

UNIVERSITY OF ENGINEERING AND TECHNOLOGY, TAXILA



Postgraduate **PROSPECTUS** **2026** Onwards





Postgraduate Prospectus

2026 Onwards



Disclaimer

This prospectus is informational and should not be taken as binding on the University. Each aspect of the educational setup, from the admission procedure or criteria to the examination regulations or discipline, requires continuing review by the competent authorities.



UNIVERSITY OF ENGINEERING AND TECHNOLOGY, TAXILA

Welcome

Vice Chancellor's M e s s a g e

It is my pleasure to welcome you to the University of Engineering & Technology, Taxila. On behalf of the faculty, officers, and staff, I congratulate you on choosing the University of Engineering & Technology, Taxila, for your postgraduate studies and research. Postgraduate education is a journey of intellectual discovery, critical inquiry, and professional development. In the University, you will become part of a dynamic academic community committed to advancing knowledge, promoting innovation, and addressing the technological and socioeconomic challenges of society.



The University provides a stimulating environment in which postgraduate students are encouraged to explore new ideas, undertake meaningful research, engage with experienced faculty, and contribute to the advancement of Engineering, Science, and Technology.

Research in the University must be guided by originality, intellectual honesty, objectivity, and respect for established ethical standards. Plagiarism, fabrication or falsification of research, academic dishonesty, harassment, discrimination, and any other violation of the University's rules or Code of Conduct will not be tolerated. Similarly, the academic environment must remain free from disruptive activities and conduct that compromise the dignity, discipline, or peaceful functioning of the University. Any violation will be dealt with strictly in accordance with the applicable rules and regulations.

At the same time, the University is committed to providing every student with a fair, inclusive, supportive, and intellectually enriching environment. You are encouraged to participate actively in academic discussions, research projects, seminars, conferences, professional societies, innovation initiatives, and constructive co-curricular activities. Make full use of the University's laboratories, libraries, research facilities, digital resources, financial assistance services, and academic support systems.

I expect you to uphold the values of merit, honesty, fairness, teamwork, transparency, mutual respect, and the rule of law. Your postgraduate years should not only lead to the attainment of an advanced degree but should also shape you into responsible researchers, ethical professionals, and thoughtful leaders capable of making a positive contribution to the country and the wider world.

I would like to extend my best wishes for your success in all your academic and research endeavors.

ALLAH bless you all.

Prof. Dr. Muhammad Inayatullah Khan

About the University



THE CITY OF TAXILA

The antique name 'Takshasila' means the city of cut stones. Taxila has gained worldwide eminence for its archaeological sites. Once a province of the powerful Achaemenian empire, Taxila was conquered by Alexander in 327 BC. It later came under the Mauryan dynasty and attained a remarkably mature level of development under the great Ashoka. Then appeared the Indo- Greek descendants of Alexander's warriors and finally came the most creative period of Gandhara. The great Kushan dynasty was established some where near 50 AD. During the next 200 years Taxila became a renowned centre of learning, philosophy, art and religion, Jaulian being a centre of excellence or a university of that age. Pilgrims and travelers were attracted to it from as far away as China and Greece.

History took a new turn around 1950 when Ordnance Factories were founded at Wah, adjacent to Taxila. The country's largest Mechanical Complex and Foundry were established at Taxila in mid sixties. In early seventies, the industrial progress attained a new dimension when Taxila was chosen to have Heavy Industries Taxila near its world famous museum. At the same time Pakistan's largest Aeronautical Complex was established at Kamra which is about 45 km from Taxila. In mid seventies, government of the Punjab found the city ideally suitable for establishing the constituent college of University of Engineering and Technology, Lahore Industrial progress in and around Taxila is gaining a newer pace. The neighboring industrial organizations are in the process of rapid expansion. A new industrial zone has emerged in Hattar area, which is about 20 km away from Taxila. Taxila is emerging as a leading industrial region at the national level. The strategic location is paving way for the city to act as a gateway to historical "Silk Route".

THE UNIVERSITY

With phenomenal increase in students' enrollment in 1970's, a plan to establish additional campuses of the University of Engineering and Technology Lahore was conceived. As a result of that, the University College of Engineering Taxila was established in 1975. For three years it functioned at Sahiwal. In 1978 it was shifted to its permanent location at Taxila. The College continued its working under the administrative control of the University of Engineering and Technology, Lahore till October 1993. During this month it received its charter as an independent university under the University of Engineering and Technology Taxila Ordinance 1993.

Vision

To be a quality conscious OEC of international standing imparting knowledge in the field of engineering and applied technologies in a caring environment for the socioeconomic development of the country

Mission

To fulfill the needs of the country by producing responsible graduates equipped with sound knowledge and skills along with highest moral values through conducive learning environment

Core Values

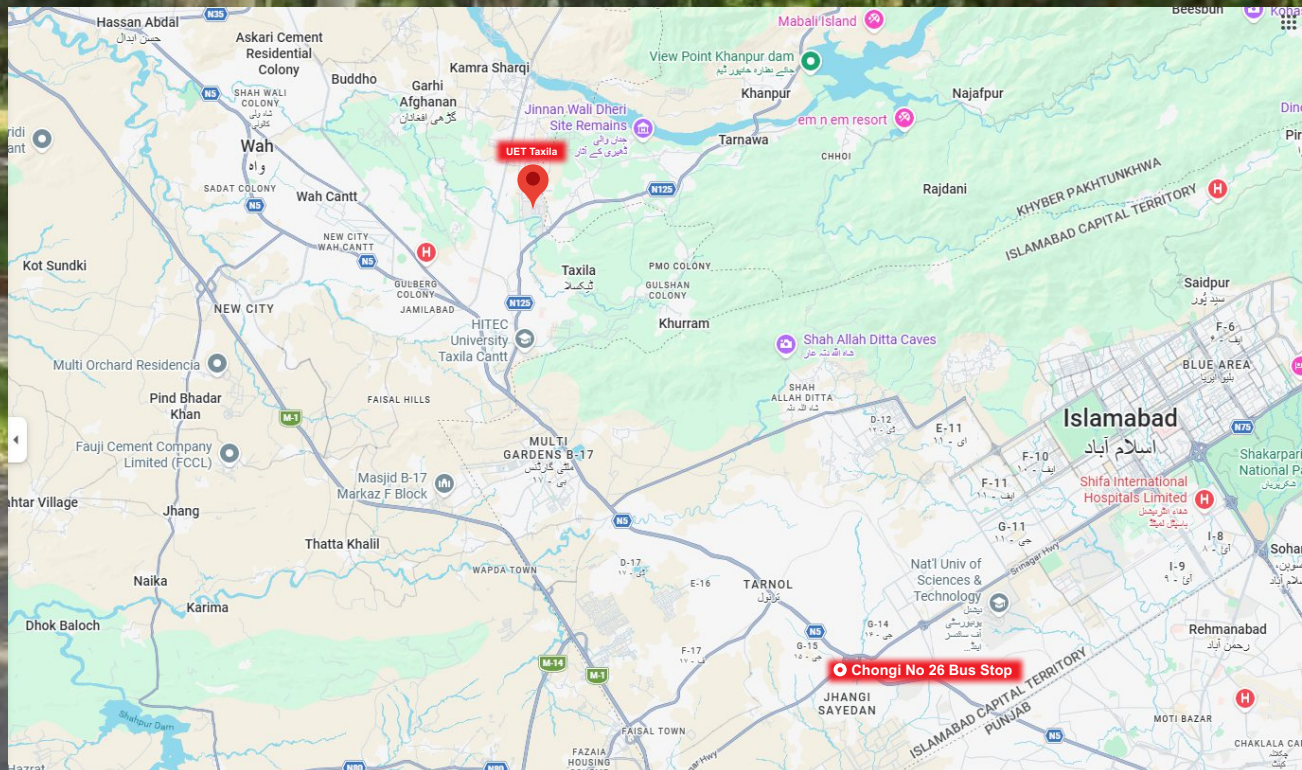
- | | |
|---------------------|-------------------------------------|
| i. Merit | ii. Honesty |
| iii. Justice | iv. Fair Play |
| v. Teamwork | vi. Transparency |
| vii. Accountability | viii. Implementation of Rule of Law |

ADMINISTRATION

The Governor of Punjab is the Chancellor and the Education Minister of Punjab is the Pro-Chancellor of the University. The Syndicate is the governing/legislative body and the Academic Council is the highest academic body of the University. The Vice-Chancellor is the Chief Executive and Academic Officer of the University. He is assisted by Deans of Faculties, Chairmen of Departments, Directors and Principal Officers of the University – the Registrar, the Treasurer, the Controller of Examinations and the Project Director, to ensure that the provisions of the University Act, the Statutes and the Regulations are faithfully observed and implemented.

LOCATION

The University campus is located on the outskirts of Taxila at a distance of 5 km from the city. It is situated near railway station Mohra Shah Wali Shah on Taxila-Havelian branch line. The city of Taxila is 35 km from the twin cities of Islamabad and Rawalpindi on the main Rawalpindi-Peshawar highway. The University buses commute daily between the campus and the cities of Islamabad, Rawalpindi and Wah Cantt. The campus covers an area of 163 acres. All the teaching departments, residential colony for teachers/ employees, student hostels, guesthouse, post office and bank are housed on campus.



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ORGANIZATIONAL SETUP



Chancellor
Governor of the Punjab

Pro-Chancellor
Minister for Education, Punjab

Vice Chancellor
Prof. Dr. Muhammad Inayatullah Khan

Registrar
Mr. Khalid Mahmood

Director ASR&TD
Prof Dr. Gulistan Raja

Controller of Examinations
Engr. Muhammad Kashif Iqbal

Treasurer
Mr. Muhammad Nawaz

Security Officer
Mr. Zahid Rasheed Gondal

Director Academics
Engr. Dr. Mansoor A. Baloch

Senior Librarian
Dr. Bashir Ahmed

Deans of Faculties

- Faculty of Civil and Environmental Engineering
- Faculty of Electronics and Electrical Engineering : Prof Dr. Gulistan Raja
- Faculty of Mechanical and Aeronautical Engineering : Prof. Dr. Riffat Asim Pasha
- Faculty of Telecommunication and Information Engineering : Prof. Dr. Hafiz Adnan Habib
- Faculty of Industrial Engineering : Prof. Dr. Mirza Jahanzaib
- Faculty of Basic Sciences & Humanities



Chairmen of Academic Departments

Department of Civil Engineering	Prof. Dr. Muhammad Yaqub
Department of Environmental Engineering	Prof. Dr. Faisal Shabbir
Department of Electrical Engineering	Prof. Dr. Tahir Mahmood
Department of Electronics Engineering	Prof. Dr. Yaseer Arafat Durrani
Department of Mechanical Engineering	Prof. Dr. Muzaffar Ali
Department of Metallurgy & Materials	Prof. Dr. Riffat Asim Pasha
Department of Energy Engineering	Dr. Muddassir Ali
Department of Computer Engineering	Prof. Dr. Haroon Yousaf
Department of Software Engineering	Prof. Dr. Tabassam Nawaz
Department of Telecommunication Engineering	Prof. Dr. Yasar Amin
Department of Computer Science	Dr. Syed Aun Irtaza
Department of Industrial Engineering	Prof. Dr. Wasim Ahmad
Department of Mathematical Sciences	Prof. Dr. Nasir Siddique
Department of Physical Sciences	Prof. Dr. Sajjad Ahmad

Directors of Postgraduate Studies

Department of Civil Engineering	Prof. Dr. Faisal Shabbir
Department of Mechanical Engineering	Dr. Mubashir Gulzar
Department of Metallurgy & Materials Engineering	Dr. Aneela Wakeel
Department of Energy Engineering	Dr. Muddassir Ali
Department of Electrical Engineering	Prof. Dr. Muhammad Obaid Ullah
Department of Electronics Engineering	Dr. Syed Azhar Ali Zaidi
Department of Computer Engineering	Dr. Fawad Hussain
Department of Software Engineering	Dr. Huma Ayub
Department of Industrial Engineering	Dr. Salman Hussain
Department of Mathematical Sciences	Dr. Zaffer Elahi
Department of Physical Sciences	Dr. Muhammad Nadeem
Department of Computer Science	Dr. Javed Iqbal



Administration of Services & Common Facilities

Chairmen of Committees

Health

Prof. Dr. Riffat Asim Pasha

Library

Prof. Dr. Shabbir Majeed Ch.

Transport

Prof. Dr. Yasar Amin

Sports

Prof. Dr. Tahir Mehmood

Masajid

Prof. Dr. Tabassam Nawaz

Discipline

Prof. Dr. Tahir Mehmood

Affiliation Committee

Prof. Dr. Mirza Jahzanzeb

House Allotment Committee

Prof. Dr. Hafiz Adnan Habib

General Administration

Audit

Resident Auditor
Mr. Awais Ali Ghumman

Accounts

Deputy Treasurer
Mr. Shahid Saleem

Deputy Registrar
Mr. Abid Mehmood Qureshi

Dues/Scholarship Section

Additional Treasurer
Mr. Farooq Ahmed

Examinations Branch

Controller
Engr. Muhammad Kashif Iqbal

Deputy Controller
Engr. Dr. Zakauallah

Establishment

Deputy Registrar
Mr. Muhammad Furqan Shahzad

Procurement

Deputy Registrar
Mr. Muhammad Usama Khalid

Academic & Regulation

Deputy Registrar
Mr. Ahmad Noor

Health Clinic

Senior Medical Officer
Senior Medical Officer
Dental Surgeon

Dr. Muhammad Arif Nadeem
Dr. Sabahat Quddus
Dr. Uzma Ashraf

Library

Senior Librarian

Dr. Bashir Ahmed

Sports

Director Physical Education

Dr. Waqar Ahmad Qureshi

Transport

Deputy Registrar

Syed Basharat Abbas Shah

Estate Office

Director Arboriculture & Land Management
Resident Officer
Estate Officer

Engr. Muhammad Touseef
Mr. Nouman Khan

Hostels

Senior Warden
Foreign Faculty Hostel

Prof. Dr. Mirza Jahanzeb
Mr. Khalid Mahmood

Legal Cell

Legal Advisor

Ch. Farhat Abbas

Network Administration and Research Center

Director Networks
System Administrator
Web Manager
Manager Software Development

Mr. Khurram Mehmood
Mr. Ulfat Hussain
Mr. Muhammad Huzaifa

Vice Chancellor's Office

Secretary to Vice Chancellor

Syed Basharat Abbas Shah

Directors

Advanced Studies, Research & Technological Development
Director QEC/ Director Academics
Director ORIC
Student Affairs
Information Technology Centre
Project Director (B&W)
Telephone Exchange
Planning & Development

Prof. Dr. Gulistan Raja
Dr. Humyun Shahid
Prof. Dr. M. Haroon Yousaf
Prof. Dr. Yasir Ameen
Prof. Dr. Yasir Amin
Engr. Tahir Ali
Dr. M. Abdul Basit
Prof. Dr. Fiaz Tahir

Directorate of ASR&TD Office

Director ASR&TD
Assistant Registrar
Assistant
Attendant

Prof. Dr. Gulistan Raja
Mr. Muhammad Hussain
Mr. Muhammad Tufail
Mr. Muhammad Bilal Niazi





CODE OF ETHICS

**For the seekers and practitioners of the magnificent science of engineering
IN THE NAME OF ALLAH, THE MOST BENEFICENT, THE MOST MERCIFUL**

- You shall be honest, faithful and just, and shall not act in any manner derogatory to the honor, integrity and dignity of the engineering profession.
- You shall not injure, maliciously, directly or indirectly, the reputation or employment of another engineer, nor shall you fail to act equitably while performing professional duty.
- You shall use your knowledge and skill of engineering for human welfare, and render professional service and advance, which reflects your best professional service and advance, which reflects your best professional judgment.
- You shall not abuse your position or power, nor accept illegal gratification of any sort.
- You shall faithfully observe and fulfill all your obligations.
- You shall express your opinion on engineering or other matters in a frank, open and straight-forward manner.
- You shall not criticize another engineer's work without his knowledge nor malign, or injure his professional reputation.
- You shall not ridicule fellow engineers nor let one discipline of engineering deride other disciplines or professions.
- You shall not directly or indirectly discredit other engineers nor assign (derogatory) epithets to their persons or work.
- Your professional advice shall be based on full knowledge of the facts and honest conviction, and you shall not write articles or advertise in self-laudatory or in any manner derogatory to the dignity of the profession.
- You shall ascertain facts before accepting them and shall not encourage or cause others to carry tales. Credulity is no credit.
- You shall help one another in upholding and doing that is right, and shall not associate with those who transgress and those who indulge in unethical practices.
- You shall be kind and considerate to others and shall not fail to be cooperative and accommodating.
- You shall decide matters of common professional interest by mutual consultation.



PROFILE OF THE UNIVERSITY POSTGRADUATE FACULTIES



Faculty of Civil and Environmental Engineering

Department of Civil Engineering

Department of Environmental Engineering

Faculty of Electronics and Electrical Engineering

Department of Electrical Engineering

Department of Electronic Engineering

Faculty of Mechanical and Aeronautical Engineering

Department of Mechanical Engineering

Department of Metallurgy & Materials Engineering

Department of Energy Engineering

Faculty of Telecommunication & Information Engineering

Department of Computer Engineering

Department of Software Engineering

Department of Telecommunication Engineering

Department of Computer Sciences

Faculty of Industrial Engineering

Department of Industrial Engineering

Faculty of Basic Sciences & Humanities

Department of Mathematical Sciences

Department of Physical Sciences

UNIVERSITY DEPARTMENTS





1.1

FACULTY OF CIVIL AND ENVIRONMENTAL ENGINEERING

1.1.1 DEPARTMENT OF CIVIL ENGINEERING

Dean

Chairman

Prof. Dr. Muhammad Yaqub

Professors

Dr. Muhammad Yaqub
BSc Engg (Hons) (UET Taxila)
MSc Engg (UET Taxila)
PhD (University of Manchester, UK)
Specialization: Structural Engineering

Dr. Ayub Elahi
BSc Engg (UET Taxila)
MSc Engg (UET Taxila)
PhD (UET Taxila)
Post Doc. (Queen's Univ. UK)
Specialization: Structural Engineering

Dr. Imran Hafeez
BSc Engg. (UET Lahore)
MSc Engg (UET Taxila)
PhD (UET Taxila)
Post Doc. (Univ. of Illinois at Urbana-Champaign, USA)

Areas of Interest

Structural Engineering,
Strengthening & Repairing of
Structures Damaged by extreme
Loading (Fire & Earthquake)
using Advanced Smart Materials

Structural Materials,
Structural Engineering, Self
Compacting Concrete, Concrete
Deterioration

Transportation Engineering,
Pavement Design and
Evaluation, Material Characterization and Performance
Evaluations

Dr. Usman Ghani
BSc Engg (UET Taxila) (Gold Medalist)
MSc Engg (UET Taxila)
PhD (UET Taxila)
Post Doc. (Univ. of London, UK)

Vegetated Open Channel
Flow, Bridge Pier Scouring,
Meandering Compound
Channels, Hydraulic Str.

Dr. Naeem Ejaz
BSc Engg (UET Taxila)
MSc Engg. (UET Lahore)
PhD (UET Taxila)

Water Quality Modeling,
Air Pollution Assessment and
Control, Environmental
Impact Assessment, Solid
Waste Management

Dr. Naveed Ahmad
BSc Engg (Hons) (UET Taxila)
MSc Engg (UET Taxila)
PhD (Univ. of Nottingham UK)
Post Doc (Univ. of Nottingham, UK)

Transportation Engineering,
Pavement Engineering,
Traffic Engineering

Dr. Faisal shabbir
BSc Engg (Hons) (UET Taxila)
MSc Engg (UET Taxila)
PhD (Univ. of Auckland, New Zealand)

Design Optimization, Structural
Dynamics, Structural Health
Monitoring

Dr. Muhammad Fiaz Tahir
BSc Engg (UET Taxila)
MSc Engg (UET Lahore)
PhD (UET Taxila)
Post Doc (Uni. of Sheffield UK)

Structural Engineering,
Earthquake Engineering,
Retrofitting of Structures,
Advance Structural Materials

Associate Professors

Dr. Usman Ali Naeem BSc Engg. (UET Taxila) MSc Engg. (UET Taxila) PhD (UET Taxila)	Climate Change & Water Resources, Flood and its Mitigation, Hydrologic Modeling & Applications
Dr. Jawad Ahmad BSc Engg. (UET Taxila) MSc Engg. (UET Taxila) PhD (Univ. of Auckland, New Zealand)	Accelerated Pavement Testing, Asset Management, Road & Traffic Safety

Dr. Bilal Ahmed Zaidi BSc Engg (UET Taxila) MSc Engg (UET Taxila) PhD (Univ. of Nottingham)	Transportation Engineering
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Assistant Professor

Engr. Muhammad Salman BSc Engg (UET Taxila) MSc Engg (NUST)	Transportation Engineering
Dr. Faheem Butt BSc Engg (UET Lahore) MSc Engg (UET Taxila) PhD (Univ. of Auckland, New Zealand)	Structural Dynamics, Earthquake Engineering, Structural Health Monitoring, Soil-Structure Interaction
Dr. Shahzad Saleem (on leave) BSc Engg (UET Taxila) MSc Engg (UET Taxila) PhD (Thammasat University, Thailand)	Structural Engineering Design of Steel Structures Strengthening Retrofitting and Repairing of Structures
Dr. Muhammad Usman Arshid (on leave) BSc Engg (UET Taxila) MSc Engg (UET Taxila) PhD (UET Taxila)	Geotechnical Engineering Remote Sensing and GIS in Geotech, Ground Improvement, Forensic Geotechnical Engg.
Dr. Naveed Ahmed BSc Engg (UET Taxila) MSc Engg (UET Taxila) PhD (Univ. of Tokyo, Japan)	Soil Liquefaction, Ground Response Analysis under Dynamic Loading, Performance of Lifelines During Earthquakes
Dr. Muhammad Saad BSc Engg (UET Taxila) MSc Engg (UET Taxila) PhD (UET Taxila)	Structural Engineering
Dr. Syed Saqib Mehboob BSc Engg (UET Taxila) MSc Engg (UET Taxila) PhD (UET Taxila)	Structural Engineering, Structural Health Monitoring
Dr. Ghufuran Ahmad Pasha BSc Engg (UET Taxila) MSc Engg (UET Taxila) PhD (Saitama University, Japan)	Flood Mitigation, Flow Vegetation Interaction, Debris Flow, Scour and Erosion
Dr. Afzal Ahmed B.Sc. Engg. (UET Taxila) M.Sc. Engg. (UET Taxila) PhD (UET Taxila)	Water Resources & Irrigation Engineering

Dr. Kashif Riaz B.Sc. Engg. (UET Taxila) M.Sc. Engg. (UET Taxila) PhD (UET Taxila)	Geotechnical Engineering
Dr. Rana Muhammad Waqas B.Sc. Engg. (UET Taxila) M.Sc. Engg. (UET Taxila) PhD (UET Taxila)	Structural Engineering
Dr. Hammad Raza B.Sc. Engg. (UET Taxila) M.Sc. Engg. (UET Taxila) PhD (UET Taxila)	Geotechnical Engineering
Dr. Jamal Ahmed Khan B.Sc. Engg. (CECOS Univ. Peshawar) M.Sc. Engg. (NUST), Islamabad PhD (NUST), Islamabad	Transportation Engineering
Dr. Mujahid Iqbal B.Sc. Engg. (UET Taxila) M.Sc. Engg. (UET Taxila) PhD (UET Taxila)	Water Resources & Irrigation Engg
Dr. Sohail Jameel B.Sc. Engg. (BZU Multan) M.Sc. Engg. (UET Taxila) PhD (UET Lahore)	Transportation Engineering

Lecturers

Engr. Muhammad Usman Rashid B.Sc. Engg. (UET Taxila) M.Sc. Engg. (UET Taxila)	Structural Engineering
Dr. Muhammad Rameez Sohail B.Sc. Engg. (MCE Risalpur, NUST) M.Sc. Engg. (NUST) PhD (UET Taxila)	Geotechnical Engineering
Engr. Zulfiqar Ali B.Sc. Engg. (UET Taxila) M.Sc. Engg. (UET Taxila)	Structural Engineering
Engr. Muhammad Arshad B.Sc. Engg. (NUST), Islamabad M.Sc. Engg. (NUST), Islamabad M.Sc. (Hons.), COMSATS Islamabad	Structural Engineering
Engr. Ali Raza (on leave) B.Sc. Engg. (BZU Multan) M.Sc. Engg. (UET Taxila)	Structural Engineering
Engr. Abdul Qadeer B.Sc. Engg. (UET Taxila) M.Sc. Engg. (NUST Islamabad)	Structural Engineering

Lab Engineer

Engr. Hammad Haider BSc Engg (UET Lahore) MSc Engg (UET Taxila)	Geotechnical Engineering
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THE DEPARTMENT

Department of Civil Engineering is actively engaged in disseminating civil engineering education for the last fifty years, whereas Department of Environmental Engineering has been established/started recently.

The Department of Civil Engineering has an academic staff of 35, nearly 90% of whom contribute to postgraduate teaching and are involved in PhD research work. Approximately 750 undergraduate and 200 postgraduate students are registered in the department. Civil engineers from UET Taxila not only cater to the national needs for buildings, highways, dams, bridges, irrigation network and water supply systems but also contribute in the overseas Gulf & Canadian markets and are the world's largest users of building materials

COURSES OF STUDY

The Department of Civil Engineering offers full-time course of four years duration leading to the degree of BSc in Civil Engineering. The department also organizes a course of 18 months duration (Minimum) leading to MSc in Civil Engineering.

In the bachelor's course, emphasis is laid on the fundamental concepts and principles, which constitute the basis of civil engineering practice. To foster their creative abilities, the students are assigned projects on design, construction or laboratory investigation for self directed execution. The classroom and laboratory work is supplemented by the instructional tours to acquaint students with civil engineering projects of national importance. Survey camp is held to impart intensive field training where the students plan and execute survey of large areas independently.

LABORATORIES

The department has the following well-equipped laboratories to meet the requirements of researchers as well as the professional needs of the government and private organizations. Following is the list of Laboratories actively engaged in research activities:

- | | | |
|-------------------------------|-------------------------------|-------------------------------------|
| a. Concrete Technology | b. Strength of Materials | c. Geotechnical Engineering |
| d. Transportation Engineering | e. Hydraulics/Fluid Mechanics | f. Theory of Structures |
| g. Surveying | h. Environmental Engineering | i. Computer Aided Design laboratory |

Most of the Laboratories have been upgraded through funds provided by Higher Education Commission. The department is actively engaged in providing consultancy services and testing facilities to national construction projects, and industry.

POSTGRADUATE STUDIES & RESEARCH

In order to satisfy the increasing demand for relevant advanced technological education, the department offers MSc degree courses in Structural Engineering, Water Resources & Hydraulics Engineering, Transportation Engineering and Geotechnical Engineering, covering the most recent developments. The courses contain a balance of analytical and professional aspects and are designed to suit the needs of fresh graduates and those with professional experience. The tremendous potential for the development of water resources requires the services of engineers trained to plan, design, construct, operate and maintain engineering works for the control and utilization of these resources. Most of the postgraduate students belong to the construction industry and act as a bridge for university industry linkage that makes research in the department to be practical and useful for the country. The growth of PhD program has further enriched the research activities in the department.

PhD IN CIVIL ENGINEERING

The department has initiated PhD program in Civil Engineering from 2001 session. One hundred and forty nine (149) PhD scholars have been registered in the department. Out of which 34 scholars have completed their PhD degrees. The PhD Program is offered in the following specializations:-

- | | | |
|---|-----------------------------|-------------------------------|
| a. Structural Engineering | b. Geotechnical Engineering | c. Transportation Engineering |
| d. Water Resources & Irrigation Engineering | | |



LIST OF COURSES

Course Outline: MSc and PhD Civil Engineering

Compulsory Courses For MSc/MS Program

Course No.	Course Title
HU-5001	Understanding of Holy Quran-I
HU-5002	Understanding of Holy Quran-II

MSc Core Courses-Specialization in Structural Engineering

Course No.	Course Title
CE-5103	Structural Design Practice
CE-5105	Pre-stressed Concrete Theory & Practice
CE-5108	Properties of Concrete and its Constituents
CE-5112	Dynamics of Structures
CE-5113	Earthquake Engineering

MSc Elective Courses-Specialization in Structural Engineering

Course No.	Course Title
CE-5101	Structural Mechanics
CE-5102	Matrix Analysis of Structural
CE-5104	Instability of Structures
CE-5106	Construction Management
CE-5107	Data Analysis and Quality Control
CE-5109	Computer Aided Design and Analysis
CE-5110	Structures
CE-5111	Bridge Engineering
CE-5114	Finite Element methods for Structural Analysis
CE-5115	Domes, Shells, and Space Structures
CE-5116	Durability of Concrete
CE-5117	Strengthening, Retrofitting and Repairing of Structures
CE-5118	Performance based Seismic Design of Structures
CE-5119	Optimization for Engineering Design
CE-5120	Masonry Structure
CE-5121	Sustainable Construction Materials
CE-5100	Postgraduate Research Thesis

Compulsory Courses For PhD Program

Course No.	Course Title
HU-6001	Understanding of Holy Quran-I
HU-6002	Understanding of Holy Quran-II

PhD Core Courses-Specialization in Structural Engineering

Course No.	Course Title
CE-6104	Displacement Based Seismic Design
CE-6106	Deterioration Mechanism in Concrete
CE-6107	Innovative Concrete Material
CE-6100	Ph.D Thesis

PhD Elective Courses-Specialization in Structural Engineering

Course No.	Course Title
CE-6101	Rehabilitation Techniques
CE-6102	Shear Behavior of RC Structural Elements
CE-6103	Blast Loading Parameters and Effects
CE-6105	Advance Structural Dynamics
CE-6108	Advances in Cement Technology
CE-6109	Numerical Methods in Concrete
CE-6110	Structural Health Monitoring
CE-6111	Tall Building Structures
CE-6112	Structural Identification of Constructed System



POSTGRADUATE PROSPECTUS-2026 Onwards

MSc Core Courses-Specialization in Geotechnical Engineering

Course No.	Course Title
CE-5201	Advanced Soil Mechanics
CE-5202	Foundation Engineering
CE-5203	Hydraulic Structures
CE-5204	Ground Improvement
CE-5205	Soil Dynamics

MSc Elective Courses-Specialization in Geotechnical Engineering

Course No.	Course Title
CE-5206	Rock Mechanics
CE-5207	Engineering Geology
CE-5208	Geo-Environment
CE-5209	Numerical Modeling
CE-5210	C.A.D (Computer Aided Design)
CE-5211	Advance Numerical Analysis
CE-5212	Excavation Engineering
CE-5213	Earth Pressure and Retaining Structures
CE-5214	Instrumentation in Geotechnical Engineering
CE-5215	Pavement Material Structure and Design
CE-5216	Soil Structure Interaction

PhD Core Courses-Specialization in Geotechnical Engineering

Course No.	Course Title
CE-6201	Research Topics in Geotechnical Engineering
CE-6202	Geo-Hazards
CE-6203	Mechanics of Unsaturated Soil

PhD Elective Courses-Specialization in Geotechnical Engineering

Course No.	Course Title
CE-6204	Soil Dynamics
CE-6205	Dams and Embankments
CE-6206	Limitation and Failures in Geotechnical Engineering
CE-6207	Analysis of Deep Foundation
CE-6208	Earthquake Disaster Assessment and Mitigation
CE-6209	Tunneling and Underground excavations

Post Graduate Research Thesis

Course No.	Course Title
CE-5200	Post Graduate Research Thesis
CE-6200	PhD Thesis

MSc Core Courses-Specialization in Water Resources & Irrigation Engineering

Course No.	Course Title
CE-5301	Advanced Open Channel Hydraulics
CE-5302	Applied Hydrology
CE-5303	Drainage and Irrigation Engineering
CE-5304	Dam Engineering
CE-5305	Design of Hydraulic Structures

MSc Elective Courses-Specialization in Water Resources & Irrigation Engineering

Course No.	Course Title
CE-5306	Applications of Modern Tools in Water Resources Engineering
CE-5307	Ground Water Hydrology
CE-5308	Ground Water Development
CE-5309	River Engineering
CE-5310	Computational Hydraulics
CE-5311	Application of GIS and Remote Sensing in Water Resources Engineering
CE-5312	Advanced Irrigation Engineering
CE-5300	Postgraduate Research Thesis

PhD Core Courses-Specialization in Water Resources & Irrigation Engineering

Course No.	Course Title
CE-6301	Applied Hydraulics
CE-6402	Advanced Hydrology
CE-7301	Advanced Statistical Hydrology
CE-6300	Postgraduate Research Thesis

PhD Elective Courses-Specialization in Water Resources & Irrigation Engineering

Course No.	Course Title
CE-6303	Statistical Hydrology
CE-6304	Sediment Transport
CE-6305	Hydro Power Development
CE-6306	Environmental Hydrology
CE-6307	Flood Risk Management
CE-6308	Water Resources System Analysis
CE-6309	Advanced Dam Engineering
CE-6310	Advanced Irrigation and Drainage Engineering

MSc Core Courses- Specialization in Transportation Engineering

Course No.	Course Title
CE-5401	Highway Planning & Design
CE-5402	Transportation Engineering
CE-5403	Pavement Evaluation & Rehabilitation
CE-5404	Pavement Structures, Materials and Design
CE-5405	Principles of Pavement Engineering



MSc Elective Courses-Specialization in Transportation Engineering

Course No.	Course Title
CE-5406	Characteristics of Passenger Transport Systems
CE-5407	Pavement Evaluation Based on NDT
CE-5408	Traffic Safety
CE-5409	C.A.D. (Computer Aided Design)
CE-5410	Railway Engineering
CE-5411	Emergencies and Transportation Engineering
CE-5412	Road Works: Practical Applications
CE-5413	Numerical Methods in Engineering
CE-5414	Geology for Engineers
CE-5415	Foundations and Earth works
CE-5416	Logistics Management
CE-5417	International and Cross Border Transport Systems
CE-5419	Intelligent Transportation System
CE-5420	Management and Prediction of Travel Demand
CE-5400	Postgraduate Research Thesis

PhD Core Courses-Specialization in Transportation Engineering

Course No.	Course Title
CE-6401	Asphalt Mix Design and Construction
CE-6402	Advanced Pavement Materials
CE-6403	Advanced Pavement Engineering

PhD Elective Courses-Specialization in Transportation Engineering

Course No.	Course Title
CE-6404	Applications of Finite Element Method in Transportation Engineering
CE-6405	Advanced Statistical Analysis
CE-6406	Design of Transport Infrastructure
CE-6407	Characteristic of Traffic Flow
CE-6408	Traffic Management Techniques
CE-6409	Application of Information Technology in Transportation Engineering



ELECTRICAL

1.2

FACULTY OF ELECTRONICS & ELECTRICAL ENGINEERING

1.2.1 Department of Electrical Engineering

Dean

Prof. Dr Gulistan Raja

Chairman

Prof. Dr. Tahir Mahmood

Professors

Prof. Dr Gulistan Raja
BSc Electrical Engineering (UET Taxila)
M.S. Engineering (Osaka University Japan)
PhD Electrical Engineering (UET Taxila)

Prof. Dr. Tahir Mahmood
BSc Engineering (Hons) (UET Lahore)
MSc. Engineering (UET Lahore)
PhD Electrical Engineering (UET Taxila)

Prof. Dr. Shabbir Majeed Chaudhry
BSc Engg (UET Taxila)
MSc Engg (UET Taxila)
PhD (UET Taxila)

Prof. Dr. Muhammad Obaid Ullah
BSc Engg (Hons) (UET Taxila)
MSc Engg (UET Taxila)
PhD (Uni of Manchester, UK)

Prof. Dr. Salman Amin
BSc Engg (Hons) (UET Taxila)
MSc Engg (UET Taxila)
PhD (UET Taxila)

Areas of Interest

Signal and Image
Processing, Medical
Image Analysis, ASIC
Design

Electrical Power
Distribution System:
Renewable Energy

Microelectronics: Devices,
Circuits and Systems

Communication System,
Signal Processing

Dielectrics and Electrical
Insulation Materials,
Composite materials

Associate Professors

Dr. Sh. Saaqib Haroon
BSc Engg (UET Lahore)
MSc Engg (UET Taxila)
PhD (UET Taxila)
Power System Operation & Control,
Power System Analysis

Dr. Ahsan Ali
BSc Engg (UET Taxila)
MSc Engg (UET Taxila)
PhD (Technische Universität
Hamburg-Harburg, Germany)
Control Systems

Dr. Muhammad Faisal Nadeem Khan
BSc Engg (Air Univ, Islamabad)
MSc Engg (UET Taxila)
PhD (UET Taxila)
System Power Planning,
Renewable Energy Modeling,
Load Modeling and Smart Grid

Dr. Intisar Ali Sajjad
BSc Engg (Hons) (UET Taxila)
MSc Engg (UET Taxila)
PhD (POLITO, Italy)
Smart Grids, Smart Buildings,
Demand Side Management,
Renewable Energy, Probabilistic
Modeling and simulation

Dr. Furqan Shaukat
BSc Engg (UET Lahore)
MSc Engg (UET Taxila)
PhD (UET Taxila)
Image Processing & Analysis

Assistant Professors

Dr. Inam ul Hassan Shaikh
BSc Engg (Hons) (UET Lahore)
MSc Engg (UET Taxila)
PhD (Uni of Manchester, UK)
Control System, Learning Control,
Intelligent Control, Robotics

Dr. M. Irfan Arshad
BSc Engg (UET Taxila)
MSc Engg (UET Taxila)
PhD (UET Taxila)
Image Processing, Biometric
Systems and Signal Processing

Dr. Junaid Mir BSc (UET Taxila) MSc (UET Taxila) PhD (Uni of Surrey, UK)	Digital Image\Video Processing, Medical Image Analysis
Engr. Ghulam Ali BSc Engg. (UET Taxila) MSc Engg. (NUST, Islamabad) PhD (Griffith University, Australia)	Microwave Communication & Microelectronics
Dr. Muhammad Rafiq BSc Engg. (UET Taxila) MSc Engg. (Chalmers Univ., Sweden) PhD (NECEPU China)	High Voltage Engineering
Dr. Munira Batool BSc Engg. (BZU, Multan) MSc Engg. (UET Taxila) PhD (PERTH, Australia)	Renewable energy resources modelling and integration in smart grids, microgrids and Virtual power plants
Dr. Muhammad Laiq Ur Rahman Shahid BSc Electrical Engg. (UET Taxila) MSc Electrical Engg. (UET Taxila) Ph. D Electrical Engg. (Jacobs University, Germany)	Computer Vision, Deep Learning
Engr. Muhammad Usman BSc Electrical Engg. (UET Taxila) MSc Electrical Engg. (UET Taxila) PhD (In Progress)	Electronic Circuit Design, Optical Communication Systems
Engr. Ahmad Umar Niazi BSc Electrical Engg. (UET Lahore) MSc Electrical Engg. (UET Taxila)	Electromagnetics, RF and Microwave
Dr. Faisal Siddiq BSc Engg (UET Taxila) MSc Engg (UET Taxila) PhD (UET Taxila)	System on Chip, Digital Design, Digital Signal Processing
Dr. Nouman Qamar BSc Engg (UET Taxila) MSc Engg (UET Taxila) PhD (UET Taxila)	Power system Operation & Control, Smart Grid
Dr. Mamoonah Khalid BSc Engg (UET Taxila) MSc Engg (UET Taxila) PhD in Electrical and Information Engineering (University of South Australia, Adelaide, Australia)	Optics and Photonics, Optical communications, Optoelectronic devices for Integrated Photonics applications
Dr. Hamza Ahmed Raza BSc Engg (UET Taxila) MSc Engg (Nust Islamabad) PhD (Arizona state university USA)	Electrical Power, Renewable Energy, Smart Grid and Energy Management

Lecturers

Engr. Hammad Shaukat BSc Engg (UET Taxila) MSc Engg (UET Taxila)	Electronic Devices and Power Electronics, Electrical Instrumentation
Dr. Muhammad Mansoor Ashraf BSc Engg. (UET Taxila) MSc Engg. (UET Taxila) PhD (UET Taxila)	Generation Expansion Planning, Power System Planning, Power System Operation, and Electrical Machine Design
Engr. Abu Bakar Waqas BSc Electrical Engg. (UET Taxila) MSc Electrical Engg. (UET Taxila) PhD Electrical Engg. (InProgress)	Metamaterials, Quantum Communications, Artificial Intelligence.
Engr. Tanveer Khursheed BSc Engg (PU Lahore) MSc Engg (UET Taxila) PhD (In Progress)	Battery System Design, Power Systems
Engr. Usama Ashfaq BSc Engg (UET Taxila) MSc Engg (UET Taxila) PhD (In progress)	Power Electronics, High Voltage Engineering, Renewable Energy Resources, Power System Optimization.
Engr. Hafiz Mehboob Riaz BSc Engg (UET Lahore) MSc Engg (NUST) PhD (In Progress)	Controller Designs for Converters, Coordination of Voltage Regulations Devices
Engr. Zainab Shahid BSc Engg (NUST Islamabad) MSc Engg (CIIT Islamabad)	FPGA System Design, Robotics, Control Systems
Engr. Muhammad Kashif Sattar BSc Engg (COMSATS Abbottabad) MSc Engg (UET Taxila) PhD (In Progress)	FPGA System Design, Robotics, Control Systems
Engr. Farzana Kousar BSc Engg (UET Taxila) MSc Engg (UET Taxila) PhD (In Progress)	Electronic Devices, VLSI Design
Engr. Komal Munir BSc Engg (UET Taxila) MSc Engg (UET Taxila) PhD (In Progress)	Electronic Devices, Embedded Systems

Lab Engineers

Engr. Shuja Irfan BSc Engg (UET Taxila)	Instrumentation, High Voltage
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THE DEPARTMENT

MISSION

Learning and research with values to address the socio-economic challenges.

The Department of Electrical Engineering was established in 1975 along with the creation of University of Engineering and Technology, Taxila at Sahiwal. After three years, the department was shifted to its permanent location on the main campus at U.E.T. Taxila. The department has three blocks, the main block, the extension block, and an industrial control and automation block, with a total covered area of 70,600 sq. ft. The department comprises of Lecture theatres, classrooms, laboratories, faculty offices etc. The laboratories are well equipped for undergraduate classes and postgraduate research, and the equipment is upgraded as the need arises.

An independent and spacious building with a covered area of 70,600 sq. ft. is available for the department. The department has two blocks namely: Main Block and Extension Block with covered areas as under:

Main Block (Ground Floor)	27,000 sq. ft.
Main Block (1st Floor)	23,600 sq. ft.
Extension Block.	20,000 sq. ft.
Total	70,600 sq. ft.

The department also has a separate building for Industrial IT: Control and Automation Center in addition to above-mentioned area.

LABORATORIES

The Electrical Engineering Department has well-equipped laboratories. The details of laboratories are as follows:

- a. Basic Electrical Engineering Lab
- b. Computer Simulation Lab
- c. Digital Systems Lab
- d. Electrical Machines Lab
- e. Electronics Lab
- f. Industrial IT: Control and Automation
 - i) Basic Control Lab
 - ii) Advance Control Lab
- g. High Voltage Lab
- h. Instrumentation and Process Control Lab
- i. Photonics & Communication Lab
- j. Power System Simulation Lab
- k. Power Electronics Lab
- l. Power Systems Lab
- m. Workshop & Projects Lab

The laboratories are regularly upgraded as and when required. The department also shares the resources of Industrial IT: Control and Automation Lab with other departments.

MSC ELECTRICAL ENGINEERING PROGRAM

The department of Electrical Engineering was initially offering only bachelor's degree in electrical engineering. The graduate program of the department of Electrical Engineering was commenced in 1984 when it started to offer MSc in Electrical Engineering with specialization in "Electronics and Communication" and specialization in "Power" in 2004. The graduate program also started to offer MSc in electrical engineering with specialization in "Control Engineering" Currently Departments Following Specialization For MSc Electrical Engineering.

- Communication and Signal Processing
- Control and Automation
- Electronics
- Power

The master's degree courses are aimed at bringing the student abreast with the most recent development in the field of specialization. Most of these students are working with major engineering organizations in the country. So far more than 675 students have successfully completed their master's degree in electrical engineering.

PHD ELECTRICAL ENGINEERING PROGRAM

The department has well established PhD program in Electrical Engineering. The program was started in 2001, and 123 students have been registered so far. The PhD degree is awarded after compliance with all requirements of Higher Education Commission. So far 46 students have successfully completed their doctorate degrees. The department has 22 PhD supervisors conducting research in various areas of electrical engineering. Almost all labs have necessary facilities for postgraduate research and are used for PhD research.

TESTING FACILITIES

The department also offer consultancy services and testing facilities to local manufacturers of electrical and electronics equipment.

POSTGRADUATE STUDIES & RESEARCH

Research work being carried out in the department has direct bearing on the needs of national industry. This research is partially funded by the Directorate of Advanced Studies Research, and Technological Development of the University and Higher Education Commission. Projects, to meet the requirements of the neighboring industries, are also conducted in the department. The faculty members and postgraduate students have published a significant number of research papers in different fields of Electrical Engineering. The department also arranges conferences, seminars, and workshops in various areas of Electrical Engineering. The faculty members, postgraduate students, and prominent researchers from home and abroad participate in these seminars.

POSTGRADUATE ACADEMIC FRAMEWORK

A.MSc EE Program

1. The MSc EE program offers the following four specializations:
 - a. Communication and Signal Processing
 - b. Control and Automation
 - c. Electronics
 - d. Power
2. To complete the MSc degree program, a total of 32 credit hours is required for both Thesis and Non-Thesis options.
3. A student opting for the thesis option shall be required to complete a total of 26 credit hours of coursework and 6 credit hours of research work.
4. All students shall complete one (01) Degree Core course that is common to all specializations.
5. Each specialization comprises four (04) Core courses, all of which are mandatory for students enrolled in that specialization.
6. Students shall complete three (03) elective courses. The elective courses may be selected from any of the following:
 - a. Postgraduate elective courses or core courses of any other specialization offered by the Department.
 - b. Course(s) offered by other departments of the University, subject to the prior approval of the Advisor/Supervisor and the Chairman of the Department.
7. In addition, two compulsory courses (Holy Quran courses) of one credit hour each must be completed in accordance with the Higher Education Commission (HEC) Policy.

A.PhD EE Program

1. To complete the PhD degree program, a total of 20 credit hours (8 courses) and a research thesis are required.
2. A PhD scholar may opt any postgraduate course from the list of elective PhD courses, on the recommendation of the Supervisor.
3. A PhD scholar may take elective course(s) from other departments of the University, preferably not more than two (02) courses, subject to the recommendation of the Supervisor and approval of the Chairman of the Department.
4. Of the eight courses, two compulsory courses (Holy Quran courses) of one credit hour each must be completed in accordance with the Higher Education Commission (HEC) Policy.
5. In addition to the successful completion of coursework and the PhD Research Thesis, scholar shall also fulfill all other degree requirements prescribed in the University's Postgraduate Prospectus and PG Rules Book.



LIST OF COURSES

Course Outline: MSc in Electrical Engg (4 Specializations)

Compulsory Courses For MSc/MS Program

Course No.	Course Title
HU-5001	Understanding of Holy Quran-I
HU-5002	Understanding of Holy Quran-II

Degree Core Course

Course No.	Course Title
EE-5001	Random Variables and Stochastic Processes

Communication and Signal Processing Core Courses

Course No.	Course Title
EE-5201	Information Theory
EE-5202	Digital Signal Processing
EE-5203	Digital Communication
EE-5204	Computer Networks

Power Core Courses

Course No.	Course Title
EE-5401	Power System Design and Analysis
EE-5402	Distribution System Engineering
EE-5403	Protection Systems
EE-5404	High Voltage Engineering

Electronics Core Courses

Course No.	Course Title
EE-5101	Analog Integrated Circuits
EE-5102	Embedded Systems
EE-5103	Digital Integrated Circuits
EE-5104	Computer Architecture

Control and Automation Core Courses

Course No.	Course Title
EE-5301	Control System Design
EE-5302	State Space Control
EE-5303	Multivariable Process Control
EE-5304	Optimal Control

Elective Courses

Course No.	Course Title
EE-5105	Industrial Electronics
EE-5106	Opto-Electronics
EE-5107	Semiconductor Materials and Technology
EE-5108	Optical Communication
EE-5109	VLSI Design
EE-5110	Analog Filter Design
EE-5111	Microwave Circuit Design

Course No.	Course Title
EE-5205	Digital Image Processing
EE-5206	Machine Learning
EE-5207	Wireless Communications
EE-5208	Antenna and Wave Propagation
EE-5209	Internet of Things
EE-5210	Wireless Sensor Networks

Course No.	Course Title
EE-5305	Adaptive Control
EE-5306	System Identification
EE-5307	Discrete Event Systems and Control
EE-5308	Intelligent Control
EE-5309	Automation of Industrial Processes
EE-5310	Digital Control
EE-5311	Stochastic Control
EE-5312	Security of Automation Systems
EE-5313	Vision Based Control
EE-5314	Model Predictive Control
EE-5315	Introduction to Systems Biology

Course No.	Course Title
EE-5405	Distribution System Reliability
EE-5406	Illumination Engineering

Course No.	Course Title
EE-5505	Nuclear Energy Systems
EE-5506	Energy Conversion Systems

MSc Research Thesis

Course No.	Course Title
EE-5000	Research Thesis

LIST OF COURSES

Compulsory Courses For PhD Program

Course No.	Course Title
HU-6001	Understanding of Holy Quran-I
HU-6002	Understanding of Holy Quran-II

Elective Courses

Course No.	Course Title
EE-6101	Optoelectronics Devices
EE-6102	Semiconductor Device Fabrication
EE-6103	Electronic Device Modeling & Simulation
EE-6104	System on Chip (SoC) Design
EE-6105	Advanced VLSI Design
EE-6106	Advanced Power Electronics
EE-6107	Advanced Analogue IC Design
EE-6108	Antenna Design
EE-6109	Advanced Digital Design
EE-6110	Semiconductor Device Fabrication
EE-6111	FPGA based System Design
EE-6112	VLSI Testing and Verification
EE-6113	Micro-Electro-Mechanical Systems
EE-6114	Antenna Design
EE-6115	Advanced Computer Architecture
EE-6116	Advanced Topics in Electronics

Course No.	Course Title
EE-6201	Biomedical Image Processing
EE-6202	Digital Video Processing
EE-6203	Pattern Recognition and Analysis
EE-6204	Digital Speech Processing
EE-6205	Multirate Signal Processing
EE-6206	Multimedia Systems and Communication
EE-6207	Computer Network Security
EE-6208	Satellite Communications
EE-6209	Advanced Communication Systems
EE-6210	Advanced Machine Learning
EE-6211	Statistical Signal Processing
EE-6212	Random Signals
EE-6213	Computer Vision
EE-6214	Advanced Topics in Communication and Signal Processing

Course No.	Course Title
EE-6301	Nonlinear Control Systems
EE-6302	Network Control Systems
EE-6303	Multi-Agent and Cooperative Control
EE-6304	Hybrid Control Systems
EE-6305	Robust Control
EE-6306	Reinforcement Learning Control
EE-6307	Convex Optimization
EE-6308	Theory of Automation
EE-6309	Algebraic Graph Theory
EE-6310	Applied Functional Analysis
EE-6311	Robot Motion Planning and Control
EE-6312	Recursive Estimation
EE-6313	Linear Systems Theory
EE-6314	Advanced Topics in Control

Course No.	Course Title
EE-6401	Distributed Generation
EE-6402	Power System Optimization
EE-6403	Modern Power Systems Operation
EE-6404	Power System Planning and Economics
EE-6405	Power Distribution Control and Automation
EE-6406	Power Quality
EE-6407	Smart Grid
EE-6408	Distribution Networks
EE-6409	Power Market
EE-6410	Electrical Machine Modelling
EE-6411	State Estimation
EE-6412	Electric Drives
EE-6413	Industrial Electrical Systems
EE-6414	Power System Stability
EE-6415	Dielectrics and Electrical Insulation
EE-6416	Electrical Equipment Condition Monitoring
EE-6417	Advanced Topics in Power

Course No.	Course Title
EE-6501	Energy Management
EE-6502	Energy Systems Modelling
EE-6503	Energy Systems Planning
EE-6504	Electric Vehicles
EE-6505	Advanced Topics in Energy

Course No.	Course Title
EE-6601	Optimization Techniques
EE-6602	Statistics in Research
EE-6603	Research Methods in Electrical Engineering
EE-6604	Advanced Numerical Methods
EE-6605	Advanced Engineering Mathematics for Electrical Engineers

PhD Research Thesis

Course No.	Course Title
EE-6000	Research Thesis



1.2

FACULTY OF ELECTRONICS & ELECTRICAL ENGINEERING

1.2.2 Department of Electronics Engineering

Dean

Prof. Dr. Gulistan Raja

Chairman

Prof. Dr. Yaseer Arafat Durrani

Professors

Prof. Dr. Yaseer Arafat Durrani
BSc. (Univ. of Peshawar)
BSc. Engg. (EMU, Turkey)
MSc. Engg. (KTH, Sweden)
PhD. Engg. (UPM, Spain)

Assistant Professors

Dr. Syed Azhar Ali Zaidi
BSc. Engg. (UET, Taxila)
MSc. Engg. (UET, Taxila)
PhD. Engg. (PDT, Italy)

Dr. Khawaja Shafiq Haider
BSc. Engg. (DCET, Karachi)
MSc. Engg. (NUST, Islamabad)
PhD. Engg. (NUST, Islamabad)

Dr. Bilal Aslam
BSc. Engg. (UET Taxila)
MSc. Engg. (NUST, Islamabad)
PhD. Engg. (UET Taxila)

Dr. Hammad Zaki
B.Sc. Engg (DCET, Karachi)
M.Sc. Engg (UET, Taxila)
Phd. Engg. (SABANCI University, Turkey)

Areas of Interest

System-on-Chip Design

ASIC Design, Digital Architectures for Communications

Control Systems, Embedded Systems,

Antenna and wave, Propagation Microwave Engineering

Nonlinear and Robust Control, Disturbance Observer, Control Allocation, UAV, Aerial Manipulation Systems

Dr. Adil Usman
Control and Automation, Power
BSc. Engg. (Air University, Islamabad)
Electronics, Electronics Circuits
MSc. Engg. (Air University, Islamabad)
PhD. Engg. (UET, Taxila)

Lecturers

Dr. Syed Zohaib Hassan Naqvi
Biomedical Signal Processing, Artificial Intelligence
BSc. Engg. (IIU, Islamabad)
MSc. Engg. (NU, Islamabad)
PhD. (UET, Taxila)

Dr. Muhammad Faraz
Photonics and Ultrasonic
BSc. Engg. (IIU, Islamabad)
MSc. Engg. (UET, Taxila)
PhD. (SKKU, South Korea)

Engr. Muhammad Tahir Iqbal
Control System
BSc. Engg. (IIU, Islamabad)
MSc. Engg. (UET, Taxila)
PhD. Engg. (In progress)

Engr. Muhammad Atif Imtiaz
Control System, Signal Processing
BSc. Engg. (MAJU, Islamabad)
MSc. Engg. (UET, Taxila)

THE DEPARTMENT

The Department of Electronics Engineering (ENCD) was established in 2010 to fulfill the needs of the country by producing responsible graduates equipped with sound knowledge and skills along with highest moral values through conducive, learning environment. The Department offers four years Undergraduate Degree Program leading to BSc. in Electronics Engineering.

Postgraduate Studies

The Department offers Postgraduate Degree Program leading to MSc. and PhD. in Electronics Engineering. The department has been mandated by the university to start its postgraduate program since 2014. It has an academic staff of 15. All PhD faculty members are involved in postgraduate teaching and PhD research work. The department offers both MSc. and PhD. postgraduate programs recognized by the HEC (through NoC letter No. 1-72/2016/QAD-NOC/HEC/UET-TAXILA/126 and 1-72/2016/QAD-NOC/HEC/UET-TAXILA/276) with the following specializations:

- Electronics System Design
- Microelectronic Materials & Devices
- Biomedical Electronics

The courses contain a balance of professional and analytical aspects and are designed to suit the needs of fresh graduates and those with professional career development. The faculty of Electronics Engineering Department is highly qualified and holds diverse research interests in the above-mentioned areas. In addition to their academic responsibilities, the faculty is involved in conducting quality research in their respective fields of investigation

Current Enrollment

PhD. Engg.	06
M.Sc. Engg.	11

Laboratories

Lab is an integrated part of most of the theory courses. The laboratories in the Department have state-of-the-art equipment to fulfill the needs of modern engineering education. The lab sessions are designed to enhance the concepts studied in the theoretical courses, to gain hands-on experience in design and debugging and to explore various practical engineering applications. The Electronics Engineering Department has following state-of-the-art laboratories.

1. Basic Electronics Lab
2. Digital Electronics Lab
3. VLSI Design Lab
4. Embedded Systems Lab
5. Instrumentation Lab
6. Control Systems Lab
7. Digital Signal & Communication Lab
8. Biomedical Signal Processing Lab
9. Computer Simulation Lab
10. Workshop/Project Lab

Research Facilities and Groups:

Research training is core part of our graduate program. All Postgraduate students are required to complete research thesis culminating in research publication. To facilitate their research activities, all Postgraduate students are provided with dedicated state-of-the-art computers, high-speed internet access, subscriptions to many quality journal publications as well as full-time access to research labs. At present the department has five main research groups active in the following key areas:

1. Electronics System Design Research Group:

This group works in areas such as SoC Design, VLSI Design, FPGA-based Design and Mixed Signal Design.

The following faculty members are part of this research group:

- Prof. Dr Yaseer Arafat Durrani
- Dr. Azhar Ali Zaidi
- Dr. Muhammad Faraz
- Engr. Tahir Iqbal
- Engr. Tahir Khan
- Engr. Misbah Younus

2. Electromagnetics and Optics Research Group:

This group works primarily in areas such as Electromagnetic Field Theory, Laser and Fiber Optics Design and Metamaterials. The following faculty members are part of this research group:

- Dr. Bilal Aslam
- Dr. Muhammad Faraz

3. Control & Automation Research Group:

This group works on analysis and design of Control & Automation related research activities. The following faculty members are part of this research group:

- Dr. Hammad Zaki
- Dr. Khawaja Shafiq Haider
- Engr. Muhammad Atif Imtiaz
- Engr. M. Umar Khan

4. Power Electronics Research Group:

This group is working on analysis and design of Power Electronics related research activities.

The following faculty members are part of this research group:

- Dr. Adil Usman
- Engr. Shujaat Hussain Shah

5. Biomedical Electronics Research Group:

This group is working on analysis and design of Biomedical Electronics related research activities. The following faculty members are part of this research group

- Dr. Syed Zohaib Hassan Naqvi
- Dr. Muhammad Faraz
- Engr. Sumair Aziz
- Engr. M. Umar Khan

LIST OF COURSES

Course Outline: Ph.D. in Electronics Engg.

Compulsory Courses For PhD Program

Course No.	Course Title
HU-6001	Understanding of Holy Quran-I
HU-6002	Understanding of Holy Quran-II

CORE COURSES: Common for all specializations

Course No.	Course Title
EN-6001	Advanced Engineering Mathematics
EN-6002	Random Processes & Statistics
EN-6003	Research Methodology

ELECTIVE COURSES

Electronics System Design

Course No.	Course Title
EN-6101	Advanced VLSI System Design
EN-6102	Mixed Signal System Design
EN-6103	Advanced System-on-Chip Design
EN-6104	VLSI Testing and Verification
EN-6105	IC Communication Architectures
EN-6106	Advanced FPGA-based System Design
EN-6107	Advanced Integrated Circuit Design
EN-6108	Advanced Digital System Design
EN-6109	Advanced Microprocessor Architectures
EN-6110	Advanced Computer Architecture
EN-6111	Advanced Embedded System Design
EN-6112	Advanced RF IC Design
EN-6113	Advanced Microwave Engineering
EN-6114	Advanced Robotic
EN-6115	Advanced Nonlinear Systems
EN-6116	Advanced Machine Learning
EN-6117	Advanced Power Electronic Systems
EN-6118	Advanced Optimization Theory
EN-6119	Advanced Linear System Theory
EN-6120	Special Topics in Electronics System Design
EN-6100	Research Thesis

Microelectronic Materials and Devices

Course No.	Course Title
EN-6201	Physics of Microelectronic Devices
EN-6202	IC Fabrication Process Technology
EN-6203	Compound Microelectronic Devices
EN-6204	Photonic and Optoelectronic Devices
EN-6205	Modelling and Simulation of Microelectronic Devices

EN-6206	Microelectronic Material Characterizations
EN-6207	MEMS System Design and Micro-Machining
EN-6208	Nanoelectronics and Nanotechnology
EN-6209	Nano-Fabrication and Characterizations
EN-6210	Organic Microelectronic Devices
EN-6211	Microelectronic Sensors and Actuators
EN-6212	Advanced Quantum Electronics
EN-6213	Advanced Theory of Solid Materials
EN-6214	Advanced Electromagnetic Field Theory
EN-6215	Computational Methods in Microelectronics
EN-6216	Special Topics in Microelectronic Materials and Devices
EN-6200	Research Thesis

Biomedical Electronics

Course No.	Course Title
EN-6301	Biomedical Microsystem Design
EN-6302	Pattern Recognition using Machine Learning
EN-6303	Advanced Biomedical Electronics
EN-6304	Materials & Sensors for Biomedical Applications
EN-6305	Advanced Organic Bioelectronics
EN-6306	Advanced Signal Processing
EN-6307	Biomedical Diagnostic Imaging
EN-6308	Advanced Biomimetic Materials
EN-6309	Robotics for Biomedical Applications
EN-6310	Advanced Biomedical Instrumentation
EN-6311	Special Topics in Biomedical Electronics
EN-6300	Research Thesis

Note: Students are required to take minimum 2 elective courses from area of specialization and maximum 1 elective course from other specializations.

Course Outline:

MSc in Electronics Engineering.

Compulsory Courses For MSc/MS Program

Course No.	Course Title
HU-5001	Understanding of Holy Quran-I
HU-5002	Understanding of Holy Quran-II

CORE COURSES: Common for all specializations

Course No.	Course Title
EN-5001	Mathematical Methods for Engineers & Scientists
EN-5002	Random Variables and Stochastic Processes
EN-5003	Research Methodology

ELECTIVE COURSES

Electronics System Design

Course No.	Course Title
EN-5101	Advanced VLSI Design
EN-5102	Mixed Signal Design
EN-5103	System-on-Chip Design
EN-5104	System-on-Chip Testing and Verification
EN-5105	Network-on-Chip Design
EN-5106	FPGA-based System Design
EN-5107	Integrated Circuit Design
EN-5108	Digital System Design
EN-5109	Microprocessor-based System Design
EN-5110	Computer Architecture
EN-5111	Embedded System Design
EN-5112	RF IC Design
EN-5113	Microwave Engineering
EN-5114	Foundation of Robotics
EN-5115	Nonlinear Systems
EN-5116	Machine Learning
EN-5117	Power Electronic Systems
EN-5118	Optimization Theory
EN-5119	Linear System Theory
EN-5120	Special Topics in Electronics System Design
EN-5100	Research Thesis

Microelectronic Materials and Devices

Course No.	Course Title
EN-5201	Solid-State Electronic Devices
EN-5202	Microelectronic Process Technology
EN-5203	Compound Electronic Devices
EN-5204	Optoelectronic Devices
EN-5205	Modelling and Simulation of Semiconductor Devices
EN-5206	Semiconductor Material Characterizations
EN-5207	MEMS Designing and Micro-Machining
EN-5208	Nanotechnology
EN-5209	Nano-Fabrication and Characterizations
EN-5210	Organic Electronic Devices
EN-5211	Electronic Sensors & Actuators
EN-5212	Quantum Electronics
EN-5213	Theory of Solid Materials
EN-5214	Electromagnetics Field Theory
EN-5215	Computational Methods in Electronics
EN-5216	Special Topics in Microelectronic Materials and Devices
EN-5200	Research Thesis

Biomedical Electronics

Course No.	Course Title
EN-5301	Biomedical Microsystems
EN-5302	Pattern Matching and Recognition
EN-5303	Biomedical Electronics
EN-5304	Biomedical Materials and Sensors
EN-5305	Organic Bioelectronics
EN-5306	Bio-Signal Processing
EN-5307	Biomedical Image Processing
EN-5308	Biomimetic Materials
EN-5309	Robotics for Medical Applications
EN-5310	Biomedical Instrumentation
EN-5311	Special Topics in Biomedical Electronics
EN-5300	Research Thesis

Note: Students are required to take minimum 3 elective courses from the area of specialization and a maximum of 2 elective courses from other specializations.



MECHANICAL

1.3

FACULTY OF MECHANICAL AND AERONAUTICAL ENGINEERING

1.3.1 Department of Mechanical Engineering

Dean

Prof. Dr. Riffat Asim Pasha

Chairman

Prof. Dr. Muzaffar Ali

Professors

Prof. Dr. Riffat Asim Pasha
B.Sc. Engg. (UET Lahore)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Prof. Dr. Muzaffar Ali
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Prof. Dr. Muhammad Ali Nasir
BSc Engg. (UET Taxila)
MSc Engg. (UET Taxila)
PhD (UET Taxila)

Associate Professors

Dr. Mubashir Gulzar
B.Sc. Engg. (NUST)
M.Sc. Engg. (NUST)
PhD (Malaysia)

Dr. Shahid Mehmood
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Areas of Interest

Fatigue and Fracture of Materials,
Material Characterization, Micro
Electro-Mechanical Systems.

HVAC, Solar Energy, Renewable
Energy System, Thermal Systems

Nano Composites, Nano-
technology, Online Structural
Health Monitoring of Compo-
site Materials using Smart
Sensors, Fiber Metal
Laminates, Materials
Characterization

Tribology, IC Engines

Fatigue & Fracture, Surface
Characterization, EDM,
Mechanical Testing, Metallography

Assistant Professors

Dr. Javed Akhtar
BSc. Engg (UET Lahore)
MSc. Engg. (UET Lahore)
PhD (Malaysia)

Dr. Tanzeel-ul-Rashid
BSc Engg. (UET Taxila)
MSc Engg. (UET Lahore)
PhD (UET Taxila)

Engr. Abdul Mobein
BSc Engg. (UET Lahore)
Msc Engg. (Germany)

Dr. Waqar Ahmad Qureshi
BSc Engg. (NUST)
Msc Engg. (UET Taxila)
PhD (Italy)

Dr. Rana Atta ur Rehman
BSc Engg. (UET Taxila)
Msc Engg. (UET Taxila)
PhD (Germany)

Dr. Abid Hussain
BSc Engg. (UET Taxila)
MSc Engg. (UET Taxila)
PhD (Hongkong)

Engr. Syed Turab Haider
BSc Engg. (UET Taxila)
Msc Engg. (United Kingdom)
PhD (Germany)

Renewable Energy Technologies,
Solar Thermal Systems and PVT

Industrial and Manufacturing
Engineering, Energy Systems
Design

Energy Systems, Power
plants

Hermo-fluids, Automatic
Control, Tribology.

Applied Mechanics and Design,
Mechanical Vibrations, Fracture
and Fatigue of Materials.

Thermo-fluids, Energy Systems,
Thermal Management.

Production and Operation
Manufacturing

Engr. Najam UI Hassan Shah
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (Arizona State Univ. USA)

Dr. Muhammad Usman
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (Germany)

Dr. Muhammad Imran
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (China)

Lecturers

Dr. M. Sajjad Sabir Malik
BSc Engg. (NUST)
Msc Engg. (NUST)
PhD (Queen Marry Univ., U.K)

Engr. Aneela Anum
BSc Engg. (UET Taxila)
MSc Engg. (UET Taxila)

Dr. Waqas Asghar
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (China)

Engr. Ebrahim Khalid
B.Sc. Engg. (Air Univ.)
M.Sc. Engg. (UET Taxila)

Engr. Amir Sohail
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (PIEAS)

Mechanics of Machines,
Mechanical Vibrations, CFD,
Heat Transfer, Power Plants

Energy Systems, Renewable
Energy Technologies, HVAC,
Energy Efficient Buildings

Solid State refrigeration, elasto
caloric effect, reduced
dimensions shape memory alloys

Control Systems, Modelling
and Simulation, Hydrofarming

Thermo-Fluids

Design against Fatigue

Thermo Fluid

Computational Mechanics

Engr. M. Noman Khan
B.Sc. Engg. (PU)
M.Sc. Engg. (UET Taxila)

Dr. Amar UI Hassan Khawaja
B.Sc. Engg.
(Wah Engg. College, UoW, Wah Cantt)
M.Sc. Engg.
(Wah Engg. College, UoW, Wah Cantt)
PhD (UET Taxila)

Engr. Muhammad Sumair
B.Sc. Engg. (UET Lahore)
M.Sc. Engg. (UET Lahore)

Engr. Ahmed Zaheer
B.Sc. Engg. (NUST)
M.Sc. Engg. (University of Leicester, UK)

Engr. Awais Islam
B.Sc. Engg. (PU)
M.Sc. Engg. (PU)

Engr. Abdul Rehman
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)

Engr. Sullahuddin
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)

Industrial Engineering &
Manufacturing

Materials and Manufacturing
Processes, Sustainable
Manufacturing, Design of
Experiments, Optimization,
Artificial Neural Networks

Thermal Power/Thermal Systems

Thermo Fluids

Industrial Engineering.

Thermo Fluids

Thermo Dynamics





THE DEPARTMENT

Mechanical Engineering is a highly versatile and diversified engineering discipline. On one hand it deals with the design of machines and equipment that use energy and convert it into useful work. On the other hand it deals with the design and development of solutions for engineering problems.

The Department offers BSc in Mechanical Engineering, MSc Mechanical Engineering and PhD Mechanical Engineering. At present, 697 students are enrolled in BSc, 50 students in MSc and 35 Students are enrolled in PhD Mechanical Engineering.

COURSES OF STUDY

The Mechanical Engineering courses are built on a strong foundation of mathematical, physical and computing sciences. Emphasis is laid on the fundamental concepts and principles, which constitute the basis of Mechanical Engineering practice. The curriculum is designed to cover a broad range of areas. In particular the department offers a series of courses in the following areas:

- Applied Mechanics and Design
- Thermal System Engineering

The courses in Thermal Engineering include applied Thermodynamics, Refrigeration and Air conditioning, Heat Transfer and Power Plant. The department offers a wide range of courses in Applied Mechanics and Design area. Starting from a basic course in Engineering Mechanics, a series of courses is offered in Mechanics of Materials, Mechanics of Machines, Mechanical Vibration and Finite Element Methods. These theoretical concepts are fostered in a series of Machine Design courses enabling the students to try their skills and design small mechanical equipment. Product design is of no use without product development studies. The University has a rich industrial neighborhood. The students have the opportunity to make maximum use of this industrial environment by engaging themselves in short term as well as long term training. These industries include HIT, HMC, POF, PAF Complex at Kamra, HEC, KSB, TIP, CTI, AWC, Railway Carriage Factory, ARL, OGTI, Research Establishments of PAEC and a large number of units in the Hattar area. The students pick real world problems either for their term papers or as final year project from these organizations and brush their skills.

LABORATORIES & OTHER FACILITIES

The department has the following well-equipped laboratories to meet the academic requirements of students and teachers as well as the professional needs of the government and private organizations:

- | | | | |
|---|----------------------------------|---|--|
| a. Applied Thermodynamics | b. Mechanics of Materials | c. Fluid Structural Interaction | d. Refrigeration & Air-Conditioning |
| e. Fluid Mechanics | f. Heat Transfer | g. Mechanics of Machines | h. Engineering Mechanics |
| i. Computer Aided Design | j. Fracture Mechanics & Fatigue | k. Modeling and Simulation | l. Composite Materials and Smart Structure |
| m. Renewable Energy Research & Development Center | n. Advanced Microscopy & Imaging | o. I. C. Engine | p. Power Plant |
| q. Machine Tool | r. Workshop (Shared) | s. Advanced Manufacturing System (Shared) | |

POSTGRADUATE STUDIES

The Department offers postgraduate courses leading to the degree of Master of Science (MSc) and PhD in Mechanical Engineering. The postgraduate degree program was started in 1983 and since then more than 700 MSc Degrees and 46 PhD Degrees have been awarded.

LIST OF COURSES

Course Outline: MSc Mechanical Engineering

Compulsory Courses For MSc/MS Program

Course No.	Course Title
HU-5001	Understanding of Holy Quran-I
HU-5002	Understanding of Holy Quran-II

Degree Core Courses (Compulsory) for All MSc Mechanical Engineering Program (08 Credit Hrs)

Course No.	Course Title
ME-5101	Engineering Analysis and Statistics
ME-5102	Research Methodologies and Design of Experiments

Specialization in Applied Mechanics and Design Core Courses (09 Credit Hours) Each Course is of 03 Credit Hours

Course No.	Course Title
ME-5201	Advanced Solid Mechanics
ME-5202	Advanced Fracture Mechanics
ME-5203	Advanced Finite Element Analysis

Elective Courses (09 Credit Hours) Each Course is of 03 Credit Hours

Course No.	Course Title
ME-5204	Theory of Vibrations
ME-5205	Advanced Control Systems
ME-5206	Advanced Stress Analysis
ME-5207	Modeling and Artificial Intelligence in Mechanical Engineering
ME-5208	Theory of Elasticity & Plasticity
ME-5209	Fatigue of Metals and Structures
ME-5210	Optimization of Engineering Systems
ME-5211	Theory of Plates and Shells
ME-5212	Advanced CAD/CAM
ME-5213	Advanced Composite Materials
ME-5214	Kinematics and Rigid Body Dynamics
ME-5215	Smart Materials and Structures
ME-5216	Advanced Engineering Materials
ME-5218	Design Against Fatigue
ME-5219	Additive Manufacturing
ME-5220	Advanced Tribology
ME-5222	Structural Dynamics and Aero-Elasticity
ME-5223	Nanotechnology Application in Engineering
ME-5224	Mechanics of Composite Material

Specialization in Thermal System Engineering Core Courses (09 Credit Hours) Each Course is of 03 Credit Hours (Any Three Courses)

Course No.	Course Title
ME-5103	Advanced Thermodynamics (core course)
ME-5104	Thermal Management Techniques (core course)
ME-5105	Thermal Systems Design and Analysis (core course)
ME-5106	Intermediate Fluid Mechanics (core course)

Elective Courses (09 Credit Hours) Each Course is of 03 Credit Hours

Course No.	Course Title
ME-5107	Advanced HVAC systems
ME-5108	Thermal design of heat exchangers
ME-5109	Advanced Heat Transfer
ME-5110	Gas Dynamics
ME-5111	Computational Fluid Dynamics
ME-5112	Energy Storage Systems
ME-5113	Thermal Power Plants
ME-5114	Energy Conversion and Prime Movers
ME-5115	Industrial Boiler and Furnaces
ME-5116	Renewable Energy Technologies
ME-5117	Hydrogen Generation and Fuel Cell Technology
ME-5118	Theory of Thermal Stresses
ME-5119	Fuel and Combustion
ME-5120	Gas, Steam Turbine and Generators
ME-5121	Intelligent Control of Thermal Systems
ME-5122	Micro/nano scale Heat Transfer
ME-5123	Battery Thermal Management
ME-5124	Flow Induced Vibration.
ME-5125	Condition Monitoring and Maintenance Techniques
ME-5126	Modern Automotive Systems
ME-5127	Piping Design
ME-5128	Sustainability Energy and Environment
ME-5129	Advancements in Internal Combustion Engines
ME-5130	Solar Thermal Systems
ME-5131	Thermal System Simulation and Optimization
ME-5132	Green/Sustainable Buildings
ME-5133	Energy Economics and Planning
ME-5134	Energy Management Systems
ME-5135	Project Management
ME-5136	Advanced Topics in Thermal Engineering

MSc Research Thesis

ME-5200	Research Thesis
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PhD Mechanical Engineering

Compulsory Courses For PhD Program

Course No.	Course Title
HU-6001	Understanding of Holy Quran-I
HU-6002	Understanding of Holy Quran-II

Core Courses

Course No.	Course Title	Credit hours
ME-6001	Advanced Engineering Mathematics	
ME-6002	Advanced Modeling and Simulation	
ME-6003	Applied Research Methodologies and Design of Experiment	
HU-6001	Understanding of Holy Quran-I	
HU-6002	Understanding of Holy Quran-II	

Elective courses for Specialization in Applied Mechanics and Design: Each Course is of 03 Credit Hours

Course No.	Course Title
ME-6201	Advanced Mechanical Vibrations
ME-6202	Applied Topics in Finite Element Analysis
ME-6203	Advanced CAD/CAM
ME-6204	Advanced Topics in Applied Mechanics and Design
ME-6205	Special Topics in Composite Materials
ME-6206	Special Topics in Design Against Fatigue
ME-6207	Advanced Fracture Mechanics
ME-6208	Applied Nanotechnology
ME-6209	Engine Tribology
ME-6210	Advanced Micro-Electromechanical Systems
ME-6211	Smart Materials and Structures
ME-6212	Advanced Dynamics of Machinery

Elective Courses for Specialization in Thermal System Engineering: Each Course is of 03 Credit Hours

Course No.	Course Title
ME-6101	Advanced Computational Fluid Dynamics
ME-6102	Advanced Fluid Mechanics
ME-6103	Advanced Heat Transfer
ME-6104	Advanced Topics in Thermal System Engineering
ME-6105	Advanced Power Plant Systems
ME-6106	Industrial Energy Management
ME-6107	Advanced Thermal Batteries
ME-6108	Energy Management in Buildings
ME-6109	Green Hydrogen Production and Storage
ME-6110	Applied Thermal Management
ME-6111	Advanced Convection Heat Transfer
ME-6112	Advanced Conduction and Radiation heat transfer
ME-6113	Sustainable Energy Systems
ME-6114	Condition Monitoring and Failure Analysis
ME-6115	Digital Twin Systems
ME-6116	Solar Power Systems
ME-6117	Modern Vehicle Design and Analysis
ME-6118	Advanced Combustion
ME-6119	Renewable Energy Systems and AI
ME-6120	Micro and Nano-scale Heat Transfer
ME-6121	Mechanics of Micro and Nano Systems
ME-6122	Energy Storage Materials
ME-6123	Machine Learning Models and Predictive Control
ME-6124	Advanced Thermal Energy Storage
ME-6125	Advanced Turbomachinery

PhD Research Thesis

ME-6200	Research Thesis
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1.3

FACULTY OF MECHANICAL AND AERONAUTICAL ENGINEERING

1.3.2 Department of Metallurgy & Materials Engineering

Dean

Prof. Dr. Riffat Asim Pasha

Chairman

Prof. Dr. Riffat Asim Pasha

Professors

Prof. Dr. Riffat Asim Pasha
BSc Engg (UET Lahore)
MSc Engg (UET Taxila)
PhD (UET Taxila)

Areas of Interest

Fatigue and Fracture of
Materials, Materials
Characterization,
Micro electromechanical
Systems

Assistant Professors

Dr. Aneela Wakeel
B.SEd. (Univ. of Punjab, Lhr.)
M.Sc. (Univ. of Punjab, Lhr.)
PhD Engg. (Chongqing Univ. China)

Mechanical Behavior, Nano
Metals, Material Character-
ization, Microstructural and
Texture Analysis, Metal
Casting and Defects, Surface
Treatment

Dr. Azhar Hussain
BSc (UET Lahore)
MSc (UET Lahore-Hanyang
University Korea)
PhD (Politecnico di torino, Italy)

Innovative ceramics &
process for aeronautics
application

Lecturers

Dr. Zaheer Abbas
B.Sc. Engg. (BZU Multan)
M.Sc. Engg. (Univ. of Punjab)
PhD(Beijing University, China)

Energy Storage Supercapacitor
Characterization Techniques,
Light Alloys, Functional
Materials

THE DEPARTMENT

Department of Metallurgy and Materials Engineering is established under the faculty of Mechanical and Aeronautical Engineering, University of Engineering and Technology, Taxila.

Metallurgy is the area of materials science that focuses on metals, compounds formed from metals, and the mixtures of metals which are known as alloys. The goal of metallurgy engineering is to find the right balance of properties such as weight, strength, hardness, toughness, and resistance to rust, fatigue, and extreme temperatures.

Materials engineering is a discipline which deals with production, processing, characterization, selection and design of a range of materials including metals and alloys, ceramics, semiconductors, polymers, glasses, composites, biomaterials and recently developed nano-materials.

Metallurgy and materials engineering is a key aspect of most companies the world over. It needs to make things stronger, cheaper, lighter, more functional and more sustainable. The graduates in this area can work, or do research in most countries of the world. Pakistan has entered into specialized high technology era of materials after surpassing over the classical "steel mill metallurgy" and has started to produce various types of luxury cars, buses, heavy duty trucks, split air-conditioners, power plants, ships and oil-rigs, missiles, sub marines, fighter planes, tanks etc. all of which demand for specialized materials in addition to the conventional materials. There is an emerging national demand of new advanced materials that can only be fulfilled by producing materials engineers.

Mission:

The Department mission continues the visionary and broad mission.

- To provide a well-rounded education in metallurgy and materials engineering to meet the needs of industry, academia, and social sector.
- To conduct research of international standard in the field.
- To provide technical personal in the cross-disciplinary materials community.

LIST OF COURSES

Course Outline: MSc Metallurgy & Materials Engineering

Compulsory Courses For MSc/MS Program

Course No.	Course Title
HU-5001	Understanding of Holy Quran-I
HU-5002	Understanding of Holy Quran-II

Core Courses

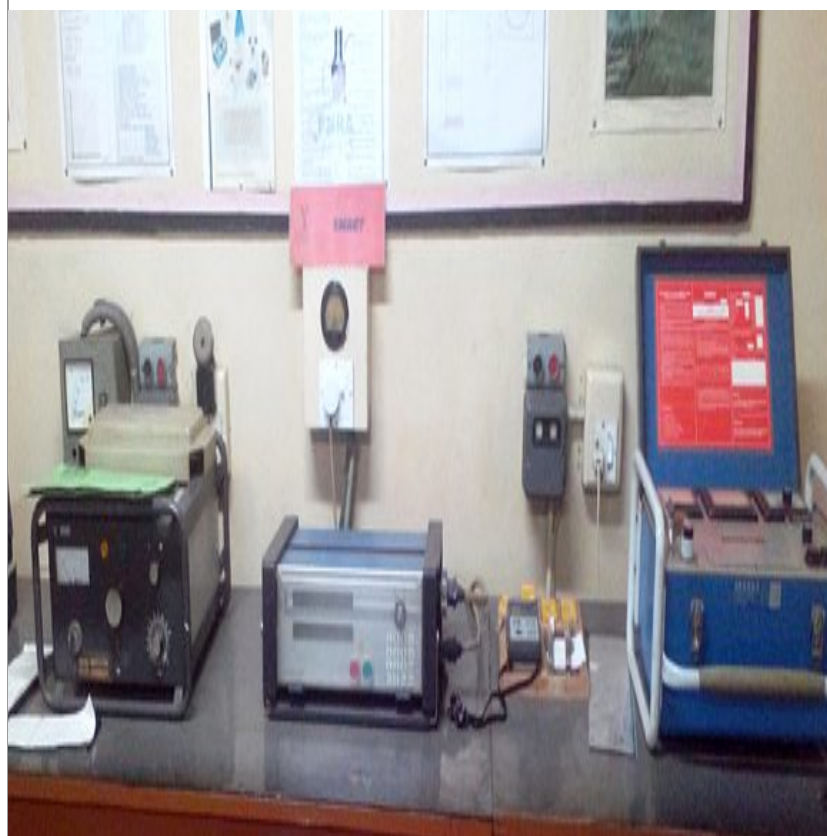
Course No.	Course Title
MME-5701	Materials Thermodynamics
MME-5702	Mechanical Behavior of Materials
MME-5703	Phase Transformations
MME-5704	Advanced Topics in Materials Engineering (depending on the choice of the Department)

Thesis

Course No.	Course Title
ME-5750	Post Graduate Thesis

Elective Courses

Course No.	Course Title
MME-5705	Theory of Dislocations
MME-5706	Fracture Mechanics and Failure Analysis
MME-5707	Metal Forming
MME-5708	Thermo-mechanical Processing
MME-5709	Micro structural Control
MME-5710	Advanced Manufacturing Systems
MME-5711	Advanced Joining Technology
MME-5712	Nanomaterials
MME-5713	Advanced Coating technology
MME-5714	Surface analysis and characterization
MME-5715	Tribology Engineering
MME-5716	Thin Film Technology
MME-5717	Carbon Materials
MME-5718	Polymer Science and Engineering
MME-5719	Advance Ceramics Engineering
MME-5720	Electronic Materials
MME-5721	Smart Materials
MME-5722	Nanotechnology
MME-5723	Synthesis and Design of Nano Structures and Devices
MME-5724	Advances in Extractive Metallurgy
MME-5725	Solidification
MME-5726	Advance Characterization Techniques
MME-5727	Modern Steels and Processes
MME-5728	Biomaterials
MME-5729	Corrosion monitoring and prevention
MME-5730	Surface Science and Engineering
MME-5731	Magnetic Materials
MME-5732	Optical Materials
MME-5733	Advance Composite Materials
MME-5734	Nano materials and Computer Aided Nano-design
MME-5735	Electron Microscopy
MME-5736	X-Ray Diffraction and Texture Studies/ Modeling of Materials Processing
MME-5737	Powder Metallurgy
MME-5738	Computational Materials Engineering
MME-5739	Mathematical Methods in Engineering/ Computational Methods for Engineers
MME-5740	Industrial Management





1.3

FACULTY OF MECHANICAL AND AERONAUTICAL ENGINEERING

1.3.3 Department of Energy Engineering

Dean

Prof. Dr Riffat Asim Pasha

Chairman

Dr. Muddassir Ali

Associate Professor

Dr. Muddassir Ali
BSc Engg. (BZU Multan)
MSc Engg. (UoP Lahore)
PhD (Laurentian Canada)

Areas of Interest

Computational Fluid Dynamics (CFD), Mathematical Modeling of Energy Systems, Membrane Separation Processes.

Assistant Professor

Dr. Tahir Mehmood
BSc Engg. (UET Taxila)
MSc Engg. (UET Lahore)
PhD (UET Taxila)

Sustainable Manufacturing, Thermo Fluids, Energy System Modeling

THE DEPARTMENT

The Department of Energy Engineering is established within the Faculty of Mechanical and Aeronautical Engineering at the University of Engineering and Technology Taxila. Energy Engineering is a broad field of engineering that encompasses energy services, energy efficiency, energy economics, environmental compliance, and alternative technologies. It is one of the most emerging engineering disciplines. It will help to find ways to increase the efficiency of energy systems, further develop conventional and alternative/renewable energy sources, and find the most efficient and sustainable ways to operate buildings and manufacturing processes. The Energy Engineering will serve as a catalyst at the University to expand opportunities in a broad spectrum of important and innovative energy options, such as renewable solar, wind, biomass, wave energy, etc., improved energy efficiency, and the production of new materials that find applications in developing clean energy technologies and other evolving energy science areas. Additionally, the department will focus on conventional energy systems for research on their efficiency, cost-effectiveness, and environmental benefits.

Laboratories and other Facilities

The department has the following well-equipped laboratories to meet students' research requirements.

- | | |
|---|------------------------------|
| a. Solar Thermal and PV Energy Lab | d. Characterization Fuel Lab |
| b. Energy Modeling and Optimization Lab | e. Hydro-Power Lab |
| c. Energy Design and Development Lab | f. Steam Power Plant |

MSc in Energy Engineering

Eligibility Criteria

BSc/BE Engineering in the relevant fields like Energy, Mechanical, Environmental, Industrial, Petroleum, Chemical, Electrical, Electronics, Mechatronics, Textile, Mining, and Metallurgy & Materials Engineering.

LIST OF COURSES

Course Outline:

List of Courses:

Curriculum: Total 32 credit hours (10 courses and thesis of 6 credits)

Compulsory Courses For MSc/MS Program

Course No.	Course Title
HU-5001	Understanding of Holy Quran-I
HU-5002	Understanding of Holy Quran-II

Core Courses

All four (4) core courses are mandatory for MSc degree in Energy Engineering. Each course is of 3 credit hours:

Course No.	Course Title
ENE-5101	Experimental Methods of Energy Systems
ENE-5102	Energy Economics and Management
ENE-5103	Energy Resources and Technologies
ENE-5104	Sustainable Energy and Environment

Elective Courses:

Elective requirement for minimum four(4) courses can be selected from the listed given below, each course is of 3 credit hours.

Course No.	Course Title
ENE-5105	Solar Thermal Engineering
ENE-5106	Solar Photovoltaic Systems
ENE-5107	Wind Energy Technology
ENE-5108	Biomass and Bioenergy
ENE-5109	Hydro Power Plants
ENE-5110	Fuel Cells Technology
ENE-5111	Combustion and Emission Control
ENE-5112	Petroleum and Natural Gas Processing
ENE-5113	Nuclear Energy Technology
ENE-5114	Power Plant Technologies
ENE-5115	Instrumentation and Process Control
ENE-5116	Industrial Energy Management
ENE-5117	Energy Statistics and Energy Demand Forecasting
ENE-5118	Energy Systems Modeling and Analysis
ENE-5119	Energy Supply Chain
ENE-5120	Energy in Buildings
ENE-5121	Materials for Energy Applications
ENE-5122	Energy Storage Systems
ENE-5123	Energy Conservation and Audit
ENE-5124	Power Generation, Transmission and Distribution
ENE-5125	Advanced Automotive Technology
ENE-5126	Advanced Topics in Energy Conversion

Thesis

Course No.	Course Title
ENE-5100	Post Graduate Thesis





1.4 | FACULTY OF TELECOMMUNICATION & INFORMATION ENGINEERING

1.4.1 Department of Computer Engineering

Dean

Prof. Dr. Hafiz Adnan Habib

Chairman

Dr. Muhammad Haroon Yousaf

Professors

Prof. Dr. Hafiz Adnan Habib
B.Sc. Engg (UET Taxila)
M.Sc. Engg (UET Taxila)
PhD (UET Taxila)

Dr. Muhammad Haroon Yousaf
B.Sc. Engg (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Associate Professors

Dr. Farhan Qamar
B.Sc. Engg (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Assistant Professors

Engr. Malik Muhammad Asim
B.Sc Engg. (UET Taxila)
M.Sc Engg. (UET Taxila)

Dr. Fawad Hussain
BSc Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Areas of Interest

Artificial Intelligence

Image Processing, Computer Vision,
Video Processing, Gesture Recognition

Optical Communication & Networks,
Wireless Communications

Computer Networks,
Wireless Communication

Audio & Speech Processig,
Computer Vision, Digital
Image Processing

Engr. Sana Ziafat
BSc Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)

Dr. Naveed Khan Baloach
BSc Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Dr. Waqar Ahmad
BSc Engg. (Comsats)
M.Sc. Engg. (UET Taxila)
PhD (Italy)

Dr. Afshan Jamil
BSc Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Dr. Abdul Rehman Aslam
BSc Engg. (UET Taxila)
M.Sc. Engg. (LUMS, Lahore)
PhD. (LUMS, Lahore)

Dr. Romana Shahzadi
B.Sc Engg. (UET Taxila)
M.Sc. Engg.(UET Taxila)
Ph.D. (UET Taxila)

Dr. M Asif Khan
B.Sc Engg. (UET Taxila)
M.Sc. Engg.(UTP, Malaysia)
Ph.D. (UTP, Malaysia)

Wireless Communication,
Computer Networks

Digital Design, Embedded
Systems

VLSI Architecture for Video
Coding

Computer Vision, Digital Image
Processing, Video Content Analysis

Digital Design, Embeded Systems

Networks Security

Communication, Cryptography,
Wireless Networks

Lecturers

Dr. Noshina Ishaq
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (U.E.T Taxila)

Network Security

Engr. Mona Waseem
BSc Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)

Brain Computer Interface
Arti cial Intelligence

Dr. Aasim Raheel
BSc Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Bio Medical Signal
Processing

Engr. Asim Raza
Bsc Engg. (UET Taxila)
M.Sc. Enggr. (UET Taxila)

Digital Image Processing

Dr. Sanay M. Umar Saeed
BSc Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Brain Computer Interface
Arti cial Intelligence

Dr. Sharoon Saleem
BSc Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Digital Design

Engr. Muhammad Tariq Javed
BSc Engg. (Comsats)
M.Sc. Engg. (UET Taxila)

Wireless Sensor Networks

THE DEPARTMENT

Computer engineering degree program was started in 2001 with intake of fifty students. Initially, it was setup in the building of Electrical Engineering Department and classes were conducted in evening session only. In the mean time, construction of a separate building for department worth Rs. 40 million with funding from HEC (Higher Education Commission) was started, which completed in year 2006. Building comprised of eight class rooms, twelve labs, one girl's common room, two examination halls, nearly twenty five offices and some other rooms and halls. Department has laboratories with sufficient hardware and computing facilities. Each computing lab is equipped with at least twenty five PCs and each hardware lab is equipped with fifteen workstations. All computing labs are also networked and department has wireless networked coverage as well.

POST GRADUATE STUDIES

Graduate (M.Sc. and Ph.D.) programs in Computer Engineering at UET, Taxila were started in 2005. Graduate program is driven by the desire to create a state-of-the-art teaching & research department in Pakistan. It is believe that only through a high quality graduate education a university can survive in the modern world. The goal of our graduate programs is to train highly qualified personnel to fulfill the needs of industry and academia. The M.Sc. Engineering program is geared towards practicing engineers who wish to augment their knowledge, use their experience, and enhance their design and technical skills. The M.Sc. and PhD. programs aim at developing research skills by combining course work and original research work carried out under the supervision of one or more faculty members.

LIST OF COURSES

PhD in Computer Engineering

Compulsory Courses for Postgraduate Students

Effective from Fall-2025 onwards, a (1+1) credit hour courses will be mandatory for all MS/MSc and PhD students. These courses are in accordance with the Higher Education Commission (HEC) Policy and must be successfully completed as part of the degree requirements.

PhD In Computer Engineering

To complete the PhD degree program, a total of 20 credit hours of coursework and a research thesis are required. Of the eight courses, two are compulsory (Holy Quran courses), each carrying one credit hour (1+1), while the remaining six may be selected from the list of courses given below.

Compulsory Courses for PhD Program

Course No.	Course Title
HU-6001	Understanding of Holy Quran-I
HU-6002	Understanding of Holy Quran-II

Courses for PhD Computer Engineering Program

Course No.	Course Title
CP-6001	Research Methodologies
CP-6002	Mathematics for Machine Learning
CP-6003	Computer Vision
CP-6004	Visual Information Engineering
CP-6005	Biomedical Signal Processing
CP-6006	Information and Coding Theory
CP-6007	Deep Learning
CP-6008	Affective Imaging
CP-6009	Brain Computer Interface
CP-6010	Advance Natural Language Processing
CP-6011	Medical Imaging
CP-6012	Stochastic Processes
CP-6013	Multimedia Communication Systems
CP-6014	Optical Communication
CP-6015	Encryption Techniques
CP-6016	System on Chip Architecture
CP-6017	Hardware for Machine Learning Applications
CP-6018	Advance Topics in Computer Engineering

Thesis

Course No.	Course Title
CP-6000	PhD Thesis

MSc in COMPUTER ENGINEERING

The Department of Computer Engineering offers an MSc in Computer Engineering. To complete the MSc degree program, a total of 26 credit hours of coursework and a 6-credit-hour research thesis are required.

Out of the eight courses, three are core courses, while the remaining five may be selected from a list of elective courses. In addition, two compulsory courses of one credit hour each (1+1) must be completed.

Compulsory Courses for MSc/MS Program

Course No.	Course Title
HU-5001	Understanding of Holy Quran-I
HU-5002	Understanding of Holy Quran-II

CORE COURSES

Course No.	Course Title
CP-5001	Computer Architecture
CP-5002	Modern Computer Networks
CP-5003	Advanced Algorithms

ELECTIVE COURSES

Course No.	Course Title
CP-5004	Embedded Systems and Application Design
CP-5005	Advance Digital System Design
CP-5006	VLSI System Design
CP-5007	Advanced Digital Signal Processing
CP-5008	Advanced Digital Communication
CP-5009	Internet of Things
CP-5010	Next Generation Networks
CP-5011	Network Security and Cryptography
CP-5012	Cyber Security
CP-5013	Machine Learning with Applications
CP-5014	Natural Language Processing
CP-5015	Artificial Neural Networks and Deep Learning
CP-5016	Image Processing and Analysis
CP-5017	Speech and Audio Processing
CP-5018	Advanced Robotics
CP-5019	Advanced Operating System
CP-5020	Software Development for Real-Time Embedded Systems
CP-5021	Human Computer Interaction
CP-5022	Web Engineering
CP-5023	Cloud Computing
CP-5024	Edge Computing

Thesis

Course No.	Course Title
CP-5000	MSc Thesis



MS Artificial Intelligence Program

Under the Computer Engineering Department, a new program offering an MS in Artificial Intelligence has been introduced. To complete the MS degree, a total of twenty-six credit hours of coursework and a six-credit-hour research thesis are required.

Out of eight courses, three are core courses, while the remaining five can be selected from a list of elective courses. Additionally, two compulsory courses of one credit hour each (1 + 1) must be completed.

Compulsory Courses for MS Program

Course No.	Course Title
HU-5001	Understanding of Holy Quran-I
HU-5002	Understanding of Holy Quran-II

ELECTIVE COURSES

Course No.	Course Title
AI-5004	Big Data Analytics
AI-5005	Image Processing and Analysis
AI-5006	Reinforcement Learning
AI-5007	Design and Analysis of Algorithms
AI-5008	Data Mining
AI-5009	Edge Computing and AI
AI-5010	Data Analytics for Business
AI-5011	Advanced Data Visualization
AI-5012	Advanced Neural Networks and Deep Learning
AI-5013	Natural Language Processing
AI-5014	Computer Vision and Video Analytics
AI-5015	Advanced Pattern Recognition
AI-5016	Ethical Issues in Artificial Intelligence
AI-5017	Internet of Things
AI-5018	AI in Healthcare
AI-5019	Intelligent Robotic Systems
AI-5020	AI for Climate Change and Remote Sensing
AI-5021	MLOPs: Foundation and Application
AI-5022	AI for Cyber Security
AI-5023	Speech and Audio Processing
AI-5024	AI for Agriculture
AI-5025	Smart Cities
AI-5026	Large Language Models
AI-5027	Digital Twins
AI-5028	Generative AI
AI-5029	Bioinformatics

CORE COURSES

Course No.	Course Title
AI-5001	Machine Learning
AI-5002	Programming for AI
AI-5003	Mathematics for AI

Thesis

Course No.	Course Title
AI-5000	MSc Thesis





1.4 | FACULTY OF TELECOMMUNICATION & INFORMATION ENGINEERING

1.4.2 Department of Software Engineering

Dean

Prof. Dr. Hafiz Adnan Habib

Chairman

Prof. Dr. Tabassam Nawaz

Professor

Prof. Dr. Tabassam Nawaz
B.Sc. Engg. (UET Taxila)
MS (BIIT) M.Sc. Engg (UET Taxila)
PhD (UET Taxila)

Areas of Interest

Advance Database, Object
Oriented Design and
Analysis.

Associate Professors

Dr. Ali Javed
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Image and Video Coding,
Multimedia Signal Processing,
Visual Content Analysis,
Multimedia Streaming

Dr. Hassan Dawood
B.Sc. Engg.
(COMSATS Wah Cantt)
M.Sc. Engg.
(Beijing Normal University Beijing China)
PhD
(Beijing Normal University Beijing China))

Image processing and Pattern
Recognition

Assistant Professors

Dr. Huma Ayub
MCS (QAU Islamabad)
MS (NUST)
PhD (UET Taxila)

EEG Signal Processing,
Machine Learning.

Dr. Madiha Liaqat
B.Sc Engg. (UET Taxila)
M.Sc Engg. (UET Taxila)
Ph.D (NUST)

Artificial Intelligence,
Information Retrieval

Dr. Saima Zareen
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (NUST)
PhD (UET Taxila)

Software Requirements,
Multimedia Wireless
Networks, System

Dr. Raja Mubashir Ayub Minhas
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Web 3.0 Advance Computing,
Recommender Systems

Engr. Muhammad Asjad Saleem Raja
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (Taxila)

Software Specification and
Design, Information Systems.

Engr. Wajahat Abbas
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (Taxila)

Multimedia Transmission
on Wireless Networks

Engr. Wajeeha Yasser
B.Sc. Engg. (UET Taxila)
M.Sc Engg. (UET Taxila)

Image Processing

Lecturers

Engr. Sahar Javaid
B.Sc. Engg. (Hons) (UET Taxila)
M.Sc. Engg. (NUST)

Machine Learning

Dr. Arta Iftikhar
BSc Engg. (Hons) (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Image Processing, Machine
Learning, Prediction &
Recommender Systems

Dr. Kawal Yousaf
BSc Engg. (Hons) (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Deep Learning Internet Application
Development, Mobile Application
Development

Engr. Maria Andleeb
B.Sc. Engg. (UET
Taxila) M.Sc. Engg.
(UET Taxila)

Wireless Networks, Cognitive
Radio Networks

Dr. Marriam Nawaz
BSc Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Face Swap and Face-Reenactment
Deep Fakes Detection

Dr. Tehmina Kalsoom
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Digital Image Processing, Computer
Vision, Android Application
Development, Artificial Intelligence
Machine Learning

THE DEPARTMENT

Software engineering degree program was started in 2002. Initially, it was setup in the building of Electrical Engineering Department and classes were conducted in evening session only. In the meantime, construction of a separate building for department worth Rs. 40 million with funding from HEC (Higher Education Commission) was started, which completed in year 2006. Building comprised of seven class rooms, nine labs, one girl's common room, two examination halls, nearly twenty offices and some other rooms and halls. Department has laboratories with sufficient hardware and software facilities. Each lab is equipped with PCs. The labs are also networked and department has wireless networked coverage as well.

POST GRADUATE STUDIES

Graduate (M.Sc.) programs in Software Engineering at UET, Taxila were started in 2008. and PhD program in Software Engineering was started in 2013. The goal of our graduate programs is to train highly qualified personnel to fulfill the needs of industry and academia. The M.Sc. Engineering program is geared towards practicing engineers who wish to augment their knowledge, use their experience, and enhance their design and technical skills. The M.Sc. and PhD. programs aim at developing research skills by combining course work and original research work carried out under the supervision of one or more faculty members.

LIST OF COURSES

PhD/MSc in Software Engineering

Compulsory Courses for Postgraduate Students

Effective from Fall-2025 Onwards, a (1 + 1) credit hour courses will be mandatory for all MS/MSc and PhD students. These courses are in accordance with the Higher Education Commission (HEC) Policy and must be successfully completed as part of the degree requirements

PhD in SOFTWARE ENGINEERING

To complete the PhD degree program, a total of 20 credit hours of coursework and a research thesis are required. of the eight courses, two are compulsory (Holy Quran courses), each carrying one credit hour (1 + 1), while the remaining six may be selected from the list of courses given below.

Compulsory Courses for PhD Program

Course No.	Course Title
HU-6001	Understanding of Holy Quran-I
HU-6002	Understanding of Holy Quran-II

Core Courses for PhD Program

Course No.	Course Title
MA-6001	Advance Engineering Mathematics
EM-6002	Research Methodologies

Elective Courses for PhD Software Engineering Program

Course No.	Course Title
SE-6101	Computer Vision
SE-6102	Artificial Intelligence and software Agent
SE-6103	Advance Programming Techniques
SE-6104	Data Mining and Analytics
SE-6105	ERP System
SE-6106	Advance Operating System
SE-6107	Advance Visual Programming
SE-6108	Image and Video Processing
SE-6109	Advance Machine Learning

MSc in SOFTWARE ENGINEERING

The Department of Software Engineering offers an MSc in Software Engineering. to complete the Msc degree program, a total of 26 credit hours of course work and a 6-credit-hour research thesis are required.

Out of the eight courses, three are core courses, while the remaining five may be selected from a list of elective courses. In addition, two compulsory courses of one credit hour each (1 + 1) must be completed.

Compulsory Courses for MSc/MS Program

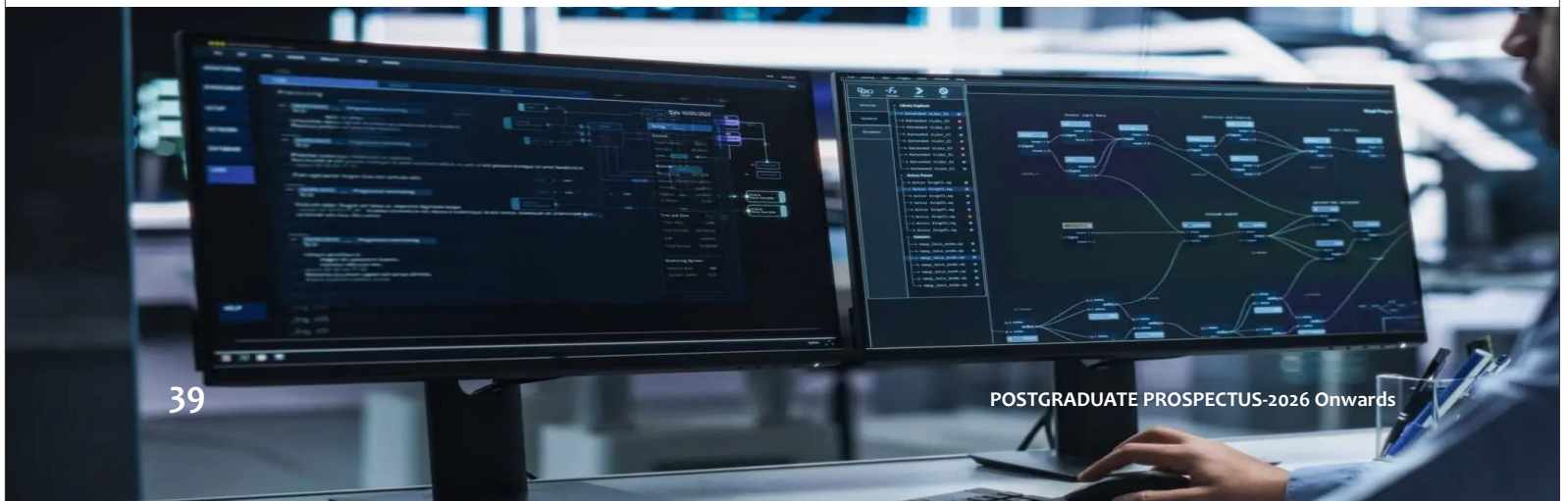
Course No.	Course Title
HU-5001	Understanding of Holy Quran-I
HU-5002	Understanding of Holy Quran-II

Core Courses for MSc Program

Course No.	Course Title
SE-5101	Software System Quality
SE-5102	Software System Requirement
SE-5103	Software System Architecture
SE-5104	Algorithm Design and Analysis
SE-5105	Advance Software Technologies
SE-5100	Postgraduate Research Thesis

Elective Courses for MSc Software Engineering Program

Course No.	Course Title
SE-5106	Software Project Management
SE-5107	Information System: Analysis and Design
SE-5108	Web Application Engineering
SE-5109	Digital Image Processing
SE-5110	Human Computer Interaction
SE-5111	Advance Database System
SE-5112	Management of QA & Software Testing
SE-5113	Mobile Application Development
SE-6101	Computer Vision
SE-6102	Artificial Intelligence and Software Agent
SE-6103	Advance Programming Techniques
SE-6104	Data Mining and Analysis
SE-6105	ERP System
SE-6106	Advance Operating System
SE-6107	Advance Visual Programming
SE-6108	Image and video Processing
SE-6109	Advance Machine Learning





1.4

FACULTY OF TELECOMMUNICATION & INFORMATION ENGINEERING

1.4.3 Department of Telecommunication Engineering

Dean

Prof. Dr. Hafiz Adnan Habib

Chairman

Engr. Prof. Dr. Yasar Amin

Professors

Engr. Prof. Dr. Adeel Akram*
B.Sc Engg (UET Lahore)
M.Sc Engg (NUST)
PhD (UET Taxila)

Engr. Prof. Dr. Yasar Amin
BSc Engg (UET Taxila)
MSc Engg (KTH Sweden)
MBA (UTU, Finland)
PhD (KTH Sweden)

Associate Professor

Engr. Dr. Rashid Saleem
B.Sc Engg (GIKI)
M.S. Engg (CASE Islamabad)
PhD (Manchester, UK)

Engr. Dr. Humayun Shahid
BSc Engg (IST, Islamabad)
MSc (NTU, Singapore)
PhD (UET Taxila)

Engr. Dr. Muhammad Abdul Basit
B.Sc. (FAST, Islamabad)
M.Sc. (UET Taxila)
PhD (UESTC, China)

*(on deputation)

Areas of Interest

Wireless Sensor Networks,
Intelligent Networks, Ad-hoc
Networks, Pervasive Computing

RFID and Microwave Engineering

Antenna Design and Modelling

RFID Tag Design, Smart Cities
and Connected Homes

Antenna Design, RF Circuits,
Microwave

Assistant Professors

Engr. Dr. Muhammad Jamil Khan
BSc Engg (UET Taxila)
MSc Engg (UET Taxila)
PhD (UET Taxila)

Engr. Dr. Syeda Iffat Naqvi
B Sc Engg (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Engr. Dr. Farzana Kulsoom
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (Universita di PAVIA, Italy)

Engr. Dr. Farzana Arshad
B.Sc. Engg (UET Taxila)
M.Sc. Engg.(UET Taxila)
PhD (UET Taxila)

Engr. Dr. Mudassar Ali
B.Sc. Engg (UET, Taxila)
M.Sc. Engg. (UET, Taxila)
PhD. (NUST Islamabad)

Engr. Dr. Muhammad Ali Riaz
B.S. Engg (IOWA State University, USA)
M.S. Engg. (IOWA State University, USA)
PhD. (UET Taxila)

Engr. Dr. Mohsan Niaz
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (CUT Sweden)
PhD. (KENT, UK)

Engr. Dr. Ali Waqar Azim
B.Sc. (UET Taxila)
M.Sc. (UT, Sweden)
PhD. (UGA France)

Digital Signal & Image Processing,
Arti cial Intelligence,

RF & Microwave Antenna Design

Digital Design

Wave Propagation & Antennas

Wireless Communication

Chipless RFID, Microwave
and millimeter wave circuits

Optical Fiber Communication,
Wireless Communication

Visible Light Communication,
Wireless Communication

Engr. Dr. Muhammad Zahid
M.Sc. Engg. (HITEC Taxila)
PhD. (UET Taxila)

Massive MIMO, mm-Wave
Antenna

Engr. Dr. Lubna Nadeem
B.Sc Engg (UET, Taxila)
M.Sc Engg (UET, Taxila)
PhD (UET Taxila)

Optical Fiber Communication,
5G Wireless Communication
(D2D Comm)

Lecturers

Engr. Zeeshan Sarwar
B.Sc Engg (COMSATS Islamabad)
M.Sc Engg (COMSATS Islamabad)
PhD (Australia)

Telecommunication
networks

Engr. Dr. Rizwana Shahzadi
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Telecommunication Networks,
Wireless Networks

Engr. Dr. Asma Ejaz
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)
PhD (UET Taxila)

Wave Propagation & Antennas

Engr. Iqra Jabeen
B.Sc. Engg. (UET Taxila)
M.Sc. Engg. (UET Taxila)

RFID Systems & Design

Engr. Aasma Shafi
M.Sc. Engg. (UET Taxila)

Communication Systems

Engr. Sadaf Talha
M.Sc. Engg.

Telecom & Networks

Lab Engineer

Engr. M. Faisal Shahzad
M.Sc. Engg. (UET Taxila)

Electronics

THE DEPARTMENT

Established in 2007, Department of Telecommunication is concerned with the theory, development and application of telecommunication systems, their design and integration. The objective of the program is to provide students with a strong theoretical and practical background in the field of telecommunication, along with the engineering analysis, design and implementation skills necessary to work between the two. The program involves study of complete telecommunication systems, technologies running and how these technologies can be developed. After successful completion of the Telecommunication Engineering degree, the graduates will gain a broad range of skills in the area of telecommunication with strong analytical and critical abilities. These graduates are ready to embark upon an exciting career in a diverse range of telecommunication technology-rich companies and industries.

POST GRADUATE STUDIES

The degree program of telecommunication engineering has been created to produce professionals with a thorough understanding of the theoretical principles of the new communication technologies. The course provides a firm foundation of these theoretical principles and is reinforced by practical work involving the design, testing and implementation of systems. The course aims to produce engineers who are versatile, adaptable and possess technical knowledge and analytical capability together with some of the practical design skills relevant to the modern telecommunications industry. Electronics is essential to the modern world of instant global communication. The subject has a history going back 60 years or more, but it is only in the last 30 years that electronics has become indispensable in the form of powerful and low-cost computers accessible to all. Applications include: digital media for audio and video storage and reproduction; satellite navigation systems which can pinpoint a location anywhere on earth to within a meter; digital cameras and camcorders at affordable price; and automated manufacturing that makes many products reliable and inexpensive. Telecommunications has been revolutionized by modern electronics, making possible worldwide instant telephony with automated international dialing and, of course, the internet is possible only because of advanced optical communication which links the continents with sufficient capacity to carry all the intercontinental internet and telephony traffic over submarine cables. None of this would be possible without the technology, but it is also the design and development engineers and graduate in electronic engineering and telecommunications engineering that make possible the products that we all use, directly or indirectly, in our daily lives. Demand for telecommunications engineers is high throughout the world. The profession offers a range of careers from design and development to marketing, management, production engineering and applications engineering. Graduates also find employment in other disciplines because of the highly numerate nature of the subject.

LIST OF COURSES

PhD in Telecommunication Engineering

To complete the PhD degree requirement, a total of 20 credit hours of course work (08 courses) and a research thesis are required. Out of 08 courses 02 are compulsory Quran courses (each of 01 credit hour), 03 are PhD core courses and remaining 03 courses can be selected from the list of elective courses with the recommendation of respective academic advisor. List of these courses is as given below.

Compulsory Courses for PhD Program

Course No.	Course Title
*HU-6001	Understanding of Holy Quran-I
*HU-6002	Understanding of Holy Quran-II

CORE COURSES

Course No.	Course Title
TE-6001	Mobile Communication and Internet Technologies
TE-6002	Smart Sensors and Systems
TE-6003	Research Methodology

* with effect from Fall-2025 Session

ELECTIVE COURSES

Course No.	Course Title
TE-6004	Advanced Mobile Radio Techniques
TE-6005	Mobile and Adhoc Networking
TE-6006	Advanced Electromagnetic Engineering
TE-6007	RF Circuit Design
TE-6008	Computational Electromagnetics
TE-6009	Satellite Networking
TE-6010	RF Subsystems and Satellite Communications
TE-6011	Optical Networks
TE-6012	Non-Linear Optics and Applications
TE-6013	Mobile and Pervasive Computing
TE-6014	Information Theory and Coding
TE-6015	Grid and Cloud Computing
TE-6016	Advanced Topics in Communication Systems
TE-6017	Advanced Wireless Communications
TE-6018	Multimedia Communications
TE-6019	Printable Antennas for Embedded Sensors
TE-6000	Research Thesis

Any other course within the university recommended by academic Advisor/Supervisor/Chairman

MSc in TELECOMMUNICATION ENGINEERING

The Department of Telecommunication Engineering is offering MSc in Telecommunication Engineering with two specializations:

1. RF Engineering & Signal Processing
2. Communication Systems and Telecommunication Networks
3. A total of 10 courses (26 credit Hours) and a Research Thesis (6 Credit Hours) are required to complete MSc degree. Out of 10 courses 02 are Quran courses (01 credit hour each), 05 are MSc core courses and remaining 3 courses can be selected from the list of elective courses with the-recommendation of respective academic advisor. The list of courses is as follows.

Compulsory Courses for MSc/MS Program

Course No.	Course Title
*HU-5001	Understanding of Holy Quran-I
*HU-5002	Understanding of Holy Quran-II

Specialization in RF Engineering and Signal Processing

CORE COURSES

Course No.	Course Title
TE-5101	Advanced Engineering Electromagnetics
TE-5102	Microwave Active Devices
TE-5103	Advanced Digital Signal Processing
TE-5104	Stochastic Processes
TE-5105	Advanced Topics in RF Engineering

ELECTIVE COURSES

Course No.	Course Title
TE-5106	Detection and Estimation Theory
TE-5107	Transforms in Signal Processing
TE-5108	Adaptive Filter Theory
TE-5109	Real-Time DSP
TE-5110	Digital Image Processing
TE-5111	Array Signal Processing

TE-5112	Speech Processing
TE-5113	Advanced Topics in Signal Processing
TE-5114	Microwave Filters
TE-5115	Radar Engineering
TE-5116	Free Space Communication
TE-5117	Antenna Theory and Design
TE-5118	Simulation and Modelling
TE-5119	Telecom Planning and Management
TE-5120	Telecommunication Business Continuity
TE-5121	Management Telecom Regulation and Standards
TE-6001	Mobile Communications and Internet Technologies
TE-6002	Smart Sensors and Systems
TE-6003	Research Methodology
TE-6007	RF Circuit Design
TE-6014	Information Theory and Coding
TE-6015	Cloud and Grid Computing
TE-6017	Advanced Wireless Communications
TE-6018	Multimedia Communications
TE-5100	Research Thesis

Specialization in Communication Systems & Telecommunication Networks

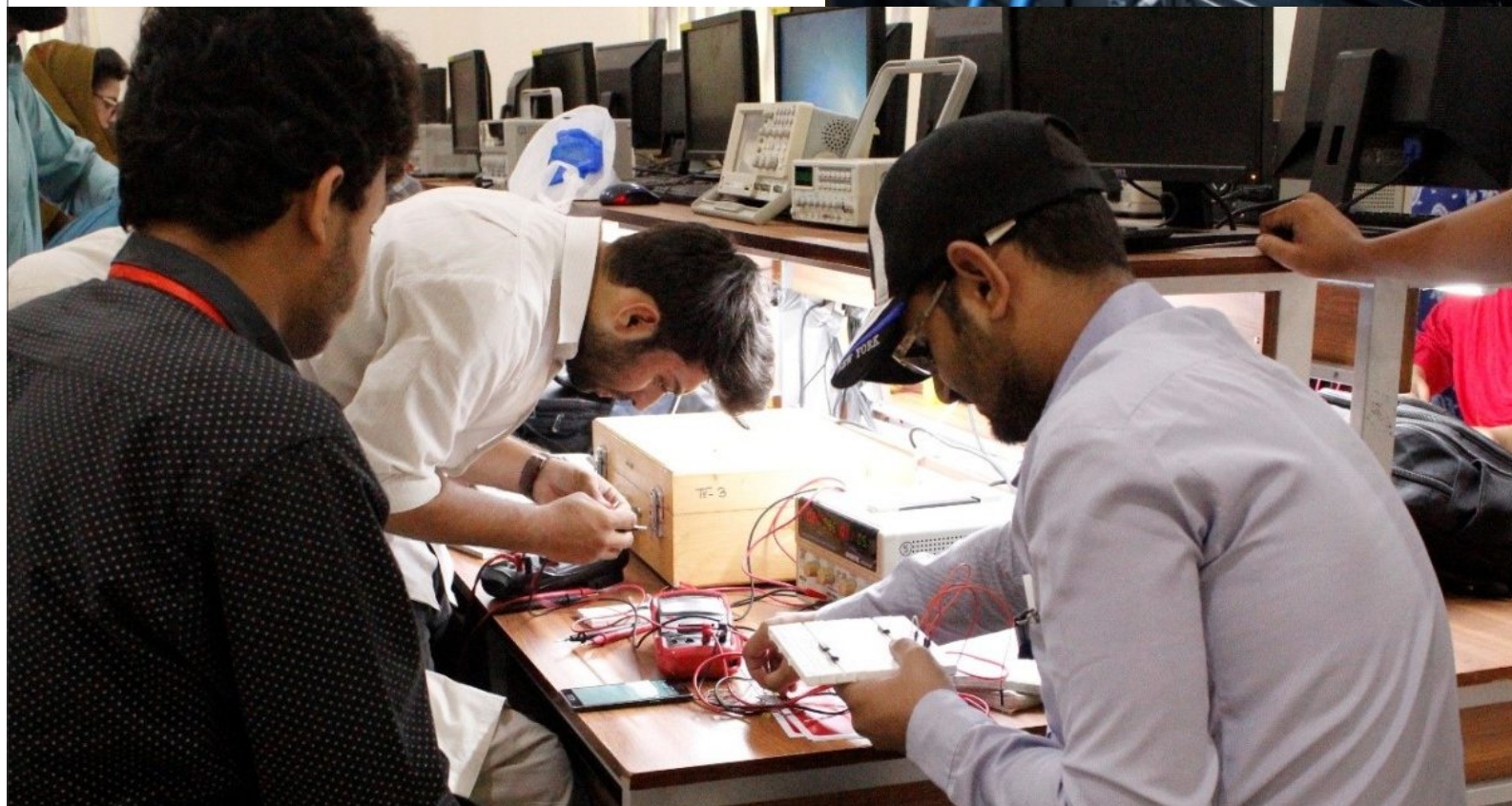
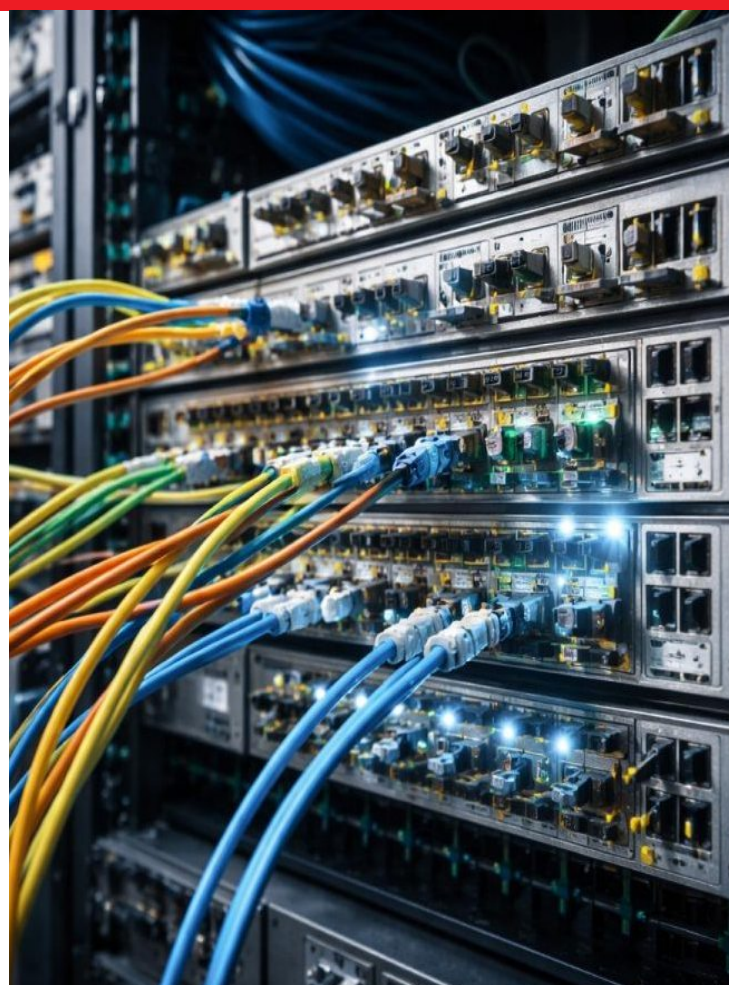
CORE COURSES

Course No.	Course Title
TE-5201	Optimization Techniques
TE-5202	Stochastic Processes
TE-5203	Advanced Digital Communication
TE-5204	Optical Communication and Networks
TE-5205	Advanced Topics in Telecommunication Networks

* with effect from Fall-2025 Session

ELECTIVE COURSES

Course No.	Course Title
TE-5206	Network Planning and Management
TE-5207	Opto-electronic Devices
TE-5208	Adaptive Filter Theory
TE-5209	Optical Communication Systems
TE-5210	Advanced Computer Networks
TE-5211	Detection and Estimation Theory
TE-5212	Information Theory
TE-5213	Coding Theory
TE-5214	QOS in Telecommunication Networks
TE-5215	RF Planning and Optimization
TE-5216	Telecom Networks
TE-5217	Network Optimization
TE-5218	Telecom Management Network
TE-5219	Broadband Communication
TE-5220	Smart Grid Networks
TE-5221	Advanced Intelligent Networks
TE-5222	Secure Communication
TE-5223	Wireless Sensor Networks
TE-5224	Simulation and Modeling
TE-5225	Telecom Planning and Management
TE-5226	Telecommunication Business Continuity
TE-5227	Management Telecom Regulation and Standards
TE-6001	Mobile Communications and Internet Technologies
TE-6002	Smart Sensors and Systems
TE-6003	Research Methodologies
TE-6014	Information Theory and Coding
TE-6015	Cloud and Grid Computing
TE-6016	Advanced Topics in Communication Systems
TE-5200	Research Thesis





1.4

FACULTY OF TELECOMMUNICATION & INFORMATION ENGINEERING

1.4.4 Department of Computer Science

Dean

Prof. Dr. Hafiz Adnan Habib

Chairman

Dr. Syed Aun Irtaza

Associate Professor

Dr. Syed Aun Irtaza
PhD (FAST, Islamabad), Postdoc
(University of Michigan, USA)

Dr. Farrukh Zeeshan Khan
PhD (Vienna University, Austria)

Assistant Professors

Dr. Muhammad Munwar Iqbal
PhD (University of Engineering
& Technology, Lahore)

Dr. Syed Muhammad Adnan Shah
PhD Comp. Engg. (University of
Engineering & Technology Taxila)

Dr. Zeshan Iqbal
PhD Comp. Engg. (University of
Engineering & Technology Taxila)

Areas of Interest

Computer Vision, Computational
Finance, Big Data Analytics, Audio
Signal Processing

AI/ML in Communication Networks,
IoT, SDN, Mobile Adhoc Networks,
and Next Generation all-optical
Networks

Database Systems, Cloud
Computing, Artificial Intelligence,
Human Computer Interaction, Web
Semantics, Machine Learning,
Data Mining, Deep Learning

Computer Vision, Multimedia Signal
Processing, Acoustic Scene
Analysis, Machine Learning, and
Deep Learning

Network Function Virtualization,
Content Centric Networks, Software
Defined Networking, Cloud
Computing.

Dr. Muhammad Javed Iqbal
PhD University Teknologi
PETRONAS, Malaysia

Dr. Qamas Gul
PhD (BIT, China)
MSc Eng. (UET, Taxila)

Lecturer

Dr. Rao Wakeel Ahmad
BCS (PU Lahore)
MCS (SU Sargodha)
MSIT (NUST, SEECS Islamabad)
PhD (UET Taxila)

Dr. Rashid Amin
PhD (COMSATS, Wah Cantt.)
MCS (IIU, Islamabad)

Dr. Rabbia Mahum
PhD (UET, Taxila)
MSCS (UET, Taxila)

Mr. Hasnat Ahmed
MSCS (IIU, Islamabad)

Ms. Asima Ismail
MSCS (IIU, Islamabad)

Artificial Intelligence, Machine Learning/
Deep Learning, Computer vision, Pattern
Recognition, Natural Language
Processing, Generative/Agentic AI

Information security, Privacy and
Applied Cryptography, Digital Twins
(DTs) and Future Networks (B5G
and 6G) security, Blockchain
applications and technologies in
networks, Machine Learning and
Multimedia Signal Processing

Explainable AI (XAI), Medical Image
Computing, Precision Agri-Tech,
Vision & Pattern Recognition,
Privacy-Preserving & Federated
ML, Generative AI & LLMs,
Multimodal Intelligence

Cybersecurity, Cloud Computing,
IoT, ML, DL, Software Defined
Networking (SDN)

Deep Learning, Computer Vision,
Deepfake Detection, Medical
Imaging

Cyber Security

Data Mining

THE DEPARTMENT

Founded in 2012 with the formal approval of the Higher Education Commission (HEC), Islamabad, the Department of Computer Science at the University of Engineering and Technology, Taxila, stands as a cornerstone of advanced computing education under the Faculty of Telecommunication and Information Engineering.

Since its inception, the department has experienced remarkable growth and strategic development to address the evolving demands of the global digital landscape. Today, the department is a thriving hub for postgraduate scholars, offering a robust, research-intensive environment equipped to address complex computing challenges and foster the next generation of academic and industrial leaders.

POSTGRADUATE STUDIES

The academic journey in the department of Computer Science began with the launch of the Master of Science (MS) in Computer Science in 2012, followed by the flagship Bachelor of Science (BS) in Computer Science program in 2014. In pursuit of academic excellence, advanced research, and specialized expertise, the department further expanded its offerings by introducing the Doctor of Philosophy (PhD) in Computer Science in 2017 and the MS in Data Science in 2019. To date, the department has successfully graduated more than 25 PhD scholars who are making significant contributions in prestigious national and international academic, research, and industry organizations.

Compulsory Courses for Postgraduate Students

Effective from Fall-2025 Onwards, a (1 + 1) credit hour courses will be mandatory for all MS/MSc and PhD students. These courses are in accordance with the Higher Education Commission (HEC) Policy and must be successfully completed as part of the degree requirements

PhD Computer Science

To complete the PhD degree program, a total of 20 credit hours of coursework and a research thesis are required. Of the eight courses, two are compulsory (Holy Quran courses), each carrying one credit hour (1+1), two are core courses, while the remaining four may be selected from the list of elective courses given below.

Compulsory Courses for PhD Program

Course No.	Course Title
HU-6001	Understanding of Holy Quran-I
HU-6002	Understanding of Holy Quran-II

CORE COURSES

Course No.	Course Title
MA-6001	Advanced Engineering Mathematics
EM-6002	Research Methodology

ELECTIVE COURSES

Course No.	Course Title
CS-6101	Data Management and Visualization
CS-6102	Machine Learning for Big Data
CS-6103	Distributed and Parallel Systems Data
CS-6104	Photonic Networks Communication
CS-6105	Cloud Computing
CS-6106	Advanced Wireless Networks
CS-6107	Digital Forensics
CS-6108	Software De ne Networking
CS-6109	Network Management and Virtualization
CS-6110	Computer Vision
CS-6111	Advance Image Processing
CS-6112	Advance Machine Learning
CS-6113	Data Analysis for Life Sciences
CS-6114	Data mining
CS-6115	Big Data and Hadoop Essentials
CS-6116	Pattern Recognition
CS-6117	Arti cial Neural Networks
CS-6118	Advance Topics in Modeling and Simulations
CS-6119	Distributed Databases
CS-6120	Distributed Data Processing
CS-6121	Learning from Data

* Any other course with in university recommended by Supervisor/Chairman

MS COMPUTER SCIENCE

The Department of Computer Science offers MS Computer Science. To complete the MS degree program, a total of 26 credit hours of coursework and a 6-credit-hour research thesis are required

Of the eight courses, four are core courses, one is specialization core while the remaining three may be selected from a list of elective courses. In addition, two compulsory courses of one credit hour each (1 + 1) must be completed.

Compulsory Courses for MS Computer Science Program

Course No.	Course Title
HU-5001	Understanding of Holy Quran-I
HU-5002	Understanding of Holy Quran-II

CORE COURSES

Course No.	Course Title
CS-5101	Advanced Operating Systems
CS-5102	Advanced Computer Architecture
CS-5103	Advanced Theory of Computation
CS-5104	Advanced Analysis of Algorithms
CS-5105	Theory of Programming Language

SPECIALIZATION CORE COURSE

Course No.	Course Title
CS-5109	Research Methodologies

ELECTIVE COURSES

Course No.	Course Title
CS-5106	Artificial Neural Networks
CS-5107	Artificial Intelligence
CS-5108	Machine Learning
CS-5110	Computer Vision
CS-5111	Augmented Reality
CS-5112	Advanced Image Processing
CS-5113	Computational Intelligence
CS-5114	Distributed Database
CS-5115	Data Warehousing
CS-5116	Big Data Analytics
CS-5117	Data Security and Privacy
CS-5119	Advanced topics in Cryptology
CS-5120	Information Visualization

ELECTIVE COURSES

Course No.	Course Title
CS-5121	Information Retrieval
CS-5122	Network Programming
CS-5123	Internet of Things
CS-5128	Text Mining and Analytics
CS-5130	Natural Language Processing
CS-5131	Data Mining and Knowledge Discovery
CS-5133	Information Security
CS-5135	Cryptography and Network Security
CS-5136	Formal Methods
CS-5138	Stochastic Process and Significance in CS
CS-5139	Network Virtualization
CS-5140	Parallel and Distributed System
CS-5141	Cloud Computing
CS-5142	Software Defined Networks
CS-5143	Advanced Computer Networks
CS-5147	Performance and Evaluation of Communication Networks
CS-5149	Wireless Network
CS-5150	Digital Signal Processing
CS-5151	Digital Forensics

RESEARCH THESIS

Course No.	Course Title
CS-5100	Postgraduate Research Thesis

* Any other course with in university recommended by Supervisor/Chairman

MS DATA SCIENCE

The Department of Computer Science also offers MS Data Science. To complete the MS degree program, a total of 26 credit hours of course work and a 6-credit-hour research thesis are required.

Of the eight courses, three are core courses, two are specialization core while the remaining three may be selected from a list of elective courses. In addition, two compulsory courses of one credit hour each (1 + 1) must be completed.

Compulsory Courses for MS Data Science Program

Course No.	Course Title
HU-5001	Understanding of Holy Quran-I
HU-5002	Understanding of Holy Quran-II

CORE COURSES

Course No.	Course Title
DS-5101	Statistical and Mathematical Methods for Data Science
DS-5102	Tools and Techniques in Data Science
DS-5103	Machine Learning

SPECIALIZATION CORE COURSE (Choose any 2)

Course No.	Course Title
DS-5104	Big Data Analytics
DS-5105	Deep Learning
DS-5106	Natural Language Processing
DS-5107	Distributed Data Processing

ELECTIVE COURSES

Course No.	Course Title
DS-5108	Advanced Computer Vision
DS-5109	Algorithmic trading
DS-5110	Bayesian Data Analysis
DS-5111	Big Data Analytics
DS-5112	Bioinformatics
DS-5113	Cloud Computing
DS-5114	Computational Genomics
DS-5115	Data Visualization
DS-5116	Deep Learning
DS-5117	Deep Reinforcement Learning
DS-5118	Distributed Data Processing and Machine Learning
DS-5119	Distributed Machine Learning in Apache Spark
DS-5120	High Performance Computing
DS-5121	Inference & Representation
DS-5122	Natural Language Processing
DS-5123	Optimization Methods for Data Science and Machine Learning
DS-5124	Probabilistic Graphical Models
DS-5125	Scientific Computing in Finance
DS-5126	Social network analysis
DS-5127	Time series Analysis and Prediction

RESEARCH THESIS

Course No.	Course Title
DS-5100	Postgraduate Research Thesis

* Any other course with in university recommended by Supervisor/Chairman



1.5 | FACULTY OF INDUSTRIAL ENGINEERING

Department of Industrial Engineering

Dean

Prof. Dr. Mirza Jahanzaib*

Chairman

Prof. Dr. Wasim Ahmad**

Professors

Prof. Dr. Mirza Jahanzaib *
BSc Engg (Lahore)
MSc Engg (Taxila)
PhD (Taxila)
(IRSIP, UK)

Prof. Dr. Wasim Ahmad**
BSc Engg (Taxila)
MSc Engg (Taxila)
PhD (Cranfield, UK)

Prof. Dr. Salman Hussain*
BSc Engg (Taxila)
MSc Engg (London South Bank, UK)
PhD (London South Bank, UK)

Areas of Interest

Rapid Tooling and Die Design, Digital Manufacturing, Industry 4.0, Advanced Manufacturing Systems, Materials Processing in Manufacturing, Automated Assembly Systems in Industry 4.0, Engineering Management

Lean Product Development Cost Modelling, Financial Management, Manufacturing Management, Machining, Optimization & Operations Management, Process Optimization, Industry 4.0, Rapid Tooling and Die Design

Robotics and Automation, Smart Manufacturing, Process improvement, Manufacturing Management All in Manufacturing, Rapid Tooling, Product Design & Development with Robotics, Industry 4.0

Associate Professors

Dr. Hafiz Muhammad Khurram Ali** Agent based Modeling, B.Sc. Engg. (UET Taxila) Renewable Energy M.Sc Engg. (UET Taxila) Systems, Decision Making Ph.D (UET Taxila)

Dr. Saifullah* Supply Chain, Optimization B.Sc Engg. (UET Taxila) Advanced Planning and M.Sc Engg. (HUST China) Scheduling, Project Management, Industry 5.0 PhD (HUST China)

Assistant Professors

Dr. Muhammad Sajid** Engineering Management, B.Sc Engg. (UET Taxila) Cost Engineering, Lean M.Sc Engg. (UET Taxila) Product Development PhD (UET Taxila)

Dr. Muhammad Jawad*** Manufacturing processes B.Sc Engg. (UET Lahore) Welding Process improvement M.Sc Engg. (UET Taxila) Ph.D (UET Taxila)

Dr. Ayesha Tayyab **
B.Sc Engg. (UET Lahore)
M.Sc Engg. (UET Taxila)
Ph.D (UET Taxila)

Dr Ing. Zahid Rashid ***
B.Sc Engg. (PU, Lahore)
M.Sc Engg. (UET Taxila)
Ph.D (Technical University Berlin)

Dr. Zaheer Ahmad **
B.Sc Engg. (UET Lahore)
M.Sc Engg. (UET Taxila)
PhD (UNIVAQ, Italy)

Lecturers

Dr. Abid Ali **
BSc Engg (Punjab University)
MSc Engg (Taxila)
Ph.D (UET Taxila)

Engr. Haji Bahader
BSc Engg (Punjab University)
MSc Engg (Taxila)
(On higher Studies abroad)

Engr. Irshad Yehya
B.Sc Engg. (PU, Lahore)
M.Sc Engg. (UET Taxila)
(On higher Studies abroad)

Lab Engineers

Engr. Muhammad Usman **
B.Sc Engg. (PU Lahore)
M.Sc Engg. (UET Taxila)

Quality Assurance & Optimization
Scheduling

Ergonomics, Human Factors
Engineering, Work Design and
Measurement, Management
Systems and Standards, Human
Machine Systems

Design of Processes, Equipment
& Plant, Metrology & Quality
Control, Manufacturing,
Research Analysis & Simulation

Manufacturing Simulation
Operations of Manufacturing
System, Advanced
Manufacturing Systems

Operations Research,
Production Planning,
Engineering Optimization

Wall Climbing Robot,
Microcontroller

Scheduling
Metrology and Statistical Quality
Control

FACULTY OVERVIEW

The Faculty of Industrial Engineering has a distinguished and evolving history, aligned with both national priorities and global academic trends. Established in 1986 with a specialization in Production Engineering, the program was restructured in 1993 to meet the emerging needs of industry. In 2008, the incorporation of the Engineering Management program further broadened the department's academic and research scope. To address the growing demand for advanced education, the faculty introduced M.Sc. programs in Industrial Engineering and Engineering Management, followed by the launch of a Ph.D. program in 2013. Expanding further, the M.Sc. in Product Design & Development was initiated in 2016, with a focus on innovation, creativity, and modern product development processes. Today, the Faculty stands as a dynamic academic hub, preparing graduates with technical expertise, managerial competence, and innovative thinking to effectively address the challenges of the modern industrial landscape.

DEPARTMENT OVERVIEW

The Faculty of Industrial Engineering offers a diverse range of advanced programs, including M.Sc. in Industrial Manufacturing Engineering, Ph.D. in Industrial Engineering, M.Sc. and Ph.D. in Engineering Management, and an M.Sc. in Product Design & Development.

Each program is designed with highly specialized courses. At the master's level, students study areas such as advanced manufacturing systems, mechanics of manufacturing processes, design of experiments, and a variety of electives focusing on facilities design and supply chain management. The Ph.D. in Industrial Engineering further prepares graduates for in-depth research across a broad spectrum of manufacturing technologies and systems.

The Engineering Management programs (M.Sc. and Ph.D.) provide a strong foundation for engineers from any discipline, equipping them with essential knowledge in technology management, human factors engineering, cost analysis, and project management, enabling them to apply these concepts effectively in real-world scenarios.

Meanwhile, the M.Sc. in Product Design & Development emphasizes the complete cycle of innovation, from conceptual design to prototyping and manufacturing, ensuring graduates gain comprehensive skills in product development processes.

The department maintains a proactive approach, having successfully completed numerous national and international projects, with several more currently underway. Graduate students are actively engaged in these initiatives, gaining valuable exposure to both research and practical implementation. The department is equipped with state-of-the-art facilities that integrate both traditional and advanced manufacturing systems, including laser cutting machines, injection molding, tool and die design, wall-climbing robots for hazardous operations, lean product

- * Dedicated faculty for Industrial Engineering Programmes
- ** Dedicated faculty for Engineering Management Programmes
- *** Dedicated faculty for Product Design & Development Programme



development, and a Human Factors & Ergonomics Lab. These resources provide students with hands-on experience in modern technologies and industrial applications. In keeping with the demands of the digital era, the department places strong emphasis on digital manufacturing, supported by prestigious projects and funding such as the Erasmus+ project, the Center of Advanced Sheet Metal, and research projects funded by the Higher Education Commission (HEC) under NRPU. These projects cover diverse areas, including safety climate in laboratories, solar cooker applications, digital welding, hospital service scheduling and planning, rapid tool and die development in injection molding setups, Industry 4.0 and automation. Through such initiatives, students gain exposure to global research standards and cutting-edge industrial practices. The applications of the department's programs are vast, preparing graduates for intermediate to senior management roles across a wide range of sectors, including (but not limited to) manufacturing, construction, mining, petroleum, chemical, architecture, water resources, software, telecom, and energy industries. The curriculum ensures a solid foundation in core management principles, while integrating technical expertise with managerial knowledge within a strategic, real-world context. The research programs are particularly well-suited to meet the needs of these industries; however, they are open to all engineering degree holders recognized by the Pakistan Engineering Council (PEC), offering broad opportunities for career advancement and professional growth.

COURSE OBJECTIVES

Each program in the department equips graduates with the knowledge and skills to effectively manage engineering operations, in industry and service sector. The integrated objectives are to:

- Develop a strong foundation in smart manufacturing, advanced production systems, lean practices, entrepreneurship, and organizational finance.
- Assess the influence of multi-criteria decision making, soft computing, and scheduling challenges, alongside legal, ethical, social, economic, technological, and global factors, on manufacturing and management strategies.
- Build adaptability through configuration management, supported by scheduling, production planning, and control concepts, to manage change in dynamic environments.
- Apply quantitative methods and discrete mathematical approaches for decision-making in production, supply chains, project management, and organizational operations.
- Strengthen expertise in organizational behavior under uncertainty, man-machine systems, human factors, and communication to enable effective leadership.
- Enhance analytical capacity through design of experiments and statistical inference skills for clear, data-driven, and strategic decision-making.

The courses have been carefully developed in consultation with industry and benchmarked against leading local and international universities, ensuring both academic relevance and practical application. To promote effective learning, the curriculum covers a wide spectrum of areas, including quantitative tools, systems engineering, technology and human resource management, economic decision-making, total quality management, supply chain management, design for manufacturing, and project management. A balanced mix of core and elective courses provides graduates with a strong foundation while offering flexibility for specialization, thereby preparing them to transform processes and lead innovation in an evolving global industrial landscape.

COURSE DETAILS

This program has been designed in close collaboration with industry, ensuring that the curriculum directly reflects the needs and expectations of modern organizations. Each course covers diversified topics and includes a mini-project, allowing students to apply theoretical knowledge to practical, real-world problems. Courses are delivered in a block mode, meaning students focus on one subject at a time, complete it, and then proceed to the next, ensuring in-depth learning and concentration.

• M.Sc. Engineering Program

The program offers two pathways

- (i) Thesis Option: A total of 32 credit hours including 26 credit hours of coursework and 6 credit hours of thesis research.
- (ii) Non-Thesis Option: A total of 32 credit hours of coursework only.

• Ph.D. Engineering Program

The PhD is designed to meet the advanced requirements of higher education in Industrial Engineering and Engineering Management, with 20 credit hours of course work and 12 hours of thesis. It emphasizes research excellence, innovation, and contributions to both academia and industry.



LIST OF COURSES

Course Outline: Industrial & Manufacturing Engineering and Engineering Management

MSc Industrial Engineering

Compulsory Courses for MSc/MS Program

Course No.	Course Title
HU-5001	Understanding of Holy Quran-I
HU-5002	Understanding of Holy Quran-II

Specialization in Industrial & Manufacturing Engineering

Course No. Course Title (Core Courses 15 credit hours)

IME-5101	Engineering Optimization Techniques
IME-5102	Research Methodology and Design of Experiments
IME-5103	Design of Advanced Manufacturing Systems
IME-5104	Manufacturing Planning & Control
IME-5105	Simulation of Industrial Systems

Elective Courses

Course No. Course Title (All courses are of three credit hours)

IME-5106	Design Principles of Metal Cutting Machine Tools
IME-5107	CAD/CAM
IME-5108	Dimensional Metrology
IME-5109	Work Design & Measurement
IME-5110	Mechanics of Manufacturing Processes
IME-5111	Project Management
IME-5112	Statistical Quality Control & Assurance
IME-5113	Facilities Planning & Design
IME-5114	Organizational Behavior
IME-5115	Scheduling of Industrial Systems
IME-5116	Computer Aided Process Planning (CAPP)
IME-5117	Advanced Data Analytics and Visualization
IME-5118	Applications of AI in Manufacturing
IME-5119	Advances in Smart Manufacturing

IME-5100 Postgraduate Research Thesis (Compulsory)*

* In case of thesis option only

** Policy for Registration in PhD Courses: MSc student may register in PhD level courses with the written endorsement of his/her supervisor as an optional Subject

PhD Industrial Engineering

Compulsory Courses for PhD Program

Course No.	Course Title
HU-6001	Understanding of Holy Quran-I
HU-6002	Understanding of Holy Quran-II

Course No. Course Title (Core Courses*) (9 credit hours)

IME-6101	Advanced Engineering Mathematics
IME-6102	Simulation and Modeling
IME-6103	Advanced Statistics and Data Mining

*Courses Common to all Mechanical, Industrial Engineering and Engineering Management

Elective Courses

Course No. Course Title (All courses are of three credit hours)

IME-6104	Engineering Software Development
IME-6105	Soft Computing Methodologies in IE
IME-6106	Industrialization and Manufacturing Entrepreneurship
IME-6107	Advanced Engineering Economics
IME-6108	Advanced Industrial Internet of Things and its Applications
IME-6109	Cutting-Edge Technologies in Smart Manufacturing Systems

IME-6100 Postgraduate Research Thesis (Compulsory)

*Courses common to all Mechanical, Industrial Engineering & Engineering Management

POSTGRADUATE PROSPECTUS-2026 Onwards

MSc Engineering Management

Course No. Course Title (Core Courses 15 credit hours)

EM-5101	Quantitative Decision Making & Problem Solving
EM-5102	Human Resource Management
EM-5103	Advanced Project Management
EM-5104	Financial Management
EM-5105	Marketing Management

Elective Courses

Course No. Course Title (All courses are of three credit hours)

EM-5106	Research Methodology and Design of Experiments
EM-5107	Total Quality Management
EM-5108	Engineering Economic Decision Analysis
EM-5109	Energy Resources Management & Utilization
EM-5110	Production and Operation Management
EM-5111	Entrepreneurship and Innovations for Engineers
EM-5112	Reliability and Maintenance Management
EM-5113	Manufacturing Strategy
EM-5114	Telecom Business Management
EM-5115	E-Commerce Tools Productivity
EM-5116	Knowledge Management
EM-5117	System Safety Engineering
EM-5118	Environmental Engineering Management
EM-5119	Global Supply Chain Management
EM-5120	Logistics Management
EM-5121	Engineering Business Law
EM-5122	Technology Management
EM-5123	Strategic Management
EM-5124	Business Process Simulation
EM-5125	Organizational Behavior
EM-5126	Advanced Data Analytics for Engineering Management
EM-5127	Smart Engineering Management with AI

EM-5100 Postgraduate Research Thesis (Compulsory)*

Elective Courses

(***Specialization in Supply Chain and Logistics Management)

Course No. Course Title (All courses are of three credit hours)

EM-5206	Research Methodology and Design of Experiments
EM-5207	Business Process Simulation
EM-5208	Managing Supply Chain Inventory
EM-5209	Retail Management
EM-5210	Logistic Management
EM-5211	Information Technology for Supply Chain Management
EM-5212	Supply Chain Management
EM-5213	Supply Chain Procurement Management
EM-5214	Supply Chain and Configuration Management
EM-5215	Warehouse Management and Physical Distribution Network
EM-5216	Supplier Relationship Management
EM-5217	Green Supply Chain Management
EM-5218	Advance Principles of Supply Chain Management
EM-5219	Data Driven Supply Chain: Analytics and Insights

EM-5200 Postgraduate Research Thesis (compulsory) *

*** The core courses for MSc Engineering Management and MSc Engineering Management with Specialization in Supply Chain and Logistics Management shall remain the same. However, students pursuing the specialization must select their elective courses from the relevant specialization stream.

* In case of thesis option only

** Policy for Registration in PhD Courses: MSc student may register in PhD level courses with the written endorsement of his/her supervisor as an optional Subject

LIST OF COURSES

Course Outline: Product Design & Development



PhD Engineering Management

Course No. Course Title (Core Courses*) (9 credit hours)

EM-6101	Advanced Engineering Mathematics
EM-6102	Simulation and Modeling
EM-6103	Advanced Statistics and Data Mining

Elective Courses

Course No. Course Title (All courses are of three credit hours)

EM-6104	Information Engineering & Global Perspective
EM-6105	Advanced Topics in Engineering Management
EM-6106	Simulation of Business Processes
EM-6107	Multi Criteria Decision Making
EM-6108	Advanced Data-Driven IoT Solutions for Engineering Management
EM-6109	Advanced Principles of Supply Chain Management

EM-6100 Postgraduate Research Thesis (Compulsory)

*Courses Common to all Mechanical, Industrial Engineering and Engineering Management

MSc Product Design & Development

Course No. Course Title (Core Courses 15 credit hours)

PDD-5101	Product Design
PDD-5102	Advanced Prototyping
PDD-5103	Advanced Manufacturing Processes
PDD-5104	Product Quality and Assurance Research
PDD-5105	Research Methodology & DOE

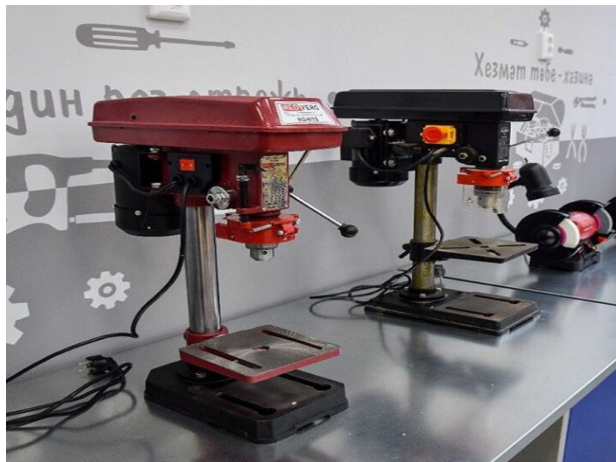
Elective Courses

Course No. Course Title (All courses are of three credit hours)

PDD-5106	R&D Strategy and Organization
PDD-5107	Product Development
PDD-5108	Product Standardization
PDD-5109	Marketing & Product Commercialization
PDD-5110	Engineering Optimization Techniques
PDD-5111	CAD/CAM

PDD-5100 Postgraduate Research Thesis (Compulsory)*

** In case of thesis option only





1.6 FACULTY OF BASIC SCIENCES & HUMANITIES

1.6.1 Department of Mathematical Sciences

Dean

Chairman

Prof. Dr. Nasir Siddiqui

Professor

Dr. Nasir Siddiqui
PhD (Mathematics)
QAU, Islamabad Pakistan

Area of Interest

Algebra (Group Theory), Group Actions, Group Graphs, Permutation
(Mathematics) Groups and Cryptography

Associate Professors

Dr. Muhammad Muddassar
PhD (Mathematics) UET, Lahore, Pakistan

Mathematical Analysis, Numerical Functional Analysis, Fractional
Calculus, Convex Functions, Time Scales Calculus, Special Functions

Dr. Azeem Shahzad
PhD (Mathematics)
QAU, Islamabad, Pakistan

Fluid Mechanics, Boundary Layer Flows, Heat Transfer

Assistant Professors

Dr. Safeera Batool
PhD (Mathematics)
CUI, Islamabad, Pakistan

Inequalities and Applications, Numerical Analysis, Fuzzy Semi-rings

Dr. Zaffer Elahi
PhD (Mathematics)
PU, Lahore, Pakistan

Differential Equations

Dr. Muhammad Altaf
PhD (Statistics)
USTC, China

Mathematical Statistics, Probability Theory, Numerical Analysis

Dr. Muhammad Touqeer
PhD (Mathematics)
PU, Lahore, Pakistan

Fuzzy Sets and Systems

Lecturers

Ms. Andleeb Abbasi*
M.Phil. (Mathematics)
QAU, Islamabad, Pakistan

Algebra, Group Theory

Ms. Sumaira Rashid
M.Phil.(Mathematics)
QAU, Islamabad, Pakistan

Algebra, Group Theory

Mr. Syed Zulqarnain Haider
M.Phil. (Mathematics)
QAU, Islamabad, Pakistan

Algebra, Group Theory

Dr. Syed Sabyel Haider
PhD (Mathematics)
NUST Islamabad, Pakistan

Differential Equations

Dr. Jawad Ahmad*
PhD (Mathematics)
QAU, Islamabad, Pakistan

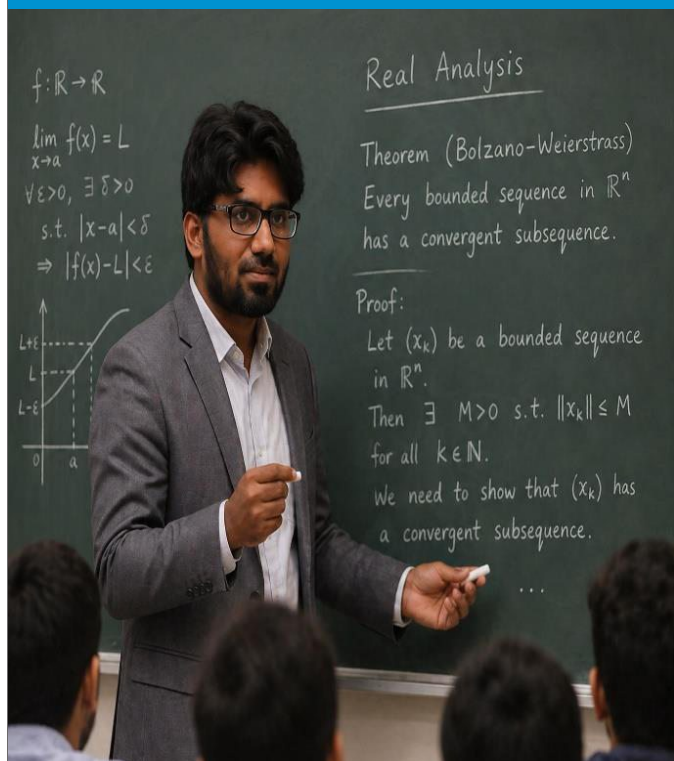
Fluid Mechanics, Boundary Layer Flows, Heat Transfer

Dr. Haleema Sadia
PhD (Mathematics)
NUST Islamabad, Pakistan

Fluid Mechanics, Boundary Layer Flows, Heat Transfer

*Ex - Pakistan Leave





THE DEPARTMENT

Established in 1975 as the Department of Basic Sciences, the Department of Mathematical Sciences was formed in 2023 through the restructuring of the original department. It serves as a cornerstone of the university's engineering education by providing a strong foundation in mathematics and related disciplines. The department is committed to bridging the gap between theoretical knowledge and practical applications through excellence in teaching, innovative research, and interdisciplinary collaboration that addresses the evolving challenges of science, engineering, and technology.

Academic Programs

- **Undergraduate & Postgraduate Foundations:** We offer meticulously tailored curricula designed to equip students with the analytical tools and statistical literacy required to excel in modern engineering and scientific landscapes.
- **MS Mathematics (Launched 2014):** This program is designed to foster advanced problem-solving skills and specialized research expertise. By integrating theoretical depth with practical applications, we prepare students for careers in academia, industry, and high-level research.
- **PhD Mathematics (Launched 2019):** Our doctoral program provides a high-level research environment focused on solving complex, real-world problems and addressing national scientific challenges. It empowers scholars to contribute original findings to the global mathematical community while enhancing the university's research profile.

Research Excellence

Equipped with state-of-the-art facilities and a culture of collaborative science, we empower our students and faculty to apply advanced mathematical models to solve the engineering challenges of tomorrow. We believe that the synergy between scientists and engineers is the key to drive innovation on an international scale.

Programs Objective

The primary goal of the Postgraduate Mathematics programs is to promote interdisciplinary research across the university's various departments. Although UET Taxila possesses an outstanding faculty of engineers and scientists engaged in internationally recognized research, considerable opportunities remain for deeper collaboration among these disciplines. By fostering effective collaboration between engineers and mathematicians, these programs aim to maximize the university's research potential and elevate its global academic standing.

The Department offers Post Graduate Degree Programs in the following disciplines

- MS Mathematics (with effect from Autumn 2014)
- PhD. Mathematics (with effect from Autumn 2019)



LIST OF COURSES FOR MS MATHEMATICS

Compulsory Courses for MSc/MS Program

Course No.	Course Title
HU-5001	Understanding of Holy Quran-I
HU-5002	Understanding of Holy Quran-II

Core Courses

Course No.	Course Title
MTH-5100	Research Thesis for MS (6 Chs.)
MTH-5101	Theory of Group Actions
MTH-5102	Applied Linear Algebra-I
MTH-5103	Viscous Fluid Flow
MTH-5104	Partial Differential Equations
MTH-5105	Fuzzy Algebra
MTH-5106	Integral Transforms
MTH-5107	Mathematical Inequalities
MTH-5108	Mathematical Statistics

Elective Courses

Course No.	Course Title
MTH-5109	Mathematical Techniques for Boundary Value Problems
MTH-5110	Compressible Fluid Flow
MTH-5111	Integral Equations
MTH-5112	Magnetohydrodynamics-I
MTH-5113	Numerical Solutions of Partial Differential Equations
MTH-5114	Perturbation Methods in Fluid Mechanics
MTH-5115	Theory of Splines
MTH-5116	Advanced Operations Research-I
MTH-5117	Semi Group Theory
MTH-5118	Theory of Ordinary Differential Equations
MTH-5119	Graph Theory
MTH-5120	Probability and Random Processes
MTH-5121	Measure and Integration
MTH-5122	Algebraic Topology-I
MTH-5123	Galois Theory-I
MTH-5124	Topics in Variational and Quasi Variational Inequalities
MTH-5125	Foundation of Cryptography
MTH-5126	General Relativity-I
MTH-5127	Cosmology
MTH-5128	Topological Vector Spaces
MTH-5129	Programming for Artificial Intelligence

LIST OF COURSES FOR PHD MATHEMATICS

Compulsory Courses for PhD Program

Course No.	Course Title
HU-6001	Understanding of Holy Quran-I
HU-6002	Understanding of Holy Quran-II

Core Courses

Course No.	Course Title
MTH-6101	Theory of Group Graphs
MTH-6102	Advanced Mathematical Modeling
MTH-6103	Applied Functional Analysis-I
MTH-6104	Non-Newtonian Fluid Mechanics
MTH-6105	Advanced Complex Analysis
MTH-6106	Advanced Fuzzy Algebra
MTH-6107	Stochastic Processes

Elective Courses

Course No.	Course Title
MTH-6108	Magnetohydrodynamics-II
MTH-6109	Nilpotent and Soluble Groups
MTH-6110	LA-Semigroups
MTH-6111	Numerical Solutions of Non-linear System of Equations and Ordinary Differential Equations
MTH-6112	Numerical Solutions of Integral Equations
MTH-6113	Applied Linear Algebra-II
MTH-6114	Applied Functional Analysis-II
MTH-6115	Advanced Operations Research-II
MTH-6116	Time Scales Calculus
MTH-6117	Algebraic Topology-II
MTH-6118	Galois Theory-II
MTH-6119	Convex Functions
MTH-6120	Approximation Theory
MTH-6121	Riemannian Geometry
MTH-6122	General Relativity-II



1.6 FACULTY OF BASIC SCIENCES & HUMANITIES

1.6.2 Department of Physical Sciences

Dean

Chairman

Prof. Dr. Malik Sajjad Mehmood

Professor

Dr. Malik Sajjad Mehmood
PhD Physics
PIEAS, Islamabad

Area of Interest

Medical Physics, Material Science & Engineering, Laser Physics, Spectroscopy, Radiation Physics & Chemistry, Bio-Photonics

Associate Professor

Dr. Muhammad Nadeem Badani
PhD Physics (Universiti Teknologi Malaysia)

Nanomaterials, Functional Composites, Energy Storage Materials, Biomedical and Drug Delivery Systems and Advanced Materials Characterization.

Assistant Professors

Dr. Muhammad Sultan
Post Doctorate (Loughborough University UK)
PhD Chemistry (QAU, Islamabad)

Material science, Chemical vapour Deposition, Environmental Sciences

Dr. Kulsoom Rahim
Ph.D. Physics (QAU, Islamabad)

Condensed matter physics (Theory)

Lecturer

Dr. Muhammad Tariq
Post Doctorate (MLU Halle-Wittenberg, Germany)
PhD Physics (MLU Halle-Wittenberg, Germany)

Material Science and Engineering, Spectroscopy

THE DEPARTMENT

The Department of Physical Sciences, established in 2023 under the Faculty of Basic Sciences and Humanities, plays a pivotal role in interdisciplinary research, particularly in condensed matter physics (theory), Density Function Theory, MOF-related research for supercapacitor materials science, radiation physics, spectroscopy, and applied computing. The Department currently has five full-time PhD faculty members, all of whom have international collaborative research experiences with institutes of international repute such as ICTP, IAEA, University of Memphis (USA), University of Loughborough (UK), the German Institute, and the Pakistan National Center for Physics in the fields of Radiation Physics, Materials Science and Engineering, Spectroscopy, Condensed Matter Physics (theory), Renewable Energy, and Computational Modeling. The Department offers two degree programs in Physics — BS and MS — and students are actively engaged in R&D activities related to cutting-edge technological developments. A landmark achievement of the Department is the establishment of a CERN Technical Associate Internship (TAI) studentship, secured through the efforts of Prof. Dr. Malik Sajjad Mehmood (Chairman and Team Leader), enabling students to undertake research traineeships at CERN — the European Organization for Nuclear Research in Geneva, Switzerland. This prestigious international collaboration provides students with unparalleled exposure to world-class particle physics research and scientific instrumentation, positioning the Department as a leading contributor to Pakistan's engagement with global scientific excellence.

PROGRAM OBJECTIVE

The postgraduate programs offered by the Department of Physical Sciences are designed to foster excellence in teaching, research, and innovation across Physics and its applied disciplines. The department is committed to producing highly skilled researchers, scientists, and professionals who are equipped with deep theoretical foundations, advanced analytical capabilities, and practical problem-solving expertise. Through rigorous coursework and original research, graduates develop the intellectual rigor and technical competence required to tackle complex scientific challenges at both national and international levels.

A central objective of the program is to cultivate interdisciplinary research culture by fostering meaningful collaboration across engineering, computing, and scientific departments within the university. The department actively engages with national and international research networks, including ICTP, IAEA, CERN, and prominent universities in the USA, UK, and Germany. The CERN Technical Associate Internship (TAI) studentship, led by Prof. Dr. Malik Sajjad Mehmood as Team Leader, exemplifies this commitment — providing students with the extraordinary opportunity to conduct research at one of the world's most prestigious scientific institutions.

The program further aims to address Pakistan's growing need for advanced scientific expertise by aligning its research portfolio with national development priorities, including renewable energy, advanced materials, medical physics, and nanotechnology. Graduates are prepared for rewarding careers in academia, research institutions, industry, and government organizations, both within Pakistan and internationally. The department is dedicated to nurturing the next generation of scientific leaders who will contribute to technological progress, drive innovation, and represent Pakistan with distinction on the world's scientific stage.

Courses of Study

The Department of Physical Sciences currently offers two comprehensive degree programs:

MS Physics: Postgraduate Program

A two-year program offering advanced studies in Physics with following options:

- Thesis Option: 32 credit hours, including 26 credit hours of coursework and 6 credit hours of thesis research
- Non-Thesis Option : 32 credit hours of coursework only

While MS Physics program is running since 2014, the BS Physics is newly introduced by the Department at the University. The first intake of students in BS Physics is started in the Fall-2023 session. In addition to our degree programs, the Department of Physical Sciences also provides their instructors to various Engineering Departments for the Applied Physics and Chemistry courses.

Laboratories

Hands-on exploration of theoretical concepts is extremely important in any degree program. Our state-of-the-art laboratories provide immersive learning experience. Equipped with all necessary instruments and guided by experienced faculty, these laboratories are the heart of our commitment to empowering students with real-world applications of theoretical knowledge. We at the Department of Physical Sciences have the following three major labs for undergraduate students.

1. Optics and Mechanics Lab
2. Electromagnetism and Thermodynamics Lab
3. Modern Physics and Material Science Lab

These labs are integral to our commitment to providing students with the tools and experience necessary to excel in the field of



Course Plan for MS Physics

Compulsory Courses for MSc/MS Program

Course No.	Course Title
HU-5001	Understanding of Holy Quran-I
HU-5002	Understanding of Holy Quran-II

CORE COURSES (Mandatory)

Course No.	Course Title
PHY-6101	Advanced Mathematical Methods of Physics
PHY-6102	Advanced Quantum Mechanics
PHY-6103	Advanced Electrodynamics
PHY-6104	Techniques of Experimental and Computational Physics

ELECTIVE COURSES

Course No.	Course Title
PHY-6105	Quantum Mechanics II
PHY-6106	Electrodynamics II
PHY-6107	Introduction to Particle Accelerators
PHY-6108	Magnetism in Condensed Matter
PHY-6109	Quantum Optics-I
PHY-6110	Condensed Matter Theory I
PHY-6111	Quantum Information Theory I
PHY-6112	Material Science
PHY-6113	Plasma Physics I
PHY-6114	Group Theory
PHY-6115	Superconductivity
PHY-6116	Particle Physics
PHY-6117	Plasma Physics II
PHY-6118	General Relativity and Cosmology
PHY-6119	Condensed Matter Theory II
PHY-6120	Experimental Plasma Physics
PHY-6121	Quantum Optics II
PHY-6122	Atomic Physics
PHY-6123	Quantum Information Theory II
PHY-6124	Accelerator Techniques for Materials
PHY-6125	Computational Physics
PHY-6126	Physics Simulations
PHY-6127	Fourier Optics
PHY-6128	Non-linear Dynamics in Physics
PHY-6129	Fiber Optics
PHY-6130	Radiation Physics I
PHY-6131	Radiation Physics II
PHY-6132	Bio Photonics

Course No.	Course Title
PHY-6133	Neutron Physics
PHY-6134	Environmental Physics
PHY-6135	Non-linear Optics
PHY-6136	Atomic & Molecular Physics
PHY-6137	Laser Physics
PHY-6138	Advance Fiber Optics
PHY-6139	Simulations in Statistical Physics
PHY-6140	Photo Dynamic Therapy
PHY-6141	Polarization Imaging
PHY-6142	AI in Advanced Physics Research
PHY-6143	Classical Mechanics
PHY-6100	Research Thesis

Research Fields

- Renewable Energy
- Material Science and Engineering
- Laser and Optics
- Simulation and Modelling
- Biomaterials
- Medical Physics
- Nano Technology
- Condensed matter Physics (Theory)
- Density Function Theory



SERVICES AND COMMON FACILITIES





2

SERVICES AND COMMON FACILITIES

2.1 CENTRAL LIBRARY

The Central Library of the University plays a vital role in dissemination of knowledge, teaching, research, and extension services. It has a seating capacity for about 250 readers at its different halls, which provide congenial conditions for study. The library remains open in 2 shifts from 8:00 am to 9:00 pm on all working days with usual break. There is a large air-conditioned reading hall which provides congenial atmosphere for study. The Library is stocked with encyclopedias, dictionaries, handbooks, standard specifications, yearbooks, almanacs, abstracts, indexes and a big reference collection of text and general technical books.

Stocks and Services

The Library has more than 62000 volumes of books and scattered issues of scientific and technical serials on diverse fields. Besides engineering subjects considerable reading material on humanities, social sciences and Islamic Studies is available. The members can borrow books and other materials, (except serials, reference or reserved books) for specific periods. They can also reserve materials, which are out in circulation. For this, reservation cards are to be handed over at the circulation counter.

Reference and Refferal Services

At the Reference Desk professional staff is available to help you with your queries, literature seraches and to ensure that your information needs are beign adequately met. The Reference and Reserve book Collection supports your reference needs.

Circulation Section/Services

Circulation is one of the key services of our Library. It provides lending services and facilities for return of loaned items. Renewal of matters and payment of fines are also handled at the Circulation Desk.

Book Bank

The Library houses a Book Bank, which lends books to all undergraduate students for a whole term on a nominal rent. Books are to be loaned for current semester only. Books are the property of the Library and are to be returned at the end of the semester irrespective of their date of issue.

Scientific Journals

Following is the list of scientific journals being subscribed for the faculty and research scholars to cater their needs.

- ACI Structural, USA. ISSN: 8893241
- European Journal of Industrial Engineering. ISSN: 1751-5262, 1751-5254
- Advances in Software Engineering, Publisher: Hindawi Publishing Corp. ISSN: 1687-8663
- Journal of Applied Composite Materials Springer
- Journal of Heat & Mass Transfer, Elsevier
- Journal of Environmental Engineering by ASCE (American Society of Civil Engineers)
- International Journal of Environmental Engineering. ISSN: 1756-8463
- Journal of Environmental Engineering and Landscape Management. ISSN: 1648-6897 (Print), 1822-4199 (online)
- SPIE Journal of Electronic Imaging. ISSN: 1017-9909
- Optical Communication Journal of Optical Engineering
- Journal of Chinese Institute of Engineers, China. Print ISSN: 0253-3839, Online ISSN: 2158-7299
- Journal of Hydraulic Research, Neterland. Print ISSN: 0022-1686, Online ISSN: 1814-2079
- IIE (Institute of Industrial Engineering) Transactions. ISSN: 1545-8830
- International Journal of Semantic Web and Information Systems (IJSWIS), ISSN: 1552-6283, EISSN: 1552-6291
- Journal of Fluid Mechanics Cambridge University Press
- IEEE Transactions on Power Systems
- IEEE Transactions on Power Delivery
- Wireless Communications IEEE transactions on Wireless Communications A\
- Antenna IEEE transactions Antenna and propagations
- Satellite Communications IEEE Journals on Selected Areas in Communications



2

SERVICES AND COMMON FACILITIES

2.2 DIGITAL LIBRARY

To meet the information requirements of students and researchers of UET Taxila, Pakistan with the provision of quality scholarly information based electronic delivery through Pakistan Educational Research Network (PERN), HEC has given online access of journals and research papers to UET Taxila. Access to all these resources is free of cost from within the UET Taxila intranet for students and researchers of UET Taxila.

Objectives

- To provide students/researchers in the university and eligible R&D organization with access to high quality journals, academic databases and articles across the widest range of disciplines.
 - To address the specific information needs of the sector with the delivery of content relevant to national development objectives.
 - To support the delivery of information and effective use of Information and Communication Technologies (ICTs) with extensive training for users with the library university and research community in Pakistan.
 - To work with international organizations to enhance the scope of available content and to implement revolutionary technologies for the delivery of content.
- To provide increased dissemination opportunities and

promote the use and visibility of locally produced research information.

CURRENTLY AVAILABLE RESOURCES

Institute of Electrical and Electronic Engineers

<<http://www.ieee.org/ieeexplore>>

American Society Of Mechanical Engineering

<<http://www.asme.org/%20>>

American Society Of Civil Engineering

<<http://www.asce.org/>>

Association Of Computing Machinery

<<http://acm.org/pubs>>

Palgrave Macmillan

<<http://www.palgrave-journals.com/pal/>>

ISIweb Of Knowledge

<<http://www.isiknowledge.com>>

Royal Society Of Chemistry

<<http://www.rsc.org/is/journals/pri.htm>>

Bentham Science

<<http://www.bentham.org>>

American Chemical Society

<<http://pubs.acs.org/>>

American Mathematical Society

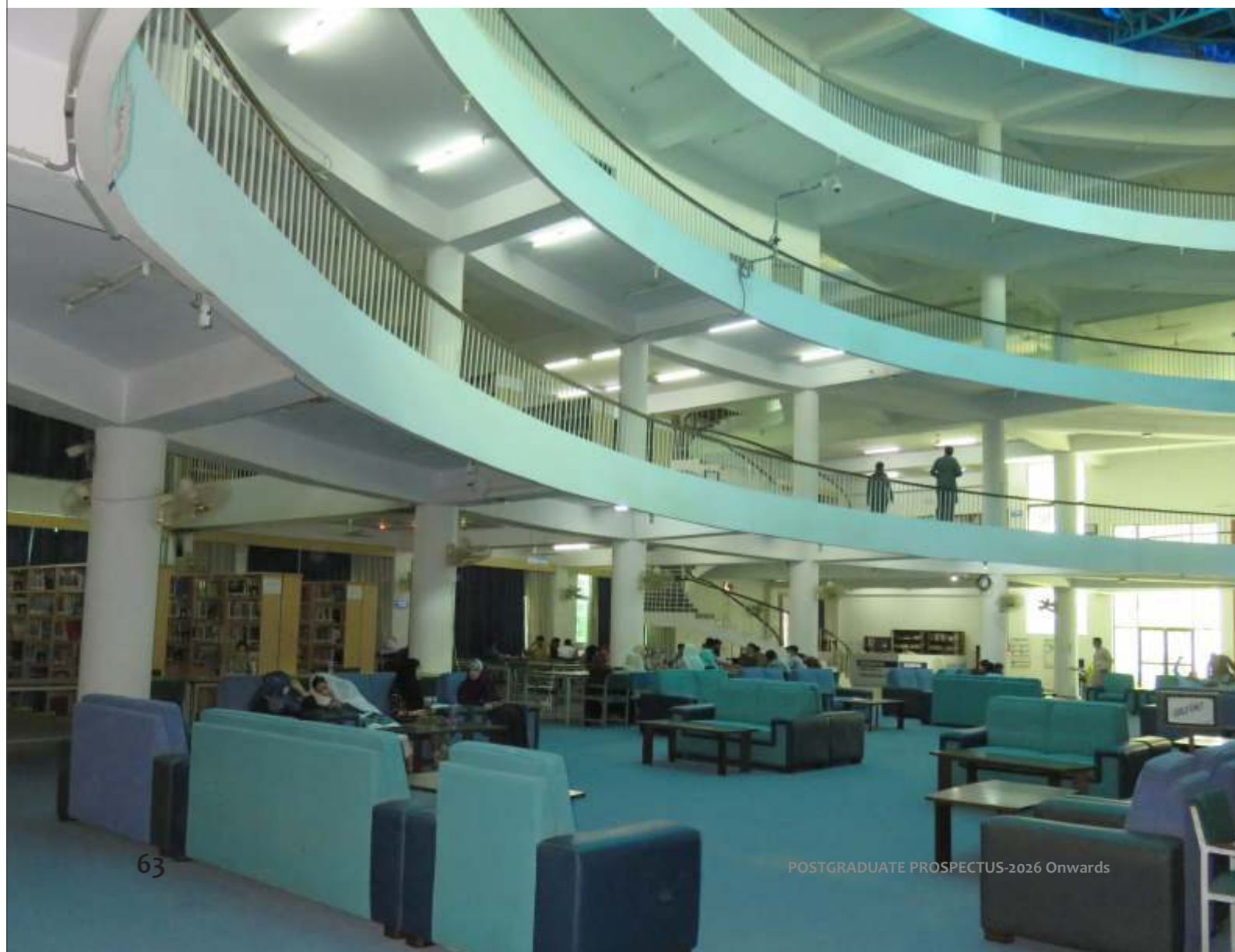
<<http://www.ams.org/journals/>>

American Institute Of Physics
<<http://journals.aip.org/>>
American Physical Society
<[Http://publish.aps.org/](http://publish.aps.org/)>
American Association Of Physics Teachers
<<http://www.appt.org/>>
Springerlink
<<http://www.springerlink.com>>
Blackwellsynerg
<<http://www.blackwell-synergy.com>>
Ebscohost
<<http://search.epnet.com>>
Oxford Universities
<<http://www.oupjournals.org>>
JSTOR
<<http://www.jstor.org/>>
Science Direct
<<http://www.sciencedirect.com>>
Science Online
<<http://www.scienceonline.com>>
Nature Publication
<<http://www.nature.com/nature>>

Maryanannliebert
<http://www.liebertonline.com>
<<http://www.liebertonline.com>>
American Society Of Micro Biology
<<http://journals.asm.org/>>

LIBRARY AUTOMATION SYSTEM (KOHA)

The library uses KOHA, a complete and modern library automation system. Students can look up any book from their phone or laptop and see right away if it is ready to borrow through their online account, students can renew books, reserve titles, and receive due date reminders. The system is linked with the HEC National Digital Library, offering access to thousands of research journals and e-books. KOHA is also connected to our SAP system, ensuring smooth data integration between library services and institutional records.





2

SERVICES AND COMMON FACILITIES

2.3 INFORMATION TECHNOLOGY CENTRE

There has been a major interest in Educational Computing since 1985 when a DEC's VAX-11/730 was installed with six terminals, one line printer and one dot matrix printer at the Data Processing Center. Later in 1989, a Micro- VAX-3100 was procured and with its 20 interactive terminals. High pace changes and alterations in trends, hardware and software, introduction of new and user friendly operating system & environments, built-in packages and world wide communication led the centre to switch over from the outdated VAX to personal computers LAN and WAN. The centre is, thus, equipped with 50 personal computers. The IT Centre is providing services to all the departments of the university.

The main objectives of the centre are:

- To train the students at undergraduate level to develop the programming skills.
- To provide research facilities to the post-graduate students of all the departments of the university.
- To provide advisory services to the teachers and research scholars of the university.
- To computerize different procedures of the university's administrative departments.
- To provide training to the engineers/officials of the surrounding industrial organizations.

The students are given extensive "Hands on" training on the mini-computers, which enhances their experience of working

in an on-line environment. Short courses in various programming languages and application packages are also offered in the evening time. The center is committed for the promotion of Information Technology and its facilities are being upgraded according to the developments in this field.

Video Conferencing Facility

Video conferencing facility in Information Technology Centre is available in accreditation with HEC. This facility is used to bring people at different sites together for a meeting. This can be as simple as a conversation between two people in private offices (point-to-point) or involve several sites (multi-point) with more than one person in Videoconferencing Hall at different sites. Besides the audio and visual transmission of meeting activities, videoconferencing can be used to share documents, computer-displayed information, and whiteboards.

2

SERVICES AND COMMON FACILITIES

2.4 NETWORK ADMINISTRATION AND RESEARCH CENTER (NARC)

In-Charge NARC

Engr. Prof. Dr. Yasar Amin
Chairman Telecom

Director Networks

Mr. Khurram Mahmood
MCS (Bahria Univ.) Islamabad

Web Manager

Engr. Ulfat Hussain
M.S Software Engg. (UET, Taxila)

Manager Software Development

Muhammad Huzaifa
MS, Computer Engg. (UET, Taxila)

Network Administrator

- a. Mr. Muhammad Iqbal
MCS (Preston Univ.) Islamabad
- b. Mr. Amjad Ismail
MCS (Virtual Univ.) Islamabad

Network Administration and Research Center (NARC)

The **Network Administration and Research Center (NARC)** is the central information and communication technology (ICT) facility of UET Taxila, established to provide reliable, secure, and innovative network and Internet services to the University community. NARC was founded as an outcome of the **University Computerization and Network Enhancement Program (UCNEP)** initiated by the Higher Education Commission (HEC) of Pakistan, with the objective of modernizing ICT infrastructure and promoting advanced digital services in higher education institutions.

Over the years, NARC has evolved into a state-of-the-art technology center responsible for the planning, design, deployment, operation, and management of the University's network and computing infrastructure. The center hosts a modern Data Center equipped with advanced virtualization and cloud technologies for hosting critical University services, applications, databases, and digital platforms.

Campus Network Infrastructure and Cloud Services

The Network Administration and Research Center (NARC) operates one of the most advanced campus ICT infrastructures among public-sector universities in Pakistan. Key infrastructure highlights include:

500+ Enterprise Wireless Access Points deployed across the campus, providing comprehensive Wi-Fi coverage in academic departments, administrative offices, libraries, laboratories, residential areas, and student hostels.

Campus-wide Wi-Fi 5 (802.11ac) and Wi-Fi 6 (802.11ax) wireless networking infrastructure with secure authentication and seamless roaming capabilities.

Participation in the global eduroam (Education Roaming) initiative, enabling secure wireless connectivity for students, faculty, and researchers at participating institutions worldwide.

A **10 Gbps Optical Fiber Backbone** interconnecting academic departments, administrative units, research centers, and hostels through a resilient fiber-optic network spanning approximately **3 kilometers** across the campus.

A dedicated high-speed **Higher Education Commission (HEC) Fiber Optic Internet Connection**, ensuring reliable and uninterrupted access to global academic and research resources.

Internet services designed to provide up to **10 Mbps bandwidth per student**, supporting modern educational, research, and collaborative learning requirements.

A modern **Dell EMC-based Cloud Infrastructure** supporting virtualization, centralized computing, and enterprise services.

More than **30 Virtual Machines (VMs)** hosting critical University services, applications, databases, web platforms, and research environments.

Enterprise-grade **Fiber Channel Storage Infrastructure** providing high-performance, scalable, and reliable storage for mission-critical applications and institutional data.

Centralized Data Center facilities incorporating virtualization, backup, disaster recovery, monitoring, and security solutions to ensure high availability and business continuity.

Advanced network security architecture utilizing enterprise firewalls, access control mechanisms, monitoring systems, and secure remote-access technologies.

- University web portals and websites
- Learning Management Systems (LMS)
- Enterprise applications and databases
- Research and academic services
- Cloud-based computing platforms
- Centralized authentication and directory services
- Digital collaboration and communication systems

Research, Training, and International Collaboration

NARC actively collaborates with leading international technology organizations to promote professional development, technology adoption, and research activities. The center is recognized as an official **Cisco Networking Academy**, providing students with access to globally recognized technical education and industry certifications.

NARC's technical staff consists of highly qualified professionals, including **Cisco Certified Academy Instructors**, who not only manage and support the University's ICT infrastructure but also conduct professional training programs, workshops, seminars, and certification-oriented courses for students and faculty members.

Internet and Digital Library Services

NARC provides uninterrupted Internet connectivity across the University campus, including academic buildings, administrative offices, faculty residences, and student hostels. The network infrastructure is supported by a high-speed optical fiber backbone and enterprise-grade networking equipment to ensure secure and reliable connectivity.

The center also facilitates access to the **HEC National Digital Library** and other international scholarly resources, enabling researchers, faculty members, and students to access scientific journals, conference proceedings, e-books, technical standards, and research databases from leading publishers and organizations worldwide.

Through its modern infrastructure, highly skilled technical workforce, and commitment to innovation, the Network Administration and Research Center continues to play a pivotal role in advancing teaching, research, administration, and digital transformation at UET Taxila.



2

SERVICES AND COMMON FACILITIES

2.5 PhD RESEARCH CENTRES

Electrical, Electronic, Mechanical, Metallurgy, Energy, Industrial/Management, Civil, Environmental, Telecom, Computer, Software Engineering Departments and Computer Science, Basic Sciences research centers for PhD students are established with the help of HEC grant. The facilities comprising of latest computers, printers, internet and multimedia are available round the clock.

2.6 DIRECTORATE OF ADVANCED STUDIES, RESEARCH AND TECHNOLOGICAL DEVELOPMENT (ASR & TD)

The Directorate of ASR&TD, which functions under the supervision of the Director, which is the secretariat of the Board of Advanced Studies, Research and Technological Development. The Board comprises the Vice-Chancellor (Chairman), all the Pro-Vice-Chancellors, all the Deans, one University Professor from each faculty, one technologist, five members from the Industries and the Director of ASR&TD.

The Directorate performs a variety of functions to promote research, extension and advisory services in the

University. The purpose of these functions is to:

- Regulate MSc and PhD programs.
- Provide funds and monitor faculty research.
- Provide funds for M.Sc. Engg. and PhD research.
- Approve thesis titles, supervisors and examiners.
- Co-ordinate the Split PhD program with foreign Universities, Government of Pakistan.

- Arrange visits of Pakistani Experts to give Workshops/Seminars in their field of expertise under TOKTEN program.
- Arrange visits of foreign Professors to the University and vice-versa.
- Award of Research Assistant-ships.
- Sponsor collaborative research work in engineering and allied disciplines at the University and promote the research work.
- Assist the Departments in organizing Post-graduate Programs, extension lectures and seminars.
- Coordinate advisory services of the University for the benefit of the Government departments and industries.
- Arrange evaluation of Research publications of faculty members and publishing of Research Journal of the University.
- Make arrangements for Extension Lectures of Senior Professors from foreign countries, under the proposed British Council Specialists visits to Pakistan and TOKTEN Schemes.
- Arrange for PhD Programs in the University.
- Regulate an endowment fund for Higher Education and R&D in IT & Telecom Division at University of Engineering & Technology, Taxila, created for an amount of Rs. 100 million. The main objective for the establishment of endowment fund is to provide a continuous service of funding the University for producing around four PhD and six MSc in the field of Signal



Processing every year. Fund would be available for man power development in the following fields:

- (1) Computer/Data communication
- (2) Image Processing
- (3) Simulation and Modelling
- (4) Wireless communication

2.7 DIRECTORATE OF STUDENTS AFFAIRS

The primary function of the directorate is to organize extra-curricular activities of the students and to foster their intellectual, literary, and artistic potentialities, which remain untapped in the classroom. It functions normally through a large number of clubs and societies; each devoted to some sport or cultural and artistic activity. The students join these clubs and societies according to their inclinations and aptitudes. Another function of the directorate is to maintain liaison with a wide cross-section of students and to be responsive to their needs and problems. The directorate also works to promote, amongst students, respect for the dignified and disciplined behaviors befitting a university student and prospective member of the honored community of engineers of Pakistan.

2.8 ESTATE OFFICE

The University Campus spreads over 163 acres of land, and requires considerable efforts to keep the gardens, lawns, roadside rows of trees and flower-beds in good trim. The efforts of this office give the Campus a pleasing look, which attracts a large number of visitors in the mornings and evenings.

For the convenience of the students, a shopping centre is located near the University hostels. This centre has a laundry, a general store, stationery and fruit shop. The office looks after security, sanitation, maintenance of lawns and gardens, and shopping facilities at the campus. It has a large squad of uniformed watchmen who guard the University buildings and property. Its sanitation staff keeps the buildings, roads, lawns, and other spaces clean and tidy.

2.9 HEALTH FACILITIES

The University provides medical facilities to its employees and students. Salient features of the existing health policy for students are listed hereunder:

1. Students will be provided free consultation by the Medical Officer.
2. Available medicines will be issued to students through authorized prescription only.
3. Night dispensary service will be available in emergency only.
4. In acute emergency, where a student cannot move, immediate report be made to RT who will make arrangements for further treatment under rules (i.e. ambulance, consultation, admission etc.). The expenditure shall be borne by the student.
5. Boarders will be required to fill in the proforma of previous medical history mentioning the disease he carries.
6. Indoor treatment from unauthorized medical attendants is not allowed.

2.10 TRANSPORT

Adequate transport facility is provided for students and the busses are plying between Rawalpindi, Islamabad, Hassanabdal, Wah Cantt. and the campus. this facility is, however, not obligation of the University and it can be reduced or terminated if the policy and /or the financial conditions so demand.

2.11 DUES /SCHOLARSHIP SECTION

The Section deals with all kinds of Fee/dues, scholarship, stipends, loans and fee concession under the charge of Treasurer.



3

ENDOWMENT FUND FOR HIGHER EDUCATION AND R& D IN IT & TELECOM DIVISION

3.1 ENDOWMENT FUND (HEC-IT)

An Endowment fund for Higher Education and R&D in IT & Telecom Division at University of Engineering & Technology, Taxila, created for an amount of Rs. 210 million. The main objective for the establishment of endowment fund is to provide a continuous service of funding the University for producing around four PhD and six MSc in the every year. Fund would be available for manpower development in the following fields:

- Computer/Data Communication
- Image Processing
- Simulation and Modelling
- Wireless Communication
- Digital Signal Processing
- Mixed Signal/Conventional ASIC Design

A student admitted as Graduate Assistant (GA) for PhD/MSc in the above fields is eligible for scholarships and other permissible benefits from this fund. The request grant from this Endowment fund is based on the research proposals that shall be peer reviewed externally. The Board of Trustees makes the decision of the grant.

3.2 ENDOWMENT FUND (UET TAXILA)

An Endowment fund of University of Engineering & Technology, Taxila, created for an amount of Rs. 35 million. The main objective for the establishment of endowment fund is to provide a continuous financial help to the Needy Student of UET Taxila other than IT & Telecom Division

3.3 COST OF MAINTENANCE / FEE / ACADEMIC SUPPORT

The following Fee and Allowances are paid by the University out of Endowment Fund where applicable:

Maintenance Allowance (PhD) GAs	Rs. 40000 PM
Maintenance Allowance (MSc) GAs	Rs. 20000 PM
Fee (PhD) GAs	Actual University Fee
Fee (MSc) GAs	Actual University Fee



4

INDUSTRY MSc AND PhD INDUSTRIAL PROFESSORSHIP

4.1. Industry MSc and PhD

- 4.1.1 Qualified Industry Employees in Full Time MSc and PhD programs of University of Engineering and Technology, Taxila may be admitted free of cost, provided that the employer agrees to approve study leave for accepted employees for 18 and 36 months respectively for MSc and PhD.
- 4.1.2 Full Time UET MSc and PhD Scholars may be placed on Industrial Research Projects at Industrial Sites/Research Labs/Facilities for 12 and 36 months respectively.
- 4.1.3 For Industrial PhD funded by industry and other research grants, the scholars will be identified and recruited through a competitive process for 36 months duration after advertisement in the national press. The purpose of the Industrial PhD initiative is:
 - a. To train individuals as researchers who have insight into the commercial aspects of research and development.
 - b. To build up personal network for the exchange of knowledge between companies and University and foreign research institutions.
 - c. To promote the Pakistan's business community's opportunities for development.

4.2. Industry Professorship

- 4.2.1 The UET will be eager to consider and involve Engineers, Scientists from Industry whereby they spend 2-3 days a month at the University and also agree to guide Masters and PhD students. The UET has established Industrial Professorship at UET Taxila in the following categories:
 - a. Title of Industry Aces for prominent industry leaders, having significant experience and clout in the industry (Existing and Retired CEOs, Chairmen of Boards, Secretaries).
 - b. Title of Full Industrial Professor for PhD industrial expert having 15+ years of industry experience.

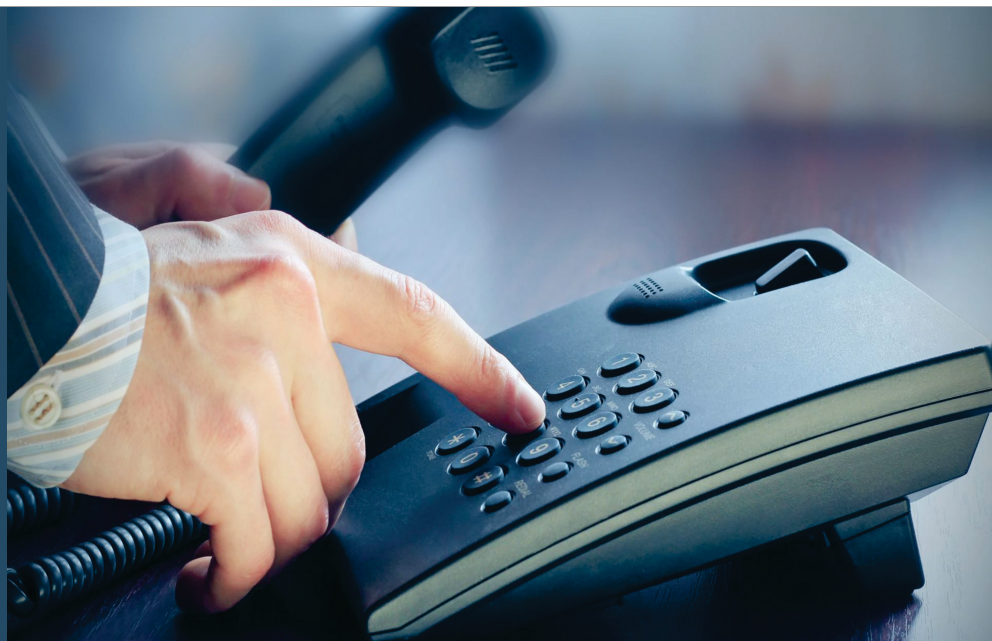
- c. Title of Associate Industry Professor for PhD industrial expert having 10+ years of industry experience.
- d. Title of Assistant Industry Professor for PhD industrial expert having 5 years of industry experience.

- 4.2.2 In lieu their presence in the University and services provided, the engaged individuals get an honorarium (Industry Aces Rs. 25,000/- per month, Industry Professor Rs.15,000/-per month, Associate Industry Professor Rs. 12,000/- per month and Assistant Industry Professor Rs. 10,000/- per month) and benefits comparable to the University faculty for producing Masters and PhD.

4.3. Donations for Student Support Fund (SSF)

- 4.3.1 To create a Student Support Fund (SSF) for needy students at undergraduate level, initially the University will contribute Twenty (20) Million Rupees in SSF. The needy students will be awarded need base Scholarships from the SSF. The University may raise funds from donors and approve the award of scholarships.
- 4.3.2 Well off students of MSc and PhD may make donations in this fund. They may also encourage their parents, relative and friends to make donations for this fund.
- 4.3.3 A committee constituted as follows and headed by the Vice Chancellor to oversee the award of need based scholarship consist of the following:
 - i. Vice Chancellor Chairman
 - ii. One Member of Syndicate Member
 - iii. All Deans Member
 - iv. One Alumni Representative Member
 - v. Director Students Affairs Member
 - vi. Treasurer Member/Secretary

IMPORTANT TELEPHONE NUMBERS



The Intercom extensions (ddd) are configured as Rawalpindi/Islamabad local numbers with prefix 051-9047 ddd, Fax No: 051-9047420

Description	Intercom Ext. (ddd)
Vice-Chancellor	401
Secretary to the Vice-Chancellor	403, 404
Deans of Faculties	
Electrical & Electronics Engineering	533
Civil & Environmental Engineering	633
Mechanical & Aeronautical	666
Engineering Telecom. & Information	566
Engineering Industrial Engineering	825
Chairmen of Academic Departments	
Electrical Engineering	535
Electronics Engineering	720
Civil Engineering	635
Environmental Engineering	795
Mechanical Engineering	668
Computer Engineering	568
Software Engineering	735
Telecommunication	918
Engineering Computer Science	845
Industrial Engineering	827
Basic Sciences	870
Other Establishments	
Registrar	405
Additional Registrar (Establishment)	407
Assistant Registrar (Establishment)	408-409
Establishment Branch	426
Additional Reg. Academic & Regulation	410
Academic & Regulation Branch	411
Admissions Office (Undergraduate)	412,427
Treasurer	413
Dy. Treasurer (Accounts)	418

Description	Intercom Ext. (ddd)
Dy. Treasurer (Audit)	425
Accounts Branch	417
Dues & Scholarship Section	421,422
Resident Auditor	423
Controller of Examinations	428
Examination Branch	432,433
Project Director (Building & Works)	434
Director QEC	492
Deputy Director QEC	493
Director Physical Education	473
Director P&D	442
Deputy Director Placement	444
Legal Advisor	445
Library	455
Health Clinic	461
Network Centre	468
Transport Office	470
Directorate of Students Affairs	472
Senior Warden	568
Quaid-e-Azam Hall	264,269
Iqbal Hall	266,271
Ali Hall	267,272
Abubakar Hall	265,270
Usman Hall	273,277
Bilal Hall	275, 276
Ayesha Hall	268,274
Telephone Exchange (Operator)	400, 500
Security Control Room	803





University of Engineering & Technology, Taxila

Prospectus-2026 Onwards

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