other than BS (CSIT) or equivalent. **(10) Seats**

Note: Seats not filled shall be transferred to the Graduates of Computer Science & Information Technology, i.e. Category (a).

3.18.3 Principal Faculty for the Programme

Chairperson

Prof. Dr. Najmi Ghani Haider

Professors

Prof. Dr. Najmi Ghani Haider
B.Sc. (Hons) Electronic Engineering (Hull, UK); Ph.D. (Brunel, UK)

Associate Professors

1. Dr. Sh. Muhammad Wahabuddin Usmani
*Diploma (Computer Science) SBTE;
BE (Electronics); MSc (Comp. Sc.);
PhD (Computer Science) NED*

2. Dr. Najeed Ahmed Khan
*MSc (Maths,) (Gold Medal);
MSc (Computer Science); Ph.D. (Leeds, UK)*

3. Dr. Muhammad Mubashir Khan
*MSc (Telecom), Sindh; MCIT (by Research) NED
Ph.D. (Leeds, UK)*

4. Dr. Saman Hina
*BS (Comp. Sc.), SSUET; MCIT (NED)
Ph.D. (Leeds, UK)*

5. Dr. Shariq Mahmood Khan
BCIT (NED); MCIT (NED); Ph.D. (Brunel, UK)

6. Dr. Shehnila Zardari
*BE (Software); MUET Jamshoro
ME (Communication Systems & Network) MUET
Ph.D. (Birmingham) UK*
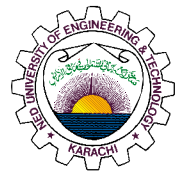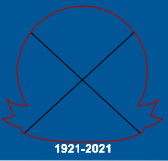
7. Dr. Raheela Asif
   BE (Comp & Info. Sys), NED; MCIT (NED);
   MS (Software Engineering) SSUET;
   Ph.D. (Computer Science) NED

Assistant Professors

1. Dr. Kashif Mehboob Khan.
   BS (Computer Engineering) SSUET
   MCIT (NED); Ph.D (Computer Science) NED

2. Dr. Maria Andaleeb Siddiqui
   BE (Telecom, NED)
   ME (Computer Networks and Performance Evaluation)
   Ph.D (Computer Science) NED

3. Dr. Waseemullah
   BCIT (NED); MCIT (NED)
   Ph.D (Computer Science) NED

4. Dr. Umer Farooq
   BCIT (NED); MCIT (NED)
   Ph.D (Computer Science) NED

5. Engr. Muhammad Faraz Hyder
   BE (CIS, NED)
   ME (CSE) NED, ME(Telecom Engg) NED
   PhD (In Progress) NED

In addition to regular faculty members, qualified and experienced personnel in other departments of NED University of Engineering and Technology, and in the city may be engaged for graduate teaching.

Applications in response to advertisement for all three specializations shall be duly completed and submitted, in person or by registered post, to:

The Chairperson
Department of Computer Science & Information Technology
NED University of Engineering & Technology
Karachi 75270, Pakistan
Phone No.92-21-99261261-8 Ext: 2399
Fax No. 92-21-99261255
E-mail: chaircsit@neduet.edu.pk
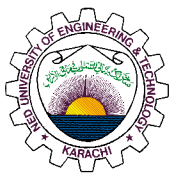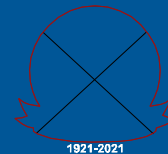
3.19 DEPARTMENT OF MATHEMATICS

The Department of Mathematics & Sciences was established along with the engineering departments at NED University. In 2010 an independent Department of Mathematics was established to cater the requirements of Mathematics in all the disciplines being taught at the University, and furthermore, to initiate its own degree programme. In July 2011 the Department has launched a Master's degree programme in Applied Mathematics with the objective of imparting strong knowledge by utilising both analytical and software tools for mathematical applications in different professions.

Realising the requirements of educational and professional institutions / organisations, mathematician with computing skills would be an attractive proposition to potential employers. The structure of the programme has been designed in a manner that the applicants have the option to completing this programme through course work only / course work and an individual study project / course work with dissertation.

The MS in Applied Mathematics is an evening / weekend programme beneficial to both engineering and science graduates. The motivation in initiating the programme is to encourage multi-disciplinary research by offering opportunities for higher studies to fresh graduates as well as experienced graduates employed in industry and other professional sectors, and to provide a route towards a Ph.D degree to those desiring to do so.

3.19.1 Principal Faculty for the Programme

Chairperson

Prof. Dr. Mirza Mahmood Baig

Professor

Prof. Dr. Mirza Mahmood Baig
M.Sc. (Mathematics) (UoK); MS (Comp Sc.) NEDUET; Ph.D (Comp Sc.) NED

Assistant Professors

1. Mr. Umar Faryaz
   B.Sc. (Hons) UoK; M.Sc.(Mathematics)UoK; MS (Comp Sc.) NED

2. Mr. Javed Ahmed Siddiqui
   B.Sc. (Hons) (UoK); M.Sc. (Mathematics) (UoK)

3. Dr. Mushtaque Hussain
   M.Sc. (Mathematics) (QAU Islamabad); PGD (Comp Sc.) (UoK) Ph.D. (Linkoping University, Sweden)

4. Mrs. Razia Shaheen
   B.Sc. (Hons) UoK; M.Sc. (Mathematics) UoK; M Phil UoK

5. Dr. Muhammad Jamil
   B.Sc. (Hons) UoK; M.Sc. (Mathematics) UoK; M.Phil (Mathematics) UoK; Ph.D. (Mathematics) G.C. Uni Lahore

6. Dr. Fareed Ahmad
   B.Sc.(Hons) UoK; M.Sc. (Mathematics) UoK; MS(Comp Sc.) NED; Ph.D. (Comp. Sc) NED

7. Dr. Azam Khan
   M.Sc. (Mathematics) UoK; Ph.D. (Linkoping Uni, Sweden)

8. Mrs. Shumaila Usman
   B.Sc.(Hons) UoK; M.Sc. (Statistics) UoK; MCIT (NED)

9. Dr. Fahim Raees
   B.Sc. (Hons) UoK; M.Sc. (Mathematics) UoK Ph.D. (Computational Fluid Dynamics) TU Delft, The Netherlands

10. Dr. Kamran Zakaria
    M.Sc. (IBM) UoK; (DAE CS); (DAE Java program) Ph.D. (Mathematics) FUUAST

11. Dr. Faqiha Sultan
    B.Sc. (Hons) UoK; M.Sc.(Applied Mathematics) UoK; Ph.D. (Mathematics) UoK

12. Mr. Zakir Hussain Khan
    B.Sc. (Hons) UoK; M.Sc. (Statistics) UoK MS. (Applied Mathematics) NED

13. Syed Tauqeer Ahmed Hashmi
    B.Sc. (Hons) UoK; M.Sc. (Statistics) UoK MS (Applied Mathematics) NED

14. Mr. Sohail Ahmed
    B.Sc. (Hons) UoK; M.Sc. (Statistics) UoK MS. (Applied Mathematics) NED

15. Dr. Saima Gul
    M.Sc. (Mathematics) UoK; Ph.D. (Matheamtics) Massey University Newzealand

16. Dr. Muhammad Yousuf Tufail
    B.Sc. (Hons) (Mathematics) UoK; M.Sc. (Mathematics) UoK Ph.D. (Mathematics) Massey University Newzealand

In addition to regular faculty members qualified personnel in other departments and in the city may be engaged for graduate teaching.

Applications in response to advertisement for MS in Applied Mathematics shall be duly completed and submitted, personally or be registered post to:

The Chairperson
Department of Mathematics
NED University of Engineering & Technology
Karachi 75270, Pakistan
Phone No. +92-21-99261261-8 Ext:2609
Fax No. +92-21-99261255
E-mail: cdm@neduet.edu.pk
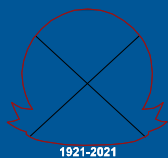
3.20 DEPARTMENT OF PHYSICS

The Department of Physics was established as an independent department in 2010. Initially it was serving as a supporting department which offered both theoretical and practical courses in Physics to undergraduate level of engineering students. Physics is an exciting subject which aims to explain how things work from the smallest to the largest of scales, from nanotechnology to the universe itself. The tremendous growth in science and technology in the last few decades is in one way or the other, related to or based on fundamental principles of Physics. Physics has been essential in the development of technologies such as the microchip, information technology, data storage, fibre-optic communication, satellite navigation and mobile phones which are transforming the infrastructure of society. As a result, modern industry has been transformed by development in computation, robotics, automation, instrumentation and miniaturization. Indeed, there are entire industries which have grown out of development in specific areas of physics such as semiconductor device physics, optics, laser physics and medical physics.

In addition to its importance to technology and industry, physics plays a fundamental role in shaping the attitude and behaviour of society. Realising the importance of Physics in the development of new technologies, MS Progamme in Physics was launched in 2012. The purpose of this programme is to produce scientifically and technologically motivated graduates (a) to promote interdisciplinary research among the students and the faculty and (b) to enhance their employability in industry and other related fields. The structure of the programme has been designed in such a manner that research-orientated graduates can undertake research projects. The MS in Physics is an evening programme for which the engineering and science graduates, having completed sixteen years of education are eligible. An intensive course on Experiments in Advanced Physics would be a novel feature of this programme enabling the students to get hands on experience in using standard laboratory instruments/techniques. It is aimed that graduates of this programme will be able to get jobs in science and related industries.

3.20.1 Departmental Facilities

The department of physics have three well established laboratories with following facilities:
1. Fourier-Transform Infrared Spectroscopy (FTIR) (NICOLET IS50)
2. Weather Station Data Logger
3. XRD Unit Phywe 4.0
4. He-Ne Laser based setup
5. Spectrophotometer
6. Vacuum System
7. Falling Ball Viscometer
8. Hall Effect Apparatus for Semiconductors
9. Ultrasonic Bath
10. Hot Plate with Magnetic Stirrer
11. Precession Michelson Interferometer

3.20.2 Research Fields:

Students of MS in Physics are doing research in the following field:

1. Material Science
2. Space Physics
3. Quantum Computing
4. Medical Physics
   NOTE: In addition to above the department is open to collaborate with Scientific, Industrial Organizations.

3.20.3 Principal Faculty for the Programme:

Chairperson

Dr. Irfan Ahmed

Associate Professor

Dr. Irfan Ahmed
B.E.(Electrical) NED; M.Engg (Electrical) NED; Ph.D. (Electrical) Michigan Tech., USA

Assistant Professors

1. Mr. Tahir Jamal
   B.Sc. (Hons) UoK; M.Sc. (Phy) UoK; M.Phil. (Phy) FUUAST;

2. Dr. Iqbal Tariq
   B.Sc. (Hons) UoK; M.Sc. (Phy) UoK; Medical Physics (P.A.E.C. and D.N.S.R.P); Ph.D. (Medical Phy / Radiation Phy)

3. Ms. Saba Javaid
   B.Sc. (Hons) UoK; M.Sc. (Phy) UoK; MS UoK; Ph.D. (In Progress)

4. Ms. Roohi Zafar
   B.Sc. (Hons) UoK; M.Sc. (Phy) UoK; MS UoK; Ph.D. (In Progress)

5. Mr. Junaid Karim Khan
   B.Sc UoK; M.Sc. (Applied Physics) UoK; M.Phill (Renewable Energy) UoK; Ph.D. (In Progress)

6. Ms. Hira Ashfaq Lodhi
   M.Sc. (Applied Physics) UoK; MS (Applied Mathematics) NED; Ph.D. (In Progress)

7. Dr. Uzair Majeed
   Ph.D.. (Material Physics);

In addition to the regular faculty members, qualified prosonnels from the other departments in the university, as well as professionals working in the city may be engaged for graduate teaching.

Applications in response to advertisement for MS in Physics shall be duly completed and submitted, personally or by registered post to:

The Chairperson
Department of Physics
NED University of Engineering & Technology
University Road, Karachi - 75270, Pakistan
Ph.: (92-21) 99261261-8
Fax : (92-21) 99261255
Email : chairmbs@neduet.edu.pk
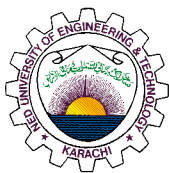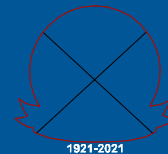
3.21   DEPARTMENT OF CHEMISTRY

Introduction

The Department of Chemistry has been established as an independent full-fledge department from Department of Mathematics and Basic Sciences in 2010. Since its establishment as an indep endent department, it was felt that it is the right moment to start the MS programme in Industrial Chemistry.

Chemistry is very important in modern science and technology and essential for the material progress of the world. Chemistry products are used in one form or another in practically every other industry before eventually emerging as part of our daily lives. After realizing the vital role of chemistry as an applied science in diverse areas that influence human society, the department is now offering a MS degree programme in Industrial Chemistry. Industrial chemistry focuses on the development, optimization and monitoring of fundamental chemical processes used in industry for transforming raw materials and precursors into useful commercial products for society.

MS programme is designed to fill the gap between academic studies and expectations of industry. Graduates of this programme would be able to conduct qualitative and quantitative chemical analysis after having sound knowledge of modern instrumental techniques for quality and/or process control. The theoretical aspects of the programme ensure a strong grounding in the different areas of chemistry.

The "MS in Industrial Chemistry" is a five semester evening programme encompassing the engineering and science graduates, having completed sixteen years of education. The graduates are likely to join the respective industries both locally and abroad. They will be finding employment in manufacturing and processing industries, as well as in industries related to paint, chemical, pharmaceuticals and agrochemicals. Education and research would also be open to them if they preferred employment in these professions. The graduate of this programme will also be able to persue higher studies if they desire to do so.

3.21.1   Departmental Facilities

Department of Chemistry is a newly established Department. It is housed in two buildings.
- Chairman Office
- Laboratories

Department has three chemistry laboratories well equipped with all necessary practical facilities. Extensive computing facilities may also be accessible to the students.

3.21.2 Principal Faculty for the Programme

Chairperson

Dr. Nuzhat Arshad

Associate Professor

1.   Dr. Nuzhat Arshad
B.Sc. UoK; M.Sc (Chem) UoK;
Ph.D (Chemistry), Karl-Franzens University of Graz. Austria;

2.   Dr. Kashif Ahmed
M.Sc. (Chemistry) UoS; Ph.D. (FUUAST)

3.   Dr. Amtul Qayoom
M.Sc. (Chemistry) UoS; Ph.D UoK;

4.   Dr. Saeeda Nadir Ali
M.Sc. (Chemistry) UoK; Ph.D (Chemistry) UoK;

Assistant Professors

1.   Syed Ghazanfar Hussain
M.Sc.(Physical Chemistry) UoK;
M.Phil; Ph.D. (In Progress)

2.   Mr. Muhammad Ansar Khan
B.Sc. (Hons.); M.S. (Applied Chemistry) UoK;
M.E. (Chemical) USA

3.   Dr. Anjum Ayub
Ph.D. (Chemistry) UoK; M.Sc. (Analytical Chemistry) Uok;
B.Sc. (Hons.) UoK; M.E. (Chemical) USA

4.   Dr. Shazia Perveen
Ph.D. (Chemistry) UoK;
M.Sc. (Analytical Chemistry) Uok; B.Sc. (Hons.) UoK

5.   Dr. Rafia Usman
Ph.D. (Chemistry) Kagoshima University;
M.S. (Chemistry) Murray State University, KY, USA;
M.Sc. (Applied Chemistry) UoK; B.Sc. (Hons.) UoK

6.   Dr. Syed Farhan Hasany
Ph.D. (Chemistry Engineering) University of Malaysia;
M.Sc. (Chemistry) UoK

In addition to the regular faculty members, qualified personnels from other departments in the university, as well as professionals working in the related industries may be engaged for graduate teaching.

Applications in response to advertisement for MS in Industrial Chemistry shall be duly completed and submitted, personally or by registered post to:

The Chairperson
Department of Chemistry
NED University of Engineering & Technology
University Road, Karachi - 75270, Pakistan
Ph: (92-21) 99261261-8
Fax :   (92-21) 99261255
Email :   chairmbs@neduet.edu.pk
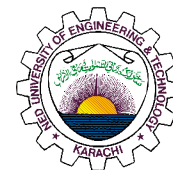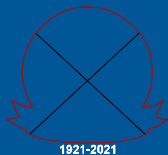
3.22   DEPARTMENT OF HUMANITIES

The Department of Humanities at NED University was established in 1977. It has expanded remarkably over the last thirty eight years in terms of faculty, scope of subjects, courses, and the academic and professional activities – *a sign of a vibrant academic culture prevailing at the department because of a dynamic professional community of teachers and researchers.*

3.22.1   Departmental Facilities

The department in 2013 initiated master's programme in Applied Linguistics fulfilling a gap of a professional degree programme in the discipline and in 2015 and 2016 launched bachelor's and doctoral programmes respective in English Linguistics and Applied Linguistics respectively to complete the academic progression and continuity essential for students and faculty to contribute towards the outcomes related with the disciplinary education, training and research.

The department offers undergraduate courses in all engineering and information technology, basic sciences, management and social sciences, development studies, and architecture programmes. These courses are related to diverse subject areas including: English Language, Academic Reading and Writing, Communication Skills, Islamic Studies, Ethical Behaviour, Pakistan Studies, Sociology, anthropology, Business and organizational Communication, Organizational Behaviour, Entrepreneurship, Logic and Critical Thinking, and Engineering and Professional Ethics, Foreign languages (*Arabic, German, French, Chinese*) and Community Service. Besides the core academic support, the Department offers a vast range of short courses and certifications for students and faculty such as: Foreign Languages Programme in Arabic, French and German, GRE & IELTS Preparatory Classes, Modular Courses in English Oral Proficiency. These courses are conducted directly and in certain cases in collaboration with renowned organizations.

MS in Applied Linguistics Programme

The department has been successfully running MS Applied Linguistics programme since 2014 and is also accorded NOC by Higher Education Commission from the first batch inducted then. The programme was conceived and launched considering the serious shortage of qualified and competent English Language Teachers (ELTs) and language and applied linguistics professionals needed in variegated academic, career and societal domains. The Department has strategically developed the expertise and the resources essential for initiating and sustaining academic, professional and research related education, and training. The programme blends in theoretical concepts with activities planned around experiential learning approach vital for inducing quality in the applied linguistics programme.

The department has an active applied linguistics research group that is consistently producing contextualized empirical research related with English Language. This has ultimately helped the department and the core language faculty in creating a distinct niche in the Applied Linguistics and English Language community. Through active professional networks with individuals and organizations, the department is collaborating on mutually beneficial projects and strengthening its outreach. The Research Special Interest Group of SPELT is primarily one such initiative where the faculty within the department is playing a key role.

MS Programme Details

MS Applied Linguistics Programme is in line with HEC criteria for admission and award of degree and was accorded NOC from the first batch / first semester 2014.

MSAL is an Afternoon Programme. The programme is structured around 30 credits to be completed through courses (24 credits) and research (6 credits thesis) and one non-credit course in minimum five semesters.

Eligibility Criteria for Seeking Admission

The candidate should possess 16 years education in English in the relevant area or equivalent in the relevant fields with second division and above in annual system of education / minimum 2.4/4.0 CGPA in semester system education.
- Candidates with BS English 4 years
- Candidates with MA English (Language/Linguistics)
- Candidates with MA English (Literature & Linguistics) *
- Candidates with MA (Literature)*

*candidates are required to complete Customised Courses. This requirement is not to complete certain number of credit hours for 16 years education rather it is to ensure their background knowledge in theoretical linguistics which may vary across programmes offered at different universities.

3.22.2 Research Fields

The current fields of research encompass Second Language Teaching & Learning, Teaching English as a Lingua Franca, EAP, ESP, Writing Instruction and Evaluation, Teacher Cognition, Genre Analysis, Language Pedagogy, Needs and situation Analysis, Language Anxiety, CALL, Curriculum and syllabus designing, Materials Writing, Language Testing and Evaluation, Language Teacher Education, Multilingualism, Code-switching, Language Identity, Language Contact, World Englishes, Language variation, Corpus and Computational approaches to language analysis and description, Critical Discourse Analysis, Pragmatics, Language Policy, Teacher and Learners' personality traits and language teaching-learning.

3.22.3 Principal Faculty for the Programme

Chairperson

Prof. Dr. Sajida Zaki

Professor

Prof. Dr. Sajida Zaki
M.A. English (Linguistics), KU, Karachi;
Ph.D. (Applied Linguistics), HU, Karachi

Associate Professor

1.   Dr. Abdul Hai Madni
       M.A. (Islamic Studies) KU;
       M.A. (Islamic Studies) Medina Uni, K.S.A.;
       M.A. (Islamic Studies) Wifaq ul Madaris;
       L.L.B. KU; Fazail-e-Arabi KU; Ph.D. (Islamic Studies) I.U.B;
       Islamic Jurisprudence Course, I.I.U. Islamabad

2.   Dr. Farooq Hassan
       M.A. (Islamic Studies) KU; L.L.B. Karachi;
       Advanced Islamic Studies Course, Al-Azhar Uni, Egypt;
       Ph. D. (Islamic Studies) KU
       Post-Doc (Fulbright), Georgetown University, USA

Assistant Professors

1.   Mr. Muhammad Ghaus Ali
       M.A. (Pak. Studies) KU

2.   Ms. Farzana Shakoor
       M.A. (Pak. Studies) KU; MS (Pak. Studies) KU

3.   Dr. Muhammad Bilal Usmani
       M.A. (Islamic Studies), KU;
       Ph.D. (Islamic Studies) FUU, Karachi

4.   Dr. Imrana Begum
       B.Ed. HU, Karachi; M.A. (General History), KU;
       M.I.T, Western International Uni, Khi;
       Ph.D. (European Studies) KU

5.   Dr. Muhammad Fareed
       M.A. Eng.(Literature & Linguistics);
       M. Phil Edu.(English Language Teaching);
       Ph.D. Edu.(English Language Teaching)

6.   Dr. Natasha Memon
       M.A. (English Literature) Sindh Uni;
       M.Sc. (Linguistics & English Languages) Uni of Edinburgh;
       Ph.D. (Linguistics & English Language), Uni of Edinburgh

7.   Ms. Almas Ashraf
       M.A. English (Linguistics) JUW;
       M.S. (Applied Linguistics) NED;

8.   Ms. Rahila Huma Anwar
       M.A. English (Linguistics) KU
       M. Phil (Applied Linguistics), HU, Khi
       Ph.D. (Applied Linguistics), NED (In Progress)

9.   Ms. Hina Manzoor
       M.A. English (Linguistics), KU;
       M.S (Applied Linguistics), KU;
       Ph.D. (Applied Linguistics), SU (In Progress)

10.   Mr. Muhammad Asim Khan
       M.A. Eng. (Literature &Linguistics) KU;
       MS (Applied Linguistics), KU;
       Ph.D. (Applied Linguistics), NED (In Progress)

11.   Dr. Rahat Rizvi
       M.A. (Economics) KU; B.Ed., KU;
       M.A. (Political Sciences) KU;
       M.A. (Islamic Studies), KU;
       M. Phil Edu, (Islamic Studies), Iqra Karachi
       Ph.D. (Islamic Studies), Iqra, Karachi.

Applications in response to advertisement for Master's in Applied Linguistics should be duly completed and submitted personally or by registered post to:

The Chairperson
Department of Humanities
NED University of Engineering & Technology
**University Road, Karachi-75270, Pakistan**
Ph:021-99261261-68 (Ext. 2208)
Fax:021-99261255
Email: chd@neduet.edu.pk
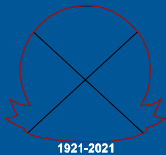
3.23 DEPARTMENT ECONOMICS & MANAGEMENT SCIENCES

MS in Economics and Finance Programme

One of the major issues being faced by the business world is globalization and global competition. Even new challenges due to, globalization have placed additional demands on businesses. In the wake of globalization, economic integration and competition, only those individuals can hold positions of responsibility that have the capacity to analyze complex problems and make intelligent decisions. The MS Economics and Finance program helps students to think logically and improve their ability to use economic and financial concepts to analyze "real world" problems and opportunities. This is a unique program that emphasizes a qualitative and quantitative approach to dealing with economic and financial problems in both the public and private sectors. This program has been designed to meet the desires of a wide range of university graduates who are willing to specialize in economics and finance for practical purposes. The MS Economics and Finance(MSEF) is a comprehensive professional program that can offer rewarding careers in the public and private sector corporations, banks, investment companies, insurance companies, leasing companies, educational and research organizations, etc.

Programme Structure

The candidates will have the following three options to earn MS in Economics and Finance degree:

1) The Candidate has to complete total thirty (30) credit hours for qualifying MS Economics and Finance programme. There will be five (5) compulsory and five (5) elective courses of three (3) credit hours each.

2) The student may also fulfil the requirement of 30 credit hours by completing 24 credits in teaching courses and 6 credit hours through independent study projects (ISP).

3) A student having completed 21 credits [taught courses] and 9 credit hours through dissertation.

Admission Requirements

The candidate should possess 16 years education in the relevant area or equivalent in the relevant field with first division and above or minimum 2.4/4.0 CGPA may apply to this program:

a) Candidates with BS (4 year program) with Economics, Management, Mathematics, Statistics, Commerce or BBA from any university as recognized by the NED University.

b) Candidates with MA/MSc with (Economics, Mathematics, Statistics) /MBA/M.Com/BE from any recognized university may also apply for admission into the program or equivalent from any HEC recognized programme.

3.23.1 Principal Faculty for the MS Economics & Finance Programme

Chairperson

Prof. Dr. Raza Ali Khan

Professor

Prof. Dr. Raza Ali Khan
DAE (Civil) SEZIT; PGD (Public Administration) UoK;
M.A. (International Relations) UoK;
M.A. (Economics) UoK; M.S./M.Phil (Economics) SZABIST;
Ph.D. (Construction Economics Management)
Universiti Teknologi PETRONAS, Malaysia)

Assistant Professor

1. Mirza Faizan Ahmed
MAS (Applied Economics) AERC-UoK;
MBA (Finance) KUBS-UoK;
Ph.D. (Behavioal Economics & Finance) AERC-UoK (In Progress)

2. Dr. Muhammad Shahid Iqbal
PGD (Statistics) UoK; MA (Economics) UoK;
MA (International Relations) UoK;
M.S. / M.Phil (Applied Economics) AERC-UoK;
Ph.D. (Economics) UoK

In addition to regular faculty members professionals from industry are engaged as adjunct and visiting faculty for teaching and research.

Applications in response to advertisement for Master's in Economics & Finance should be duly completed and submitted personally or by registered post to:

The Chairperson
Department of Economics & Management Sciences
NED University of Engineering & Technology
University Road, Karachi-75270, Pakistan
Ph:021-99261261-68 (Ext. 2226)
Fax:021-99261255
Email: ceme@neduet.edu.pk

4.   COURSES OFFERED UNDER THE FACULTIES

4.1   Master Programme in the Faculty of Civil and Petroleum Engineering

4.1.1   M.Engg. in Civil Engineering

(a) Structural Engineering

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CE-501	Advanced Structural Analysis	3	CE-504	Advanced Engineering Mathematics	3
CE-502	Mechanics of Solids	3	CE-511	Structural Dynamics	3
CE-503	Advanced Reinforced Concrete	3			

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CE-505	Prestressed Concrete Design	3	EQ-521	Displacement Based Seismic Design	3
CE-506	Finite Element Method	3	EQ-522	Performance Based Seismic Design	3
CE-507	Advanced Concrete Technology	3	EQ-523	Seismic Design of Steel and Composite Structures	3
CE-508	Computer Methods in Structural Analysis	3	EQ-524	Seismic Design and Assessment of Masonry Structures	3
CE-509	Theory of Plates and Shells	3			
CE-510	Structural Stability	3	EQ-525	Loss Estimation and Hazard Mitigation	3
CE-512	Bridge Analysis and Design	3	EQ-526	Fundamentals of Fire Dynamics	3
CE-513	Seismic Analysis and Design	3	EQ-527	Seismic Vulnerability Assessment of Bridges	3
CE-514	Design of Tall Structures	3	EQ-528	Finite Element Method	3
CE-515	Design of Steel Structures	3	EQ-529	FRP Reinforced Concrete Design	3
CE-516	Repair Maintenance And Strengthening of Reinforced Concrete Structures	3	EQ-530	Fracture Mechanics of Concrete	3
			EQ-531	Structural Fire Engineering	3
CE-517	Performance-based Seismic Design	3	EQ-532	Fire Safety and Management	3
CE-5002	Thesis	6	CE-5022	Forensic Engineering	3

(b) Geo-technical Engineering

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CE-531	Advanced Soil Mechanics	3	CE-534	Soil Investigation & Testing	3
CE-532	Foundation Engineering	3	CE-540	Earth Retaining Structures	3
CE-533	Soil-Foundation Dynamics	3			

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CE-535	Earth Structures	3	CE-541	Computer Applications in Geo-technical Engg	3
CE-536	Soil Stabilisation	3	CE-542	Geoenvironmental Engineering	3
CE-537	Rock Mechanics	3	CE-543	Trasnportation Geotechnics	3
CE-538	Groundwater and Seepage	3	CE-5002	Thesis	6
CE-539	Subsurface Hydrology	3	CE-5022	Forensic Engineering	3

(c) Transportation Engineering

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CE-561	Urban Transportation Planning	3	CE-564	Probability and Statistics	3
CE-562	Geometric Design of Highways	3	CE-569	Pavement Analysis & Design	3
CE-563	Advanced Traffic Engineering and Management	3			

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CE-565	Traffic Flow Theory	3	CE-571	Waterway Transportation	3
CE-566	Highway Materials & Construction	3	CE-572	Transportation Systems Evaluation	3
CE-567	Public Mass Transportation	3	CE-573	Road Maintenance Management System	3
CE-568	Airport Planning & Design	3	CE-575	Railway Track Engineering	3
CE-570	Transportation Economics	3	CE-5002	Thesis	6
			CE-5022	Forensic Engineering	3

(d) Coastal and Water Resources Engineering

Coastal Engineering

Compulsory Courses

Course No.	Course Title	Credit Hrs
CE-521	Introduction to Ocean and Coastal Engg.	3
CE-518	Mathematical Methods for Engineers	3
CE-555	Design of Marine Structures	3
CE-523	Coastal Processes	3
CE-524	Coastal Management	3

Elective Courses

Course No.	Course Title	Credit Hrs
CE-522	Port Planning and Design	3
CE-525	Soil Mechanics in Coastal Engineering	3
CE-551	Marine Geology	3
CE-552	Marine Dredging	3
CE-553	Off-shore Engineering Analysis	3
CE-554	Computational Hydraulics	3
EN-520	Marine Pollution and Control	3
CE-5002	Thesis	6
CE-5022	Forensic Engineering	3

* *The degree will be offered in two streams i.e. Coastal Engineering and Water Resources Engineering.*

Water Resources Engineering

Compulsory Courses

Course No.	Course Title	Credit Hrs
CE-580	Applied Hydrology	3
CE-518	Mathematical Methods for Engineers	3
CE-579	Water Quality Management	3
CE-577	Irrigation System Design and Management	3
CE-583	Groundwater Engineering	3

Elective Courses

Course No.	Course Title	Credit Hrs
CE-556	Water Resources Planning and Management	3
CE-557	Legal & Financial Aspects of Water Resources	3
CE-558	Sustainable Water Resources Management (SWRM)	3
CE-559	Remote Sensing in Water Resources	3
CE-560	Reservoir Operations	3
CE-578	Ground Water Resource Management	3
CE-581	Hydroclimatology	3
CE-582	Water Resources Modelling	3
CE-584	Drainage Engineering	3
CE-585	Hydraulic Structure Engineering / Advanced Hydraulic Engineering	3
EN-517	Water Supply and Sewer System Design	3
CE-5002	Thesis	6
CE-5022	Forensic Engineering	3

(e) Construction Engineering Law

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CE-5011	Fundamentals of Law and Legal Structures	3	CE-5013	Construction Contracts and Procurement Law	3
CE-5012	Intellectual property (IP) protection and Professional Ethics	3	CE-5014	Construction Claims Preparation and Analysis	3
			CE-5015	Construction Disputes	3

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CE-5016	Fundamentals of Environmental Laws for Construction Industry	3	CE-5020	Construction Law and Risk Management	3
CE-5017	Construction Specifications writing and Documentation	3	CE-5021	International Perspectives of Construction Law	3
CE-5018	Construction Law Case Studies	3	CE-5002	Thesis	6
CE-5019	Building Codes and Regulations	3	CE-5022	Forensic Engineering	3

4.1.2   M.Engg. in Structural Earthquake Engineering

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
EQ-501	Structural Dynamics	3	EQ-504	Advanced Structural Analysis	3
EQ-502	Fundamentals of Earthquake Engineering	3	EQ-505	Structural Reliability Analysis	3
EQ-503	Seismic Design of RC Building	3			

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
EQ-521	Displacement Based Seismic Design	3	EQ-527	Seismic Vulnerability Assessment of Bridges	3
EQ-522	Performance Based Seismic Design	3	EQ-528	Finite Element Method	3
EQ-523	Seismic Design of Steel and Composite Structures	3	EQ-529	FRP Reinforced Concrete Design	3
EQ-524	Seismic Design and Assessment of Masonry Structures	3	EQ-530	Fracture Mechanics of Concrete	3
EQ-525	Loss Estimation and Hazard Mitigation	3	EQ-531	Structural Fire Engineering	3
EQ-526	Fundamentals of Fire Dynamics	3	EQ-532	Fire Safety and Management	3
			EQ-5002	Thesis	6

4.1.3   M.Engg. in Petroleum Engineering

Non-Credit Courses			Compulsory Courses		
Course No.	Course Title	Credit Hours	Course No.	Course Title	Credit Hours
PE-101	Fundamentals of Petroleum Engineering	NC	PE-501	Advanced Reservoir Engineering	3
PE-202	Petroleum Geology	NC	PE-502	Advanced Drilling Engineering	3
PE-207	Drilling Engineering	NC	PE-503	Advanced Production Engineering and Flow Assurance	3
PE-302	Reservoir Fluid Properties	NC			
PE-304	Reservoir Engineering-1	NC	PE-504	Applied Mathematics in Petroleum Engineering	3
PE-306	Subsurface Production Engineering	NC	PE-505	Health, Safety and Environment	3

Elective Courses					
Course No.	Course Title	Credit Hours	PE-518	Petroleum Production Operations	3
PE-506	Thermodynamics and Phase Behaviour of Hydrocarbon Systems	3	Course No.	Course Title	Credit Hours
PE-507	Formation Evaluation	3	PE-519	Production Optimization	3
PE-508	Advanced Reservoir Simulation	3	PE-520	Stimulation Design	3
PE-509	Advanced Well Testing	3	PE-521	Special Topics in Natural Gas Engineering	3
PE-510	Enhanced Oil Recovery	3	PE-522	Advanced Petrophysics and Well Logging	3
PE-511	Fractured Reservoir	3	PE-523	Unconventional Reservoirs	3
PE-512	Carbonate Reservoir Characterization	3	PE-524	Petroleum Geomechanics	3
PE-513	Petroleum Resources and Reserves Estimation	3	PE-525	Petroleum Economics	3
PE-514	Drilling Fluid Engineering	3	PE-526	Advanced Petroleum Geology	3
PE-515	Underbalanced and Managed Pressure Drilling	3	PE-527	Seismic Data Acquisition, Processing and Interpretation	3
PE-516	Offshore Drilling	3	PE-528	Applied Petroleum Project Planning and Management	3
PE-517	Well Control	3			

4.2   Master Programme in the Faculty of Mechanical and Manufacturing Engineering

4.2.1.   M.Engg. in Mechanical Engineering

(a) Design

Compulsory Courses					
Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
ME 501	Engineering Design	3	ME 504	Finite Element Analysis	3
ME 502	Advanced Stress Analysis	3	ME 505	Mechanical Vibrations	3
ME 503	Computer Aided Design	3	TE 505	Advanced Statistics	3

Elective Courses					
Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
ME 506	Acoustics	3	ME 523	Operations Research	3
ME 507	Power Plant Design	3	ME 524	Reliability & Quality Engineering	3
ME 508	Kinematics and Rigid Body Dynamics	3	ME 527	Human Factor Engineering	3
ME 511	Material Science	3	ME 530	Maintenance Engineering	3
ME 512	Fracture Mechanics	3	EM 504	Project Management Framework and Tools	3
ME 513	Creep	3	MS 552	Applied Mathematics-II	3
ME 514	Advanced Metallurgy	3	MS 553	Computer Applications	0
ME 521	Automation & Controls	3	ME-5002	Thesis	6
ME 522	Computer Aided Manufacturing	3			

(b) Energy Systems

Compulsory Courses					
Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
ME 541	Advanced Thermodynamics	3	ME 545	Renewable Energy	3
ME 542	Energy Management	3	ME 548	Advanced Fluid Mechanics	3
ME 544	Advanced Heat Transfer	3	TE 505	Advanced Statistics	3

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
ME 504	Finite Element Analysis	3	ME 551	Introduction to Computational Fluid Dynamics	3
ME 507	Power Plant Design	3	ME 552	Turbulence Modeling	3
ME 523	Operations Research	3	ME 558	Energy Modelling & Forecasting	3
ME 524	Reliability & Quality Engineering	3	ME 562	Photovoltaic Systems	3
ME 543	Combustion Engineering	3	ME 563	Wind Energy: Design & Integration	3
ME 546	Energy Planning	3	EM-504	Project Management Framework and Tools	3
ME 547	Advanced Air-Conditioning & Refrigeration	3	MS 552	Applied Mathematics-II	3
ME 549	Desalination	3	MS 553	Computer Applications	0
ME 550	Numerical Methods in Heat Transfer	3	ME-5002	Thesis	6

(c) Renewable Energy

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
ME 555	Advanced Thermodynamics	3	ME 558	Energy Modelling and Forecasting	3
ME 556	Renewable Energy Systems	3	ME 559	Process and Energy Integration	3
ME 557	Energy Economics, Policy and Assessment	3			

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
			ME 568	Hydro Power Plants	3
ME 560	Energy Management & Conservation	3	Course No.	Course Title	Credit Hrs
ME 561	Solar Thermal Energy Systems	3	ME 569	Tidal and Wave Energy	3
ME 562	Photovoltaic Systems	3	ME 570	Hydrogen & Fuel Cell Technology	3
ME 563	Wind Energy: Design and Integration	3	ME 571	Energy Storage	3
ME 564	Design of Wind Turbines	3	ME 572	Optimization Techniques	3
ME 565	Geothermal Energy	3	ME 573	Energy and Environment	3
ME 566	Biomass Power Generation	3	ME 574	Fluid Dynamics	3
ME 567	Bio Fuels	3	ME 575	Power Plant Engineering	3

(d) Mechatronics

Non-Credit Courses for Mechanical & Allied Disciplines

Course No.	Course Title	
MC-501	Electrical and Electronic for Mechanical Engineers	NC
MC-502	Introduction to A.I & Computer Architecture	NC
MC 513	Control Theory & Systems	

Non-Credit Courses for Electrical & Allied Disciplines

Course No.	Course Title	
MC 503	Elements of Machine Dynamics & Design	NC
MC 504	Mechanics of Materials & Processes	NC
MC 505	Thermo Fluidics	NC

Compulsory Courses

Course No.	Course Title	Credit Hrs
MC 511	Sensors and Actuators	3
MC 514	Kinematics & Rigid Body Dynamics	3
MC 515	Industrial Automation & Robotics	3
MC 546	Data Acquisition and Microcontroller	3
MC 547	Mechatronics System Design	3

Elective courses

Course No.	Course Title	Credit Hrs
MC 512	Computer Aided Mechanical Design	3
MC 521	Advanced Industrial Process Control	3
MC 531	Computer Aided Manufacturing	3
MC 523	Mechanical Design of Mechatronics Systems	3
MC 525	Electrical Machines & Power Electronics	3
MC 527	Microprocessor and Interfacing Applications	3
MC 529	Mathematical Modelling & Simulation	3
MC 533	Artificial Intelligence and Neural Networks	3
MC 537	Reliability Engineering	3
MC 539	Micro-& Nano-Electromechanical Systems	3
MC 541	Digital Image Processing & Machine Vision	3
MC 543	Applied Programmable Logic Control	3
MC 545	Advanced Robotics	3
MC 548	Special Topics in Mechatronics Engineering	3
ME 504	Finite Element Analysis	3
EE 512	Advanced Digital Signal Processing	3
CT 562	Machine Learning	3
MC 5002	Thesis	6

4.2.2 M.Engg. in Manufacturing Engineering

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
ME 521	Automation & Controls	3	ME 524	Reliability & Quality Engineering	3
ME 522	Computer Aided Manufacturing	3	ME 525	Advanced Manufacturing Processes	3
ME 523	Operations Research	3	TE 505	Advanced Statistics	3
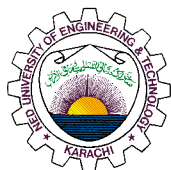
Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
ME 503	Computer Aided Design	3	MS 553	Computer Applications	0
ME 504	Finite Element Analysis	3	IM 505	Automated Manufacturing Systems	3
ME 511	Materials Science	3	IM 506	Business Process Reengineering	3
ME 526	Advanced Metal Forming	3	IM 513	Six Sigma Methodologies	3
ME 527	Human Factor Engineering	3	IM 515	Agile & Lean Manufacturing	3
ME 528	Computer Integrated Manufacturing	3	IM 525	Design For Manufacturing	3
ME 529	Management Information System (MIS)	3	IM 526	Facilities Planning and Layout	3
EM 504	Project Management Framework & Tools	3	IM 527	Intelligent Manufacturing Systems	3
MS 552	Applied Mathematics II	3	ME 586	Health Safety & Enviroment	3
			IM 5002	Thesis	6

4.2.3 M.Engg. in Textile Engineering

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
TE 501	Textile Quality Assurance	3	TE 504	Automation & Control	3
TE 502	Textile Printing	3	TE 505	Advanced Statistics	3
TE 503	Processes for Cotton Dyeing	3			

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
TE 506	Fibre Engineering Science	3	TE 513	Advanced Weaving Engineering	3
TE 507	Fibre Forming Polymers	3	TE 515	Technical Textiles	3
TE 508	Advanced Finishing Processes	3	TE 516	Supply Chain Design & Management	3
TE 509	Colour Physics & Measurement	3	EM 504	Project Management Framework and Tools	3
TE 510	Engineering in Textile Colouration	3	TE 5002	Thesis	6
TE 511	Physico-Chemical Processes in Textiles	3	**Note:**	One course on Computer Applications (MS 553) may be	
TE 512	Advanced Yarn Engineering	3		recommended by the Chairman as a non-credit course.	

4.2.4 M.Engg. in Automotive Engineering

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
AU-500	Advanced Automotive Engineering	3	AU-503	Automotive Control Systems	3
AU-501	IC Engine Thermodynamics	3	AU-504	Automotive Materials & Manufacturing	3
AU-502	Advanced Vehicle Dynamics	3	TE-505	Advanced Statistics	3

Elective Courses

(a) Automotive Design			(b) Automotive Manufacturing		
Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
AU-520	Automotive Powertrains	3	IM-505	Automated Manufacturing Systems	3
ME-551	Introduction to Computational Fluid Dynamics	3	IM-501	Supply Chain Management	3
ME-503	Computer Aided Design	3	IM-515	Agile and Lean Manufacturing	3
AU-521	Vehicle Aerodynamics	3	IM-503	Maintenance Management	3
AU-522	Mechatronics in AE	3	ME-524	Reliability & Quality Engineering	3
AU-523	Emissions and Exhaust Control	3	EM-504	Project Management Framework & Tools	3
ME-504	Finite Element Analysis	3	IM-513	Six Sigma Methodologies	3
AU-525	Noise, Vibrations and Harshness	3	ME-527	Human Factor Engineering	3
AU-526	Sensors and Actuators	3	MM-539	Corrosion Engineering	3
AU-527	Fluid Power Systems and Control	3	MM-538	Polymer Engineering	3
AU-528	Lubrication	3	MM-540	Modern Composites Materials	3
AU-5002	Thesis	6	AU-5002	Thesis	6

4.2.5 MS in Textile Management

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
TM-551	Apparel & Merchandizing Management	3	EM-501	Organization Systems	3
EM-504	Project Management Framework & Tools	3	TS-516	Supply Chain Design and Management	3
EM-502	Accounting & Financial Management	3			

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
TS-515	Technical Textile	3	EM-505	Operation Research	3
TS-554	Health Safety & Environment Management	3	TS-517	Advanced Fabric Forming Processes	3
TS-556	Research Methodology	3	TS-508	Advanced Finishing Processes	3
TS-553	Textile Brand Management & Marketing	3	EM-511	Total Quality Management	3
TS-552	Textile Computer Integrated Enterprise	3	TS-5002	Thesis	6
EM-503	Strategic Planning & Decision Making	3			

4.3 Master Programme in the Faculty of Electrical and Computer Engineering

4.3.1 M. Engg. in Electrical Engineering

(a) Control Systems

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
EE-501	Linear Control Systems	3	EE-504	Adaptive Control Systems	3
EE-502	Optimal Control Systems	3	EE-505	Digital Control System	3
EE-503	Random Variables & Stochastic Processes	3			

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
EE-506	Linear Multivariable Control Theory	3	EE-524	Electrical Power Distribution System Engg.-I	3
EE-507	Non Linear Control Systems	3	EE-525	Electrical Power Distribution System Engg.-II	3
EE-508	Stochastic Processes in Electrical Engg.	3	EE-526	Electrical Power Transmission System Engg.	3
EE-509	Estimation Theory	3	EE-529	Power System Reliability	3
EE-510	Stochastic Control Systems	3	EE-5002	Thesis	6
EE-511	Graph Theory	3			
EE-512	Advanced Digital Signal Processing	3			

(b) Electrical Power Systems

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
EE-521	Power System Analysis – I	3	EE-524	Electrical Power Distribution System Engg.-I	3
EE-522	Power System Analysis – II	3	EE-526	Electrical Power Transmission System Engg.	3
EE-523	Power System Protection	3			

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
EE-525	Electrical Power Distribution System Engg.-II	3	EE-501	Linear Control Systems	3
EE-527	Power System Stability	3	EE-505	Digital Control System	3
EE-528	Computer Methods in Power System Analysis	3	EE-512	Advanced Digital Signal Processing	3
EE-529	Power System Reliability	3	EE-543	Solid State DC Drives	3
EE-530	Power System Protection using Static Relays	3	EE-544	Solid State AC Drives	3
EE-531	Embedded Power Generation	3	EE-5002	Thesis	6
EE-532	Reactive Power Control	3			

(c) Electrical Machines & Drives

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
EE-541	Power Electronics – I	3	EE-544	Solid State AC Drives	3
EE-542	Power Electronics – II	3	EE-545	Electrical Machines Design	3
EE-543	Solid State DC Drives	3			

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
EE-546	Special Electrical Machines	3	EE-505	Digital Control System	3
EE-547	Unified Theory of Electrical Machines	3	EE-524	Electrical Power Distribution System Engg.-I	3
EE-548	Elements of Machine Control	3	EE-525	Electrical Power Distribution System Engg.-II	3
EE-549	Electrical Machines Protection System	3	EE-526	Electrical Power Transmission System Engg.	3
EE-501	Linear Control Systems	3	EE-5002	Thesis	6

(d) Smart Grid

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
EE-570	Advanced Electrical Power Systems	3	EE-573	Smart Grid Technologies and Applications	3
EE-571	Advanced Power Electronics	3	EE-574	Data Analytics for Smart Grid	3
EE-572	Synchrophasor Technology	3			

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
EE-501	Linear Control System	3	EE-578	Renewable Energy Integration with Electrical Network	3
EE-505	Digital Control System	3			
EE-512	Advanced Digital Signal Processing	3	EE-579	Smart Grid System Security	3
EE-523	Power System Protection	3	EE-580	Power System Reliability	3
EE-531	Embedded Power Generation	3	EE-581	Electrical Load Forecasting	3
EE-532	Reactive Power Control	3	EE-582	FACTS Devices and HVDC System	3
EE-575	Electricity Markets	3	EE-583	Energy Management Systems	3
EE-576	Communication System for Smart Grid	3	EE-5002	Thesis	6
EE-577	Energy Storage Systems	3			

4.3.2 M. Engg. in Computer Systems Engineering

(a) Computer Architecture and Systems Design

Non-Credit Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CS-401	Introduction to Programming Systems Design	NC	CS-405	Logic Design and Switching Theory-I	NC
CS-402	System Design using Microprocessors	NC	CS-406	Introduction to Artificial Intelligence	NC

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CS-506	Advanced Computer Systems Architecture	3	CS-531	Advanced Operating Systems	3
CS-513	Artificial Intelligence	3	CS-537	Advanced Switching Theory	3
CS-524	Distributed Computer Systems	3			

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CS-502	Advanced Microprocessors-based Design	3	CS-521	Introduction to Robotics	3
CS-505	Advanced Digital Signal Processing	3	CS-525	Embedded Systems	3
CS-508	Real Time Computer Systems	3	CS-526	Advanced VLSI Systems Design	3
CS-510	Diagnosis and Design of Reliable Digital Systems	3	CS-527	Current Topics in Computer Systems Engineering	3
CS-511	Interconnecting Networks	3	CS-5002	Thesis	6
CS-512	Computer Aided Design of Digital Systems	3			

(b) Computer Network & System Security

Non-Credit Courses

Course No.	Course Title	Credit Hrs
CS-403	Introduction to Computer Networks	NC
CS-404	Computer Systems Architecture and Organization	NC
CS-407	Comuting Essentials	NC

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CS-506	Advanced Computer Systems Architecture	3	CS-540	Computer Network Protocols	3
CS-531	Advance Operating Systems	3	CS-541	Stochastic Processes for Computer Netwroks	3
CS-539	Computer Security	3			

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CS-503	Queuing Theory for Performance Modelling of Computer Systems	3	CS-543	Internet Security	3
			CS-544	Vulnerability Assessment and Ethical Hacking	3
CS-504	Design and Analysis of Computer Communication Networks	3	CS-545	Cloud Computing & Security	3
			CS-546	Carrier and ISP Network	3
CS-514	Performance Evaluation of Computer Systems	3	CS-572	Internet Traffic Engineering & Management	3
CS-517	Digital Communication Theory	3	CS-573	Network Security	3
CS-523	Routing and Switching	3	CS-5002	Thesis	6
CS-524	Distributed Computer Systems	3			
CS-538	Information Theory and Cryptography	3			
CS-542	Cyber Security	3			

4.3.3 M.S. in Data Engineering and Information Management

1- M.S. students may be required to study Non-Credit (NC) courses, in case they have not studied them at undergraduate level. All Non-Credit Courses are essentially required to be taken as soon as they offered.

2- All the admitted students to M.S. Programme in Data Engineering will be required to take 10 courses in total including five compulsory along with other five courses from electives.

Non-Credit Courses

Course No.	Course Title	Credit Hrs
CS-411	Computer Systems Fundamentals	NC
CS-412	Data Structures and Databases	NC

Compulsory Courses

Course No.	Course Title	Credit Hrs
CS-551	Advanced Database Systems	3
CS-552	Data Analytics	3
CS-553	Information Systems Management	3
CS-554	Data Security and Audit	3
CS-555	Distributed Systems	3

Elective Courses

Course No.	Course Title	Credit Hrs
CS-561	Advanced Internet Computing	3
CS-562	Big Data Computing	3
CS-563	Business Intelligence	3
CS-564	Cloud Computing	3
CS-565	Data Encryption	3
CS-566	Data Mining	3
CS-567	Data Warehousing	3
CS-568	Decision Support Systems	3
CS-569	E-Business Management	3
CS-570	Enterprise Resource Planning	3
CS-571	Information Systems Auditing	3
CS-572	Internet Traffic Engineering and Management	3
CS-573	Network Security	3
CS-5002	Thesis	6

4.3.4 M.Engg. in Electronic Engineering

Non-Credit Courses

Course No.	Course Title	Credit Hrs
EL-402	Introduction to Mechatronics	NC
EL-403	Introduction to Power Electronics	NC

Note: Non-Credit (NC) courses may be offered to those students who have not studied these courses at undergraduate level.

Compulsory Courses

Course No.	Course Title	Credit Hrs
EL-501	Solid State Materials &Devices	3
EL-502	Analog Integrated Circuits	3
EL-503	Advanced Digital Electronics and Interfacing Techniques	3
EL-504	Electronic Design Automation	3
EL-507	Fuzzy Logic and Intelligent Electronics Control Systems	3

Elective Courses

(a) Micro System Design

Course No.	Course Title	Credit Hrs
EL-511	Digital VLSI Design	3
EL-512	Analog VLSI Design	3
EL-513	Micro Fabrication Processes	3
EL-514	Light Wave Engineering	3
EL-515	High Speed Semiconductor Devices and Circuits	3
EL-516	Introduction to Micro-electro-mechanical Systems	3
EL-517	Selected Topics in Micro System Design	3
EL-5002	Thesis	6

(b) Industrial Electronics

Course No.	Course Title	Credit Hrs
EL-521	Measurement & Calibration of Electronic System	3
EL-522	Intelligent Measurements and Instrumentation	3
EL-523	Industrial Control Systems	3
EL-524	Advanced Power Electronics	3
EL-525	Sensors and Systems	3
EL-526	Robotics and its Application of Industrial Electronics	3
EL-528	Selected Topics in Industrial Electronics	3
EL-543	Solid State DC Drives	3
EL-544	Solid State AC Drives	3
EL-5002	Thesis	6

4.3.5 M.Engg. in Telecommunications Engineering

Compulsory Courses

Course No.	Course Title	Credit Hrs
TC-501	Probability and Random Processes	3
TC-502	Information Theory	3
TC-503	Digital Communication Theory	3
TC-504	Advanced Communication Systems	3
TC-511	Communication Networks	3
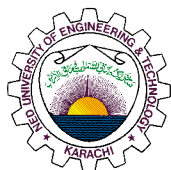
a) RF Engineering			b) Telecommunications Networks		
Elective Courses			**Elective Courses**		
Course No.	**Course Title**	**Credit Hrs**	**Course No.**	**Course Title**	**Credit Hrs**
TC-510	Telecommunication Management	3	TC-505	Telecommunications Network Operations	3
TC-512	Microwave Systems	3	TC-510	Telecommunication Management	3
TC-513	Principles of Radar	3	TC-517	Communication Security	3
TC-514	Mobile Telephone System	3	TC-541	Wireless Networks	3
TC-515	Advanced Digital Signal Processing	3	TC-542	Carrier Grade VoIP	3
TC-516	Satellite Communication	3	TC-543	Network Programming	3
TC-518	Advanced Optical Communication Systems	3	TC-544	Next Generation Networks	3
TC-519	Antenna Theory	3	TC-545	Software Defined Network	3
TC-531	RF Electronics	3	TC-546	Teletraffic Engineering	3
TC-532	Wireless Transceiver Design	3	TC-547	Optical Networks	3
TC-533	Ultra Wideband Communication	3	TC-548	Advanced Multimedia Communication	3
TC-534	Advanced Wireless Systems	3	TC-549	Mobile and Pervasive Computing	3
TC-535	Digital Design for Wireless	3	TC-5002	Thesis	6
TC-536	Software Defined Radios	3			
TC-537	Advanced Engineering Electromagnetics	3			
TC-5002	Thesis	6			

4.3.6 M.S. in Telecommunication Systems

Non-Credit Courses			Compulsory Courses		
Course No.	**Course Title**	**Credit Hrs**	**Course No.**	**Course Title**	**Credit Hrs**
TC-401	Mathematical Methods for Telecommunications	NC	TC-501	Probability and Random Processes	3
TC-402	Signals and Linear Systems	NC	TC-506	Information Systems	3
NOTE: Students may be required to take Non-credit (NC) courses to fulfill the deficiency, if any, at the undergraduate level as determined by the department.			TC-507	Analog and Digital Communication	3
			TC-508	Data Communication and Networks	3
			TC-509	Telecommunication Policies and Regulations	3

Elective Courses					
Course No.	**Course Title**	**Credit Hrs**	**Course No.**	**Course Title**	**Credit Hrs**
TC-505	Telecommunications Network Operations	3	TC-524	Optical Communication	3
TC-515	Advanced Digital Signal Processing	3	TC-525	Next Generation Networks	3
TC-516	Satellite Communication	3	TC-526	Broadband Communication Systems	3
TC-521	RF communication Systems	3	TC-527	QoS in Telecommunication Systems	3
TC-522	Data Security	3	TC-5002	Thesis	6
TC-523	Wireless Systems and Networks	3			

4.3.7 M.Engg. in Biomedical Engineering

Compulsory Courses					
Course Code	**Course Title**	**Credit Hrs.**	**Course Code**	**Course Title**	**Credit Hrs.**
BM-450	Anatomy and Physiology for Engineers	NC	BM-544	Mathematical & Computer Modeling of Physiological Systems	3
BM-541	Advanced Biomedical Instrumentation	3	BM-567	Regulatory Framework for Medical Devices	3
BM-542	Finite Element Method	3			
BM-543	Mechatronics System Design	3			

Elective Courses					
Course Code	**Course Title**	**Credit Hrs.**	**Course Code**	**Course Title**	**Credit Hrs.**
BM-546	Digital Control System	3	BM-558	Structural Bioinformatics	3
BM-547	Medical Robotics	3	BM-559	Functional Genomics	3
BM-548	Telemedicine	3	BM-560	Proteomics	3
BM-549	Computer Vision	3	BM-561	Advanced Biochemistry	3
BM-550	Advanced Medical Imaging	3	BM-562	Drug Delivery & Pharmacology	3
BM-551	Prosthetics & Orthotics	3	BM-563	Advanced Digital Signal Processing	3
BM-552	Clinical Gait Analysis	3	BM-564	Advanced Mass Transfer	3
BM-553	Advanced Biomaterials	3	BM-565	Research Methodology	3
BM-554	Design of Implants/Artificial Organs	3	BM-566	Medical Device Design Considerations	3
BM-555	Advanced Biomechanics	3	BM-545	Biomedical Ethics for Engineers	3
BM-556	Design of Experiments	3	BM-5002	Thesis	6
BM-557	Cardiovascular Fluid Mechanics	3			

4.4   Master Programme in the Faculty of Chemical and Process Engineering

4.4.1   M.Engg. in Materials Engineering.

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
MM-501	Phase Transformations in Solids	3	MM-504	Heat Treatment and Microstructure Evolution in Metals	3
MM-502	Production of Ferrous and Non-Ferrous Materials	3	MM-505	Advanced Materials Characterization Techniques	3
MM-503	Deformation Behaviour and Failure Analysis		MM-506	Practical/laboratory/industrial visits with short reports	NC

NOTE: If students who are enrolled in ISP then Non-credit course MM-506 is exempted.

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
MM-531	Surface Engineering and Coating Techniques	3	MM-539	Corrosion Engineering	3
MM-532	Ceramic Engineering	3	MM-540	Modern Composite Materials	3
MM-533	Electronic and Magnetic Materials	3	MM-541	Computational Materials Engineering	3
MM-534	Nanotechnology	3	MM-542	Production Management and Quality Assurance	3
MM-535	Electron Microscopy	3	MM-5002	Thesis	6
MM-536	Adv. X-Ray Diffraction and Texture Studies	3			
MM-537	Powder Metallurgy	3			
MM-538	Polymer Engineering	3			

4.4.2   M. Engg. in Chemical Engineering

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CH-501	Chemical Thermodynamics – III	3	CH-504	Advanced Process Control	3
CH-502	Advanced Reaction Engineering	3	CH-505	Mathematical Methods	3
CH-503	Transport Phenomena	3			

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CH-510	Polymer Science	3	CH-519	Biochemical Engineering	3
CH-511	Polymer Processing	3	CH-520	Advanced Heat Transfer	3
CH-512	Applied Statistics	3	ME-542	Energy Management	3
CH-513	Advanced Composite Materials	3	ME-543	Combustion Engineering	3
CH-514	Petroleum Refining Engineering	3	EN-508	Environmental Impact Assessment	3
CH-515	Computational Fluid Dynamics	3	EM-512	Project Evaluation and Feasibility Analysis	3
CH-516	Advanced Mass Transfer	3	CH-5002	Thesis	6
CH-517	Corrosion	3			
CH-518	Fluidization Engineering	3			

4.4.3   M. Engg. in Polymer Engineering

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
PP-511	Advanced Engineering Mathematics	3	PP-514	Rheology of Complex Fluids	3
PP-512	Advanced Polymer Processing	3	PP-515	Polymer Structure-Property Relationships	3
PP-513	Polymer Reactor Engineering	3			

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
PP-401	Introduction to Polymeric Materials	NC	PP-530	Rubber Technology	3
PP-525	Advanced Polymer Composites	3	PP-531	Polymer Characterization	3
PP-526	Fibre Technology	3	PP-532	Polymer Degradation, Stability and Recyling	3
PP-527	Polymer Adhesives and Coatings	3	PP-533	Process Safety & Loss Preventation	3
PP-528	Polymer Product Design	3	EM-504	Project Management Framework and Tools	3
PP-529	Specialty and Functional Polymer Materials	3	PP-5002	Thesis	6
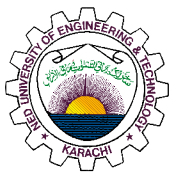
4.4.4 M.Engg. in Environmental Engineering

	Compulsory Courses				
ourse No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
EN-515	Air Pollution and Control	3	EN-525	Physico Chemical Processes	3
EN-523	Analysis of Env. Contaminants	3	EN-526	Solid Waste Management	3
EN-524	Wastewater Engineering	3			

	Elective Courses				
Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
EN-501	Introduction to Environmental Engineering	3	EN-518	Sustainable Development & Appropriate Tech	3
EN-502	Environmental Applied Sciences	3	EN-519	Introduction to Ocean and Coastal Engg.	3
EN-503	Advanced Mathematics	3	EN-520	Marine Pollution and Control	3
EN-508	Environmental Impact Assessment	3	EN-521	Special Topics in Environmental Engineering	3
EN-509	Modeling in Environmental Engineering	3	EN-527	Environmental Health and Sanitation	3
EN-510	Process Dynamics in Environmental Systems	3	EN-528	Urban Water Supply and Sewer System Design	3
EN-511	Environmental Management	3	EN-5002	Thesis	6
EN-513	Industrial Waste Treatment and Disposal	3			
EN-514	Water Resources Management	3			

4.5 Master Programme in the Faculty of Architecture & Management Sciences

4.5.1 Master of Architecture Programme

	Compulsory Courses				
Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
AR-601	Advanced Architectural Design-I	3	AR-603	Studies in Architectural Research	3
AR-602	Advanced Architectural Design-II	3	AR-604	Architectural Theory	3

	Elective Courses				
Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
AR-605:	Architectural Design Project	6	AR-637:	Architecture of Housing	3
AR-606:	Aesthetics in Architecture	3	AR-638:	Advanced Landscape Architecture	3
AR-607:	Theory and Applications of Arts in Architecture	3	AR-639:	Psychological Applications in Architectural Design	3
AR-608:	Green Architecture: Concepts and Applications	3	AR-643:	Entrepreneurship in Architecture	3
AR-609:	Regulatory Considerations in Architectural Applications	3	AR-644:	Stylistic Studies in Architecture	3
			AR-646:	Community Architecture	3
AR-610:	Interdisciplinary Issues in Architectural Applications	3	AR-647:	Advanced Writing Skills in Architecture	3
			AR-648:	Architecture and the City	3
AR-635:	Case Studies in Architectural Conservation and Restoration in Developing Countries	3	AR-649:	Advanced Themes in Analysing Architecture	3
			EQ-532	Fire Safety and Management	3
AR-636:	Advanced Computer Applications in Architecture	3	AR-6002	Thesis	6

4.5.2 Master of Urban & Regional Planning Programme

	Non-Credit Courses				
Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
AR-511	Introduction to Urban Design	NC	AR-515	Introduction to Transportation and Infrastructure	NC
AR-512	Introduction to Urban Sociology	NC			
AR-513	Methods in Physical Planning	NC	AR-516	Basic Communication Techniques in Planning	NC
AR-514	Introduction to Urban Economics	NC			

	Compulsory Courses				
Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
AR-611	Planning Theory	3	AR-614	Infrastructure Planning	3
AR-612	Methods in Urban Planning Research	3	AR-615	Economic Development and Regional Planning	3
AR-613	Landuse Planning and Analysis	3			

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
AR-616	Urbanism: Theory and Practice	3	AR-629	Advanced Urban Sociology	3
AR-617	Advanced Studies in Urban Design	3	AR-630	Project Planning and Management	3
AR-618	Urban Area Conservation	3	AR-631	Development Planning in Pakistan	3
AR-619	Legal and Regulatory Aspects in Planning	3	AR-632	Seminar in Urban Management in Pakistan	3
AR-620	Planning Implementation Methods	3	AR-634	Planning for Sustainable Development	3
AR-621	Advanced Urban Economics	3	AR-640	Design Project in Urban Planning	6
AR-622	Seminar in Planning, Economics and Development	3	AR-641	Regional Planning Studio	3
AR-623	Computer Applications in Planning	3	AR-642	City Planning Studio	3
AR-624	Real Estate Analysis	3	EQ-532	Fire Safety and Management	3
AR-625	Statistical Methods in Planning	3	AR-6002	Thesis	6
AR-626	Remote Sensing	3	CE-561	Urban Transportation Planning	3
AR-627	Advanced Studies in Housing	3		** Offered by Civil Engineering Department.*	
AR-628	Urban Management and Administration	3			

4.5.3 MS in Disaster Management and Sciences

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
DM-501	Disaster Science and Management Theories	3	DM-504	Strategic Planning and Decision Making	3
DM-502	Organizational System	3	DM-505	Operations Research	3
DM-503	Accounting and Financial Management	3			

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
DM-521	Project Evaluation and Fesibility Analysis	3	DM-528	Research Design	3
DM-522	Geo Information in Disaster Management	3	DM-529	Fundamental of Fire Dynamics	3
DM-523	Disaster Risk Reduction	3	DM-530	Policies, Planning and Strategies for Disaster Management	3
DM-524	Disaster Response and Recovery	3			
DM-525	Urban Transportation Planning	3	DM-531	Flood Hazard Assessment and Remediation	3
DM-526	Demographic Analysis Techniques	3	DM-532	Water Supply and Sanitation in Emergencies	3
DM-527	Vulnerability and Risk Assessment	3	DM-5002	Thesis	6

4.6. Master of Engineering Management (MEM) Programme

The above programme is offered in the following areas of specialisation.
(i) Construction Management — offered by Department of Civil Engineering
(ii) Water Resources Management — offered by Department of Civil Engineering
(iii) Transportation Infrastructure Management — offered by Department of Urban and Infrastructure Engineering
(iv) Energy and Plant Management — offered by Department of Mechanical Engineering
(v) Industrial Management — offered by Department of Industrial & Manufacturing Engineering
(vi) Quality Management — offered by Department of Industrial & Manufacturing Engineering
(vii) Supply Chain Management — offered by Department of Industrial & Manufacturing Engineering
(viii) Textile Management — offered by Department of Textile Engineering
(ix) Energy Management — offered by Department of Electrical Engineering
(x) Chemical and Process Management — offered by Department of Chemical Engineering
(xi) Environmental Management — offered by Department of Environmmental Engineering

Compulsory Courses / Common Electives

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
EM-501	Organisational Systems	3	EM-511	Total Quality Management	3
EM-502	Accounting and Financial Management	3	EM-512	Project Evaluation and Feasibility Analysis	3
EM-503	Strategic Planning and Decision Making	3	EM-513	Research Methods in Engineering Management	3
EM-504	Project Management Framework and Tools	3			
EM-505	Operations Research	3			
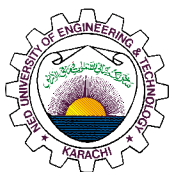
Elective Courses

(a) Construction Management

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CE-544	Quantitative Tools for Engg. Management	3	CE-591	Cost Engineering and Control	3
CE-545	Construction Claim Management	3	CE-592	Decision Making and Risk Management in Construction	3
CE-546	Vulnerability Analysis and Hazard Mitigation	3	CE-593	Construction Operations and Development of Tech.	3
CE-547	Housing for Developing Countries	3	CE-594	Bidding Strategy and the Legal Construction Env.	3
CE-548	Occupational Health and Safety in Construction	3	CE-595	Technical Entrepreneurship and the Management and Marketing of Construction Services	3
CE-549	Value Engineering in Construction	3			
CE-550	Construction Productivity Management	3	CE-596	Public Infrastructure Management	3
CE-587	Human Resource Managment in Construction Industry	3	CE-597	Real Estate Management	3
CE-588	Leadership in Construction Management	3	CE-598	Construction Failure Analysis	3
CE-589	Supply Chain Management in Construction Industry	3	EQ-532	Fire Safety and Management	3
CE-590	Advanced Topics in Project Management	3	CE-5002	Thesis	6
			CE-5022	Forensic Engineering	3

(b) Water Resources Management

Course No.	Course Title	Credit Hrs
CE-556	Water Resources Planning and Management	3
CE-557	Legal & Financial Aspects of Water Resources	3
CE-558	Sustainable Water Resources Management (SWRM)	3
CE-559	Remote Sensing In Water Resources	3
CE-560	Reservoir Operations	3
CE-576	Water Services Management	3
CE-577	Irrigation System Design and Management	3
CE-578	Groundwater Resource Management	3
CE-579	Water Quality Management	3
CE-5002	Thesis	6
CE-5022	Forensic Engineering	3

(c) Transportation Infrastructure Management

Course No.	Course Title	Credit Hrs
UE-501	Urban Transportation Management	3
UE-502	Pavement Asset Management	3
UE-503	Intelligent Transportation Systems	3
UE-504	Road Safety Analysis and Methodologies	3
UE-505	Micro-Scale Traffic Modelling	3
UE-506	Travel Demand Forecasting	3
UE-507	Geospatial Analysis for Transportation Asset Management	3
UE-508	National Transportation Management	3
UE-509	Transportation Systems Asset Management	3
UE-511	Highway Project Management	3
UE-512	Sustainable Urban Transport	3
UE-5002	Thesis	6

(d) Energy and Plant Management

Course No.	Course Title	Credit Hrs
ME 507	Power Plant Design	3
ME 530	Maintenance Engineering	3
ME 545	Renewable Energy	3
ME 557	Energy Economics, Policy and Assessment	3
ME 558	Energy Modeling and Forecasting	3
ME 560	Energy Management and Conservation	3
ME 584	Energy Trading and Distribution	3
ME 585	Reliability and Asset Management	3
ME 586	Health, Safety and Environment	3
IM 501	Supply Chain Management	3
TE 505	Advanced Statistics	3
ME-5002	Thesis	6

(e) Industrial Management

Course No.	Course Title	Credit Hrs
IM-501	Supply Chain Management	3
IM-502	Computer Simulation Methods	3
IM-503	Maintenance Management	3
IM-505	Automated Manufacturing Systems	3
IM-506	Business Process Reengineering	3
IM-515	Agile & Lean Manufacturing	3
IM-526	Facilities Planning and Layout	3
ME-524	Reliability & Quality Engineering	3
ME-527	Human Factors Engineering	3
ME-529	Management Information Systems (MIS)	3
ME-542	Energy Management	3
ME-546	Energy Planning	3
ME-586	Health Safety & Environment	3
IM-5002	Thesis	6

(f) Quality Management

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
IM-506	Business Process Reengineering	3	IM-515	Agile and Lean Manufacturing	3
IM-511	Statistical Quality Control	3	IM-516	Design and Analysis of Experiments	3
IM-512	Reliability Engineering	3	IM-517	Advanced Quality Engineering	3
IM-513	Six Sigma Methodologies	3	ME-586	Health Safety & Environment	3
IM-514	Quality Planning and Management	3	IM-5002	Thesis	6

(g) Supply Chain Management

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
IM-501	Supply Chain Management	3	IM-558	Change Management	3
IM-550	Advanced Principles of Supply Chain Management	3	IM-559	International Trade	3
			IM-560	Process Management	3
IM-551	Information Technology for Supply Chain Management	3	IM-561	Principles of Marketing	3
IM-552	Logistics Management	3	IM-562	New Product and Service Development Management	3
IM-553	Green Supply Chain Management	3	IM-563	Warehouse Management and Physical Distribution Network	3
IM-554	Procurement Management	3			
IM-555	Business Process Simulation	3	IM-564	Supplier Relationship Management	3
IM-556	Retail Management	3	ME-586	Health Safety & Environment	3
IM-557	Managing Supply Chain Management	3	IM-5002	Thesis	6

(h) Textile Management

Course No.	Course Title	Credit Hrs
TE-505	Advanced Statistics	3
TE-516	Supply Chain Design and Management	3
TE-551	Apparel and Merchandising Management	3
TE-552	Textile Computer Integrated Enterprise	3
TE-553	Textile Brand Management and Marketing	3
TE-554	Health Safety and Environmental Management	3
IM-503	Maintenance Management	3
TE-5002	Thesis	6

(i) Energy Management

Course No.	Course Title	Credit Hrs
EE-561	Power Generation Economics	3
EE-562	Energy Audits	3
EE-563	Energy Conservation	3
EE-564	Power System Restructuring	3
EE-565	Distributed Generation	3
EE-566	Reliability Engineering	3
EE-567	Energy Planning	3
EE-568	Reactive Power Management	3
EE-5002	Thesis	6

(j) Chemical and Process Management

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CH-506	Applied Chemical Thermodynamics	3	PP-533	Process Safety and Loss Prevention	3
CH-507	Thermal Process Engineering	3	CH-5002	Thesis	6
CH-508	Process Design Simulation	3			
CH-509	Reactor Design and Kinetics	3			
CH-521	Process Dynamics and Control	3			
CH-522	Advanced Refining and Gas Engineering	3			
CH-523	Process Safety Management	3			
EM-511	Total Quality Management	3			

NOTE: Non-Credit Course (Prerequisite for the graduates of Materials Engg., Metallurgical Engg., Industrial and Manufacturing Engg., Environmental Engg., Mechanical Engg., Food Engg. and Petroleum Engg.)

CH-498	Fundamentals of Chemical Engineering	NC

(k) Environmental Management

Course No.	Course Title	Credit Hrs
EN-523	Analysis of Environmental Contaminants	3
EN-530	Environmental Systems Engineering	3
EN-531	Environmental Quality Management	3
EN-532	Civil Systems and the Environment	3
EN-533	Environmental Risk Management	3
EN-534	Environmental Law and Policy Development	3
EN-535	Ecology and Sustainability	3
EN-536	Waste and Pollution Management	3
EN-537	Water Quality Management	3
EN-538	Principles of Air Quality Management	3
EN-539	Water and Sanitation Infrastructure in Developing Countries	3
EN-540	Health, Safety & Environmental Management	3
EN-541	Remote Sensing in Environmental Management	3
EN-5002	Thesis	6
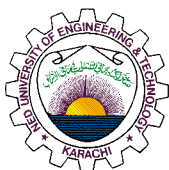
4.7 Master Programme in the Faculty of Information Sciences & Humanities

4.7.1 Courses in MS Streams in the Department of Computer Science and Information Technology

Programme structure: Students have to complete thirty (30) credit hours in any specialization of the MS programme. There will be customized non-credit courses, four (04) for MS (CSIT)/MS (IS) and three (03) for MS (DS) (pre-requisites only for candidates coming from fields other than computer science/engineering and software engineering), five (05) compulsory courses and five (05) elective courses of three (03) credit hours each.

Customised Courses

Course No.	Course Title	Credit Hrs.	Course No.	Course Title	Credit Hrs.
CT-491 *	Operating System	NC	CT-493	Data Structure and Algorithm Design	NC
CT-492	Object Oriented Programming	NC	CT-494	Introduction to Databases	NC

Not applicable for MS (DS) specialization.

Note: A departmental admission committee shall decide the deficiency courses (non-credit) which a candidate shall have to take based on his/her previous qualification at the time of admission.

4.7.1(a) MS in Computer Science and Information Technology

Compulsory Courses

Course No.	Course Title	Credit Hrs.	Course No.	Course Title	Credit Hrs.
CT-501	Software Project Management	3	CT-576	Advanced Operating System	3
CT-504	Advanced Numerical Analysis	3	CT-577	Advanced Theory of Automata	3
CT-506	Advanced Anallysis of Algorithms	3			

Elective Courses

Course No.	Course Title	Credit Hrs.	Course No.	Course Title	Credit Hrs.
CT-511	Information System Development Methodologies	3	CT-534	Software Quality Assurance	3
CT-512	Principles of Marketing	3	CT-535	Compiler Construction & Techniques	3
CT-513	Quality Information System	3	CT-536	Object Oriented Designing for Application Techniques	3
CT-514	Software Development Methodologies using UML	3	CT-537	Wireless & Mobile Communication	3
CT-515	Internet Banking	3	CT-538	Introduction to Robotics	3
CT-516	Multimedia Communications	3	CT-539	Advanced Computer Networking	3
CT-517	Internet Techniques and their Application	3	CT-540	Broadband Networks	3
CT-518	Web Authoring	3	CT-558	Distributed Blockchain Technologies	3
CT-519	Business Process Reengineering	3	CT-559	Artificial Neural Networks	3
CT-520	E-Commerce	3	CT-560	Deep Learning	3
CT-521	Distributed Intelligent System	3	CT-561	Natural Language Processing	3
CT-522	Cryptography & Network Security	3	CT-562	Machine Learning	3
CT-523	Fuzzy Control & Neural Networks	3	CT-563	Business Intelligence	3
CT-524	Knowledge Based Systems	3	CT-564	Web Intelligence and Big Data	3
CT-525	Modelling & Simulation	3	CT-565	Computational Journalism	3
CT-526	Logic Programming	3	CT-566	Digital Image Processing	3
CT-527	Image Processing & Computer Vision	3	CT-567	Computer Vision	3
CT-528	Advanced Database Techniques	3	CT-568	Soft Computing	3
CT-529	Object Oriented Databases	3	CT-569	Virtualization and Cloud Computing	3
CT-530	Data Mining	3	CT-570	Wireless Communication	3
CT-531	Theory of Information System Design	3	CT-571	Nature Inspired Optimisation Algorithms	3
CT-532	Information System Audit	3	CT-572	Parallel Computing	3
CT-533	Information System Management	3	CT-573	GPGPU Programming	3
			CT-5002	Thesis	6

4.7.1(b) MS in Information Security

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CT-506	Advanced Analysis of Algorithms	3	CT-539	Advanced Computer Networking	3
CT-508	Cryptography	3	CT-574	Information Privacy and Security	3
CT-509	Distributed Systems	3			

Elective Courses

Course No.	Course Title	Credit Hrs.	Course No.	Course Title	Credit Hrs.
CT-507	Wireless and Mobile Communication Networks	3	CT-550	Trusted Computing	3
CT-532	Information System Audit	3	CT-551	Fault Tolerance and Reliability	3
CT-541	Network Security	3	CT-552	Quantum Cryptography	3
CT-542	Information Security Management	3	CT-553	Emerging Trends in Information Security	3
CT-543	Database Security	3	CT-554	Ethical Hacking	3
CT-544	Cyber Crimes and Security	3	CT-555	Cloud Security	3
CT-545	Digital Forensics	3	CT-556	Intrusion Detection	3
CT-546	Secure E-Commerce	3	CT-557	Privacy Engineering	3
CT-547	Secure Programming	3	CT-558	Distributed Blockchain Technologies	3
CT-548	Security Testing Theory and Practice	3	CT-571	Nature Inspired Optimisation Algorithms	3
CT-549	Multimedia Security and Privacy	3	CT-5002	Thesis	6

4.7.1(c)　MS in Data Science

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CT-530	Data Mining	3	CT-583	Tools and Techniques for Data Science	3
CT-562	Machine Learning	3	CT-592	Big Data Analytics	3
CT-581	Statistics & Probability for data Science	3			

Elective Courses

Course No.	Course Title	Credit Hrs.	Course No.	Course Title	Credit Hrs.
CT-521	Distributed Intelligence Systems	3	CT-587	Distributed Computing	3
CT-524	Knowledge Based System	3	CT-588	Information Retrieval	3
CT-525	Modeling & Simulation	3	CT-589	Social Media Analysis	3
CT-527	Image processing & Computer Vision	3	CT-590	Data Visualization	3
CT-528	Advance Database Techniques	3	CT-591	Text Processing	3
CT-529	Object Oriented Databases	3	CT-593	Data Warehousing	3
CT-559	Artificial Neural Networks	3	CT-594	Optimization Methods	3
CT-560	Deep Learning	3	CT-595	Pattern Recognition	3
CT-561	Natural Language Processing	3	CT-596	Web Mining	3
CT-563	Business Intelligence	3	CT-597	Time Series Analysis & Forecasting	3
CT-564	Web Intelligence and Big Data	3	CT-598	Financial Data Analysis	3
CT-569	Virtualization and Cloud Computing	3	CT-599	Speech Processing	3
CT-582	Numerical Linear Algebra	3	CT-5002	Thesis	`6

4.7.2　MS in Applied Mathematics

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
MT-500	Scientific Computing	NC	MT-503	Applied Statistics	3
MT-501	Differential Equations	3	MT-504	Numerical Methods and Applications	3
MT-502	Linear Algebra	3	MT-505	Operations Research and Optimisation	3

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
MT-511	Advanced Engineering Mathematics	3	MT-524	Financial Mathematics	3
MT-512	Advanced Discrete Mathematics	3	MT-525	Computation and Simulation in Finance	3
MT-513	Finite Element Analysis	3	MT-526	Economic Theory for Financial Market	3
MT-514	Numerical Methods in Heat Transfer	3	MT-527	Financial Modelling and Risk Management	3
MT-515	Transforms and their Applications	3	MT-528	Finance Theory and Asset Pricing	3
MT-516	Computational Mechanics	3	MT-529	Monte Carlo Techniques for Simulations	3
MT-517	Computational Fluid Dynamics	3	MT-530	Design and Analysis of Experiments	3
MT-518	Computational Methods for Data Mining	3	MT-531	Stochastic Optimisation and Control	3
MT-519	Fuzzy Logic and Neural Networks	3	MT-532	Time Series Analysis and Forecasting	3
MT-520	Graph Theory	3	MT-533	Probability and Stochastic Processes	3
MT-521	Computational Complexity and Applications	3	MT-534	Statistical Method and Data Analysis	3
MT-522	Applied Database Techniques	3	MT-538	Partial Differential Equations	3
MT-523	Simulation and Modelling	3	MT-5002	Thesis	6

4.7.3   MS in Physics

Customised Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
PH-400	Classical Mechanics	NC	PH-406	Modern Physics - I	NC
PH-401	Electromagnetic Fields-I	NC	PH-407	Modern Physics - II	NC

The committee headed by Dean (ISH) and two members from the department will determine the eligibility and requirement for customised courses for each individual.

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
PH-500	Mathematical Physics	3	PH-503	Advanced Statistical Mechanics	3
PH-501	Advanced Computational Physics	3	PH-504	Electromagnetic Fields –II	3
PH-502	Advanced Quantum Mechanics	3	PH-505	Advanced Experimental Methods in Physics	NC

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
PH-510	Advanced Material Science	3	PH-519	Optical Properties of Solids	3
PH-511	Magnetic Properties of Materials	3	PH-520	Photonic Devices	3
PH-512	Semiconductor Physics	3	PH-521	Optical Physics and Lasers	3
PH-513	Dielectrics and Their Measurements	3	PH-522	Research Methodology	3
PH-514	Atomic Structure	3	PH-523	Energy and Environmental Physics	3
PH-515	Molecular Structure	3	PH-524	Nanotechnology	3
PH-516	Electron and Photoelectron Spectroscopy	3	PH-525	Medical Radiation Physics	3
PH-517	Laser Spectroscopy	3	PH-5002	Thesis	6
PH-518	Non Linear Optics	3			

4.7.4   MS in Industrial Chemistry

Customised Courses			Compulsory Courses		
Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CY-402	Physical Chemistry	NC	CY-501	Unit Operations	3
CY-403	Instrumental Methods and Techniques	NC	CY-502	Advanced Chemical Kinetics	3
CY-404	Separation Techniques	NC	CY-503	Chemical Thermodynamics	3
CY-415	Mathematics & Statistics*	NC	CY-504	Industrial Chemical Analysis	3
CY-416	General Chemistry	NC	CY-524	Laboratory Quality Assurance	3

*   For candidate who hasn't studied mathematics and Statistics (undergraduate level) course at BS(Four Years)/M.Sc. level.

The committee headed by Dean (ISH) and two members from the department will determine the eligibility and requirement for customised courses for each individual.

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
CY-505	Advanced Spectroscopic Techniques	3	CY-515	Paint and Surface Coatings	3
CY-506	Electroanalytical Techniques	3	CY-516	Paint Failure Analysis	3
CY-507	Advanced Chromatographic Techniques	3	CY-517	Corrosion Chemistry	3
CY-508	Surface Chemistry and Catalysis	3	CY-518	Agrochemicals	3
CY-509	Mathematical Methods	3	CY-519	Dyes Chemistry	3
CY-510	Applied Statistics	3	CY-520	Soap, Detergent and Cosmetic Industries	3
CY-511	Research Methodology	3	CY-521	Environmental Pollution Chemistry	3
CY-512	Drug and Heterocyclic Chemistry	3	CY-522	Water Treatment	3
CY-513	Organic Synthesis	3	CY-523	Nano Chemistry	3
CY-514	Natural Product Chemistry	3	CY-5002	Thesis	6

4.7.5 MS in Applied Linguistics

Customised Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
HS-410	Introduction to Linguistics	NC	HS-418	Pragmatics	NC
HS-411	Second Language Acquisition	NC	HS-419	Pedagogical Grammar	NC
HS-412	Language Teaching Methodologies	NC	HS-420	Discourse Analysis	NC
HS-413	Phonetics & Phonology	NC	HS-421	Syllabus Designing & Testing	NC
HS-414	Morphology & Syntax	NC	*	The committee comprising Dean ISH and two members from	
HS-415	Semantics	NC		Humanities Department will determine the eligibility and	
HS-416	Sociolinguistics	NC		requirement of customised courses for students from English	
HS-417	Psycholinguistics	NC		Literature.	

Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
HS-500	Applied Linguistics & Language Studies	3	HS-503	Research Methodology in Applied Linguistics	3
HS-501	Second Language Learning & Language Teaching	3	HS-504	Quantitative Tools for Research	3
HS-502	Curriculum Development in Language Teaching	3			

Non Credit Courses

Course No.	Course Title	Credit Hrs
HS-519	Advanced Academic Reading & Writing	NC

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
HS-511	English for Specific Purposes	3	HS-516	Critical Discourse Analysis	3
HS-512	Teaching English for Academic Purposes	3	HS-517	Language Teacher Education & Development	3
HS-513	Language Testing & Evaluation	3	HS-518	Issues in Syntax	3
HS-514	Globalization and Spread of English	3	HS-5002	Thesis	6
HS-515	Pragmatics & inter- cultural communication	3			

4.7.6 MS in Economics and Finance

Customised Courses | Compulsory Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
EC-401	Principles of Economics	NC	EC-501	Microeconomic Theory	3
EC-402	Mathematical Economics	NC	EC-502	Macroeconomic Theory	3
EC-403	Accounting and Financial Mathematics	NC	EC-503	Mathematics for Economics and Finance	3
			EC-504	Econometrics	3
			EC-505	Financial Accounting	3

Elective Courses

Course No.	Course Title	Credit Hrs	Course No.	Course Title	Credit Hrs
EC-506	Money and Banking	3	EC-517	Economic Development Planning	3
EC-507	Financial Markets and Institutions	3	EC-518	Analysis of Financial Statements	3
EC-508	International Trade and Finance	3	EC-519	Corporate Finance	3
EC-509	Investment Analysis and Portfolio Management	3	EC-520	Corporate Planning and Performance	3
EC-510	Project Appraisal and Management	3	EC-521	Islamic Banking and Finance	3
EC-511	International Business Strategy	3	EC-522	Business Management	3
EC-512	International Development and Finance	3	EC-523	Entreprenuership	3
EC-513	Multinational Corporations and Finance	3	EC-524	Research Methodology	3
EC-514	Managerial Economics	3	EC-5002	Thesis	6
EC-515	Financial Management and Risk	3			
EC-516	Investment Banking and Management	3			

5   NUMBER OF SEATS, FEES AND DEPOSIT

5(a)   NUMBER OF SEATS TO BE OFFERED FOR ADMISSION TO THE PROGRAMME

Number of seats available to candidates in respective department who fulfill the requirements for eligibility as specified in the regulations shall be notified by each Department separately.

5(b)   UNIVERSITY FEES AND DEPOSIT

The following are the University fees:

1-   Fee Payable at the time of admission to the Programme

(i)	Admission / Re-admission Fee	Rs. 4000.00
(ii)	Enrolment fee *(alongwith form fee)*	Rs. 2000.00
(iii)	Security Deposit	Rs. 6000.00
(iv)	Documents Verification Fee	Rs. 2000.00

2-   Fee Payable in each semester

(i)	Tuition & Examination Fee per Course	
	EVENING	
	a) M.Engg. Programme	Rs. 15000.00
	b) MS Programme	Rs. 14000.00
	c) MEM Programme	Rs. 17000.00
	WEEKEND	
	a) M.Engg. Programme	Rs. 22000.00
	b) MS Programme	Rs. 22000.00
	c) MEM Programme	Rs. 26000.00
(ii)	Library Fee	Rs. 1000.00
(iii)	Registration Fee / Semester	Rs. 1200.00
(iv)	Internet Fee	Rs. 600.00
(v)	Late Fee, if applicable	Rs. 1000.00
(vi)	Equivalence Fee, if applicable	Rs. 1000.00
(vii)	University Endowment Fund	Rs. 120.00
(viii)	I Grade Examinations Fee (Per Course), if applicable	Rs. 5000.00

6 REGULATIONS FOR THE MASTER DEGREE PROGRAMMES AS OFFERED BY NED UNIVERSITY

6.1 GENERAL

6.1.1 Title

These Regulations may be called, 'Regulations for Master's Degrees; NED University of Engineering & Technology.

6.1.2 Commencement

These Regulations shall come into force with immediate effect superseding all previous Regulations.

6.1.3 Nature of the Degree

Successful completion of the Masters Programme shall lead to the Master's Degree in discipline / relevant area of specialisation.

6.1.4 Nature of Programme and Number of Seats

Any teaching department of this University offering undergraduate programme may offer Day programme for full time students or Afternoon/Evening/Weekend Programmes for part time students; it may also offer both full-time and part-time Programmes simultaneously leading to the degree(s) as appropriate. With approval of the concerned Dean, each department shall specify number of seats in any programme and under each area of specialisation, (wherever applicable).
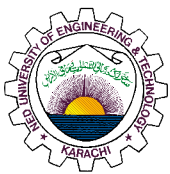
6.1.5 Criteria and Procedure for Admission

i) A Candidate must be a citizen of Pakistan / resident in Pakistan.

ii) The candidate should possess the following qualifications with CGPA 2.4/4.0 (For such candidates having been awarded qualifying degree ONLY in 'Division', HEC defined criteria shall be used for conversion to CGPA);

   a) For Master of Engineering (M.Engg.)/ Master of Engineering Management (MEM) Programme, the candidate must possess Bachelors of Engineering degree or equivalent in the relevant fields.

   b) For Master of Urban & Regional Planning (MURP) Programme, the candidate must possess either Bachelor of Architecture or Bachelor of City and Regional Planning or Bachelor of Civil Engg., or Bachelor of Urban Engineering or M.Sc. in Geography or four years B.S Degree in "Geography" or M.A. "Geography".

   c) For Master of Architecture (M. Arch) Programme, the candidate must possess Bachelor of Architecture.

   d) For Master of Science (MS) in:-

      (i) Computer Science & Information Technology, the candidate must possess either Bachelors of Computer Science and Information Technology or equivalent, or Bachelor of Architecture or Bachelors of Engineering or Sixteen Years Education in Applied Mathematics or Applied Physics or equivalent.

      (ii) Applied Mathematics, the candidate must possess Bachelors of Engineering degree or Sixteen years education in Mathematics or equivalent.

      (iii) Industrial Chemistry, the candidate must possess Bachelors of Engineering degree or Sixteen years education in Chemistry or Applied Chemistry equivalent.

      (iv) Physics, the candidate must possess Bachelors of Engineering degree or Sixteen years education in Applied Mathematics, Applied Physics, Physics or equivalent.

      (v) Applied Linguistics, the candidate must possess Bachelors in English or Sixteen years education in English in the relevant area with second division and above / CGPA 2.4/4.0.

      (vi) Data Engineering and Information Management, the candidate must possess Bachelors of Engineering degree or Bachelors of Computer Science, or Bachelors of Business Administration or sixteen years education in Applied Mathematics or Statistics, or equivalent.

      (vii) For Master of Engineering Management (MEM in Process Engineering Management) candidates having obtained degree in the disciplines of Chemical, Mechanical, Food, Petroleum, Environmental, Industrial & Manufacturing, Materials,

Metallurgy, Polymer/Polymer & Petrochemical Engineering from the institutions as recognized by this university will be accepted for admission.

OR

e) Any other degree in disciplines as approved by Academic Council for any of the above programmes.

iii) To be enrolled in any programme Day / Afternoon/ Evening / Weekend, the candidate must have attained high degree of scholarship in his/her undergraduate study in relevant or approved discipline and must have demonstrated promise for success in advanced study.

iv) Application for admission shall be made on the prescribed form, and sent to the Chairperson of concerned department, either by hand or by registered post. After introduction of ONLINE Admissions System, only this platform shall be used for submission of Admission Form. Any application received after the closing date may not be considered. Any applicant who fails to appear in the Admission Test shall stand disqualified for admission.

v) Admission shall be granted on the basis of merit. Merit list of successful candidates will be prepared in accordance with criteria as under:
a) Qualifying Examination Result.
b) Qualifying Pre-Admission Entry Test that includes the NTS GAT-General Test or University conducted test or any other test recognized by the HEC with minimum 50% cumulative score.
c) Interview of candidates or short-listed candidates under (a) and (b) above, if required.

vi) Names of all selected candidates shall be displayed on the departmental notice board.

vii) Selected candidates shall be required to report to the Chairperson, of the respective Department for verification of their documents, then payment of prescribed fees and complete registration / enrolment documents within the prescribed date as notified.

viii) The Dean of each Faculty shall monitor compliance with Regulations by the concerned departments within his/her Faculty.

ix) The Vice-Chancellor can cancel admission of any candidate after giving him a personal hearing.

6.1.6 Medium of Instruction

Instructions in all classes and laboratories and all examinations written or oral shall be carried out in the English language.

6.2 SCHEME OF STUDIES

6.2.1 General

(i) Each Programme shall be of thirty (30) credit hours including Thesis where total credits hours for course work are proportionally reduced.
a) In MS (Applied Linguistics) Programme a student may earn the degree by completing 24 credits in taught courses and 6 credits through Thesis.

(ii) There shall be two semesters in one calendar year, namely; Fall Semester and Spring Semester.

(iii) Wherever applicable and in order of merit of selection, each candidate shall have the option to enroll either in the Day or the Afternoon or the Evening or the Weekend programme

(iv) Any student enrolled in the Day / Afternoon programme may complete all requirements in three semesters (four semesters for students opting for Thesis; Thesis being compulsory in the Day programme) or within a maximum of eight semesters (Four Years) including withdrawal; if any.

(v) Any student enrolled in the Evening / Weekend programme may complete all requirements in minimum four semesters (for weekend minimum period being three semesters) or within maximum of eight semesters (Four Years) including withdrawal (Semester and Programme withdrawal); if any.

(vi) Those students desiring to pursue for PhD, or based on their personal preference/ motivation, if allowed by the concerned Chairperson, may opt for Thesis in place of two optional courses of 3 credit hours each. Thesis shall be administered as described in clause 6.4.

6.2.2 Duration of Course and Time Schedule

(i) Each semester shall have at least sixteen weeks instruction time followed by semester examinations.

(ii) In the Day / Afternoon/ Weekend programme, courses up to maximum of twelve credit hours and in the Evening programme courses up to maximum of six credit hours shall be allowed in each semester. However, the Chairperson of the concerned department may allow one additional course to any such student who is enrolling for three credit hours of Thesis in a Semester or otherwise might require one more semester to complete thirty credit hours requirement for the degree.

6.2.3 Admission in Any Semester

i) Admission in any semester requires registration either in any course(s) or Thesis.

ii) Registration in course(s) for earning credit hours shall be subject to the following conditions:

   a) Any student having lesser than 2.5 GPA/CGPA shall be allowed registration in courses for earning credits subject to the condition that he/she shall remain on probation during next Semester.

   b) The student shall be required to achieve at least 2.5 CGPA after completion of the course(s) during next / probationary Semester.

iii) Any student who was on probation in any Semester and had not achieved at least 2.5 CGPA shall not be allowed to earn new credits and would be required to repeat /improve earlier courses.

iv) Any student may be allowed to take one course of three credit hours offered under any other area of specialisation in the same Department or in any other Department of the University with the recommendation of concerned Chairperson(s) and approval of the concerned Dean.

v) Registration of students in any course may be subjected to the maximum number of students in the class.

vi) Any student may be allowed to change a course within two weeks after the date of the commencement of the classes by the Chairperson of the concerned department.

vii) Any students admitted in one particular programme i.e. Day/Evening/ Weekend may desire changing to alternate programme (with same specialization) shall be allowed by the concerned Dean on the recommendations of concerned chairperson. Such change shall however be allowed provided that there are justified reasons for the request of change in programme.

6.2.4 Transfer of Credits / Exemption

(i) Transfer of credit/ exemption of courses(s) may be granted by the concerned Chairperson against courses(s) which the student has passed earlier provided that:

   (a) Application must be submitted before the completion of first semester of studies.
   (b) Discontinuation of his/her studies has not exceeded two calendar years.
   (c) Such course(s) was (were) not counted towards any other degree.

(ii) **Transfer of Credits**
Any credit course(s) completed during preceding four semesters from this University with at least 'B' grade may be credited with transfer of grade(s) as follows;

   a) Course(s) listed under the current scheme of specialisation
   b) One course from any other specialisation in line with clause 6.2.3(iv), if applicable.

(iii) **Exemption of Courses**

Subject to equivalence, exemption may be granted:
   a) To a maximum of Six credit hours equivalent courses passed in at least 'B' grade from any other institution.
   b) Any number of non-credit courses from any other institution

Grades of exempted course(s) shall not be counted towards CGPA and the thirty credit hours requirement for the degree shall be reduced accordingly.

Note: **Necessary notification towards grant of transfer of credits /exemption shall be issued in each case.**

6.2.5 Cancellation of Admission

The admission of any such student will be cancelled if the student is:

(i) involved in any breach of discipline as prescribed in Regulations.
(ii) fails to register in any semester without being officially allowed withdrawal either from the Semester or from the Programme.
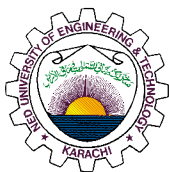
(iii) On probation in the second effective semester of his/her studies and on completion of the semester i.e. after taking the exam fails to achieve at least 2.5 CGPA.

6.2.6 Withdrawal from Semester

Permission to withdraw from any semester may be given under justified circumstances by concerned Chairperson and shall be notified accordingly. However, fees paid shall not be refunded. In any case withdrawal shall only allowed for the second semester provided that the student attended classes and had maintained at least 50% attendance in any one course during the first semester.

6.2.7 Withdrawal from Programme

A student, who is unable to continue his/her studies because of justified circumstances on his/her part and desires withdrawal from the Programme, should apply to the Chairperson of the concerned department. If allowed, necessary notification shall be issued. In any case withdrawal shall only be allowed at commencement of second semester provided that the student attended classes and had maintained at least 50% attendance in any one course during the first semester.

6.2.8 Re-Admission in the Programme

A student who has officially withdrawn from the Programme may be readmitted in the programme provided that the period of absence together with period of study shall not exceed maximum permissible period as given in Clause 6.2.1 (iv & v).

6.2.9 Admission to Master's Programme through Academy

(i) Applicants having passed Masters Courses through Academy of this University may be considered for admission in any relevant Masters Programme provided that they fulfil conditions under Clause 6.1.5 of these Regulations.

(ii) Relevant courses completed in the four preceding semesters with at least 'B' grade may be credited towards CGPA. However, maximum of four such courses shall be credited.

(iii) Consequently, maximum period for completion of the Masters Degree Programme may be reduced by one Semester for day Programme and two Semesters for evening Programme.

6.3 EXAMINATION

6.3.1 Conduct of Examination

(i) There shall be a final examination at the end of each semester as scheduled by the Controller of Examinations.

(ii) The maximum marks in each course shall be 100; distributed as 40 marks for the sessional work and 60 marks for the final examination.

(iii) The maximum marks in planning and design studio courses shall be 100; distributed as 60 marks for sessional work and 40 marks for final examination.

(iv) Thesis shall be assessed as described in clause 6.4

6.3.2 Class Attendance

The students shall be expected to attend the classes regularly and submit the home-assignment when due. A candidate with less than 75 percent attendance in any course shall not be allowed to take the final examination in that course.

6.3.3 Grade Point Average

The following grades / grade points with the equivalent marks shall be awarded to the students on the basis of their performance in each course of study.

Grade	Grade Point	Marks	Remarks
A	4.0	88 – 100	-
A –	3.7	80 – 87	-
B +	3.4	75 – 79	-
B	3.0	70 – 74	-
B –	2.7	67 – 69	-
C +	2.4	64 – 66	-
C	2.0	60 – 63	-
C –	1.7	57 – 59	-
D +	1.4	54 – 56	-
D	1.0	50 – 53	-
F	0.0	Below 50	Fail
S	-	-	Satisfactory (for Thesis)
U	-	-	Unsatisfactory (for Thesis)
P	-	50 – 100	Pass in non-credit course
X	-	-	Exempted
I	-	-	Incomplete
WU	-	-	unofficial withdrawal

6.3.4 Academic Performance

Academic performance shall be determined on the basis of;

(i) Grade point average (GPA) to be calculated for the courses completed in any semester or for some selected courses completed in more than one semester.

(ii) Cumulative Grade point average (CGPA) to be calculated for all courses completed upto any semester or on completion of thirty credit hours.

(iii) GPA and CGPA shall be calculated as:

$$\text{GPA and CGPA} = \frac{\text{Sum of (Credit hours of course multiplied by grade point in that course)}}{\text{Total credit hours of courses}}$$

*Note: In the above calculation, total credit hours of courses (denominator value) includes count of course(s) with "F" grade as well.

6.3.5 Absence from Examination

(i) Any candidate, who fails to appear in the final examination of any course shall be awarded grade 'WU' in the course(s):

(ii) a) If there is any documentary evidence or otherwise there is sufficient ground to justify absence of the candidate accepted as such by the teacher, the chairperson and the Dean concerned, the grade WU in the course will be changed to grade 'I'.

   b) Such candidate shall be required to appear in the examination of the course as scheduled by the chairperson; if the candidates fail to appear again, for any reason, he/she shall be awarded grade WU as final grade in the course.

6.3.6 Change of Grade/ Improvement

Registration in a course for change of grade/ improvement will be subject to the following conditions:

(i) A compulsory course which the student is required to repeat for obtaining a passing grade or a course selected by the student for improvement of his/her CGPA.

(ii) Any other credit course in lieu of an optional course.

(iii) Better grade(s), if any, will be considered for determining GPA / CGPA

6.4 THESIS

Thesis shall be equivalent to six credit hours and shall be required to be completed within duration of two semesters, with three credits hours enrolled in each of the two semesters. Three credits of thesis may include laboratory work. Extension of one semester may, however, be granted by the concerned Chairperson in special circumstances if the student was unable to complete the Thesis requirements in two semesters because of unavoidable circumstances not related to his/ her own lack of commitment.

6.4.1 Proposal for Thesis

(i) During the first 8-10 weeks of the first semester of Thesis enrolment, a proposal on prescribed format should be submitted by the student to the concerned Department through the Supervisor.

(ii) The Thesis proposal is to be evaluated by a Postgraduate Committee comprising of three senior faculty members including Chairperson. This Committee is to be constituted by concerned Dean.

(iii) The proposal would then be defended in a departmental seminar.

(iv) After successfully defending the proposal, the proposal would be submitted to the concerned Board of Studies for consideration.

6.4.2. Thesis Assignment and Supervision

(i) Each such student will also be assigned a Supervisor for guidance.

(ii) Depending on the nature of topic for Thesis, Chairperson concerned shall recommend a Supervisor having relevant experience /expertise in the area of the topic, to guide the student in the enquiry, analysis and/or development work undertaken and it's write up throughout the period of research. The approval of the supervisor shall be given by the Vice Chancellor. The Supervisor shall be responsible for;

   a) Initial definition /selection of the topic of the research and plan of the research assigned to the candidate.

b) Guiding the candidate in development of the research proposal, overall monitoring and guidance, thesis writing and other matters related to the programme.

(iii) Thesis shall be allowed only to those students having completed twelve credit hours with CGPA of 2.75.

(iv) Supervisor may recommend a Co-Supervisor to the Chairperson concerned. The approval of the Co-Supervisor will be given by the Vice Chancellor.

(v) A student undertaking a research leading towards thesis option shall be allowed to enroll in a maximum of two more courses of three credit-hours each during such semester(s) in which he/she enrolls for thesis, provided that he / she is able to maintain a CGPA of 2.75 at time of such enrollment.

(vi) Satisfactory performance of the first three credit hours of a thesis shall be based on an Evaluation Report by the Supervisor endorsed by the Chairperson concerned.

(vii) A student satisfactorily completing the first three credit hours of a thesis shall be allowed to enroll in the remaining three credits in a subsequent semester provided that he / she is able to maintain a CGPA of 2.75 at the time of such enrollment.

(viii) A student having unsatisfactorily performing in the first three credit hours of a thesis shall not be given any thesis credit and shall be required to undertake regular coursework in lieu of the six credit hours of thesis work.

(ix) A student after successfully completing three credit hours of thesis may opt / be given the option to enroll for regular coursework in lieu of the complete six credit hours of thesis work. No credit, however, shall be given in such a case for any completed thesis credit hours.

(x) A Weekend Pogramme student desirous in enrolling in thesis may be allowed by the concerned Chairperson to enroll in 12 credit hours in his/ her first semester of studies so as the student be able to complete the degree requirements in 3 semesters. All other conditions will apply.

(xi) A candidate, who is temporarily unable to continue research because of justified circumstances, should file an application to the Chairperson of the concerned Department through the Supervisor for temporary suspension from the programme. Such leave of absence shall not exceed twelve months. Upon return after availing the leave, Chairperson on the recommendation of Supervisor may allow the student to continue.

6.4.3   Evaluation of Thesis

(i) A candidate may be allowed by the Chairperson of the concerned Department to submit the Thesis only after:

    (a) Fulfilling all requirements as suggested by the Supervisor.
    (b) Pursuing Thesis work for at least two semesters.
    (c) Fulfilling all other regulatory requirements prescribed by the University.

(ii) A candidate shall submit an application after fulfilling conditions of Section 6.4.3(i), to the Chairperson of the concerned Department for the examination and shall submit three copies of the Thesis for evaluation. This submission should be done by the candidate within two weeks of completion of classes in semester for evaluation / examination. Otherwise, either the candidate may request the Chairperson for award of grade 'I' and extension of one Semester or withdrawal from the Thesis.

(iii) The candidate shall be examined orally and will be provided an opportunity to defend his/her Thesis.

(iv) The Vice Chancellor of the University, on the recommendation of the Board of Studies (BoS), shall nominate an Examiner's Committee comprising of at least two examiners including the Supervisor. Examiner (other than the supervisor) may also be from outside the University.

(v) The evaluation of Thesis shall be done in the following manner:
    (a) Requirement fulfilled without any corrections
    (b) Requirement fulfilled contingent to major corrections
    (c) Requirement fulfilled contingent to minor corrections
    (d) Fail

(vi) The Examiner's Committee shall examine and grade the Thesis: 'S' for satisfactory without any corrections or with corrections; otherwise 'U' for unsatisfactory.

(vii) In case of result as 6.4.3(v)(b) or 6.4.3(v)(c), the Examiners' Committee shall indicate in what respect the material of the Thesis should be modified and specify period for resubmission. Once re-submitted in due time, one of the members of the Examiner's Committee, as nominated by the Examiner's Committee, shall certify that the corrections are carried out as recommended by the Examiner's Committee. In case of major revision, Committee shall also decide whether to hold subsequent examination or not. Up to the time re-examination is done (if required) and/ or all corrections are certified, the Thesis result of the candidate shall be withheld. Re-examination shall only be allowed once. In case the candidate fails to submit the corrections to the satisfaction of the examiner's committee in due time, a one-time extension may be granted by the Examiner's Committee. This whole process, however, should take no longer than 12 weeks from the date of first oral examination.

(viii) In the case of a failure or when a student is unable to meet the requirements as mentioned in 6.4.3 (vii) in case of major or minor corrections, Thesis shall be graded as "Unsatisfactory" and the student shall be required to undertake regular coursework in lieu of the six credit hours of Thesis work.

(ix) The Examiner's Committee shall submit the result of the entire examination, immediately after the oral examination, on the prescribed form to the Controller of Examinations.

6.4.4 Submission of Thesis

(i) A candidate, having qualified for Thesis, shall submit three copies of the Thesis on a prescribed format to the Chairman of the concerned Department.

(ii) The NED University of Engineering &Technology shall have the right to publish the Thesis or any part thereof and/or develop intellectual property out of the same – irrespective of whether or not the project work is completed.

6.5 AWARD OF DEGREE

Any student who has fulfilled following conditions shall be eligible for the award of Masters Degree in the relevant field;

(i) Passed all non-credit courses, if required.

(ii) Passed all credit courses counted towards degree with minimum 2.75 CGPA within specified time.
  a) Satisfactorily completed Thesis.

(iii) Satisfactorily completed all other requirements

6.6 GENERAL PROVISION

Regulations and rules of the Undergraduate Programme shall not be applicable to any Post-graduate Programme unless otherwise specified by the appropriate authority.
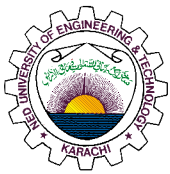
7 SUPPORTING INFRASTRUCTUR

7.1 Engr. Abul Kalam Library

Since its inception in the City Campus, Engr. Abul Kalam Library http://www.neduet.edu.pk/library has grown to become one of the leading academic libraries particularly focusing engineering, sciences and technology of the country. The library devotes considerable efforts and resources to the development of an outstanding library collection to meet the needs of the students, teachers and researchers and serves as the regional reference library of engineering and technology. Services and facilities of the library are governed by the library regulations.

Engr. Abul Kalam Library comprises of two buildings adjacent to each other. The reference and administrative building consists of three floors having numerous seating capacity for the library users. The building adjacent to this comprises of two floors with Circulation Section on the ground and Book Bank on the first floor. Departmental libraries have also been setup in remote campuses, City Campus, LEJ Campus, TIEST Campus as well as selected teaching departments at main campus.

Library collection is the impressive blend of traditional information resources and scholarly electronic resources. The collection includes:

- Textbooks of common interest.
- Reference books including encyclopedias, handbooks, dictionaries, manuals etc.
- Periodicals on current lists of subscription as well as volumes of back issues of local and international scholarly journals; magazine and newspapers.
- Government documents & Archive material including Acts and Ordinances, Services Rules, Statistical reports, Census reports, Survey reports, Planning reports and Budgets etc.
- Non book materials, CD-ROMs, DVDs etc.
- Digital content including databases of e-books, e-journals and e-thesis and e-dissertations etc.

Reference Section provides reading / reference services to its members and users. Textbooks and reference materials including audio visual material, periodicals and government documents are restricted to be used within the premises. The collection is secured against theft using state-of-the-art security system and also protected by fire alarms. Library has a separate bag deposit room at the main entrance which is monitored through CCTV.

The library provides book lending services through the Circulation Section to students, faculty members, researchers and other employees of the University as per rules laid down. However, the Book Bank caters undergraduate students only. The library also conducts Book Fair and Library Orientation to new comers annually.

The library keeping pace with emerging technologies has its own Computerized Library Management System, Website, OPAC and Portal Services. Wi-Fi access points and Digital Notice Board are also available to facilitate library users.

A computing facility comprising of latest configuration computers provides digital services to its users such as access to e-books and e-journals through the National Digital Library Program of HEC. Internet facilities, Laser Printing, Scanning and CD/DVD Writing and Copying of reference material.

The library is committed to providing a pleasant, user-oriented learning environment for its users. Its mission is to make its resources available and useful to its users and to sustain and preserve a universal collection of knowledge for future generations.

7.2   INFORMATION TECHNOLOGY DEPARTMENT

The University has its own Internet facility managed by its Information Technology (IT) Department (formerly Internet Centre) established in 1998-99. The Information Technology (IT) Department since its establishment has played a pivotal role in developing the I.T. infrastructure of the University by providing robust Internet facility to its users within and outside of its campuses. The department is equipped with state of the art networking equipment and acts as a central IT hub providing services like Internet, Portal, Web, Network Operations and Support Services. Continuing the expedition in producing the best in the Country, this Department also hosts corporate training for faculty and staff along with the video conferencing facility enabling Faculty and Students to join the rest of the Engineering and Technological hubs of the world.

7.2.1.   Network & Communication Internet Facility

The IT Department is equipped with the state of the art LAN/WAN equipment. The Optical Fibre core network provides Gigabit connectivity to all the departments terminating at the Cisco Highend distribution switches located at the IT Department. The department also functions as an ISP providing dialup and VPN connections to the University students, faculty and staff thus enabling them to also connect remotely from their home. At present the University boasts a bandwidth of 48 Mbps on PERN-2 (Pakistan Education and Research Network-2) in addition to a 1 Mbps Satellite connection. Coping up with the ever growing technology standards, the University has extended its services and infrastructure highlighted as under:-

- Establishment of NEDUET owned Metro-LAN thus connecting all its three campuses including Main, LEJ & City campus through its own dedicated Fibre Optic links hence creating a massive learning network that would facilitate every member of the University irrespective of their campus location.
- Deployment of customized WLAN (Wi-Fi) thus establishing Wireless Internet Network providing campus wide coverage. Deployment of Kaspersky Antivirus solution with central management at University Level.
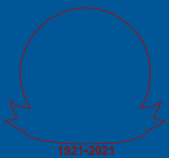
- Deployment of Microsoft KMS server for the biggest Microsoft volume based license software installation.
- The 24 X 7 network and support services throughout the year providing access to database and information Agencies linkage with libraries (globally), Industry, Universities (local & Foreign), resource sharing and email services.

7.2.2. Hardware Maintenance and Inventory

Department also provides hardware and software support services in addition to managing hardware inventory and technical feasibility services.

7.2.3. Video Conferencing Facility

This University has a centrally located Video Conferencing Facility Centre through which NEDUET connects to any part of the world, locally and Internationally to connect and communicate with video and voice facility for the arrangement of virtual classes (online classes), conferences, seminars, Internet meetings (video conferences) among multiple locations, as and when required. This facility is available round the clock.

7.2.4. Information Systems And Software Section

The IT Department focuses on delivering state-of-the-art software using Agile Methodology with Faster Development time and uncompromising integrity, some of them are as follows; Undergraduate and Postgraduate Students Management System, Human Resource Management System, Attendance Information System, Shuttle Pass System, Hostel Management System, LTV Management System, Security Operations Management System, Statutory Bodies Management System and Academic Performance Monitoring System etc. while several others are in the phase of development. This comprehensive and sophisticated development effort as a whole is termed as NEDUET Campus Management System (NEDUET-CMS). To access information contained within CMS, Every employee and student on Intranet uses a front end interface known as NEDUET Campus Portal. NEDUET Portal is a 24/7 service. Portal works on the principle of Single sign on for multiple applications with personalized, secure, and robust and role based access management.

With the aim of facilitating Undergraduate students, Portal dedicated online Students Interface is enriched with the following features:-

- Availability of Personal and Academic Profile
- Subject wise to-date Attendance Status
- Classes and Examination Schedules
- Special announcements from course Teachers
- Access to study material uploaded by course teacher
- Access to Personal letters issued from Registrar Office
- Availability of Portal Notice Board showing recent notifications and announcements from Registrar Office.

IT department has also developed online subsequent semester registration application for admitted undergraduate students.

7.2.5. Research & Development Section

The Research & Development Section of IT Department working with main objective of providing a centralized high performance parallel computing facility to the entire University in particular and to the universities of Pakistan in general, for Research and Development in any of the Engineering disciplines. The facilities are primarily meant to be utilized at the postgraduate and PhD level. It has, therefore, been facilitated with the most advanced hardware and software keeping in view the Research and Development needs of the country in virtually all the engineering disciplines. High-end workstations with excellent graphics support and computational power are available for the researchers to assist them in their research work.

The University has the distinction of being the first Public Sector University of configuring and developing its own Linux based 50 nodes cluster with the technical assistance of its own IT force. The system was developed in the year 2003 and became functional in 2004. The State-of-the-art hardware that includes Intel Xeon processors, Gigabit Ethernet connectivity, high-tech system as well as management software has been used for Cluster development that provides tremendous increase in performance and throughput. The System is capable of executing complex engineering problems efficiently and with great accuracy. This facility has enabled researchers and creative professionals to exploit heavy computational and bandwidth-conscious software like Fluent, Ansys, MATLAB,
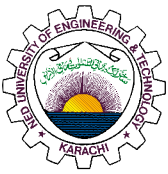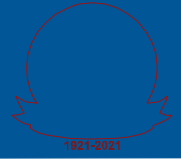
Cadence, OPNET etc., and perform heavy simulations and modelling exercises with ease. Recently, one new high performance computing cluster based on 64-bit architecture has been developed. The latest core processors technologies with branded high tech systems are procured. This cluster is now fully functional. With storage capacity of these systems reaching terabyte (TB) and memory capacity in gigabyte (GB), the computation on these are producing fast results. All facilities available at the Centre can be accessed on campus over the University LAN and it can also be accessed from remote locations. The centre also extends its service to the engineering industry and other professional organizations involved in Research and Development work.

The section also has a very large database of multidisciplinary software with a high number of licenses for some distinct software. Several of these software have the feature of executing tasks in parallel and utilising computing power of our clusters. The software repository will attract the research to pursue their academic research using these software under the terms and conditions of NED University. In addition, Research and Development section also has a training facility where seminars and workshops related to different software are conducted throughout the year for the faculty and students of the University.

7.3   INSTRUMENTATION CENTRE

A state of the art Instrumentation Centre established under the grant provided by the Higher Education Commission (H.E.C.) is in operation, and performing testing and calibration activities for in-house purposes, besides doing repair work and maintenance for departments all over the University. It is also providing training and practical works to undergraduate and postgraduate students, and aiding the undergraduate students in undertaking final year projects of various disciplines.

The Centre has well equipped facilities, latest equipment, machinery, device and expertise for doing both inside as well as outside calibration activities. Laboratories at the centre comprise of Electronic and Signals lab, Pressure and Temperature lab, Equipment testing, Water Quality testing, Frequency flow, Training facility (for training of personnel and students of undergraduate as well as postgraduate and conduct of courses related to maintenance, calibration & testing) and National Instrument (NI). Various pressure calibrators,

temperature calibrators, electrical / electronic calibrators, calibration management software (CALMAN), calibration test benches and systems like NAGMAN 9600 exist and are in regular use. The equipment is also being used for research work and providing R&D facilities for the local industry / institutions. The Centre currently is in the process of acquiring ISO 17025 certification, and up on accreditation, it will very soon be at par with the international and worldwide standards. On commissioning, the Instrumentation Centre will also provide testing of equipment used in industries and organizations located in the Karachi region as well as surroundings. It will also serve as training centre for instrument engineers. The NED University lays emphasis on efforts in contribution towards research and quality of its human resource by providing updated as well as good facilities for utilization by the student, academicians and researchers. For the achievement of all of the above objectives and goals, the Instrumentation Centre can act as a liaison between the University and Industries as well as R&D Institutions by providing quality and up to date services and facilities.

7.4   NED ACADEMY

7.4.1. General

Centre for Continuing Engineering Education was initially established in 1998. Later on the NED Academy came into existence on 1st July, 2008 as recommended by the Higher Education Commission (HEC). The main objectives of NED Academy are:-

- To update Engineers with recent developments in Engineering Science / Engineering Management / IT.
- To provide opportunities for working Engineers to enhance their skills with the objective of improving their employability.
- To provide opportunities for the lower tier in Engineering / IT Profession to improve their qualification to meet Professional Body's registration level.
- To offer structured programmes in conventional disciplines for engineers who are unable to find time to seek admission in formal Masters Degree programme but can acquire necessary credit hours over longer periods by attending several such programmes in service.
- To offer postgraduate diplomas in specific technologies such as sugar, plastics, rubber, cement etc., which could subsequently be
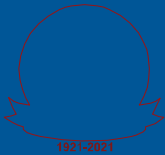
improved and structured to the level of postgraduate degrees.

The Academy consists of two sections:

- Centre for Continuing Engineering Education (CCEE)
- Centre for Multidisciplinary Postgraduate Programmes (CMPP)

7.4.2. Centre for Continuing Engineering Education (CCEE)

The CCEE brings University and Industry together with successful models of Industry-University partnerships. Continuing Education transfers know-how in a timely manner and to the right people. The CCEE, since its inception has offered numerous courses which are widely welcomed by the Engineering community.

7.4.3. Centre for Multidisciplinary Postgraduate Programmes (CMPP):

CMPP is planning to start Multidisciplinary M.Engg Programmes in Alternate Energy, Mechatronics and Earthquake Engineering in near future.

7.4.4. Admission to Masters Programme Through Academy:

Applicats having passed Master Courses through Academy of this University may be considered for admission in any relevant Master Programme provided that they fulfill the eligibility requirements and apply for admission in Masters Programme whenever offered. Further details are available in Master's Regulations.

7.5 FERROCEMENT INTERNATIONAL NETWORK

Department of Civil Engineering also has the honour of being the country's Information Node on FERROCEMENT. Ferrocement International Network (FIN-PAKISTAN) was established in the Department through International funding in 1990, and since then has been serving as National Node for disbursing research material, disseminating related knowledge and imparting know-how in ferro-cement. The National node working under INTERNATIONAL NODE at IFIC-AIT-BANGKOK, has access related to the research endeavors in Ferro cement, and has links with researchers, and resource persons in this field.

7.6 COWASJEE EARTHQUAKE STUDY CENTRE

The Department of Civil Engineering established Cowasjee Earthquake Study Centre (CESNED) in year 2001 after the devastating Bhuj earthquake. The objectives of this endeavour include housing national and global data pertaining to earthquake and act as a centre for disseminating accumulated knowledge, as well to respond to emergency needs and be able to provide guiding principles for pre and post earthquake mitigation. The CESNED became the hub of earthquake related endeavours soon after its establishment including publication of a newsletter. The vital role played by CESNED after 8th October 2005 Kashmir earthquake led to its recognition as one of the two earthquake study centres in the Country and is being funded by HEC for its future development as an International Centre.

7.7 SHAKE TABLE

A shaking table is one of the most recent technological updating of the Civil Engineering Department at NED University. The table installed in 3mx3m in dimensions with a 500 kN actuator and a stroke capacity of + 12 inches. This is a device for shaking structural models or building components with a wide range of simulated ground motions, including reproductions of recorded earthquakes time histories. While modern tables typically consist of a rectangular platform that is driven in up to six degrees of freedom (DOF) by servo-hydraulic or other types of actuators, the earliest reported uses of shake tables date back more than a century. Test specimens are fixed to the platform and shaken, often to the point of failure. Using video records and data from tansducers, it is possible to interpret the dynamic behavior of the specimen. Earthquake shaking tables are used extensively in seismic research, as they provide the means to excite structures in such a way that they are subjected to conditions representative of true earthquake ground motions. The unit installed at NED University utilizes quality components and micro-clean filtration to provide trouble-free long life with minimum maintenance. A complete system of interlocks and controls allow failsafe, unattended, continuous operation.

7.8 PCB FABRICATION LABORATORY

A PCB fabrication Laboratory is available in the Department of Electronic Engineering. This is primarily for training under-graduate students in
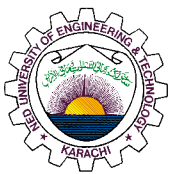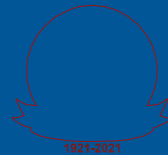
PCB fabrication technology. The laboratory is supported by PCB layout design software and auto routing software. The graduating students with this experience are expected to benefit in their professional field. The Laboratory is being used for fabrication of PCB for local requirement and possibilities of taking orders for external agencies are being examined.

7.9   PRODUCT DEVELOPMENT CENTRE

With the emerging new technologies and shorter product life cycle with high quality demand, the manufacturing industry in Pakistan stands at a position where they are expecting tough challenges ahead. Higher educational institutions in Pakistan are there to share these challenges NED University has been facilitated with Product Development Centre (PDC). This centre is fully equipped with complete range of sophisticated equipment and software to be used for re-engineering.

7.10   DIRECTORATE OF INDUSTRIAL LIAISON

The Directorate of Industrial Liaison was established at NED University in 1997. It has been able to create and enhance the required university-industry linkage in the form of a number of activities, e.g. arranging internship opportunities for students in different industries/organizations, collecting suggestions about the topics of Final Year Design Projects and arranging technical/practical help from the industries related with the projects. In a number of cases the industries have assigned projects to the university students with competent advisors from their organizations to help the students. In addition to that, study visits are arranged for the students and faculty at various industries and organizations.

7.11   MEDICAL DEPARTMENT

Medical Department is located next to Humanities Department of this University. It is headed by a Principal Medical Officer and accompanied by a Senior Medical Officer. Among paramedical staff, one male and two female nurses are also providing medical assistance to the doctors.

A colony resident qualified female nurse and ambulance service 24/7 are available for hostel students.

Two peripheral Medical sub centres are located at each LEJ and City Campus. However, paramedical staff is available at both campuses.

There are numerous diagnostic & therapeutic modalities available in medical department. Emergency / routine Outpatient Department Service (OPD), Pathological, Radiological, electrocardiography tests as well as ambulance facilities are available. These services are free of charges for students.

Similarly, therapeutic support in the form of Airway, Breathing and Circulatory (ABC) assistance as well as Outpatient facilities are available at both peripheral Medical Sub-Centers, i.e. City and LEJ Campuses.

7.12   PHYSICAL EDUCATION

University Sports complex headed by Manager Physical Education provides facilities for athletics, badminton, cricket, football, table tennis, hockey, physical fitness & basket ball.

7.13   OFFICE OF RESEARCH, INNOVATION & COMMERCIALIZATION (ORIC)

Higher Education Commission has established ORIC offices to promote research, innovation and entrepreneurship in universities across Pakistan and working towards commercializing academic research. ORIC Office at NED University was established in 2014, and since then it has been supporting various research and entrepreneurial activities for students and faculty alike.

The objective of the establishment of Office of Research, Innovation and Commercialization (ORIC) is to develop, expand, enhance and manage the university's research programs and to link research activities directly to the educational, social and economic priorities of the university and its broader community. ORIC is also responsible for assuring that the quality of research reflects the highest international standards and advances the stature of the university among the world's best research institutions.

ORIC-NEDUET has established NED Entrepreeurial mindset among students & launched 3D Printing Facility Lab under Maker Studio, inspired from MIT's Fab Lab to introduce multidisciplinary learning at the campus. The Office is all set to inaugurate First HEC backed and NED University's business incubation center, with the name CINETIC (Centre of Innovation, Entrepreneurship, Technology, Incubation and Commercialization).
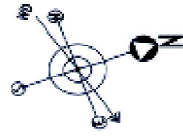
NED UNIVERSITY OF ENGINEERING AND TECHNOLOGY

SOCCER FIELD

CAR PARKING

BANKS

HABIB

NBP

Entrance

TENNIS COURT

BASKET BALL COMPLEX

SQUASH COMPLEX

FITNESS CENTRE

BOYS GYMNASIUM

GIRLS GYMNASIUM

CRICKET GROUND

CAFETERIA

TRANSMITTER TOWER

Central Store

PARKING

FOOD CENTRE

STORE

Services Dept.

ADMISSIONS CENTRE

Humanities Dept.

Medical Dept

R & D SECTION

CIRCULATION LIBRARY

Dean Offices

Administration Block

MASJID

POLYMER & PETROCHEMICAL ENGINEERING DEPARTMENT

STUDENTS CAFETERIA

R.E.O. HOSTEL

BOYS HOSTEL

Staff Colony

Girls Hostel

Girls Hostel

GIRLS HOSTEL

UNIVERSITY ROAD

KARACHI UNIVERSITY

Abul-Hassan Isphani Road

Covered Car Parking

ACADEMIC	
STORE	
PARKING	

SERVICES	
LIBRARY	
ADMINISTRATION	
HOSTELS	

Laboratories.

Adv. Mat. Testing Lab.	4B	IMD Labs	14A	
ATD Labs.	18A	MED Labs	12A	
CED Labs.	4A	PED Labs	16A	
CIS Labs.	15A	Telecom Labs	19B	
CSIT Labs.	5A	Textile Labs	17A	
EED Labs	13A			
Electronics Labs	19A			

Administrative Depts.

Administration Block	27
Admission Centre	25
Dean Offices	28

Academic Depts.

Automotive & Marine Engg. Dept.	18
Chemical Engg. Dept.	24
Chemistry Dept.	5
CIS Lecture Hall	15B

Civil Engg. Dept.	4
Comp. & Info. Sys. Engg. Dept.	15
Comp. Sc. & I.T Dept.	5
Elect. Engg. Dept.	13
Electronic Engg. Dept.	19
Environmental Engg. Dept.	20
Humanities Dept.	30
Indl. & Mfg. Engg. Dept.	14
Materials Engg. Dept.	23
Mathematics Dept.	5

Mech. Engg. Dept.	12
Metallurgical Engg. Dept.	21
Petroleum Engg. Dept.	16
Physics Dept.	5
Polymer & Petrochemical Engg. Dept.	22
Textile Engg. Dept.	17
Urban Engg. Dept.	3

Support Depts./Facilities

Audio Visual Room	8
Auditorium	11
Banks	1
Cafeteria	6
Convocation Ground	33
Food Centre	26
Girls Common Room	7
IT Department	9
Medical Dept.	29
R & D Section (IT Dept.)	32
Services Dept.	31
Staff Centre	10
Video Conferencing Hall	2

LEJ CAMPUS

LOCATION MAP OF NED UNIVERSITY OF ENGINEERING AND TECHNOLOGY (LEJ CAMPUS) KARACHI

CITY CAMPUS
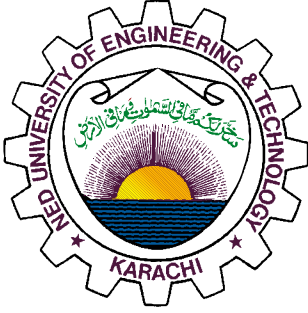
A CHAIRMAN'S OFFICE
B COMPUTER LABS
C STAFF ROOM #1
D THIRD YEAR STUDIO
E SEMINAR HALL
F REFERENCE LIBRARY
G FIRST YEAR STUDIO
H SECOND YEAR STUDIO
I BUILDING#2 (TO BE RESTORED)
J PROPOSED TUCK SHOP
K STAFF ROOM # 2
L LECTURE THEATOR
M FINAL YEAR STUDIO
N MOSQUE

DJ COLLEGE

BURNS ROAD

MOULANA DIN MUHAMMAD WAFAI ROAD

City Campus

Maulana Din Muhammad Wafai Road, (New
Pakistan Chowk), Karachi
Tel: 32620758, 99213058
Fax: 99261255

LEJ Campus

81-A, Block-3, Memon
Co-operative Housing Society, Karachi
Tel: 99230601, 99230602, 99230604,
Fax: 99261255

**Thar Institute of Engineering,
Sciences and Technology (TIEST)**
(A constituent College of NED University of
Engineering and Technology

Shaheed Benazir Bhutto Cultural Complex,
Police Road, Near SSP Office, Mithi Tharparkar