



02

FACULTY OF ENGINEERING SCIENCES AND TECHNOLOGY

Prof. Dr. Vali Uddin

Dean, Faculty of Engineering Sciences and Technology (FEST)
Phone: 92-21-36440163 Fax: 92-21-36440130
Email: dean.fest@hamdard.edu.pk

Prof. Dr. Pervez Akhtar

Acting Director, Hamdard Institute of Engineering and
Technology (HIET)
Phone: 92-21-36440105-6 Fax: 92-21-36440130
Email: directorhiet@hamdard.edu.pk

Prof. Dr. Abdul Hameed Memon

Chairman, Department of Postgraduate Studies &
Chairman, Department of Mechanical Engineering
Phone: 92-21-36440134 Fax: 92-21-36440130
Email: hameed.memon@hamdard.edu.pk

Prof. Dr. Rashid Hussain

Chairman, Department of Electrical Engineering &
Deputy Director (Academics)
Phone: 92-21-364401034 Fax: 92-21-36440130
Email: Rashid.hussain@hamdard.edu.pk

Prof. Dr. Aqeel-Ur-Rehman

Chairman, Department of Computing &
Deputy Director (Admin)
Phone: 92-21-36440107 Fax: 92-21-36440116
Email: aqeel.rehman@hamdard.edu.pk

Dr. Tariq Javid

Chairman, Department of Biomedical Engineering
Phone: 92-21-36440167 Fax: 92-21-36440130
Email: tariq.javid@hamdard.edu.pk

Engr. Azhar Dilshad

Chairman, Department of Computer Engineering
Phone: 92-21-36440165 Fax: 92-21-36440130
Email: azhar.dilshad@hamdard.edu.pk

Dr. Amjad Ali

Acting Deputy Director
Graduate School of Engineering Science and
Information Technology (GSESIT), HIET
Phone: 92-21-34305025, 92-346-2209522
Email: ddgsesit@hamdard.edu.pk

- **Message by the Dean**
- **Introduction**
- **Faculty**
- **Academic Programs**
- **Admissions**
- **Graduate School**
- **Environmental Studies Centre**

Degree Programs

Department of Biomedical Engineering

- B.E. (Biomedical)

Department of Computing

- B.S. (Computer Science)
- B.S. (Software Engineering)
- M.C.S.(Master of Computer Science)

Department of Computer Engineering

- B.E. (Computer System)

Department of Electrical Engineering

- B.E. (Electrical)
- B.E. (Electronics)

Department of Mechanical Engineering

- B.E. (Energy Systems)
- B.E. (Mechanical)

Department of Postgraduate Studies

Ph.D./M.E. (Electrical Engineering) concentration/ specialization:

- Control and Automation
 - Communication Systems and Networks
 - Computer Systems
 - Electronics
 - Embedded Systems
 - Power Systems
 - Telecommunication Systems
- Ph.D./M.S. (Computer Science) concentration/ specialization:
 - Computer and Communication Networks
 - Software Engineering
 - Information Technology
 - Information and Communication Security
 - M.S. (Energy and Environment)
 - Ph.D. (Computer Science)
 - Ph.D. (Energy and Environment)





**Message by the Dean
Prof. Dr. Vali Uddin**

Faculty of Engineering Sciences and Technology (FEST) fathoms the global requirements, and by believing in strong professional growth we are preparing our students to take a holistic look around them and address some of the society's formidable challenges. Through an amalgamation of empirical learning, self-governing research endeavors and quality teaching, we offer one of the renowned engineering programs in the country.

FEST is opening vistas for scrupulous students with a competitive edge, ready to lead their heads with their hearts. We offer a wide range of graduate and under graduate degree programs in Bio-medical (in association with faculties of Eastern Medicine, Medical & Health Sciences and Pharmacy), Computer Systems, Electrical, Electronics, Energy Systems, and Mechanical Engineering and in Computer Science and Software Engineering. In reliance with HEC standards, our city campus offers graduate study programs leading to MS, ME and Ph.D. degrees.

The role of engineering can be capitalized on by bonding it with the research; and we acknowledge this. FEST provides good opportunities for Research in Engineering and Computing and provided the society with quality engineers, scholars and scientists having respectable careers in the field domestically and abroad.

Our young scholars work in an academically balanced, rigorous and pulsating environment where their self-exploration exposes them to prove their academic standings. They work intimately with reputed faculty and researchers who possess a seamless allegiance to teaching, mentoring and innovative research work.

We suggest you to explore our website and ascertain our excellent cross-disciplinary programs or, come visit our teaching and research facilities, converse with our faculty and students, and discern for yourself how we're becoming the institute-of-choice in engineering and technology.

INTRODUCTION

Faculty of Engineering Sciences & Technology (FEST) has the mission to advance and create knowledge in Engineering Sciences and Technology, nurture well-rounded imbibed personalities, creative and entrepreneurial minds; sensitive towards social responsibility and moral values, and to provide innovative solutions to local and global problems. We are sensitive to provide various opportunities, facilities, funding, professional training and research, guidelines, and motivation, augmented by a 103 qualified faculty members, 32 equipped laboratories in an academically balanced, and supportive environment. The faculty members encourage our students to advance their academic standings, build their capacity to meet career challenges. As a result, majority of our graduates are having respectable careers in both the academia, industry, governmental and non-governmental organizations domestically and abroad as innovative and successful engineers/computing professionals.

Hamdard Institute of Engineering and Technology (HIET)

Main Campus

Hamdard Institute of Engineering and Technology- HIET (formerly Hamdard Institute of Information Technology HIIT) was established in 1997 - a body for imparting quality education and training is among one of the pioneers to introduce Information Technology education in Karachi.

HIET has a strong motive to disseminating knowledge in modern and emerging areas of engineering, science and technology. Thus it offers assortment of Bachelors to Doctorate level programs, accredited/recognized by PEC and HEC, from Biomedical to Computer Systems Electrical, Electronics, Energy Systems, and Mechanical Engineering.

Conversely, Computer Science (CS) program is accredited by NCEAC with unique offering of courses in 'key emerging CS technologies'.

With a strong base of highly qualified faculty, well-resourced laboratories and well-designed & optimized curriculum as per HEC Curriculum Revision Committee (NCRC) framework, HIET offers a very conducive environment for quality education to produce multi-disciplinary graduates capable of acquiring leadership roles along diverse career paths in a rapidly changing and highly competitive global milieu.



Faculty of Engineering Sciences & Technology (FEST)

Prof. Dr. Vali Uddin

Dean FEST
Ph.D. Electrical Engineering,
Northeastern University, USA
M.S. Electrical Engineering,
Boston University, USA
B.E. Electronic Engineering,
NED University, Karachi
Email: vali.uddin@hamdard.edu.pk

Prof. Dr. Pervez Akhtar

Professor & Director HIET
Ph.D. Electrical Engineering,
University of Wales, UK
M.S. Electromagnetic Engineering
University of Wales, UK
B.E. Electrical Engineering,
NED University, Karachi
Email: directorhiet@hamdard.edu.pk

Prof. Dr. Abdul Hameed Memon

Chairman Mechanical Engineering &
Chairman Postgraduate Studies
Ph.D. Mechanical Engineering,
Sheffield Hallam University, UK
B.E. Mechanical Engineering,
Mehran University, Pakistan
Email: hameed.memon@hamdard.edu.pk

Prof. Dr. Rashid Hussain

Chairman Dept. of Electrical Engineering & Deputy
Director (Academics),
Ph.D. Telecom Engineering,
Hamdard University, Karachi
M.S. Electrical Engineering,
University of Texas, USA
M.S. Computer Science,
University of Houston, USA
B.E. Electrical Engineering,
NED University, Karachi
Email: rashid.hussain@hamdard.edu.pk

Prof. Dr. Aqeel-ur-Rehman

Chairman Department of Computing & Dy. Director
(Admin),
Ph.D. Computer Science,
NUCES, FAST-NU, Karachi
M.S. Information Technology,
Hamdard University, Karachi
B.S. Electronic Engineering,
SSUET, Karachi
Email: aqeel.rehman@hamdard.edu.pk

Engr. Tarique Haider

Associate Professor
M.S. Electrical Engineering,
Illinois Institute of Technology, USA
B.E. Electrical Engineering,
NED University, Karachi
Email: tarique.haider@hamdard.edu.pk

Dr. Tariq Javid

Associate Professor & Chairman
Biomedical Engineering
Ph.D. Electronics Engineering
NUST, Karachi
M.E. CSE, NED University, Karachi
B.E. Electronics Engineering
NED University, Karachi
Email: tariq.javid@hamdard.edu.pk

Dr. Muhammad Faisal Khan

Associate Professor
Ph.D. Electronics Engineering,
GIK, Islamabad, Pakistan
M.S. Electronics Engineering,
GIK, Islamabad, Pakistan
B.E. Electrical Engineering,
NED University, Karachi
Email: faisal.khan@hamdard.edu.pk

Dr. Amjad Ali

Associate Professor &
Dy. Director GSESIT
Ph.D. Electrical Engineering
Zhejiang University, China
M.S. Electrical Engineering
Comsats Islamabad, Pakistan
B.E. Electronics
University of Sindh Jamshoro, PK
Email: Amjad.Ali@hamdard.edu.pk

Dr. M. Rizwan Tanveer

Ph.D. Computer System
NTU, Singapore
MS Computer System,
NTU, Singapore
B.E. Computer System
Hamdard University, Karachi
Email: rizwan.tanveer@hamdard.edu.pk

Dr. Syed Sajjad Hussain Rizvi

Associate Professor
Ph.D. Computer Engineering
IQRA University, KHI. PK
Business Administration
University of Karachi, PK
B.E. Telecommunication Engg.
Hamdard University, Pakistan
Email: Dr.Sajjad@hamdard.edu.pk

Engr. Nadeem Saleem

Assistant Professor & Incharge Environmental
Studies Center
M.E. Mechanical Engineering,
University of UTAH, USA
B.E. Mechanical Engineering,
NED University, Karachi
Email: nadeem.saleem@hamdard.edu.pk

Mr. M. M. Kamil Siddiqi

Assistant Professor
M.A. International Relations,
University of Karachi, Karachi
Email: kamil.siddiqi@hamdard.edu.pk

Engr. Kashif Abbasi

(on study leave)
Assistant Professor
M.S. (Computer Science),
SZABIST, Karachi,
BE (Civil Engineering),
NED University, Karachi
Email: k.abbasi@hamdard.edu.pk

Engr. Azhar Dilshad

Assistant Professor & Chairman
Dept. of Computer Engineering
Ph.D.* Computer Engineering,
Hamdard University, Karachi
M.S. Computer Integ. Manufacturing,
NTU, Singapore
M.S. Control & Automation,
NTU, Singapore
B.E. Computer Systems,
Hamdard University, Karachi
Email: azhar.dilshad@hamdard.edu.pk

Mr. Shams ul Arfeen

Assistant Professor
Ph.D.* Computer Science,
Hamdard University, Karachi
M.S. Computer Network,
PAF-KIET, Karachi, Pakistan
B.S. Computer Science,
Sindh University, Jamshoro
Email: shams.arfeen@hamdard.edu.pk

Engr. Saif Uddin Hirani

Assistant Professor
M.S.* Electronic Engineering,
PAF-KIET, Karachi
B.E. Electronic Engineering,
NED University, Karachi
Email: saif.hirani@hamdard.edu.pk

Engr. Sheeraz Arif

(on study leave)
Assistant Professor
Ph.D.* Info. & Comm. Engg.
Beijing Institute of Technology
M.S. Telecom. Engineering,
London South Bank, U.K
B.E. Computer Engineering, SSUET, Karachi
Email: sheeraz.arif@hamdard.edu.pk

Engr. Saleem Ul Haq

Assistant Professor
M.E. Electrical Engineering,
UET Lahore, Lahore
M.Sc. Environmental Engineering,
NED University, Karachi
B.E. Electrical Engineering,
NED University, Karachi
Email: saleem.haq@hamdard.edu.pk

Engr. M. Ahmed Sikander

Assistant Professor
Ph.D.* Telecom. Engineering,
Hamdard University, Karachi
M.S. Telecom. Engineering,
BTH, Sweden
B.S. Electronic Engineering,
SSUET, Karachi
Email: m.sikander@hamdard.edu.pk

Engr. Syed Nadeem Mian

Assistant Professor & Coordinator
B.E. (Energy Engineering)
M.E. Mechanical Engineering,
University of Trondheim, Norway
B.E. Mechanical Engineering,
NED University, Karachi
Email: nadeem.mian@hamdard.edu.pk

Dr. Adnan Ahmed Siddiqui

Assistant Professor
Ph.D. Information Technology,
Hamdard University, Karachi
M.S. Mobile Computing & IS,
Hamdard University, Karachi
M.C.S. University of Karachi
B.S.C. University of Karachi
Email: adnan.siddiqui@hamdard.edu.pk

Engr. Zaheen Fatima

Assistant Professor
Ph.D.* Computer Engineering,
Hamdard University, Karachi
M.S. Computer Engineering,
NED University, Karachi
B.E. Computer Engineering,
SSUET, Karachi
Email: zaheen.fatima@hamdard.edu.pk

Syed Salman Shah

Assistant Professor
Ph.D.* Computer Science
PAFKIET, Karachi
M.S. Information Technology,
Hamdard University, Karachi
B.C.S. Computer Science,
FAST-ICS, Karachi
Email: salman.shah@hamdard.edu.pk

Engr. Rabia Khatoon

(on study leave)
Assistant Professor
M. S. Energy & Environment,
Hamdard University, Karachi
M.Sc. Environmental Sciences,
Karachi University, Karachi
B.E. Civil Engineering,
NED University, Karachi
Email: rabia.haider@hamdard.edu.pk

Dr. Dur-e-Jabeen

Assistant Professor
Ph.D. Electronic Engineering,
Hamdard University, Karachi
M.E. Electrical Engineering,
NED University, Karachi
B.E. Electronic Engineering,
NED University, Karachi
Email: dure.jabeen@hamdard.edu.pk

Engr. Muhammad Faris

Assistant Professor
Ph.D.* Electronic Engineering,
Hamdard University, Karachi
M.E Communication & Signal Processing,
Hamdard University, Karachi
B.E Biomedical Engineering,
SSUET, Karachi
Email: m.faris@hamdard.edu.pk

Mr. Asim Hussain

Assistant Professor & Head Industrial Relations Departm
M.B.A., IBA Karachi
M.Sc. Computer Science,
NED University, Karachi
M.Sc. Applied Mathematics,
Karachi University, Karachi
B.Sc. (Honors) Mathematics,
Karachi University, Karachi
Email: asim.hussain@hamdard.edu.pk

Engr. Rehan Adil

Assistant Professor
Ph.D.* Electrical Engineering,
Hamdard University, Karachi
M.E. Control and Automation,
Hamdard University, Karachi
B.E. Electronic Engineering,
SSUET, Karachi
Email: rehan.adil@hamdard.edu.pk

Engr. Asad-ur-Rehman

Assistant Professor
M.S.CS Computer System
PAF -KIET, Karachi, Pakistan
B.E. Computer System
NED University, Pakistan
Email: asad.rehman@hamdard.edu.pk

Engr. Muhammad Iqbal Khan

Assistant Professor
M.S. Electrical Engineering,
M.S. Strategic Studies,
PNEC, NUST, Karachi
M.S. Avionics Engineering
Air War College, PAF Karachi
B.E. NED University, Karachi
Email: iqbalkhan22@hamdard.edu

Engr. Fida Hussain

(on study leave)
Assistant Professor
M.E Control & Automation,
Hamdard University, Karachi
B.E. Electronic Engineering,
DCE&T, Karachi
Email: fida.hussain@hamdard.edu.pk

Engr. Farhan Tanvir

Assistant Professor
Ph.D.* Electrical Engineering,
Hamdard University, Karachi
M.E. Computer Networks & Performance Evaluation,
NED University, Karachi
B.E. Telecom Engineering,
NED University, Karachi
Email: farhan.tanvir@hamdard.edu.pk

Ms. Sadia Ali

Assistant Professor
M S. Applied Mathematics,
NED University, Karachi
M.Sc. Mathematics,
University of Karachi, Karachi
Email: sadia.ali@hamdard.edu.pk

Engr. Farooq Zia

Assistant Professor & Program Coordinator
B.E.(Telecommunication)
Ph.D.* Telecom. Engineering
Hamdard University Karachi
MS Telecom & Networks
Hamdard University Karachi
Email: farooq.zia@hamdard.edu.pk

Engr. Anwar Anis Ahmad

Assistant Professor
Ph.D.* Energy Engineering
NED University, Pakistan
M.E. Mechanical Engineering
Lamar University, Texas USA
B.E. Mechanical Engineering
NED University, Pakistan
Email: Anwar.Anis@hamdard.edu.pk

Mr. Imran Khan

Assistant Professor
M.S. Telecommunication
Iqra University, Karachi
M.Sc. Applied Physics,
Karachi University, Karachi
Email: imran.khan@hamdard.edu.pk

Engr. Syed Asim Raza

Assistant Professor & Head HIET
Laboratories
M.S.C. Wireless Communication
Greenwich University, London
B.E. Electronics Engineering
NED University, Pakistan
Email: asim.raza@hamdard.edu.pk

Mr. Muhammad Adeel Mannan

Assistant Professor
Ph.D.* Computer Science
SZABIST, Pakistan
MS Computing
SZABIST, Pakistan
BS Computer Science
Karachi University, Karachi
Email: adeel.mannan@hamdard.edu.pk

Mr. Iqbal Uddin Khan

Assistant Professor
Ph.D.* Computer Science,
Hamdard University, Karachi
M.S. Telecommunications,
Hamdard University, Karachi
B.Tech. Electronics,
Indus University, Karachi
Email: iqbaluddin.khan@hamdard.edu.pk

Engr. Muhammad Uzair

(on study leave)
Assistant Professor
MEM Engineering Management
UTS, Sydney, Australia
MESC Electric power
UNSW Kensington, Sydney Australia
BE Electrical Engineering
NED University, Pakistan
Email: m.uzair@hamdard.edu.pk

Engr. Mirza Mohammad Amir

Assistant Professor
M.Sc. Electrical & Electronic Engg.
University of Bradford, UK
B.S. Electronic Engineering
Sir Syed University, PK
Email: amir.mirza@hamdard.edu.pk

Engr. M. Danish Mujeeb

Assistant Professor
Ph.D.* Biomedical Engineering
NED University, Pakistan
M.E. Industrial Controls
Hamdard University, Pakistan
B.E. Biomedical Engineering
Sir Syed University, PK
Email: Danish.Mujib@hamdard.edu.pk

Ms. Saboohi Mehmood

Assistant Professor
MS Software Engineering
Jinnah University for Women, Karachi
BS Computer Science
Jinnah University for Women, Karachi
Email: saboohi.mehmood@hamdard.edu.pk

Engr. Adnan Shah

Assistant Professor & Coordinator, B.E. Electronic
Engineering
Ph.D.* Electrical Engg., NED
M.S. Telecom Engineering
Hamdard University, Karachi
B.E. Electrical Engineering
NED University, Pakistan
Email: adnan.shah@hamdard.edu.pk

Mr. Afzal Hussain

Assistant Professor
MSE Software Engineering
University Malaya, Kuala Lumpur
MCS University, Karachi
BCS University, Karachi
Email: Afzal.hussain@hamdard.edu.pk

Dr. Syed Aqeel Raza

Assistant Professor
Ph.D. Computing
Sunway University Malaysia
M.S.C. Telecommunication
Blekinge Institute, Sweden
M.E. Signal Processing
Hamdard University, Karachi
B.E. Computer System Engineering
Email: Aqeel.raza@hamdard.edu.pk

Engr. Tayyab Ahmed Ansari

Assistant Professor
M.E. Biomedical Engineering,
NED University, Karachi
B.E. Biomedical Engineering,
NED University, Karachi
Email: tayyab.ansari@hamdard.edu.pk

Engr. Rehan Khursheed

Assistant Professor
M.Sc. Energy Conversion & Mgmt.
University of Nottingham, UK
B.E. Mechanical Engineering
NED University, Karachi
Email: Rehan.Khursheed@hamdard.edu.pk

Engr. Tayyab Ahmed Shaikh

Assistant Professor
Ph.D.* Electrical Engineering
Hamdard University, Karachi
M.E. Computer & System Design
NED University, Pakistan
B.E. Computer & Information Systems
NED University, Pakistan
Email: Tayyab.Ahmed@hamdard.edu.pk

Engr. Shahzor Memon

Assistant Professor
M.E. Electronic Engineering
MUET, Jamshoro, Pakistan
B.E. Electronic Engineering
MUET, Jamshoro, Pakistan
Email: shahzor.memon@hamdard.edu.pk

Syed Ahmed Hasan Jafri

Assistant Professor
M.S. Computer Eng. Networks
Sir Syed University, PK
M.B.A. Marketing & Supply Chain
SZABIST, Pakistan
B.S. Electrical Engineering
Purdue University Fort Wayne USA
Email: Ahmed.Hasan@hamdard.edu.pk

Engr. Sadiq ur Rehman

Assistant Professor
Ph.D. * Communication systems & Network
Hamdard University, Karachi
M.Sc. Comp. Science & Communication
Engineering
University Duisburg-Essen Germany
B.E. Electronic Engineering
Hamdard University, Karachi
Email: Sadiq.Rehman@hamdard.edu.pk

Mr. Aamir Hussain

Assistant Professor
MS. Computer Science
Muhammad Ali Jinnah University, Karachi
MCS. Computer Science
University Of Karachi

Ms. Arshia Aijaz

Lecturer
M. Phil.* Physics,
Federal Urdu University, Karachi
M.Sc. Physics, University of Karachi,
Email: arshia.ajaz@hamdard.edu.pk

Mr. Muhammad Arif

Lecturer
M. Phil.* Environment
DUHS, Karachi, Pakistan
M.Sc. Microbiology,
University of Karachi, Karachi
B.Sc. Microbiology,
University of Karachi, Karachi
Email: muhammad.arif@hamdard.edu.pk

Ms. Ambreen Zehra

Lecturer
Ph.D.* Mathematics,
University of Karachi
M. Phil. University of Karachi
M.Sc. University of Karachi
B.Sc. SSGC, Karachi
Email: ambreen.zehra@hamdard.edu.pk

Ms. Nazra Zahid Shaikh

Lecturer
M.A. English Language & Teaching,
NUML, Islamabad
M.Ed. AIOU, Islamabad
B.A. Arts, University of the Punjab
Email: nazra.zahid@hamdard.edu.pk

Mr. Zafar Ahmed

Lecturer
M.A Islamic Studies
Karachi University
B.ED, Karachi University
B.Com, Karachi University
Email: zafar.ahmed@hamdard.edu.pk

Engr. Midhat Aleem

Lecturer
M.E. Mechatronics
NED University, Karachi
B.E. Medical Engineering
NED University, Karachi
Email: midhat.aleem@hamdard.edu.pk

Engr. Muhammad Adeel

Lecturer
M.E. Industrial Control & Automation
Hamdard University, Karachi
B.E. Electronic Engineering
Sir Syed University, Pak
Email: m.adeel@hamdard.edu.pk

Engr. Fatima Mohsin Zakai

Lecturer
M.E. Electronic Engineering
NED University, Pakistan
B.E. Electronic Engineering
Hamdard University, Karachi
Email: Fatima.Mohsin@hamdard.edu.pk

Engr. Ali Asghar

Lecturer
M.E. Electronic System Engineering
QUEST, Nawabshah, PAK
B.E. Electronic Engineering
MUET, Jamshoro, PAK
Email: Ali@hamdard.edu.pk

Engr. Abdul Manan Memon

Lecturer
M.E. Electrical Power
UTM, Malaysia
B.E. Electronic Engineering
Mehran University, PK
Email: Abdul.manan@hamdard.edu.pk

Engr. Mohammad Faizan

Lecturer
M.E. Electrical Engineering,
Hamdard University, Karachi
B.E. Electronic Engineering,
Hamdard University, Karachi
Email: m.faizan@hamdard.edu.pk

Engr. Mahesh Kumar

Lecturer
M.E. Electrical Engineering,
Hamdard University, Karachi
B.E. Electronic Engineering,
Hamdard University, Karachi
Email: Mahesh.Kumar@hamdard.edu.pk

Engr. Jamal uddin Jalalani

Lecturer
M.E. Energy & Environment Engg.
QUEST, Nawabshah, PAK
B.E. Mechanical Engineering
QUEST, Nawabshah, PAK
Email: Jamal.uddin@hamdard.edu.pk

Engr. Faiz Muhammad

Lecturer
M.E. Electrical Power
UTM Malaysia
B.E. Electrical (Communication)
COMSATS Lahore, Pakistan
Email: Faiz.Muhammad@hamdard.edu.pk

Mr. Ahmar Murtaza

Lecturer
Ph.D.* Computer Science,
Hamdard University, Karachi
M.S. Telecommunications,
Hamdard University, Karachi
B.Tech. Electronics,
Indus University, Karachi
Email: Ahmar.Murtaza@hamdard.edu.pk

Engr. Shariq A. Khan

Lecturer
M.E. Electronic Engineering,
Hamdard University, Karachi
B.E. Electronic Engineering,
Hamdard University, Karachi
Email: Shariq.Khan@hamdard.edu.pk

Engr. Abdul Haseeb

Lecturer
M.E. Electrical Engineering,
Hamdard University, Karachi
B.E. Electronic Engineering,
Hamdard University, Karachi
Email: abdul.haseeb@hamdard.edu.pk

Engr. Syeda Noor ul Ain

Lecturer
M.E. Micro Systems Design,
NED University, Karachi
B.E. Electronic Engineering,
DC&ET, Karachi
Email: noor.ain@hamdard.edu.pk

Engr. Muhammad Talha Iqrar

Lecturer
M.E. Control & Automation
Hamdard University, Pakistan
B.E. Electronic Engineering
Sir Syed University, PK
Email: Talha.Iqrar@hamdard.edu.pk

Engr. Mansaf Ali Abro

Lecturer
M.E. Mechatronics Engineering
MUET, Jamshoro, PAK
B.E. Mechanical Engineering
MUET, Jamshoro, PAK
Email: Mansaf.Ali@hamdard.edu.pk

Engr. Asad Ali Laghari

Lecturer
M.E. Energy Systems Engineering
MUET, Jamshoro, Pakistan
B.E. Mechanical Engineering
QUEST Nawabshah Pakistan
Email: Asad@hamdard.edu.pk

Ms. Shafaq Sohail

Lecturer
M.S. Software Engineering
NUST, Rawalpindi, Pakistan
B.S. Software Engineering
Fatima Jinnah Women University,
Rawalpindi, Pakistan
Email: Shafaq.Sohail@hamdard.edu.pk

Engr. Faizan Ahmed

Lecturer
M.S. Robotics & Intelligent Machines
NUST, Karachi, Pakistan
B.S. Electronic Engineering
Sir Syed University, Pakistan
Email: Faizan.Ahmed@hamdard.edu.pk

Engr. Ramsha Fatima

Lecturer
M.E. Bio medical Engineering
NED University, Karachi
B.E. Bio-Medical Engineering,
NED University, Karachi
Email: ramsha.fatima@hamdard.edu.pk

Engr. Osama Malik

Lecturer
M.E. Mechatronics Engineering
NED University, Karachi
B.E Bio medical Engineering
Hamdard University, Karachi
Email: omalik@hamdard.edu.pk

Engr. Adeel Khan
Lecturer
M.E. Indust. Controls & Automation
Hamdard University, Karachi
B.E Electrical (Electronic) Engg
Hamdard University, Karachi
Email: Adeel.Khan@hamdard.edu.pk

Engr. M. Abdul Basit
Lecturer
M.E. Biomedical Engineering
NED University, Karachi
B.E. Biomedical Engineering
NED University, Pakistan
Email: Abdul.basit@hamdard.edu.pk

Pawan Kumar
Lecturer
M.E. Electronic Engineering
NED University, Karachi
B.E Computer System
Hamdard University, Karachi
Email: Pawan.Kumar@hamdard.edu.pk

Engr. Syed Ijlal Hassan Shah
Lecturer
MS. Electronics Engineering
LUMS, Lahore
B.E. Electrical Engineering
Islamia University, Bhawalpur
Email: ijilal.hassan@hamdard.edu.pk

Engr. Atif Mehmood
Lecturer
MS. Electronics Engineering
FAST, Lahore
B.S.C. Computer System Engineering
COMSAT
Email: atif.mehmood@hamdard.edu.pk

Engr. Shoaib Ahmed Shaikh
Lecturer
M.E. Electrical Engineering
NED University, Karachi
B.E. Electrical Engineering
Quaid-e-Awam University, Nawabshah
Email: shoaib.ahmed@hamdard.edu.pk

Engr. Muhammad Ahsan Shaikh
Lecturer
M.E. Electrical Engineering
Hamdard University, Karachi
B.E. Electronics Engineering
Multimedia University, Malaysia
Email: m.ahsan@hamdard.edu.pk

Engr. Hafiza Mazia Ada
Lecturer
M.E. Micro System Design
NED University, Karachi
B.E. Electronics Engineering
NED University, Karachi
Email: mazia.ada@hamdard.edu.pk

Engr. Noman Sarwar
Lecturer
MS. Manufacturing Engineering
NED University, Karachi
B.E. Automotive Engineering
NED University, Karachi
Email: noman.sarwar@hamdard.edu.pk

Engr. Hassan Jafri
Lab Engineer
M.E.* Energy Engineering
NED University, Karachi
B.E Energy Engineering
Hamdard University, Karachi
Email: Hassan.Jafri@hamdard.edu.pk

Engr. Halar Mustafa
Lab Engineer
M.E.* Electrical Engineering,
Hamdard University, Karachi
B.E Telecommunication
Hamdard University, Karachi
Email: hmustafa@hamdard.edu.pk

Engr. Hamza Ali
Lab Engineer
M.E.* Energy & Plant Management
NED University, Karachi
B.E. Energy Engineering
Hamdard University, Karachi
Email: Hamza.Ali@hamdard.edu.pk

Engr. Ghulam E Mustafa Abro
Lab Engineer
M.E.* Industrial Automation
Sir Syed University, Pakistan
B.E Computer System
Hamdard University, Karachi
Email: Mustafa.Abro@hamdard.edu.pk

Engr. Hina Iftikhar
Lab Engineer
M.E.* Biomedical Engineering
NED University, Pakistan
B.E. Biomedical Engineering
NED University, Pakistan
Email: hina.iftikhar@hamdard.edu.pk

Engr. Yasir Ameer
Lab Engineer
B.S. Electrical Engineering
FAST-NUCES, Pakistan
Email: yasir.ameer@hamdard.edu.pk

Engr. Alishan Siddiqui
Lab Engineer
M.S. Engineering Management
IOBM, Karachi
B.E. Energy Engineering
Hamdard University, Karachi
Email: Alishan.Siddiqui@hamdard.edu.pk

Engr. Yusra Tahir
Lab Engineer
M.E.* Energy Engineering
Hamdard University, Karachi
B.E. Energy Engineering
Hamdard University, Karachi
Email: Yusra.Tahir@hamdard.edu.pk

Engr. Asad Ali Rahimoon
Lab Engineer
M.E.* Computer Engineering
FAST-NU, Karachi
B.E Computer System
Hamdard University, Karachi
Email: asad.ali@hamdard.edu.pk

Ms. Halima Sadia Khan
Lab Instructor
M.S.* Computer Science
NED University, Pakistan
B.S. Computer Science
NED University, Pakistan
Email: Halima.Sadia@hamdard.edu.pk

Engr. Sarah Anwar
Lab Engineer
B.E Computer & Info. System
NED University, Pakistan
Email: Sarah.Anwar@hamdard.edu.pk

Engr. Ayesha Abdul Ghafoor
Lab Engineer
B.E. Electrical Engineering
NED University, Pakistan
Email: Ayesha.Ghafoor@hamdard.edu.pk

Engr. Naveed ur Rehman
Lab Engineer
B.E. Electronic Engineering
Hamdard University, Karachi
Email: naveed.rehman@hamdard.edu.pk

Engr. Arsalan Ahmed Khan
Lab Engineer
M.E. Mechanical Engineering
NED University, Pakistan
B.E. Energy Engineering
Hamdard University, Karachi
Email: Arsalan.Khan@hamdard.edu.pk

Engr. Junaid Qazi
Lab Engineer
M.E.* Electrical Engineering
Hamdard University, Karachi
B.E. Electronic Engineering
Hamdard University, Karachi
Email: junaid.qazi@hamdard.edu.pk

Engr. Bazgha Jabeen
Lab Engineer
B.E. Electronic Engineering
NED University, Pakistan
Email: Bazgha.Jabeen@hamdard.edu.pk

Mr. Mohsin Raza Khan
Lab Instructor
MS.* Computer Science
Bahria University, Karachi
B.S. Computer Science
Bahria University, Karachi
Email: mohsin.khan@hamdard.edu.pk

Engr. Rabiya Jamil
Lab Engineer
M.E.* Mechanical Engineering
NED University, Karachi
B.E. Mechanical Engineering
NED University, Karachi
Email: rabiya.jamil@hamdard.edu.pk

Engr. Tayyaba Khalid
Lab Engineer
M.E.* Mechatronics
NED University, Karachi
B.E. Biomedical Engineering
NED University, Karachi
Email: tayyaba.khalid@hamdard.edu.pk

Engr. Rahooil Rai
Lab Engineer
B.E. Mechanical Engineering
Quaid-e-Awam University, Nawabshah
Email: rahool.rai@hamdard.edu.pk

Academic Programs' Rules & Regulations

1. Admission Criteria

Program-wise admissions criteria shall be followed as per the need and conformity of HEC and PEC guidelines.

Entry Requirements

For B.E. (Engineering) Programs
60% in H.S.C.*./D.A.E**

* B.E. (Electrical, Energy and Mechanical): Pre-Engg. with Physics, Math and Chemistry

B.E. (Computer System, Electronics: Pre-Engg. With Physics, Math and Chemistry / Computer Science

B.E. (Biomedical): Pre-Engg. With Physics, Math and Chemistry or Pre-Medical with Physics, Biology (Zoology, Botany) and Chemistry

** Relevant Technology (maximum 2% reserved seats (out of total allowed seats) in a program)

Students with A-level or other Equivalent qualification, shall submit 'Equivalency Certificate' (issued from I.B.C.C.) with minimum 60% marks for BE programs (50% for BS programs).

For B.S.(Science) Programs

50% in H.S.C. (Pre-Engineering/Science General/Computer Science), DAE, DIT or Equivalent

Combinations of Physics / Statistics / Economics, Chemistry / Computer Science/Statistics, and Mathematics (mandatory)

2. Merit Criteria for Admission

Category Weightage (%) Entry Test and interview 50% H.Sc. / D.A.E/A-Level 40% S.S.C 10%

The HIET Entry Test passed scores shall be valid for 01 year.

3. Grading Policy:

'Absolute Grading' is used as per the following table:

Grading Policy		
Grade	Grade Point	Numerical Grade
A	4.00	85 and above
A-	3.66	80-84
B+	3.33	75-79
B	3.00	71-74
B-	2.66	68-70
C+	2.33	64-67
C	2.00	61-63
C-	1.66	58-60
D+	1.3	54-57
D	1.00	50-53
F	00	Below 50

4. Degree Awarding Criteria:

The degree (at Bachelor's level) shall be awarded at a minimum of 2.00 CGPA (Cumulative Grade Point Average). All other requirements of (completion of total number of credit hours, all courses and Final Year Project) of respective degree programs must be fulfilled by the student. Maximum candidature period in all undergraduate programs is 7 years.

5. Academic Year and Semester Duration

The Academic Year span over two regular semesters (Spring and Fall) having 18 weeks duration each including 02 weeks reserved for final examinations. Conversely, Summer semester (08 weeks duration including final examination) is offered for students i.e., to cover deficiency (I/W/F grade) or GPA improvement of previously attempted courses.

6. Course Load per semester:

The maximum course load in regular semester shall be 21 credits including theory and labs whereas, maximum course load in summer semester shall be 02 courses.



7. Distribution of Marks (in each subject):

The marks distribution shall be as follows:

a. Theory subjects (100 marks):

Title	Particulars / Description	Marks Distribution
Mid-term Exam	Theory / MCQs	30
Sessional marks	Quizzes / Assignments / Presentation	20
Final Exam	Three (3) hours duration each	50
	Total	100

b. Practical subjects (50 marks):

Title	Particulars / Description	Marks Distribution
Lab Sessionals	Lab Manual and Lab Task	20 marks
Final Exam	Viva voce and Lab Performance/Project	30 marks
	Total	50

- b) Weightage for a course may be allowed in case a student misses any midterm exam due to genuine reasons such as: medical, family emergency or university representation.
- c) Theory subjects shall comprise of total 100 marks whereas, practical course shall carry 50 marks and they both shall be calculated and graded separately.
- d) The student must pass theory and practical examinations separately.

8. Promotion, Promotion with Warning and Relegation:

Promotion: A student will be promoted to next semester if he / she clear all courses in last semester with SGPA 1.50 AND satisfy the following criteria:

- a) For promotion to Semester IV, he /she must clear all subjects of Semester I
- b) For promotion to Semester V, he /she must clear all subjects of Semester II with CGPA 2.0
- c) For promotion to Semester VI, he /she must clear all subjects of Semester III with CGPA 2.0
- d) For promotion to Semester VII, he /she must clear all subjects of Semester IV with CGPA 2.0
- e) For promotion to Semester VIII, he /she must clear all subjects of Semester V with CGPA 2.0

9. Promotion with warning:

In case of one or more F grade(s) in any semester or SGPA less than 1.50 in semester I, II, and III a student will be promoted to next semester with warning. However, he/she must also satisfy the above mentioned criteria for promotion to semester IV onwards.

10. Relegation:

- i. Student will not be promoted to next semester if he / she fail to fulfill the above criteria for promotion to semester IV onwards. He / she will require clearing all deficiencies to satisfy the above promotion criteria before moving to next semester.
- ii. Student will not be promoted to next semester if he / she fail in all courses in last semester.

11. Minimum Attendance Requirement:

A student shall not be allowed to appear in the final examination of any subject if he/she fails to maintain at least 75% attendance in that subject. The attendance shall be counted from the date of registration of courses. The provision of 05% attendance shall be with concerned, of Dean.

12. Course Registration and Drop:

- a) The course registration is expected to be carried out before commencement of classes of each semester. Only those courses shall be allowed to register whose pre-requisite courses have been cleared. Letter grades of the acceptable courses should not be allocated and counted in the calculation of CGPA
- b) A student can drop/add any course, due to any reason, within two (2) weeks after commencement of classes. No more than two (2) courses can be dropped/added in one semester.
- c) No fee shall be charged for the dropped courses. If any student has already paid the fee, then his fee for the dropped course(s) shall be transferred to the next semester.

13. Course Withdrawal:

a) A student can apply for the withdrawal (with the approval of the Director of the institute upon recommendation of concerned Department Chairman/Program Coordinator) of any course before two weeks' of the final examination. This provision is kept for the benefit of a good student, when he/she realizes that he/she is not going well in the particular subject and taking its final examination, may badly affect his/her current SGPA and CGPA.

- b) Full fee shall be charged for any withdrawn course(s) and not more than two (2) courses can be withdrawn in one semester. Likewise, the same course cannot be withdrawn twice.
- c) Grade "W" will be mentioned in the transcript for any withdrawn courses and it will not be counted in the calculation of the CGPA/SGPA.

14. Incomplete Grade:

- a) A student can be allowed "Incomplete" grade in any subject to allow him/her not to appear in the final examination by head of the institute (with the consent of respective teacher and Department Chairman/Program Coordinator) after being satisfied that the concerned student has a genuine reason, beyond any doubt, that disables him/her to appear in final examination.
- b) In case of any valid unforeseen event, the application for incomplete grade must be submitted within two days of conduction of exam along with supporting document.
- c) A student may only be allowed for incomplete grade if he/she has passed mid-term exams.
- d) The student with incomplete grade has to take that course in later semesters, and he/she shall be required to appear in the final examination only with the recommendation of head of the concerned teaching department for approval by Director of Institute.
- e) Grade "I" shall be assigned for approved "Incomplete" subject(s). No fee shall be charged to the student for re-registering the same course(s) in the subsequent semester.

15. Additional course(s):

Students may be allowed 'additional courses' (shall be 'separately mentioned on student transcript') of their interest upon recommendation of respective Department Chairman/Program Coordinator and approval of Director of the institute. In case, if a student gets average grade in an elective subject, and he/she registers in another (but approved) elective subject then, the 'highest grade marks in any of the subject' shall be acceptable for GPA calculation.

16. Semester Drop / Temporary Suspension:

Temporary suspension is allowed to students facing acute domestic problems / valid reasons subject to the approval of head of institute on the positive recommendations of concerned Department Chairman/Program Coordinator. During suspension period, the student shall be required to pay semester charges as "Retention Fee" for each suspended/missed semesters whether undergraduate or postgraduate programs to continue his/her registration with FEST. Semester drop / leave of absence application for whole semester will be accepted within Add/Drop Phase in a semester. This period will also be counted in total candidature period. Admission cancellation shall be provoked in case of 01year un-approved absence by student.

17. Transfer of credits from other University/Institution:

- The other institution from where a student wants to transfer to FEST must be an accredited PEC institute (for BE programs) and HEC recognized institute/university (in case of transfer into BS program).
- The courses completed by the student at other institution will be compared with similar courses being offered at HIET by the Academic Officer on the recommendation of Department Chair/Program Coordinator and Director HIET. Dean FEST will be the final approving authority to issue the equivalency certificate. Any deficiency shall have to be removed by the student.

- Transfer of Credit hours: Only course secured with 'A', 'B' or 'C' grades can be transferable. This reflects on a 'Numerical Grade' as minimum 61%.
- Not more than 50% of the credits can be transferable. Letter grades of the acceptable courses shall be marked as 'TC' grades on equivalency and transcript with name of migrating institute and shall not be counted in the calculation of CGPA.
- The student has to fulfill all admission requirements and pay the following fee as per university policy:
 - Prospectus / Application Package Fee
 - Migration, Admission and Semester Fee
 - Other Registration & Enrollment requirements.

18. Disciplinary Policy:

Students have to follow a code of conduct, abide by the rules and regulations of the University and institute towards maintaining an academic and comfortable environment at the campus. In case of any misconduct or abuse, student has to appear in person before disciplinary committee for the hearing which shall then decide a suitable action against the student as deemed necessary and he/she has call for

disciplinary action; which may amount to imposition of fine, suspension, expulsion, or disqualification of a student from any academic honor such as award of gold medal, scholarship, etc. The following will call for disciplinary action:

- Failure to meet the University code of conduct, disregard or disobedience of rules of the University or authority whether alone or in association with others.
- Objectionable conduct/ involvement in activities like ragging, use of unfair means or breach of norms or others which are against interest and reputation of the University.
- Improper behavior in or outside the classroom.
- Any act of dishonesty including submission of false documents and deliberate misreporting.

Note: All activities shall be governed by the rules and regulations of the University. In case of ambiguity or non-existence of rules, the final authority for interpretation and decision shall rest with the University. The Institute reserves the right to change and amend any academic rule as and when required.



Bachelor of Engineering (Biomedical)

Quality of life is definitely more superior to what it was in the past. This is due to present day advancements in the field of Biomedical Engineering. This discipline provides advanced tools and gadgets to monitor body functions and also the systems which correct malfunctions. A four-year undergraduate program provides the opportunities to the students desirous of adopting Biomedical Engineering as their profession. Hamdard University enjoys the advantage of fully functional and vibrant colleges of Medicine, Pharmacy and Eastern Medicine to complement the relevant aspects of this course.

Program Summary

Duration of the program	4 Years
Number of semesters	8
Number of courses per Semester	5 or 6
Total number of courses	42 + Final Year Project
Total credit hours	138

Recommended Plan of Studies for Bachelor of Engineering (Biomedical)

SEMESTER-1				SEMESTER-2			
Course ID	Course Title	Cr. Hr.	Pre-Req	Course ID	Course Title	Cr. Hr.	Pre-Req
NS-111	Applied Physics	2+1	-	HS-121	Islamic Studies	2+0	-
CSE-111	Introduction to Computing	2+1	-	NS-121	Calculus & Analytical Geometry	3+0	-
EE-111	Basic Electrical Engineering	3+1	-	BME-122	Physiology I	2+1	-
NS-112	Basic Mathematics (for Pre-Medical)	4+0	-	EE -121	Circuit Analysis	3+1	-
NS-113	Basic Biology (for Pre-Engineering)	4+0	-	CSE-121	Object Oriented Programming	2+1	-
BME-111	Introduction to Biomedical Engineering	1+0	-	BM-121	Human Anatomy	2+1	-
HS-111	Pakistan Studies	2+0		Total credits		18	
Total credits		17					
SEMESTER-3				SEMESTER-4			
Course ID	Course Title	Cr. Hr.	Pre-Req	Course ID	Course Title	Cr. Hr.	Pre-Req
NS-211	Complex Variable & Transformation	3+0	-	BME-221	Biomedical Electronics	3+1	EE-211
BME-212	Physiology II	2+1	BME-122	EE-221	Digital Logic Design	3+1	-
BME-211	Biochemistry	2+1	-	NS-221	Linear Algebra & Differential Equation	3+0	-
EE-211	Basic Electronics	3+1		BME-222	Biomechanics	3+1	-
CSE-211	Computer Aided Engineering Drawing	0+1	-	EE-222	Signals and Systems	3+1	-
HS-211	Communication Skills	2+0	-	Total credits		19	
Total credits		16					
SEMESTER-5				SEMESTER-6			
Course ID	Course Title	Cr. Hr.	Pre-Req	Course ID	Course Title	Cr. Hr.	Pre-Req
BME-311	Biomedical Instrumentation 1	3+1	-	BME-321	Biomedical Instrumentation II	3+1	BME-311
NS-312	Probability and Statistics	3+0		BME-32X	Elective-I	3+0	-
NS-311	Numerical Methods	3+0		BME-323	Biomedical Control Systems	3+1	-
EE-311	Microprocessors and Interfacing	2+1		CSE-321	Modelling & Simulation	2+1	-
BME-312	Biomedical Signal Processing	3+1	EE-222	BME-322	Biomaterials	3+1	-
Total credits		17		Total credits		18	
SEMESTER-7				SEMESTER-8			
Course ID	Course Title	Cr. Hr.	Pre-Req	Course ID	Course Title	Cr. Hr.	Pre-Req
MS-411	Engineering Management	3+0	-	BME-42X	Elective-IV	3+0	-
BME-412	Medical Imaging	2+1	-	HS-411	Professional Practices & Ethics	3+0	-
BME-41X	Elective-II	3+0	-	BME-42X	Elective-V	3+0	-
BME-41X	Elective-III	3+0	-	MS-422	Entrepreneurship	3+0	-
HS-411	Technical Report Writing	3+0	-	BME-421	Final Year Project (Phase II)	0+3	BME-411
BME-411	Final Year Project (Phase I)	0+3		Total credits		15	
Total credits		18					

List of Elective Courses:

Track 1		Track 2		Track 3	
Instrumentation		Tissue Engineering and Molecular Bioengineering		Biomedical Computing	
Semester-6					
BME-324	Power Electronics	BME-325	Biophysics	BME-326	Telemedicine Systems
BME-327	Bioelectricity	BME-320	Regenerative Medicine	BME-327	Bioinformatics
		BME-328	Drug Delivery Systems		
Semester-7					
BME-413	Rehabilitation Engineering	BME-410	Tissue Engineering	BME-418	Medical Data System
BME-414	Medical Robotics	BME-415	BioFluid Mechanics & BioHeat Transfer	BME-419	Artificial Intelligence
BME-417	Medical Device Quality System and Standards	BME-416	Neuroscience		
Semester-8					
BME-424	Biomedical Engineering Systems	BME-420	Genetic Engineering	BME-422	Medical Image Processing
BME-425	Medical Device Regulatory Affairs	BME-428	DNA Computing	BME-423	Hospital Information System
		BME-429	Nano Biotechnology	BME-426	Computational Fluid Dynamics

Bachelor of Engineering (Computer System)

The program focuses on design and development of computer systems and computer integrated systems, with due consideration to such engineering factors as function, performance and cost. The program strives to interweave & span topics from formal specifications to heuristic algorithm development; from systems architecture to computer design; from interface electronics to software development, especially real-time applications; and from computer networking to VLSI implementation.

Program Summary

Duration of the program	4 Years
Number of semesters	8
Number of courses per Semester	5 or 6
Total number of courses	40 + Final Year Project
Total credit hours	137

Recommended Plan of Studies B.E. (Computer System)

SEMESTER-1				SEMESTER-2			
Course Code	Course Title	Cr. Hr.	Pre-Req	Course Code	Course Title	Cr. Hr.	Pre-Req
NS-111	Calculus and Analytical Geometry	3+0		NS-121	Differential Equations	3+0	NS-111
CSE-111	Introduction to Computing	2+1		CSE-122	Circuit Analysis	3+1	Nil
CSE-112	Workshop Practice	0+1		CSE-121	Computer Programming	3+1	CSE-111
NS-112	Applied Physics	3+1		EE-121	Electronic Devices and Circuits	3+1	Nil
HS-111	Functional English	3+0		HS-121	Communication Skills	3+0	HS-111
HS-112	Islamic Studies / Ethical Behavior	2+0		Total credits		18	
Total credits		16					
SEMESTER-3				SEMESTER-4			
Course Code	Course Title	Cr. Hr.	Pre-Req	Course Code	Course Title	Cr. Hr.	Pre-Req
NS-211	Multivariable Calculus	3+0	NS-111	EE-221	Signals and Systems	3+1	Nil
CSE-211	Digital Logic Design	3+1	Nil	MS-xxx	Management Elective	3+0	Nil
CSE-212	Object Oriented Programming	3+1	CSE-121	CSE-221	Data Structures and Algorithm	3+1	CSE-212
NS-212	Discrete Structures	3+0	Nil	NS-221	Linear Algebra	3+0	NS-111
CSE-213	Computer Aided Engineering Drawing	0+1	Nil	CSE-222	Computer Architecture and Organization	3+0	Nil
HS-211	Pakistan Studies	2+0	Nil	Total credits		17	
Total credits		17					
SEMESTER-5				SEMESTER-6			
Course Code	Course Title	Cr. Hr.	Pre-Req	Course Code	Course Title	Cr. Hr.	Pre-Req
CSE-311	Probability and Statistics	3+0	NS-111	CSE-321	Operating Systems	3+1	CSE-111
CSE-312	Microprocessor and Interfacing	3+1	CSE-222	CSE-322	Digital System Design	3+1	CSE-211
HS-311	Technical Report Writing	3+0	Nil	CSE-323	Software Engineering	3+0	CSE-221
CSE-313	Data Communication and Computer Networks	3+1	CSE-111	IDEE-32x	IDEE-1	3+0	xx-xxx
CSE-314	Database Management Systems	3+1	CSE-221	CSE-XXX	Elective I	3+1	XXX-XXX
Total credits		18		Total credits		18	
SEMESTER-7				SEMESTER-8			
Course Code	Course Title	Cr. Hr.	Pre-Req	Course Code	Course Title	Cr. Hr.	Pre-Req
CSE-411	Final Year Project Part-I	0+3	Nil	CSE-429	Final Year Project Part-II	0+3	CSE-411
CSE-xxx	Elective-II	3+1	xxx-xxx	CSE-XXX	Elective-IV	3+0	CSE-XXX
CSE-xxx	Elective-III	3+0	xxx-xxx	IDEE-42x	IDEE-2	3+1	xxx-xxx
MS-411	Entrepreneurship	3+0	Nil	HS-xxx	Social Science Elective	3+0	Nil
EE-321	Digital Signal Processing	3+1	EE-221	HS-421	Professional Practice and Engineering Ethics	3+0	Nil
Total credits		17		Total credits		16	

ELECTIVES (3+1)				ELECTIVES (3+0)			
Course Code	Course Title	Cr. Hr.	Pre-Req	Course Code	Course Title	Cr. Hr.	Pre-Req
CSE-324	Instrumentation and Measurements	3+1	EE-121	CSE-416	Theory of Automata	3+0	NS-212
CSE-325	Web Engineering	3+1	CSE-121	CSE-421	Compiler Design	3+0	CSE-416
CSE-326	Artificial Intelligence	3+1	NS-212	CSE-417	Computer Security and Cryptography	3+0	CSE-313
CSE-327	Embedded Systems	3+1	CSE-312	CSE-418	Real-Time Systems	3+0	CSE-321
CSE-412	FPGA based System Design	3+1	CSE-322	CSE-422	Parallel and Distributed Computing Systems	3+0	CSE-312
CSE-413	Power Electronics	3+1	EE-121	CSE-423	Digital Image Processing	3+0	EE-321
CSE-414	Advanced Programming	3+1	CSE-121	CSE-419	Global Information System & Remote Sensing	3+0	CSE-314
CSE-415	Software Project Management	3+1	CSE-323	CSE-424	Software Quality Assurance	3+0	CSE-323
IDEE (3+1)				IDEE (3+0)			
Course Code	Course Title	Cr. Hr.	Pre-Req	Course Code	Course Title	Cr. Hr.	Pre-Req
IDEE-421	Modeling and Simulation	3+1	NS-122	IDEE-321	Numerical Analysis	3+0	NS-121
IDEE-422	Control Engineering	3+1	EE-221	IDEE-322	Fault Tolerant Systems	3+0	CSE-211
IDEE-423	Introduction to Mechatronics	3+1	NS-121	IDEE-323	Robotics	3+0	NS-221
IDEE-424	Communication Systems	3+1	EE-221, CSE-311	IDEE-324	Rehabilitation Engineering	3+0	CSE-312
IDEE-425	Bio-Medical Instrumentation	3+1	EE-121	IDEE-325	Neural Networks and Fuzzy Logic	3+0	NS-221

Social Science Electives (3+0)			
Course Code	Course Title	Cr. Hr.	Pre-Req
HS-422	Foreign Language	3+0	Nil
HS-423	Sociology	3+0	Nil
HS-424	Cyber Crimes and Law	3+0	Nil
HS-425	Art and Graphics	3+0	Nil
Management Electives (3+0)			
Course Code	Course Title	Cr. Hr.	Pre-Req
MS-221	Engineering Economics and Management	3+0	Nil
MS-222	Organizational Behavior	3+0	Nil
MS-223	Principles of Management	3+0	Nil

Bachelor of Engineering (Electrical)

The Electrical Engineering Program prepares students for employment in the electronic industry by emphasizing analysis, applied design, hands-on-experience and communication skills. Graduates can apply their knowledge for a broad range of opportunities available in industrial, commercial, and governmental organizations. Students are offered a wide assortment of training in electrical network analysis, linear control system, power distribution and utilization, electrical power transmission, power system analysis, renewable energy systems, advanced electrical machine design, power electronics, communication systems, digital signal processing, and industrial electronics.

Program Summary

Duration of the program	4 Years
Number of semesters	8
Number of courses per Semester	5 or 6
Total number of courses	41+ Final Year Project
Total credit hours	138

Recommended Plan of Studies for Bachelor of Engineering (Electrical)

SEMESTER-1			SEMESTER-2		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
HS - 111	Functional English	3+0	HS - 121	Islamic Studies / Ethical Behavior	3+0
NS - 111	Calculus and Analytical Geometry	3+0	HS - 122	Communication Skills	2+0
NS - 112	Applied Physics	3+1	EG - 121	Engineering Mechanics	3+0
CSE - 111	Introduction to Computing	2+1	NS - 122	Differential Equations	2+1
EE - 111	Linear Circuit Analysis	3+1	CSE - 121	Programming Fundamentals	3+1
EE - 112	Computer Aided Engineering Drawing	0+1	EE - 121	Basic Electronics	3+0
Total credits		18	Total credits		17
SEMESTER-3			SEMESTER-4		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
HS - 211	Pakistan Studies	2+0	NS - 221	Multivariable Calculus	3+0
EE - 214	Workshop Practice	0+1	CSE - 221	Data Structures and Algorithms	3+1
EE - 211	Digital Logic Design	3+1	EE - 221	Signals and Systems	3+1
EE - 212	Electrical Network Analysis	3+1	EE - 222	Probability and Statistics	3+0
EE - 213	Electronic Devices and Circuits	3+1	HS - 221	Engineering Ethics	3+0
NS - 212	Linear Algebra	2+0	EG - 221	Thermodynamics	2+0
Total credits		17	Total credits		19
SEMESTER-5			SEMESTER-6		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
NS - 311	Numerical Analysis	3+0	MS - 321	Engineering Economics and Management	3+0
EE - 311	Microprocessors and Microcontrollers	3+1	EE - 322	Linear Control System	3+1
EE - 312	Communication Systems	3+1	EE - 321	Electrical Machines	3+1
EE - 31X	Breadth Elective I	3+1	EE - 323	Breadth Elective II	3+1
EE - 315	Electromagnetic Field Theory	3+0	EE - 32X	Depth Elective I	3+0/1
Total Credits		18	Total Credits		19
SEMESTER-7			SEMESTER-8		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
HS - 411	Technical Report Writing	3+0	HS - 421	Organizational Behavior	3+0
MS - 411	Project Management	3+0	EE - 42X	Depth Elective IV	3+0
EE - 41X	Depth Elective II	3+0/1	EE - 42X	Depth Elective V	3+0
EE - 41X	Depth Elective III	3+0	EE - 421	Final Year Project Part-II	0+3
EE - 411	Final Year Project Part-I	0+3	Total Credits		13
Total Credits		16			
Breadth Elective I (Fifth Semester)			Breadth Elective II (Sixth Semester)		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
EE - 316	Electronic Circuit Design	3+1	EE - 323	Instrumentation and Measurements	3+1
EE - 317	Power Distribution and Utilization	3+1	EE - 324	Computer Communication Networks	3+1

Depth Electives Pool			Depth Electives Pool		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
EE - 418	Advanced Electrical Machines	3+1	EE - 32X	Fiber Optic Communications and Devices	3+0
EE - 426	Power Electronics	3+1	EE - 32X	Wireless and Mobile Communications	3+0
EE - 41X	Power System Analysis	3+1	EE - 32X	Satellite Communications	3+0
EE - 41X	Electrical Power Transmission	3+1	EE - 32X	Information Theory and Coding	3+0
EE - 325	Digital Signal Processing	3+1	EE - 32X	Transmission and Switching Systems	3+0
EE - 422	Industrial Electronics	3+1	EE - 32X	Spread Spectrum Communications	3+0
EE - 41X	Renewable Energy Systems	3+1	EE - 32X	Next Generation Networks	3+0
EE - 415	Solid State Devices	3+1	EE - 42X	Advanced Electrical Machine Design	3+0
EE - 423	Digital Image Processing	3+1	EE - 322	Digital Control Systems	3+0
EE - 326	Digital Communication	3+1	EE - 42X	Power Generation	3+0
EE - 41X	Power System Analysis	3+1	EE - 42X	Power System Reliability	3+0
EE - 424	Wave Propagation and Antenna	3+1	EE - 42X	Power Generation Economics	3+0
EE - 41X	RF and Microwave Engineering	3+1	EE - 42X	Power System Restructuring	3+0
EE - 415	VLSI Design	3+1	EE - 42X	Energy Management	3+0
EE - 41X	Integrated Electronic Circuits	3+1	EE - 322	Modern Electric Drive	3+0

Bachelor of Engineering (Electronics) The Electronic Engineering Program prepares students for employment in electronic industry by emphasizing analysis, applied design, hands-on-experience and communication skills. Graduates can apply their knowledge of electronic engineering in a variety of industries, such as aerospace, power, communications biomedical, computers etc. Students are offered a wide range of training in basic electronics, electronic instrumentation, testing and measurement, controls, microprocessors, biomedical electronics, communication systems and VLSI.	Program Summary	
	Duration of the program	4 Years
	Number of semesters	8
	Number of courses per Semester	5 or 6
	Total number of courses	39+ Final Year Project
	Total credit hours	136

Recommended Plan of Studies For Bachelor of Engineering (Electronics)

SEMESTER-1				SEMESTER-2			
Code	Course Title	Cr. Hrs.	Pre-Req	Code	Course Title	Cr. Hrs.	Pre-Req
HS-111	Functional English (English-I)	3+0	Nil	HS-121	Communication Skills (English-II)	3+0	Nil
NS-111	Calculus and Analytical Geometry (Math-I)	3+0	Nil	HS-122	Pakistan Studies (Humanities)	2+0	Nil
NS-112	Applied Physics (Natural Sciences)	3+1	Nil	NS-121	Linear Algebra (Math-II)	3+0	NS-111
CS-111	Computer Fundamentals and Programming (Computing/ Fundamentals)	2+1	Nil	EE-121	Solid State Electronics (Engineering Fundamentals-III)	2+0	Nil
EE-111	Linear Circuit Analysis (Engineering Fundamentals-I)	3+1	Nil	CS-121	Object Oriented Programming (Computing/Programming)	3+1	CS-111
CS-112	Computer-Aided Engineering Design (Computing/Design)	0+1	Nil	EE-122	Electronic Devices and Circuits (Engineering Foundation-IV)	3+1	NS-112 EE-111
Total Credits		14+4		Total Credits		16+2	
SEMESTER-3				SEMESTER-4			
Code	Course Title	Cr. Hrs.	Pre-Req	Code	Course Title	Cr. Hrs.	Pre-Req
NS-211	Differential Equations (Math-III)	3+0	NS-111 NS-121	NS221	Complex Variables and Transforms (Math-IV)	3+0	NS-121 NS-211
EE-211	Electronics Workbench (Engineering Fundamentals-II)	0+1	Nil	HS-221	Islamic Studies (Humanities)	2+0	Nil
EE-212	Electrical Network Analysis (Engineering Foundation-VII)	3+1	EE-111	EE-221	Electronic Circuit Design (Engineering Foundation-V)	3+1	EE-122
EE-213	Instrumentation and Measurements (Breadth-I)	3+1	EE-111	EE-222	Probability and Random Variables	3+0	Nil
EE-214	Digital Logic Design (Engineering Foundation-VI)	3+1	Nil	EE-223	Microprocessors and Microcontrollers (Breadth-III)	3+1	EE-214
Total Credits		12+4		Total Credits		14+2	

SEMESTER-5				SEMESTER-6			
Code	Course Title	Cr. Hrs.	Pre-Req	Code	Course Title	Cr. Hrs.	Pre-Req
NS-311	Social Sciences-I (Humanities)	3+0	Nil	HS-321	Technical Report Writing and Presentation Skills (Humanities)	3+0	Nil
EE-311	Integrated Electronics (Breadth-II)	3+1	Nil	HS-322	Social Sciences-II (Humanities) Critical thinking	3+0	Nil
EE-312	Electromagnetic Field Theory (Engineering Foundation-VIII)	3+0	NS221	EE-321	Digital Signal Processing (Depth I)	3+1	EE-313
EE-313	Signals and Systems (Breadth-IV)	3+1	EE-212	IDEE-321 EE-32x	Analog and Digital Communications (IDEE-I)	3+1	EE-221 EE-313
EE-314	Electrical Machines (Breadth-V)	3+1	EE-212	EE-322	Control Systems (Breadth-VI)	3+1	EE-212 EE-313
Total Credits		15+3		Total Credits		15+3	
SEMESTER-7				SEMESTER-8			
Code	Course Title	Cr. Hrs.	Pre-Req	Code	Course Title	Cr. Hrs.	Pre-Req
MS-411	Engineering Economics	3+0	Nil	MS-421	Management Sciences (Elective)		
EE-412	Elective I (Depth II)	3+1	EE-221	EE-421	Elective III (Depth IV)	3+1	EE-412
EE-41x	Elective II (Depth III)	3+0/1	EE-xxx	EE-42x	Elective IV (Depth V)	3+0/1	EE-xxx
IDEE-411	IDEE-II	3+0/1	Nil	EE-423	Electronic Engineering Project	0+3	Nil
EE-413	Electronic Engineering Project	0+3	Nil	Total Credits		9+4/5	
Total Credits		12+6					

List of Elective (Depth) Courses			
Course code	Name of Elective (7th semester)	Course code	Name of Elective (8th semester)
BH XXX	Numerical Methods (3+0) *	EE4XX	Wave Propagation and Antennas (3+1)
EE4XX	Digital Control Systems (3+1)	EE4XX	Filter Design (3+1)
EE4XX	Microelectronic Technology (3+1)	EE/CS4XX	Digital Image Processing (3+0)
EE4XX	Digital Instrumentation Systems (3+1)	EE4XX	Introduction to Robotics (3+1)
EE4XX	Advanced Communication Systems (3+0)	CS4XX	Advanced Object Oriented Programming (3+1)
EE4XX	VLSI Design (3+1)	EE/CS4XX	Introduction to Neural Networks (3+0)
EE4XX	FPGA Based System Design (3+1)	EE4XX	Digital System Design (3+1)
EE4XX	Laser and Fiber Optics (3+0)	EE4XX	Operating System Concepts (3+0)
EE4XX	Mobile Communications (3+0)	EE/CS4XX	Computer Communication Networks (3+1)
EE4XX	Satellite Communications (3+0)	EE/CS4XX	Artificial Intelligence (3+1)
EE4XX	Microwave Engineering (3+1)	EE4XX	Embedded System Design (3+0)
EE4XX	Opto Electronics (3+1)	EE4XX	Biomedical Instrumentation (3+1)
EE4XX	Optical Communication Systems (3+0)	EE4XX	Mechatronics Applications (3+0)
List of Social Sciences Electives			
Course code	Name of Elective (7th semester)	Course code	Name of Elective 8th semester)
	Sociology and Development		Professional Psychology
	Social Anthropology		Organizational Behaviour
	Psychology and Human Behaviour		Introduction to Sociology
	Cognitive Science		Introduction to Philosophy
	Methods and Statistics in Social Science		



Bachelor of Engineering (Energy Systems)

Energy Systems Engineering is an emerging field with a global perspective of the energy challenges and aims to prepare students to meet the current demands of energy sector. Domain of Energy Systems Engineering combines the core areas from the field of Mechanical and Electrical Engineering. The program provides fundamental engineering knowledge in areas of energy systems design, energy generation, hybrid energy systems, electrical power systems, conversion, energy management and conservation along with modules on energy sources, energy policy, economics and associated environmental issues.

Graduate students will be able to apply acquired knowledge & skills to be successful professional engineers in various industries engaged in designing, manufacturing and processing in the area of classical power plants, nuclear engineering, refinery engineering, refrigeration & air conditioning and renewable and sustainable energy.

Program Summary

Duration of the program	4 Years
Number of semesters	8
Number of courses per Semester	5 or 6
Total number of courses	43+ Final Year Project
Total credit hours	136

Recommended Plan of Studies For Bachelor of Engineering (Energy Systems)

SEMESTER-1			SEMESTER-2		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
HS - 119	English Composition and Comprehension	3+0	HS - 121	Islamic Studies / Ethics	2+0
NS - 119	Linear Algebra & Calculus	3+0	HS - 129	Communication and presentation Skills	3+0
NS - 112	Applied Physics	2+1	NS - 128	Differential Equations, Power Series, Laplace Transformation	3+0
CSE - 119	Computer Programming and Application in Engineering	2+1	NS - 129	Organic Chemistry	2+1
ESE - 111	Metallurgy & Workshop Practice	2+2	ESE - 121	Principles of Energy Engineering	2+0
ESE - 112	Engineering Drawing, Graphics and CAD	2+1	ESE - 122	Engineering Mechanics	3+1
Total Credits		19	Total Credits		17
SEMESTER-3			SEMESTER-4		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
HS - 119	Pakistan Studies	2+0	MS - 229	Operations Management	2+0
NS - 119	Sociology for Engineers	2+0	NS - 229	Statistics and Probability	3+0
NS - 112	Fluid Mechanics	3+1	ESE - 221	Manufacturing Engineering	2+1
CSE - 119	Electrical Engineering - I	3+1	ESE - 222	Mechanics of Materials	2+1
ESE - 111	Engineering Thermodynamics	3+1	ESE - 223	Heat and Mass Transfer	2+1
ESE - 112	Engineering Numerical Analysis	2+1	ESE - 224	Instrumentation and Controls	3+1
Total Credits		19	Total Credits		18
SEMESTER-5			SEMESTER-6		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
ESE - 311	Solar Energy Systems	2+1	ESE - 321	Hydrogen and Fuels Cells	3+0
ESE - 312	Wind and Hydropower Conversion	3+1	ESE - 322	Bio-Energy Engineering	3+1
ESE - 313	Electrochemical Engineering Fundamentals	2+0	ESE - 323	RS & GIS for Renewable Energy Resources	2+0
ESE - 314	Boiler Engineering and Power Plant	2+1	ESE - 324	Heating, Ventilation and Air Conditioning Systems	3+1
ESE - 315	Electrical Engineering-II	3+0	MS - 329	Entrepreneurship	3+0
NS - 319	Energy and Environment	2+0	Total Credits		16
Total Credits		17			

SEMESTER-7			SEMESTER-8		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
ESE - 411	Energy Conservation	3+0	ESE - 421	Power Electronics	2+1
ESE - 412	I.C. Engines	2+1	ESE - 422	Energy Economics, Policy and Management	3+0
ESE - 41X	Engineering Elective-I	3+0/2+1	ESE - 42X	Engineering Elective-III	3+0
ESE - 41Y	Engineering Elective-II	3+0	ESE - 42Y	Engineering Elective-IV	3+0
ESE - 415	Project and Report- I	0+3	ESE - 425	Project and Report - II	0+3
Total Credits		15	Total Credits		15

**List of Electives:
Non-Engineering Elective Courses:**

SEMESTER-2		
Course Code	Course Title	Cr. Hr.
NS - 318	Psychology and Human Behavior	2+0
HS - 319	Professional Ethics	2+0
NS - 319	Energy And Environment	2+0

(ESE-41X, Engineering Elective-I)			(ESE-41Y, Engineering Elective-II)		
Course Code	Course Title	Course Code	Course Code	Course Title	Course Code
ESE - 413	Renewable Energy Engineering	2+1	ESE - 417	Fuels and Combustion	3+0
ESE - 414	Petroleum and Gas Exploration	3+0	ESE - 418	Environmental Impact Assessment	3+0
ESE - 416	Geothermal and Tidal Energy	3+0	ESE - 419	Theory of Machines	3+0
(ESE-42X, Engineering Elective-III)			(ESE-41Y, Engineering Elective-II)		
Course Code	Course Title	Course Code	Course Code	Course Title	Course Code
ESE - 423	Nuclear Energy Engineering	3+0	ESE - 426	Clean Coal Technology	3+0
ESE- 424	Nano Technology and Energy	3+0	ESE - 427	Machine Design	3+0
ESE - 428	Photoactive Materials and their Characterization	3+0			

Bachelor of Engineering (Mechanical)

Mechanical Engineering, being mother field of engineering, involves designing, developing, installing, operating and maintaining mechanical systems which covers machines, engines and almost all systems with moving components. It plays a key role in development of the systems for benefit of humankind. It is a diverse engineering discipline which offers an exciting environment where many skills are brought together to create innovative products, infrastructure and technology for manufacture. It provides many career opportunities in a rapidly changing technologies and industrial practices.

Mechanical Engineering prepare graduates for careers in manufacturing processes and mechanical systems, manufacturing of products, as well as designing new technologies, such as high-tech vehicles, oil platforms, power plants, etc. and intelligent systems for energy conversions to utilize alternative energy resources.

The program inculcates academic knowledge, complementary professional and personal skills needed to work in the mechanical engineering industry, develop students with intellectual & practical skills to design solutions to real problems.

The theoretical knowledge is complemented by practical skill in using industry standard tools and equipment. Moreover, familiarization and application of different software such as ANSYS, Pro Engineer, Fluent and Matlab. Is also provided to students.

Program Summary

Duration of the program	4 Years
Number of semesters	8
Number of courses per Semester	6 or 7
Total number of courses	55+ Final Year Project
Total credit hours	136

Recommended Plan of Studies For Bachelor of Engineering (Mechanical)

SEMESTER-1				SEMESTER-2			
Course Code	Course Title	Pre-Req	Cr. Hr.	Course Code	Course Title	Pre-Req	Cr. Hr.
NS-114	Calculus-I	-	3+0	NS-129	Calculus-II	-	3+0
NS-112	Applied Physics	-	2+1	HS-129	Communication Skills	-	2+0
NS-113	Applied Chemistry	-	2+0	EE-119	Electrical Engineering	NS-112	2+1
HS-119	Functional English	-	2+0	ME-122	Engineering Materials	-	3+0
CSE-119	Computer Systems and Programming	-	2+1	ME-124	Engineering Mechanics-I: Statics	-	3+0
ME-112	Engineering Drawing and Graphics	-	1+1	ME-125	Computer Aided Drawing	-	0+1
ME-113	Introduction to Engineering	-	1+0	ME-126	Workshop Practice	-	0+2
Total credits		13+3=16		Total credits		13+4=17	
SEMESTER-3				SEMESTER-4			
Course Code	Course Title	Pre-Req	Cr. Hr.	Course Code	Course Title	Pre-Req	Cr. Hr.
NS-219	Linear Algebra and Differential Equations	NS-114	3+0	EE-229	Electronics Engineering	EE-119	2+1
HS-211	Pakistan Studies	-	2+0	HS-22X	Social Sciences Elective	-	2+0
ME-212	Thermodynamics – I	-	3+0	ME-223	Mechanics of Materials – II	ME-213	3+0
ME-213	Mechanics of Materials – I	ME-124	3+0	ME-224	Thermodynamics – II	ME-212	3+0
ME-216	Engineering Mechanics-II: Dynamics	-	3+0	ME-225	Machine Design – I	-	3+0
ME-217	Engineering Mechanics Lab	-	0+1	ME-226	Fluid Mechanics – I	ME-124	3+0
HS-219	Technical Report Writing and Presentation Skills	-	1+1	ME-227	Mechanics of Materials Lab	-	0+1
				ME-228	Thermodynamics Lab	-	0+1
Total credits		15+2=17		Total credits		16+3=19	
SEMESTER-5				SEMESTER-6			
Course Code	Course Title	Pre-Req	Cr. Hr.	Course Code	Course Title	Pre-Req	Cr. Hr.
NS-319	Numerical Analysis	NS-114	2+1	NS-212	Probability and Statistics	-	3+0
ME-313	Manufacturing Processes	-	3+1	MS-328	Health, Safety & Environment	-	1+0
ME-314	Heat and Mass Transfer	ME-212	3+0	ME-324	Control Engineering	-	3+1
ME-315	Fluid Mechanics – II	ME-226	3+0	ME-325	Mechanics of Machines	ME-211	3+0
ME-316	Machine Design – II	ME-225	2+0	ME-326	Heating, Ventilation and Air Conditioning	ME-212	3+0
ME-317	Instrumentation and Measurement	-	2+1	ME-3TX	Technical Elective - I	-	2+0
ME-318	Fluid Mechanics Lab	-	0+1	ME-327	Heat Transfer and HVAC Lab	-	0+1
Total credits		15+4=19		Total credits		15+2=17	
SEMESTER-7				SEMESTER-8			
Course Code	Course Title	Pre-Req	Cr. Hr.	Course Code	Course Title	Pre-Req	Cr. Hr.
MS-318	Engineering Economics	-	2+0	HS-121	Islamic Studies/ Ethics	-	2+0
ME-41P	Senior Design Project – I	-	0+3	MS-429	Entrepreneurship	-	1+0
ME-411	Internal Combustion Engines	ME-212	3+0	MS-42X	Management Elective	-	2+0
ME-432	Mechanical Vibrations	-	3+0	ME-42P	Senior Design Project – II	-	0+3
ME-416	Introduction to Finite Element Analysis	-	2+1	ME-428	Power Plants	ME-224	3+0
ME-4TX	Technical Elective - II	-	2+0	ME-4YT	Technical Elective - III	-	2+0
ME-410	Mechanisms and Mechanical Vibrations Lab	-	0+1	ME-420	IC Engines & Power Plants Lab	-	0+1
Total credits		12+5=17		Total credits		10+4=14	

List of Social Sciences Electives (HS-22X)

Course Code	Course Title	Pre-Req	Cr. Hr.	Course Code	Course Title	Pre-Req	Cr. Hr.
HS-224	Professional Ethics	-	2+0	HS-227	Introduction to Sociology	-	2+0
HS-225	Organizational Behavior	-	2+0	HS-228	Professional Psychology	-	2+0
HS-226	Critical Thinking	-	2+0	HS-229	Social Anthropology	-	2+0

List of Management Electives (MS-42X)

Course Code	Course Title	Pre-Req	Cr. Hr.	Course Code	Course Title	Pre-Req	Cr. Hr.
MS-424	Project Management	-	2+0	MS-427	Operations Research	-	2+0
MS-425	Operations Management	-	2+0	MS-428	Engineering Law	-	2+0
MS-426	Total Quality Management	-	2+0				

List of Technical Electives-I (ME-3TX)

Course Code	Course Title	Pre-Req	Cr. Hr.	Course Code	Course Title	Pre-Req	Cr. Hr.
ME-3T1	Renewable Energy Technology	-	2+0	ME-3T3	Computational Fluid Dynamics	-	2+0
ME-3T2	Automation and Robotics	-	2+0	ME-3T4	Tribology	-	2+0

List of Technical Electives-II (ME-4TX)

Course Code	Course Title	Pre-Req	Cr. Hr.	Course Code	Course Title	Pre-Req	Cr. Hr.
ME-4T1	Introduction to Mechatronics	-	2+0	ME-4T3	Nuclear Engineering	-	2+0
ME-4T2	Mechanical Engineering Design	-	2+0	ME-4T4	Stress Analysis	-	2+0

List of Technical Electives-III (ME-4YT)

Course Code	Course Title	Pre-Req	Cr. Hr.	Course Code	Course Title	Pre-Req	Cr. Hr.
ME-41T	Maintenance Engineering	-	2+0	ME-43T	Aerodynamics	-	2+0
ME-42T	Gas Dynamics	-	2+0	ME-44T	Special topic in Mechanical Engg.	-	2+0



<p>Bachelor of Science (Computer Science) The BS (Computer Science) program at the Faculty of Engineering Sciences and Technology emphasizes on developing strength of technical preparation and produce graduates highly capable of working in computer industry and pursuing graduate studies in Computer Science.</p> <p>Computer Science is concerned with the study of the hardware, software and theoretical aspects of high-speed computing devices and with the application of these devices to solve scientific, technological, and business problems. Basically, the program requires scholars to take courses in programming, data structures, algorithms, numerical computation, databases, and operating systems, programming languages, software engineering and automata theory. The students are given the option to take specialization in Mobile & Web Application Development, Computer Networks & Information Security and Ubiquitous Computing.</p>	Program Summary	
	Duration of the program	4 Years
	Number of semesters	8
	Average number of courses per Semester	5 or 6
	Total number of courses	41 + Final Year Project
Total credit hours	135	

Recommended Plan of Studies For Bachelor of Science (Computer Science)

SEMESTER-1			SEMESTER-2		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
NS - 111	Calculus and Analytical Geometry	3+0	NS - 121	Multivariable Calculus	3+0
CS - 111	Introduction to Computing	2+1	CS - 121	Programming Fundamentals	3+1
HS - 111	Functional English	3+0	CS - 122	Discrete Structures	3+0
CS - 112	Basic Electronics	2+1	HS - 121	Communication Skills	3+0
HS - 112	Pakistan Studies	2+0	MG/SS-XXX	University Elective – I	3+0
HS - 113	Islamic Studies/Ethical Behavior	2+0	Total Credits		16
Total Credits		16			
SEMESTER-3			SEMESTER-4		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
NS - 211	Linear Algebra	3+0	CS - 221	Data Structures and Algorithms	3+1
CS - 211	Digital Logic Design	3+1	CS - 222	Data Communication and Computer Networks	3+1
CS - 212	Object Oriented Programming	3+1	CS - 223	Microprocessor and Assembly Language	3+1
NS - 212	Probability and Statistics	3+0	NS - 221	Differential Equations	3+0
MG/SS-XXX	University Elective – II	3+0	MG/SS-XXX	University Elective – III	3+0
Total Credits		17	Total Credits		18
SEMESTER-5			SEMESTER-6		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
CS - 311	Database Systems	3+1	CS - 321	Theory of Automata	3+0
CS - 312	Introduction to Software Engineering	3+0	CS - 322	Design and Analysis of Algorithms	3+0
CS - 313	Operating Systems	3+1	CS - 323	Computer Architecture and Organization	3+0
CS - 314	Numerical Computing	2+1	HS - 321	Technical Report Writing	3+0
MG/SS-XXX	University Elective-IV	3+0	CS - 3XX	CS Elective – I	3+0/ (2+1)
Total Credits		17	CS - 3XX	CS Elective – II	3+0
			Total Credits		18

SEMESTER-7			SEMESTER-8		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
CS - 411	Human Computer Interaction	3+0	HS - 421	Professional Practices	3+0
CS - 412	Compiler Construction	3+0	CS - 421	Information Security	3+0
CS - 413	Artificial Intelligence	3+0	CS - 4XX	CS Elective – V	3+0/ (2+1)
CS - 4XX	CS Elective – III	3+0/ (2+1)	CS - 4XX	CS Elective – VI	3+0/ (2+1)
CS - 4XX	CS Elective – IV	3+0/ (2+1)	CS - 425	Final Year Project – II	0+3
CS - 415	Final Year Project – I	0+3	Total Credits		15
Total Credits		18			

NOTE: Students are required to take at-least 4 courses from specialized stream and the remaining (at max 2) may be taken from Common or other Stream Electives

University Electives			CS Electives		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
MG - 121	Financial Accounting	3+0		Computer Networks and Information Security	
MG - 211	Financial Management	3+0			
MG - 221	Principles of Management and Economics	3+0	CS - 361	Wireless Networks	3+0
MG - 222	Marketing and Management	3+0	CS - 362	Ad-hoc Networks	3+0
MG - 311	Human Resource Management	3+0	CS - 363	Cryptography and Network Security	3+0
MG - 312	Entrepreneurship	3+0	CS - 462	Network Management	3+0
SS - 311	Organizational Behavior	3+0	CS - 464	Cloud Computing	3+0
			CS - 465	Multimedia Communications	3+0
CS Electives			CS Electives		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
Common Electives			Ubiquitous Computing		
CS - 331	Advanced Database Management Systems	3+0	CS - 371	Ubiquitous Computing	3+0
CS - 332	Advanced Computer Programming	3+0	CS - 372	Sensor Networks	3+0
CS - 333	Data Science	3+0	CS - 473	Distributed and Parallel Computing	2+1
CS - 434	Modeling and Simulation	3+0	CS - 474	Next Generation Networks	3+0
CS - 432	Digital Image Processing	2+1	CS - 475	Mobile Network Technologies	3+0
CS - 433	Information Systems Audit	3+0	CS - 476	Context Aware Applications	3+0
CS - 434	Operations Research	3+0	CS - 477	Computer Vision	3+0
CS - 436	Fuzzy Logic	3+0	Software Engineering		
CS - 438	Data Warehousing and Data Mining	3+0	CS - 381	Software Engineering Economics	3+0
CS - 439	Concepts of Programming Languages	3+0	CS - 382	Software Requirement Engineering	3+0
CS - 440	Natural Language Processing	3+0	CS - 383	Software Project Management	3+0
Mobile and Web Application Development			CS - 483	Software Design Patterns	3+0
CS - 351	Web Engineering	2+1	CS - 485	Software Architecture	3+0
CS - 352	Mobile Application Development	2+1	CS - 486	Software Quality Assurance	3+0
CS - 353	Semantic Web	3+0	CS - 487	Business Process Automation	3+0
CS - 453	Mobile Middleware	3+0			
CS - 454	Mobile Databases	3+0			
CS - 456	Computer Graphics	3+0			
CS - 457	Network Programming	2+1			
CS - 458	Advanced Operating Systems	3+0			



Bachelor of Science (Software Engineering)

The BS (Software Engineering) program at the Faculty of Engineering Sciences and Technology emphasizes on developing strength of technical preparation and produce graduates highly capable of working in the software engineering industry and pursuing graduate studies in related areas.

The courses span around Software Engineering, Introduction to Database Systems, Software Engineering Economics, Software Requirement and Specifications, Software Verification and Validation, Software Architecture and Design, Human Computer Interaction, and Software Project Management. Students may choose among the wide variety of electives courses from the Software Engineering Elective and Software Domain Specific Electives pool.

Program Summary

Duration of the program	4 Years
Number of semesters	8
Average number of courses per Semester	5 or 6
Total number of courses	40 + Final Year Project
Total credit hours	131

Recommended Plan of Studies For Bachelor of Science (Software Engineering)

SEMESTER-1			SEMESTER-2		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
NS - 111	Calculus and Analytical Geometry	3+0	NS - 121	Multivariable Calculus	3+0
CS - 111	Introduction to Computing	2+1	CS - 121	Programming Fundamentals	3+1
HS - 111	Functional English	3+0	CS - 122	Discrete Structures	3+0
CS - 112	Basic Electronics	2+1	HS - 121	Communication Skills	3+0
HS - 112	Pakistan Studies	2+0	MG/SS-XXX	University Elective – I	3+0
HS - 113	Islamic Studies/Ethical Behavior	2+0	Total Credits		16
Total Credits		16			
SEMESTER-3			SEMESTER-4		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
NS - 211	Linear Algebra	3+0	CS - 221	Data Structures and Algorithms	3+1
CS - 211	Digital Logic Design	3+1	SE - 221	Object Oriented Software Engineering	3+0
CS - 212	Object Oriented Programming	3+1	CS - 222	Computer Communication and Networks	3+1
SE - 211	Software Engineering	3+0	CS - 223	Introduction to Database Systems	3+1
MG/SS-XXX	University Elective – II	3+0	CS - 224	Software Engineering Economics	3+0
Total Credits		17	Total Credits		18
SEMESTER-5			SEMESTER-6		
SE - 311	Software Requirement and Specifications	3+0	SE - 321	Software Verification and Validation	3+0
SE - 312	Probability and Statistics	3+0	SE - 322	Software Architecture and Design	3+0
CS - 311	Operating Systems	3+1	CS - 322	Human Computer Interaction	3+0
CS/SE - 3XX	SE Elective - I	3+0/(2+1)	HS - 321	Technical Report Writing	3+0
CS/SE - 3XX	SE Elective - II	3+0/ (2+1)	MG/SS-XXX	University Elective –III	3+0
CS - 314	Numerical Computing	2+1	CS - 3XX/ SE - 3XX	SE Domain Elective – I	3+0
Total Credits		18	Total Credits		18
SEMESTER-7			SEMESTER-8		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
CS - 412	Software Project Management	3+0	HS - 421	Professional Practices	3+0
MG/SS-XXX	University Elective –IV	3+0	CS/SE - 4XX	SE Elective – IV	3+0/(2+1)
CS - 4XX/	SE Domain Elective – II	3+0	CS/SE - 4XX	SE Elective – V	3+0/(2+1)
SE - 4XX	SE Elective – III	3+0/	SE - 425	Final Year Project – II	0+3
CS/SE - 4XX	Final Year Project – I	(2+1)	Total Credits		12
Total Credits		15			

University Electives			Supporting Sciences		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
MG - 121	Financial Accounting	3+0	NS - 121	Multivariable Calculus	3+0
MG - 211	Financial Management	3+0	CS - 134	Numerical Computing	3+0
MG - 221	Principles of Management and Economics	3+0	CS- 224	Software Engineering Economics	3+0
MG - 222	Marketing and Management	3+0	SE Domain Specific Electives		
MG - 311	Human Resource Management	3+0	Course Code	Course Title	Cr. Hr.
MG - 312	Entrepreneurship	3+0	SE - 351	Net-Centric Systems	3+0
SS - 311	Organizational Behavior	3+0	SE - 352	System for Small and Mobile Platform	3+0
SE Electives			SE - 353	Information Systems and Data Processing	3+0
Course Code	Course Title	Cr. Hr.	SE - 451	Enterprise Systems Engineering	
CS - 321	Theory of Automata and Formal Languages	2+1	SE - 455	Industrial Process Systems	
CS - 331	Advanced Database Management Systems	3+0	CS - 451	Artificial Intelligence	
CS - 332	Web Engineering	3+0	MG - 451	Financial and E-Commerce	
CS - 333	Data Science	3+0	CE - 451	Systems	
CS - 334	Introduction to Bioinformatics	3+0		Embedded and Real time Systems	
SE - 331	Social Networks	2+1			
SE - 432	Aspect Oriented Software Design	3+0			
SE - 433	Event Driven Programming	3+0			
SE - 434	Functional Programming	3+0			
SE - 435	Formal Methods	2+1			
SE - 436	Software Quality Engineering	3+0			
CS - 433	Information Systems Audit	2+1			
CS - 438	Data Warehousing and Data Mining	3+0			
CS - 450	Mobile Computing	3+0			
CS - 460	Data Security and Encryption	3+0			
CS - 464	Cloud Computing	3+0			
CS - 473	Distributed and Parallel Computing	2+1			



**Graduate School of Engineering Sciences and Information Technology (GSESIT), Karachi
Faculty of Engineering Sciences & Technology (FEST)**

Graduate School of Engineering Sciences and Information Technology (GSESIT) is especially geared towards graduate studies and currently offers Masters, and Ph.D. programs.

FEST, Hamdard University aims to contribute to the society by undertaking education and research in the advanced and in-depth theories and applications of science and technology, promoting collaboration with industry and research institutes, and by producing creative manpower. The Department of Postgraduate Studies at offers graduate programs leading to the Master of Science, Master of Engineering and Doctor of Philosophy degrees with majors in various disciplines of engineering and sciences.

These Postgraduate Programs prepare students to develop a level of knowledge and proficiency to conduct deep research; enabling them to practice at advanced level in their field of choice. The program emphasizes student/ faculty interaction and timely completion of the degree.

The aim of the Postgraduate Program in Engineering and Sciences is to attain theoretical and practical depth in one of the areas of interest. The students enrolled in the postgraduate program would have to specialize in one of the given areas of specialization according to the guidelines.



Department of Postgraduate Studies at GSESIT, FEST, Hamdard University, Karachi

The following programs are offered by the Postgraduate Studies Department:

1	M.E. (Electrical Engineering)	2	M.S. (Computer Science)
	Area of specializations:		Area of specializations:
a	Control and Automation	a	Information and Communication Security
b	Communication Systems and Networks	b	Computer and Communication Networks
c	Computer System	c	Software Engineering
d	Electronics	d	Information Technology
e	Embedded Systems		
f	Power Systems	3	M.S. (Energy and Environment)
g	Telecommunication Systems	4	PhD (Electrical Engineering)
		5	PhD (Computer Science)
		6	PhD (Energy and Environment)

Policy for the Conduct and Award of Masters Degree

1 Eligibility Criteria:

- a 16 years equivalent qualification from HEC recognized institutes in relevant area.
- b Minimum CGPA 2.00/4.00 (2.50/5.00) or 60% marks or equivalent. Percentage will only be counted if CGPA is not mentioned on the transcript.
- c No 2nd division in terminal degree.
- d NTS GAT (General)/GRE (General) or test prescribed by HEC or the university with minimum score of 50.
- e Equivalence certificate from HEC in case of equivalent/foreign degree.

2 Duration of Study:

- a Typical / Average duration of study for MS/ME program: 02 years.
- b Maximum duration of study for MS/ME program: 04 years.

3 Academic Year and Semester:

The academic year is divided into Spring and Fall and an optional summer semester.

4 General Structure for Masters Programs:

- a GSESIT offers two types of Masters Degree: Masters (with coursework only) and Masters (with coursework + thesis). A student must complete 6 credit hours of thesis work under the supervision of a faculty advisor in case of Masters (with coursework + thesis option).
- b Typically Masters Degree programs require earning 30 credit hours depending upon coursework only or coursework + thesis option.

	“Coursework Only” Option	“Coursework + Thesis” Option
Number of semesters	4 (Typical)	4 (Typical)
Program credit hours	30 (Min)	30 (Min)
No. of courses	10	8
Coursework Credit Hrs	30	24
Thesis Cr Hrs	-	6
Credits allowed per semester	• 09 - 12 (max) in Spring/Fall • 03 - 06 (max) in summer	• 09 - 12 (max) in Spring/ Fall • 03 - 06 (max) in summer

- c Independent study provides students the opportunity for in-depth exploration of problems or topics individually with the faculty advisor. Therefore, one Independent Study course (with approved topics) of three credit hours may be allowed to research scholars only. This option requires prior approval of sponsoring faculty advisor, Dy. Director GSESIT and Dean FEST before registering in Independent Study to be sure that the course will be accepted toward the completion of their degree requirements.

5 General Scheme of Studies for Masters Programs:

SEMESTER-1			SEMESTER-2		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
ABC - xxxx	Core- I	3	ABC - xxxx	Core- III	3
ABC - xxxx	Core- II	3	ABC - xxxx	Elective – II	3
ABC - xxxx	Elective – I	3	ABC - xxxx	Elective – III	3
Total Credits		9	Total Credits		9
SEMESTER-3			SEMESTER-4		
Course Code	Course Title	Cr. Hr.	Course Code	Course Title	Cr. Hr.
ABC - xxxx	Elective – IV	3	ABC - xxxx	Thesis	6
ABC - xxxx	Elective – V	3		OR	
Total Credits		6	ABC - xxxx	Elective – VI	3
			ABC - xxxx	Elective – VII	3
			Total Credits		6

Grand Total: 30

6. Course Registration & Enrollment

- a. A student must register each semester (within the prescribed time period) until completion of degree requirements.
- b. Student can register for maximum 03 - 04 courses in a regular semester and 1 – 2 Courses in a summer semester.
- c. Registered course can only be changed within add/drop period with prior approval of Dy. Director GSESIT within 02 week of class commencement.
- d. Student can take maximum of 02 courses from other specialization area subject to permission (if deems appropriate) by Dean of Faculty.
- e. A student may not be allowed course registration in 2nd semester and his/her result will be withheld if he/she fails to clear GRE/NTS GAT/ HU GAT Test prescribed by HEC within first semester. The test validation is of one year from date of admission.

7. Course Add/Drop

- a. A student can add/drop any course (due to any reason) within 02 weeks after commencement of classes. Add/Drop of maximum 02 courses is allowed in one semester.
- b. No fee shall be charged for dropped courses during Add/Drop phase. Fee for the dropped course(s) shall be transferred to next semester in case a student has already paid the fee.

8. Course Withdrawal

- a. A student can apply for withdrawal from any course with the approval of Dy. Director GSESIT two weeks before the final examination.
- b. Full fee shall be charged for any withdrawn course(s). There shall be “no full or partial refund of fee” allowed under any circumstances.
- c. Grade “W” will be mentioned in the transcript for any withdrawn course and will not be counted in the calculation of CGPA/SGPA.
- d. Not more than two courses can be withdrawn in one semester. The same course cannot be withdrawn twice.

9. Incomplete 'I' Grade

- a. After being satisfied that a student has genuine reason beyond any doubt that disables him/her to appear in the final examination, Dean of Faculty; with the consent of respective Director/ Principal and Course teacher, can award grade 'I' to a student in any subject. This provision has been kept for the benefit of a good student who has passed the Mid-Term and has satisfactory attendance. ('I' 'Incomplete')
- b. A student with 'I' grade in a subject, needs to appear in final exam of that subject in later semesters, however, sessional marks will remain the same as in the previous semester.
- c. No fee shall be charged to the student for re-registering in grade “I” subject in subsequent semesters.

10. Migration of Student from other University/Institution

- a. The course(s) completed by the student at other institution (must be a HEC recognized institute/university) will be compared with similar courses being offered at GSESIT by the Admission Committee and if found satisfactory will be recommended for acceptance of credits. Not more than 50% of the coursework is transferable.
- b. Courses with 'B' grade and above are transferable. This reflects on a 'Numerical Grade' as minimum 70%. The student has to fulfill all admission requirements and all other applicable fees as per university policy.

11. Degree Requirements:

Completion of 30 credit hrs with minimum CGPA of 2.50.

12. Grading Policy:

Absolute grading is used at GSESIT as per the following table:

Grading Policy		
Grade	Grade Point	Numerical Grade
A	4.00	85 and above
A-	3.66	80-84
B+	3.33	75-79
B	3.00	71-74
B-	2.66	68-70
C+	2.33	64-67
C	2.00	61-63
C-	1.66	58-60
D+	1.3	54-57
D	1.00	50-53
F	00	Below 50

13. Academic Deficiencies

- a. A student shall be dropped from the program if he/she fails to meet degree requirements within stipulated duration (04 yrs).
- b. On disciplinary grounds.

14. Minimum Attendance Requirements

- a. Minimum 75% attendance is required to appear in subject final examination.
- b. Grade 'F' shall be awarded for short attendance cases

15. Coursework

- a. 03 semesters (24 credit hrs) and thesis (06 credit hrs) or 02 additional courses (06 credit hrs) instead of thesis.
- b. Minimum CGPA to qualify coursework is 2.50/4.00.

16. Improvement of Grades:

Improvement of grades is allowed in all courses having grades up to C+. All terms and conditions for registering in a regular course shall apply.

17. Thesis Work

In addition to 24 credit hrs of course work, MS/ME students optionally complete 06 Cr hrs of research work in lieu of two courses.

18. Academic Dishonesty:

Any plagiarism in MS/ME research work at any stage, even if reported after completion of degree or fake documents submitted by the student, even those submitted at the time of admission shall result in cancellation of MS/ME degree.

Policy for the Conduct and Award of Ph.D. Degree

Admission Requirements:

1. Eligibility Criteria:

- a. 18 years equivalent qualification.
- b. MS/M Phil/Equivalent degree (with 30 Cr Hrs) in relevant field from an HEC recognized university/institute.
- c. Minimum CGPA of 3.00 (out of 4.00 in the semester system) or First Division (in the annual system) in MS/M Phil/Equivalent degree
- d. Equivalence certificate from HEC in case of equivalent/foreign degree.
- e. GRE (Subject) Test with 60% percentile score or NTS/HU GAT /(Subject) or any other HEC- approved equivalent test applicable to selected PhD discipline with minimum 60% score.

2. Schedule of Admission:

Admission in PhD programs shall be announced twice a year i.e. every Fall and Spring semester to select prospective students, however, applications of eligible students having valid GRE (Subject)/NTS GAT (Subject) /HEC approved equivalent test score, will be accepted and processed throughout the year.

3. Application for Admission:

Prospective students will submit Admission Form along with all the documents required for admission processing.

4. Admission Processing:

After initial scrutiny (as per eligibility criteria) Admission Department at GSESIT will forward Admission Form along with Form 16-02-01 (Documents Verification and Interview. See Appendix 'D') to Dy. Director GSESIT for initial interview and recommendations.

5. Evaluation and Acceptance:

Recommendations of the Dy. Director GSESIT will be considered by Departmental Research Committee (DRC). The candidate(s) will appear before DRC for an interview (if required). DRC shall also indicate the condition(s) (if any) that must be fulfilled by the candidate for admission in PhD program. The DRC will take decision regarding suitability or otherwise for provisional admission to PhD. Recommendations of DRC and also the conditions (if any) will be forwarded through Dy. Registrar Academics (DRA) office to Board of Advance Studies and Research (BASR) for the approval of admission in FEST PhD program.

6. Other Considerations:

- a. Work Experience: Some work experience with reputable national or international organizations would be preferred for admission.

- b. Availability of Potential Supervisor:
 - i. Availability of a suitable supervisor and acceptance of candidate by supervisor.
 - ii. Matching of the candidate's area of research with supervisor's expertise.
 - iii. Number of PhD students already registered with the potential supervisor.
- c. Letter of Consent: A letter of consent from potential supervisor would be preferred.
- d. Academic Profile and References:
 - i. The academic profile and references would be given due consideration.
 - ii. Candidates with only outstanding academic career from a local/foreign university/institution of repute shall be considered for admission at FEST.
 - iii. Relevance and strength to PhD program applied for admission and GPA of the courses taken by the candidate during MS/MPhil will be considered.
 - iv. Credentials of the candidate, his/her skills and abilities in the area of interest and his/her research vigor as per the research proposal.
 - v. Out of 30 Cr Hrs of MS/MPhil degree, preferably 6 Cr Hrs should be thesis.
 - vi. The score obtained in international GRE (Subject) Test or NTS/HU GAT (Subject) or HEC approved equivalent test. (i.e 60% score)

- e. Research Support: Availability of requisite laboratory, related equipment, and library support for the conduct of doctoral research.

7. Provisional Admission Status:

- a. Dy. Director GSESIT shall process each case of PhD admission for consideration by DRC. Within 07 days of the DRC decision, Academic Department will disseminate the admission status (joining of student in PhD program) on Form No.16-02-02 (Provisional Admission in PhD Program. See Appendix 'D') with distribution as follows:
 - i. Dean FEST
 - ii. Dy. Registrar Academics (DRA)
 - iii. Supervisor/Co-supervisor (if appointed)
 - iv. Sponsoring / Funding Agency (if any)
 - v. Systems Department/CMS Coordinator
 - vi. Student's file
- b. A PhD admission shall remain 'Provisional' unless approved by BASR

9. Duration of Study:

- a. Typical / Average duration of PhD program: 04 years whereas, maximum duration (shall be counted from the date of admission in PhD) is 08 years.
- b. Typical timeline for PhD is as follows:

S.#	Action	Time
1.	Completion of 18 Cr Hrs coursework and formation of GEC	Within 1 Year
2	a. Qualifying Examination Part I (written) and Part II (Oral)	Next 6 Months
	b. Approval of synopsis and conduct of one seminar	
3	Research work, publications of research papers (4 Progress Reports)	2 Years
4	Evaluation by foreign and local experts	4 Months
5	Dissertation defence and submission of soft and hard bound copies	2 Months
	Total Time	4 Years

10. Academic Year and Semester:

The academic year is divided into two regular semesters (Fall and Spring) and an optional semester (Summer).

11. Area of Concentration (AoC):

PhD student must select one Area of Concentration (AoC) in consultation with his/her research supervisor/faculty advisor/Guidance and Examination Committee (GEC). A PhD student must take five courses from AoC.

Courses Description	No. of Courses	Cr. Hr.
Area of Concentration (AoC)	5	15
Research Methodology	1	3
Dissertation		30

12. General Structure of PhD Programs:

A minimum of 48 credit hours (including 18 Cr. Hrs. of coursework and 30 credit hours of research dissertation).

Number of regular semesters	8 (Typical)
Program credit hours	48 (Min)
No. of courses	06
Coursework Credit Hrs	18
Dissertation Credit Hrs	30
Credits allowed per semester for coursework	09 - 12 (max) in Spring/Fall
Credits allowed per semester for research work (Dissertation)	06 (max) in Spring/Fall

SEMESTER-1		
Course Code	Course Title	Cr. Hr.
ABC - xxxx	AoC-I	3
ABC - xxxx	AoC-II	3
ABC - xxxx	Research Methodology	3
Total Credits		9

SEMESTER-2		
Course Code	Course Title	Cr. Hr.
ABC - xxxx	AoC-III	3
ABC - xxxx	AoC-IV	3
ABC - xxxx	AoC-V	3
Total Credits		9

SEMESTER-3		
Course Code	Course Title	Cr. Hr.
XYZ - xxxx	PhD Research Work (Proposal Defense)	6
Total Credits		6

SEMESTER-4		
Course Code	Course Title	Cr. Hr.
XYZ - xxxx	PhD Research Work (1 st Progress Report)	6
Total Credits		6

SEMESTER-5		
Course Code	Course Title	Cr. Hr.
XYZ - xxxx	PhD Research Work (2 nd Progress Report)	6
Total Credits		6

SEMESTER-6		
Course Code	Course Title	Cr. Hr.
XYZ - xxxx	PhD Research Work (3 rd Progress Report)	6
Total Credits		6

SEMESTER-7		
Course Code	Course Title	Cr. Hr.
XYZ - xxxx	PhD Research Work (4 th Progress Report)	6
Total Credits		6

SEMESTER-8		
Course Code	Course Title	Cr. Hr.
	PhD Research Work (Open Defense)	

(Note: Please refer to FEST Policy & Procedures for PhD Degree Booklet available at Dy. Director GSESIT. FEST reserves the right to change or amend any rule as and when required)

Graduate Courses for Electrical Engineering

Specialization - Control and Automation

EE 7201 Linear System Theory*	EE 8201 Non-Linear Control System
EE 7102 Analysis of Stochastic Systems*	EE 8202 Adaptive Control Systems
EE 7501 Advanced Digital Signal Processing *	EE 8205 Network and Embedded Control Systems
EE 7101 Advanced Modeling and Simulation	EE 8203 Control System Optimization
EE 7105 Quality Engineering	EE 8505 Digital Filter Approximation Theory and Design
EE 7106 Reliability Analysis	EE 8502 Adaptive Filter Design
EE 7108 Systems Analysis	EE 8504 Two Dimensional Digital Signal Processing
EE 7202 Advanced Classical Control System	EE 8204 Advanced Robotics and Automation
EE 7203 Process Control	EE 8206 Optimal Control Systems
EE 7204 Advanced Digital Control	EE 8207 Computer Control Networks
EE 7205 Programmable Logic Controllers and Control Systems	EE 9201 Robust Multivariable Control
EE 7206 Robotics	EE 9101 Convex Optimization
EE 7702 Artificial Intelligence	EE 9102 Selected Topics in Control and automation
EE 7301 Advanced Digital System Design	CS 7103 Game Theory
EE 7302 Advanced Instrumentation	CS 7104 Machine Vision
EE 7303 Advanced Power Electronics	CS 8101 Neural and Fuzzy Systems
EE 7403 Electrical Drives	CS 8206 Advanced Optimization Techniques and Algorithms
EE 7612 Queuing Theory	EE 8201 Non-Linear Control System

Specialization - Communication Systems and Networks

EE 7102 Analysis of Stochastic Systems*	EE 8503 Wavelet based Signal and Image Processing
EE 7501 Advanced Digital Signal Processing *	EE 8504 Two Dimensional Digital
EE 7601 Advanced Communication Networks*	EE 8505 Digital Filter Approximation Theory and Design
EE 7301 Advanced Digital System Design	EE 8603 Lasers and Modern Optics
EE 7502 Digital Image Processing	CS 7405 IP Telephony and Voice over IP
EE 7602 Wireless and Mobile Communication Systems	CS 7407 High-speed Broadband Networks
EE 7605 Information Theory and Coding	CS 7411 Computer and Network Security
EE 7606 Error Control Coding	CS 7409 Network Performance Analysis
EE 7608 RF and microwave engineering	CS 7403 Network Management
EE 7609 Radar System	CS 7404 Multimedia Networking
EE 7610 Optical Communication Systems	CS 7401 Advanced Computer Networks
EE 7611 Digital Design for Communication Systems	CS 7406 Multi-Layer Switching Architecture
EE 7613 Telecommunication traffic Engineering	CS 8402 Internetworking
EE 7614 Wireless Multiple Access Communication	CS 8405 Next Generation Networks
EE 7615 RF/Microwave and Antenna Design	CS 8206 Advanced Optimization Techniques and Algorithm
EE 7616 Microwave Circuits and Systems	CS 8403 GIS and Remote Sensing
EE 7617 Radar Systems	EE 9601 Selected Topics in Communications and Signal Processing
EE 8806 Advanced Embedded Systems	
EE 8601 Advanced Digital Communication	

Specialization - Telecommunication Systems

EE 7102 Analysis of Stochastic Systems*	EE 8615 Satellite, Fixed and Mobile Radio Systems
EE 7501 Advanced Digital Signal Processing *	EE 8616 RF/Microwave and Antenna Design
EE 8601 Advanced Digital Communication*	EE 8617 Speech Analysis & Processing
EE 7301 Advanced Digital System Design	EE 8618 Adaptive Filter Theory
EE 7502 Digital Image Processing	EE 8619 Multi-rate Signal Processing
EE 7601 Advanced Communication Networks	EE 8620 Network Planning and Management
EE 7605 Information Theory and Coding	EE 8621 Wireless Multiple Access Communication
EE 7602 Wireless and Mobile Communication Systems	EE 8622 Secure Telecommunication System
EE 7606 Error Control Coding	CS 7401 Advanced Computer Networks
EE 7610 Optical Communication Systems	CS 7403 Telecom Network Management
EE 7611 Digital Design for Communication Systems	CS 7404 Multimedia Networking
EE 7612 Radar Systems	CS 7405 IP Telephony and Voice over IP
EE 8501 Video and Signal Processing	CS 7407 High-speed Broadband Networks
EE 8503 Wavelet based Signal and Image Processing	CS 7411 Computer and Network Security
EE 8505 Digital Filter Approximation Theory and Design	CS 7409 Network Performance Analysis
EE 8504 Two Dimensional Digital Signal Processing	CS 8403 GIS and Remote Sensing
EE 8612 RF Engineering Techniques	CS 8206 Advanced Optimization Techniques and Algorithms
EE 8613 RF Circuit Design	EE 9601 Selected Topics in Telecommunication Systems
EE 8614 Electromagnetic Compatibility and Interface	EE 9602 Selected Topics in Telecommunication Engineering

*= Core Courses

Specialization - Computer Systems

EE 7701 Advanced Computer Architecture*	EE 7301 Advanced Digital System Design
EE 7102 Analysis of Stochastic Systems *	EE 7306 Real Time Embedded Systems
EE 7501 Advanced Digital Signal Processing *	EE 7308 Advanced FPGA Based System Design
EE 7702 Artificial Intelligence	EE 7502 Digital Image Processing
EE 7601 Advanced Communication Networks	EE 8806 Advanced Embedded Systems
EE 7602 Wireless and Mobile Communication Systems	CS 7103 Advanced Operating Systems
EE 7605 Information Theory and Coding	CS 7505 Computer Arithmetic
EE 8503 Wavelet based Signal and Image Processing	CS 7316 Design & Analysis of Algorithms
EE 8701 Advanced Parallel and Distributed Computing	CS 7411 Computer and Network Security
EE 8702 Advanced Microprocessor based Systems	CS 8403 GIS and Remote Sensing
EE 8703 Advanced Microprocessor-based Systems Design	EE 9501 Digital Signal Processing Hardware Implementation
EE 8704 Reconfigurable Computing	EE 9701 Selected Topics in Computer Engineering
EE 7101 Advanced Modeling and Simulation	

Specialization - Embedded Systems

EE 7501 Advanced Digital Signal Processing *	EE 8802 Parallel Embedded Computer Architecture
EE 7801 Principles of Embedded Computing Systems *	EE 8803 Multiprocessors and Multi core Embedded Systems
EE 7301 Advanced Digital System Design*	EE 8804 Multi core Programming and Architecture
EE 7306 Real Time Embedded Systems	EE 8805 Real-Time Software Development
EE 7602 Wireless and Mobile Communication Systems	EE 8806 Advanced Embedded Systems
EE 7701 Advanced Computer Architecture	EE 8807 Reconfigurable Computing
EE 7308 Advanced FPGA Based System Design	EE 8808 GPU Programming and Architecture
EE 7801 Embedded System Validation and Verification	EE 8809 Embedded Processor and Peripherals
EE 7804 Embedded Networking	EE 8810 Embedded Operating Systems
EE 7802 Embedded Systems Programming	EE 8811 Embedded System Modeling
EE 7803 Embedded Image and Video Processing	CS 7411 Computer and Network Security
EE 7805 Product Design and Development	EE 9501 Digital Signal Processing Hardware Implementation
EE 8801 Advanced Microprocessor-based System Design	EE 9801 Selected Topics in Embedded Systems

Specialization - Electronics

EE 7102 Analysis of Stochastic Systems*	EE 8303 Chaos Theory and Fractals
EE 7501 Advanced Digital Signal Processing *	EE 8502 Adaptive Filter Design
EE 7304 Electronic System Design *	EE 8504 Two Dimensional Digital Signal Processing
EE 7204 Advanced Digital Control System	EE 8505 Digital Filter Approximation Theory and Design
EE 7205 Solid State Electronics	EE 7101 Advanced Modeling and Simulation
EE 7302 Advanced Instrumentation	EE 7309 Linear Control System
EE 7306 Real Time Embedded Systems	EE 7702 Artificial Intelligence
EE 7303 Advanced Power Electronics	EE 8301 Estimation Theory
EE 7308 Advanced FPGA Based System Design	EE 8302 Multivariable Control Theory
EE 7502 Digital Image Processing	EE 8303 Digital Integrated Circuit Design
EE 7602 Wireless and Mobile Communication systems	CS 7103 Game Theory
EE 8201 Non-Linear Control System	CS 8101 Neural and Fuzzy Systems
EE 8202 Adaptive Control Systems	CS 8206 Advanced Optimization Techniques and Algorithms
EE 8206 Optimal Control Systems	EE 9301 Selected Topics in Electronic Engineering

Specialization - Power Systems

EE 7102 Analysis of Stochastic Systems*	EE 8402 Modeling and Simulation of Converters
EE 7501 Advanced Digital Signal Processing *	EE 8403 Modeling and Simulation of Electrical Machines
EE 7401 Power System Modeling and Analysis*	EE 8404 Advanced Electrical Machine Design
EE 7402 Smart Grids and Future Electric Energy Systems	EE 8505 Digital Filter Approximation Theory and Design
EE 7403 Electrical Drives	EE 7414 Energy Management
EE 7404 Advanced Power System Transmission	EE 7415 Renewable Energy Systems
EE 7405 Advanced High Voltage Engineering	EE 8405 Distributed Generation
EE 7406 Power System Circuit Breakers and Sub stations	EE 8406 Control of DC Machines and Drives
EE 7407 Power System Distribution	EE 8407 Control of AC Machines and Drives
EE 7408 Power System Reliability	EE 8408 Power Electronics Devices and Converters
EE 7409 Insulation Coordination in Power Systems	EE 8409 Switch-Mode Power Supplies
EE 7410 Power Generation Economics	EE 8410 Special Electrical Machines
EE 7411 Power System Restructuring	EE 8411 Advanced Electrical Machine Design
EE 7412 Advanced Power System Stability	EE 8412 Advanced Control Systems
EE 7413 Power Quality	EE 9401 Selected Topic in Power Engineering
EE 8401 Condition Monitoring Techniques	

* = Core Courses

General Electives - Electrical Engineering

EE 7101 Advanced Modeling and Simulation	EE 7107 Research Methodology
EE 7102 Analysis of Stochastic Systems	EE 7108 Systems Analysis
EE 7103 Entrepreneurship	EE 7109 Advanced Discrete Mathematics
EE 7104 Project Management	EE 7110 Advanced Mathematical Methods
EE 7106 Reliability Analysis	EE 9101 Convex Optimization

Graduate Courses for Computer Science**Specialization - Information and Communication Security**

CS 7501 Information Theory and Coding*	CS 7515 Software System Security
CS 7502 Cryptography and Security Mechanism*	CS 7516 Network Security
CS 7503 Data Communication Networks and Security*	CS 7517 Cryptographic Engineering
CS 7504 Information Security Management	CS 7518 Design and Analysis of Algorithms
CS 7505 Computer Arithmetic	CS 8501 Selected Topics in Information and
CS 7506 Applied Cryptography	CS 7515 Software System Security Communication Security
CS 7507 Cryptanalysis	CS 8502 Trusted Computing
CS 7508 Error Control Coding	CS 8503 Security Engineering
CS 7509 Advanced Discrete Mathematics	CS 8505 Trusted Systems
CS 7510 Wireless Network Security	CS 7102 Cyber Laws and Ethics
CS 7511 Secure Communication Systems	EE 7301 Advanced Digital System Design
CS 7512 Access Control and Database Security	EE 7501 Advanced Digital Signal Processing
CS 7513 Digital Forensics	EE 7601 Advanced Communication Networks
CS 7514 Information Hiding	

Specialization - Computer Communication and Networks

CS 7401 Advanced Computer Networks*	EE 7601 Advance Communication Networks
CS 7101 Advance Theory of Computation*	EE 7613 Telecommunication Traffic Engineering
CS 7201 Advance Algorithm Analysis*	EE 7602 Wireless & Mobile Communication Systems
CS 7403 Network Management	EE 7606 Error Control Coding
CS 7404 Multimedia Networking	EE 7614 Wireless Multiple Access Communication
CS 7405 IP Telephony and Voice over IP	CS 8401 Selected Topics in Computer and Communication Networks
CS 7406 Multi-Layer Switching Architecture	CS 7402 Internet Protocols
CS 7407 High-speed Broadband Networks	CS 8402 Internetworking Architectures, Protocols & Applications
CS 7408 Cryptography	CS 8404 QoS Architecture for Multimedia Wireless Networks
CS 7409 Network Performance Analysis	CS 8405 Next Generation Networks
CS 7410 Cloud Computing	CS 8101 Neural & Fuzzy Systems
CS 7411 Computer and Network Security	CS 7221 Internet Programming
CS 7416 Wireless Sensor Networks	EE 7610 Optical Communication Systems
CS 7417 Ubiquitous Computing	CS 7209 Web Services & Service Oriented Architecture
EE 7701 Advance Computer Architecture	CS 7501 Information Theory and Coding

Specialization - Software Engineering

CS 7201 Advanced Algorithm Analysis *	CS 7216 Advanced Artificial Intelligence
CS 7202 Advanced Software Engineering *	EE 7701 Advance Computer Architecture
CS 7101 Advance Theory of Computation *	CS 7217 Advanced Human Computer Interaction
CS 7103 Advanced Operating Systems	CS 7218 Advanced Programming and Algorithms
CS 7203 Software Development Methods	CS 7219 Knowledge Engineering
CS 7204 Software Project Management	CS 7221 Internet Programming
CS 7205 Software Engineering Economics	CS 7104 Data Warehousing and Data Mining
CS 7206 Software Testing and Quality Assurance	CS 8201 Selected Topics in Software Engineering
CS 7207 Advanced Object Oriented Programming	CS 8202 Empirical Software Engineering
CS 7208 Graphics Programming	CS 8203 Software Engineering and Formal Specifications
CS 7211 Object Oriented Software Engineering	CS 8204 Enterprise System Databases and Programming
CS 7212 Software Architecture	CS 8205 Agent Oriented Software Engineering
CS 7213 Software Design Patterns	CS 8206 Advance Optimization Techniques & Algorithms
CS 7214 Software Process Improvement	CS 7109 Game Theory
CS 7220 Design & Analysis of Algorithms	EE 8804 Multi- core Programming & Architecture

*= Core Courses

Specialization - Information Technology

CS 7108 Advanced Database Management Systems*	CS 7310 E-Commerce
CS 7301 Information Technology Infrastructure*	CS 7311 Geographical Information Systems
CS 7201 Advanced Algorithm Analysis *	CS 7312 Multimedia Technology
CS 7103 Advanced Operating Systems	CS 7313 Internet Technologies
CS 7302 Information Technology Architecture	CS 7314 Mobile Commerce
CS 7303 IT Policy, Laws, and Practice	CS 7417 Ubiquitous Computing
CS 7304 IT Planning and Evaluation	CS 8301 Selected Topics in Information Technology
CS 7305 IT Services Management	CS 8302 Advanced Topics in Databases
CS 7306 IT Project Management	CS 7103 Advanced Operating Systems
CS 7307 IT Audit and Assessment	CS 8303 Information Security and Assurance
CS 7308 Economics of Technology	CS 8304 Telecom Management
CS 7309 IT Disaster Management	

General Electives - Computing

CS 7101 Advanced Computational Techniques in Engineering	CS 7105 Multimedia Databases
CS 7102 Cyber Laws and Ethics	CS 7106 Distributed Databases
CS 7103 Advanced Operating Systems	CS 7107 Semantic Web
CS 7104 Data Warehousing and Data Mining	CS 7108 Advanced Database Management Systems

Graduate Courses for Energy & Environment

Energy & Environment

EN 7301 Energy Management and Policy*	EN 7211 Solid & Hazardous Waste Management
EN 7311 Environmental Management Systems*	EN 7212 Marine Pollution
EN 7318 Energy Resources & Utilization*	EN 7214 Water & Waste Water Management
EN 7201 Environmental Impact Assessment	EN 7215 Population Dynamics & Environment
EN 7101 Renewable Energy Technologies	EN 7216 Environment Economics
EN 7102 Thermal Energy Systems	EN 7303 Energy & Environmental Law
EN 7104 Heating, Ventilation & Air – Conditioning (HVAC)	EN 7308 Energy Systems Auditing
EN 7133 Energy Efficiencies & Conservation	EN 7312 Climate Change, its Impacts and CDM
EN 7118 Sustainable Cities	EN 7313 Carbon Foot Printing
EN 7204 Low Carbon Cities	EN 7316 Environment and Sustainable Development
EN 7206 Environmental Auditing & Monitoring	EN 8201 Advance Environmental Science
EN 7207 GIS & Remote Sensing Application in Environment	EN 8205 Environmental Risk Assessment
EN 7208 Fresh Water Ecology	EN 7304 Air Pollution & Control
EN 7209 Environmental Analytical Techniques	EN 7306 Health Safety & Environment
EN 7210 Advance Energy Efficient Buildings	EN 7310 Risks & Hazards in Energy Sector

*= Core Courses

Environmental Studies Centre (ESC)

In 1991, Hydrochemistry Laboratory, Hamdard University was established with the collaboration of Ministry of Agriculture, State of Baden, Wittenberg, Germany, under the supervision of Professor Dr. Juregen Honholz. The basic aim for establishment of Hydro-chemistry lab was to developing agriculture & horticulture and development, monitoring & assessment of water sources for drinking & irrigation purposes in the area around Madinat al-Hikmah.

The laboratory has carried out extensive work in the field of environment for national and multinational industries. It has also provided training to the rural population around Madinat al-Hikmah.

In September 2005, Hamdard University decided to develop the facility into full-fledged Environmental studies centre to carry out M.Phil. /Ph.D. studies in Environmental.

The centre is fully equipped for carrying out research projects for various organizations including Governmental departments. It is presently extending highly professional research services to the satisfaction of its clients by producing quality output within the specified time frame.

Capabilities and Services

Faculty and staff at the environmental studies Centre has considerable experience in project development, conducting surveys and supporting the investigations, prepare feasibility studies, planning, management, and supervision of field, lab and teaching assignments.

Projects Identifications

Preliminary Studies, impact of environmental factors & toxicity assessment. Surveys and Investigations, Environmental impact assessment studies Survey for potable water supply Municipal effluent Hydrological and hydraulic investigations Roads and buildings survey.

Feasibilities Preparations

- E.I.A for industrial projects
- Study for water supply
- Municipal wastes

Specific Capabilities

Centre has fulfilled the present day requirements by extending services in the field of environment. The centre has close liaison with environmental experts and is capable of undertaking various project responsibilities in the fields as listed below;

Water and waste-water analysis Base-line study & preparation of waste-water, water and industrial effluent inventory for industries.

Air pollution assessment and control Solid wastes analysis management Environmental impact assessment studies Fields of Activities

- Environmental assessment and pollution control.
- Domestic and industrial effluent monitoring and assessment.
- Dams and irrigation water studies
- Ground water qualitative and qualitative assessment.
- National Environmental Quality Standards for municipal and industrial
- National Environmental Quality Standards for gaseous and motor vehicle exhaust emission
- Microbiological studies for goods and other edible products
- WHO/EX/PQS Quality Standards for drinking water quality assessment Laboratories.

I. Environmental Research Lab.

Physical, chemical and aesthetical parameters related to water, waste water, soil, air, and foods samples are analyzed in this laboratory.

II. Environmental Microbiology Research.

All the microbiological work pertaining to environmental samples is carried out here. The requisite sophisticated equipments are regularly used for culture proliferation.

III. Environmental Pollution Monitoring / Biochemical Lab

The environmental studies centre is recognized and appraised with the following ministries and Government agencies, diligent services to which have been extended by this centre over the last many years: Marine Fisheries Department, Ministry of Food, Agriculture and Livestock of Pakistan (since 1999). Identified for the Environmental auditing, management and municipal effluent and gaseous emission, through environmental protection agency, Government of Pakistan (since 1997).

Pakistan council of scientific & industrial research recognizes environmental studies centre as a

technical centre for environment.

National drainage programme (WAPDA) research advisory team visited the environmental studies centre and appreciated the facilities available for Ph.D. Studies & Research Project.

Research Projects

The centre has already completed and is undertaking many projects, some of these are;

- i. Geo-Chemical and hydraulic investigation of Hub river and Hamdard University area with the collaboration of Germany.
- ii. Geo-Chemical Source of Heavy metal poisoning in the inhabitants of Karachi with the collaboration of University of Karachi.
- iii. Problems of health & environmental geochemistry granted by national drainage program (WAPDA).
- iv. Exploration of ground water potential in the premises of Hamdard University Karachi, Madinat al-Hikmah Bund Murad, electrical resistivity survey, measurements carried out 600 feet down, general geology of study area with the collaboration of geological survey of Pakistan (GSP) Karachi.
- v. Identification of salmonellae & shigellae in controlled environment, their impact under disinfectant, and hygiene of farms research study carried out with the collaboration of University of Karachi.

Stake holders

Services have been provided to the following sectors:

Pharmaceutical Industries
Chemical Manufacturing Industries
Metal Plating Industries
Steel Manufacturing Industries
Cotton & Woven Industries
Textile Manufacturing Industries
Cement Manufacturing Industries
Food Processing Industries
Sea Food Industries
Beverage Industries