Annual Progress Report 2022-2023

Department of Electronics Engineering

University of Engineering & Technology, Taxila

Table of Contents

University Mission

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

University Vision

To be a quality conscious institution of international standing imparting knowledge in the field of engineering and emerging technologies in a caring environment for the socioeconomic development of the Country

University Core Values

- *Merit*
- *Honesty*
- *Fair play*
- *Teamwork*
- *Transparency*
- *Accountability*
- *Justice*
- *Implementation of Rule of Law*

CHAPTER 1

DEPARTMENT OF ELECTRONICS ENGINEEING

1.1 Introduction

The Department of Electronics Engineering started in 2010 with an enrollment of 60 undergraduate students per year. The department is housed in the historic building of laboratory block. Laboratory block is the first building of this campus constructed in 1977. The building is renovated to accommodate Electronics Engineering Department. The department was shifted to 2nd floor of newly purpose built combined academic block beside administration block of UET Taxila in February, 2017. Current enrollment of the program is 50 undergraduate students per year.

The department offers undergraduate and postgraduate programs. In all matters regarding courses of study and others, the department follows the policies and guidelines of Higher Education Commission (HEC) and Pakistan Engineering Council (PEC). The all programs are recognized by HEC and PEC.

1.2 OBE Implementation

The Department started to work on Outcome Based Education (OBE) based system in 2015 by considering the guidelines given by PEC in its OBA manual. The Department is the pioneer for the implementation of OBE system at UET, Taxila. Currently, OBE system is functioning in its true sense under the following three committees:

- Program Committee
- Subject/CQI Committee
- Assessment/ Analysis Committee

1.3 Faculty Profile

Department of Electronics Engineering has the mixture of young and experienced faculty members.

Dean

Prof. Dr. Aftab Ahmad

Chairman

Prof. Dr. Yaseer Arafat Durrani

Professor

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

Assistant Professors

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

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

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

Dr. Aamir Rashid
BSc Engg (UET Lahore)
MSc Engg (Uni. of Nice, France)
Ph.D. Engg. (INPT, France)

Dr. Hammad Zaki
BSc. Engg. (DCET, Karachi)
MSc. Engg. (UET, Taxila)
PhD. Engg. (Sabanci Uni., Turkey)

Dr. Usman Masud
BSc. Engg. (UET, Taxila)
MSc. Engg. (Uni. of Kassel, Germany)
PhD. Engg. (Uni. of Kassel, Germany)

Lecturers

Dr. Adil Usman
BSc Engg (Air Univ, Islamabad)
MSc Engg (Air Univ, Islamabad)
PhD. (UET, Taxila)

Dr. Syed Zohaib Hassan Naqvi
BSc Engg (IIUI, Islamabad)
MSc Engg (IIUI, Islamabad)
MBA (VU, Islamabad)
PhD. (UET, Taxila)

Dr. Muhammad Faraz
BSc Engg (IIUI),
MSc Engg (UET, Taxila)
PhD. (SKKU, South Korea)

Dr. Sajjad Ahmed
BSc. Engg (UET, Lahore)
MSc. Engg (UET, Lahore)
PhD. Engg (UET, Lahore)

Engr. Tahir Iqbal
BSc Engg (COMSATS, Abbottabad),
MSc Engg (UET Taxila)

Engr. Muhammad Atif Imtiaz (On Study Leave Abroad)
BSc Engg Engg (MAJU)
MSc Engg (UET, Taxila)

Engr. Qummar Zaman (On Study Leave Abroad)
BSc Engg (IIUI)
MSc Engg (UET, Taxila)

Lab Engineers
Engr. Muhammad Umar Khan
BSc. Engg. (COMSATS, Abbottabad)

Engr. Shujaat Hussain Shah
BSc. Engg. (UET, Taxila)

Engr. Hafiza Misbah Younis
BSc. Engg. (UET, Taxila)
MSc. Engg. NUST

Engr. Sumair Aziz
BSc. Engg. (IIU, Islamabad)

Engr. Tahir Khan
BSc. Engg. (IIU, Islamabad)
MSc. Engg. (HITEC Uni., Taxila)

Recently, Dr. Hamad Zaki as Assistant Professor, Engr. Tahir Iqbal as Lecturer, Engr. Tahir Khan as Lab Engineer have joined their duties from Electronics Engineering, Chakwal Campus to Electronics Engineering Department, Main Campus.

1.4 Summary of Initiatives to Adopt Outcome Based Assessment

The Department of Electronics Engineering started to work on Outcome Based System of Education in 2015 by considering guidelines given by PEC in its OBA manual. Following is the summary of the activities during 2022-2023 by the Department of Electronics Engineering, UET, Taxila.

No.	*Date*	*Departmental Activities 2022-2023*
BoUGS Meetings		
1.	08-04-2022	Agenda Items: 1. Industrial Linkages 2. Entrepreneurship
2.	21-06-2022	Agenda Items: 1. Overall OBA Implementations in the light of PEC Evaluation Report during PEC visit
3.	09-06-2022	Agenda Items: 1. Revision of PEOs 2. Revision of CLOs 3. Lab Work Revision of Psychomotor Domain/Labs 4. Survey Forms Revision 5. Assessment Direct/InDirect Method for CLO/PLO 6. Assessment of GAs in three Domain KSA 7. Final Year Project Proposal
4.	12-09-2022	Agenda Items: 1. BSc. Curriculum Revision 2. Key Performance Indicators (KPI)Revision
5.	19-09-2022	Agenda Items: 1. BSc. Curriculum Revision
6.	27-02-2023	Agenda Items: 1. Curriculum Revision 2. Key Performance Indicators (KPI)Revision
IAB Meetings		
1.	04-04-2022	Agenda Items: 1. Industrial Linkages 2. Entrepreneurship
2.	07-06-2022	Agenda Items: 1. Revision of PEOs 2. Revision of CLOs 3. Lab Work Revision of Psychomotor Domain/Labs 4. Survey Forms Revision 5. Assessment Direct/InDirect Method for CLO/PLO 6. Assessment of GAs in three Domain KSA Final Year Project Proposal
3.	09-09-2022	Agenda Items: 1. BSc. Curriculum Revision 2. Key Performance Indicators (KPI)Revision
4.	08-02-2023	Agenda Items: 1. Industrial Linkages
5.	04-04-2023	Agenda Items: 1. BSc. Curriculum Revision

		2. MSc./PhD. Curriculum Revision
BoPGS Meetings		
1.	18-03-2022	Agenda Items: 1. Appointment of Examiners Experts for PhD. Oral Examination 2. Inclusion of Co-Supervisor in RMC of PhD. Student Engr. Abdul Nasir 3. MSc. Thesis Topic Approval 4. Change of Supervisor of PhD. Student
2.	25-08-2022	Agenda Items: 1. List of MSc./PhD. Courses for Fall-2022 2. Appointment of Examiners for PhD. Oral Examination 3. MSc. Thesis Final Seminar 4. Appointment of External Examiners for MSc. Thesis Evaluation
3.	05-10-2022	Agenda Items: 1. Recommendations of PhD. Applications
4.	09-02-2023	Agenda Items: 1. List of MSc./PhD. Courses for Spring-2023 2. Revision of MSc./PhD. Curriculum 3. MSc. Thesis Topic Approval 4. MSc. Thesis Final Seminars 5. Appointment of External Examiners for MSc. Thesis Evaluation 6. Appointment of Co-Supervisor for PhD. Students
OBE Implementation Meetings		
1.	18-01-2022	1. CQI Evaluation Rubrics 2. Course Folders Review
2.	31-01-2022	1. Lab Equipment Requirements 2. OBA Result Submission 3. FYP Exams for 2K18 Session
3.	17-02-2022	1. Course Distribution of Spring-2022 2. OBA Result Submission on ERP
4.	08-03-2022	1. Discussion of Chakwal Campus Students 2. OBA Result Submission on ERP
	07-04-2022	1. Mid Exam Preparation 2. 2K18 Session FYP Presentations
	14-11-2022	1. Preparation of Self Assessment Report (SAR) for next PEC Re-Accreditation Visit
5.	15-03-2022	1. Course Folders Review
6.	24-08-2022	1. Course Folders Review

7.	11-05-2022	1. Review of the PEC Re-Accreditation Visit Report 2. Formulation of OBE-based Committees a. Revision of PEO's Program Mission/PEOs b. Revision of CLOs c. Revision of Curriculum d. Revision of KPIs e. Lab Work Revision of Psychomotor Domain/Labs f. Internship Committee g. Assessment Direct/Indirect Method for CLOs/PLOs h. Assessment of Gas in three Domain KSA
8.	13-03-2023	Seminar of Sustainable Design Goals (SDGs) by Engr. Sajjid Ahmed

1.5 Academic Program and Activities

With reference to the recommendations of the Departmental Industrial Advisory Board (IAB), Departmental Board of Undergraduate Studies (BoUGS), Board of Faculty (BoF) meetings, the following agenda items are approved in Academic Council meeting 50/2023 held on 17-03-2023:

1. Approval of the Revised of Key Performance Indicators of Electronics Engineering Department
2. Approval of the BSc. Undergraduate Revised Curriculum of Electronics Engineering Department
3. Approval of MSc. Postgraduate Revised Curriculum of Electronics Engineering Department Main Campus.
4. Approval of the PhD. Postgraduate Revised Curriculum of Electronics Engineering Department

1.6 Program Mission

Provide quality education in Electronics Engineering imparting sound engineering knowledge and skills in order to fulfill the demands of industry and services sector.

1.7 Program Educational Objectives

The Electronics Engineering graduates should achieve the following objectives within five years of their graduation:

PEO-1: Proficiency in engineering knowledge and tools for the design, analysis and evaluation of complex engineering problems.

PEO-2: Enhance their knowledge and skills while providing effective solutions keeping in view the environmental and societal aspects.

PEO-3: Contribute as a team member or manager, demonstrating professionalism.

1.7 BSc Electronics Engineering Program Accreditation Status

Once the program started running smoothly and it was felt that the program fulfills the PEC accreditation requirements, the Department applied for accreditation of BSc Electronics Engineering for its first session of 2010 to

Pakistan Engineering Council (PEC) in 2014. Consequently, said session was accredited by PEC. Since then, seven batches i.e., sessions 2010-2016 of Electronics Engineering are duly accredited by PEC. Table below outlines the history of accreditation of the BSc Electronics Engineering program.

BSc Electronics Engineering Program Accreditation Status			
Sr. No.	Session	Status	PEC Notification No.
1	2K10 Session (1st Session)	Accredited	PEC/AD/UET-T/CL-70/2014 Dated: 24-10-2014
2	2K11 & 2K12 Sessions (2nd and 3rd Sessions)	Accredited	PEC/AD/UET-T/DL-73(EAB)/2015 Dated: 20-08-2015
3	2K13 & 2K14 Sessions (4th and 5th Session)	Accredited	PEC/AD/UET-T/DL-83(OBA)/2017 Dated: 08-11-2017
4	2K15 & 2K16 (6th and 7th Sessions)	Accredited *under Level-II (OBA)*	PEC/AD/UET-T/DL-87(OBA)/2018 Dated: 17-08-2018
5	2K17, 2K18 & 2K19 (8th , 9th and 10th Sessions)	Accredited *under Level-II (OBA)*	PEC/AD/UET-T/DL-103/2021 Dated: 28-10-2021

1.8 Students Teacher Ratio

The following table lists the student teacher ratio.

Session	Current Strength
2K19	48
2K20	48
2K21	50
2K22	43
Total	189
Full-Time Dedicated Faculty (FTDF)	14
Shared Faulty	3 (25% of FTDF = 3)
TAs/RAs	0 (9*0.5=4.5; 20% of FTDF = 2)
Student Teacher Ratio	189/(14+3)=11.11

1.9 Undergraduate Program

The Bachelor of Science in Electronics Engineering is a 4-year program. During the 4-year program the students are exposed to the core and elective courses of Electronics engineering, basic humanities and social sciences,

Computer sciences and Management sciences. The students are also required to complete a Final year project with a total of 6 credit hours. Students must complete list of approved courses with total 132-134 credit hours. The lab sessions are designed in order to enhance the concepts studied in the theoretical session and to explore the practical applications of the subject.

Years of study: 4 years

Minimum Number of Credit Hours: 132

1.9.1 Annual Intake

The following table gives the intake for all sessions of the program.

Sr. No	Intake Batch	Total Applicants	Total Admissions Offered	Total Students Admitted	Present Strength	No. of Section(s)
1	2K19	735	50	50	48	1
2	2K20	3575	50	48	48	1
3	2K21	3575	50	48	48	1
4	2K22	1920	50	43	43	1
Total			200	189	187	4

The majority of admitted students have passed Intermediate Examination with good marks. The merit for the 2K20-session is given in the following table.

Category	A (Open Merit)	S (Partial-Subsidized)	X (Overseas)
2K22 Merit No. of Seats	65.059 (22nd list)	52.671 (7th list)	49.800 (1st list)

1.9.2 Admission Response

As per record, 1920 applications were received last year for admission to BSc Electronics Engineering. Only 5.34% of the total candidates could secure admission in the degree course.

1.10 Final Year Project

Final Year Project (FYP) in the Department of Electronics Engineering (ENCD) is a two-semester, six (06) credits course. The evaluation of FYP is done through various components such as project proposal, presentations, report and project demo. In 7th semester the student is required to submit the project proposal and also to present his proposal and work in Mid-semester and End-semester presentations. In 8th semester the student required to submit the final project report and has to give an End semester presentation and the Oral examination of the Project. The evaluation of each component is done through rubrics. List of Final Year Projects (FYPs) of 2K18 and 2K19 is given in (Annex-I).

1.11 Internship

The Placement Office at UET Taxila search and develop contacts mainly with the national and multinational industries in public as well as in private sectors and R&D organizations with an aim to identify the prospective employers, jobs, scholarships and industrial training for university students. In order to accomplish the goal of University Placement Office, Department of Electronics Engineering has also constituted a Committee to contact with public and private sector companies to generate internship opportunities for its students. The industries in which students completed their internship in 2022-2023 are as follows:

List of Industry Performed Internship of 2K18 Students		
Sr.No	Name of organization	No of Students
1	CRD, Taxila	15
2	PEL, Lahore	03
3	Pakistan Aeronautical Complex, Kamra	01
4	POF Institute of Technology, Wah	01
5	Attack Refinery Limited ARL, Rawalpindi	01
6	FOZION, Islamabad	02
7	Renewables & Technology, Islamabad	01
8	PTCL, Islamabad	02
9	Swarm Robotics lab UET, Taxila	02
10	Emco Industries Limited, Lahore	01
11	Rainbow, Multan	01
12	Oil & Gas Development Company limited, Dakhni	01
13	Special Communications Organization, Rawalpindi	01
14	Islamabad Electrical Supply Company Ltd., Islamabad	01
15	Astral	01
16	ABQ Automation & Supplier	01
17	Alfanar, Saudi Arabia	01

1.11.1 Student Societies

The proposal for the construction of following two societies are requested to DSA:

- Electronics Dept. Literary Society
- Electronics Dept. Sports Society
- IEEE Consumer Electronics Society

Following Events/Workshops/Talks are organized by IEEE-CES of ENCD.

- Development of soft skills
- Engineering Knowledge for Children
- Commercialization of Projects
- Research Methodology
- CES Fiest

1.12 Student Industrial Trips

The following Industrial trips were arranged in 2022-2023:

- National Institute of Electronics, Islamabad on 26-05-2022 (2K21Session)
- DG Khan Cement Factory, Kallar Kahar on 11-10-2022 (2K20 Session)
- Packages Pvt. Industries, Lahore on 31-05-2022 (2K18 Session)
- Bestway Cement, Hattar, Haripur on 30-06-2022 (2K20 Session)
- WAPDA, Mangla Dam, Mangla 01-06-2022 (2K19 Session)

1.13 Postgraduate Program

The Department was mandated by the University to start its postgraduate program in 2014. At present, it has an academic staff of 15, including 11 faculty members, involved in postgraduate teaching and research work. Under this program, the following degrees will be offered:

- Master of Science in Electronics Engineering
- Doctor of Philosophy in Electronics Engineering

The Department offers both MSc. and PhD. postgraduate programs recognized by the HEC with the following specializations:

i. Electronics System Design
ii. Microelectronic Materials and Devices
iii. Biomedical Electronics

The courses contain a balance of professional as well as research aspects and are designed to cater the needs of fresh graduates pursuing career development in both industry and research domains. The faculty of Electronics Engineering Department is highly qualified and holds diverse research interests in the above mentioned areas. In addition to their academic responsibilities, the faculty is actively involved in conducting quality research in their respective areas of investigation.

1.13.1 Enrollment – 2021-22

-	Applications	Entry Test	Interview	Merit List	Registered
MS-Fall-2019	41	35	27	27	10
MS-Fall-2020	6	3	3	3	2
MS-Fall-2021	5	5	5	5	3
PhD-Fall-2019	6	5	5	5	5
PhD-Fall-2020	2	1	1	1	1
PhD-Fall-2021	0	0	0	0	0
PhD-Fall-2022	2	2	2	2	2

1.13.2 Post graduate Students Strength

MSc. Program							
Session	Enrolled	FT	PT	Course Work	Thesis	Dropped	Completed
MS-15	15	0	15	0	2	13	0
MS-17	23	15	8	6	14	3	0
MS-18	12	4	8	12	0	0	0
MS-19	10	0	10	10	0	0	0
MS-20	2	0	2	2	0	0	0
MS-21	3	0	3	0	0	0	0
MS-22	5	0	5	4	4	2	4

PhD Program						
Session	Enrolled	FT	PT	Course Work	Comprehensive	Thesis
PhD-14	3	0	3	0	1	2
PhD-15	3	0	3	0	1	2
PhD-17	1	0	1	1	0	0
PhD-18	2	0	2	2	0	0
PhD-19	5	0	5	5	0	0
PhD-20	1	0	1	1	0	0
PhD-21	0	0	0	0	0	0
PhD-22	2	0	2	3	0	3

1.13.3 Courses Offered

The courses offered in Spring/Fall-2020-22 semesters are listed in Table I to IV.

List of MSc/PhD Courses for Fall-2022					
S.no	Course Code	Course Name	Teacher Name	Teacher	Specialization
1	EN-5110	System on Chip Testing and Verification	Prof. Dr. Yaseer Arafat Durrani	Internal	Electronic System Design
2	EN-6001	Mathematical Methods for Engineers and Scientists	Prof. Dr. Yaseer Arafat Durrani	Internal	Common to all
3	EN-6003	Linear System Theory	Dr. Hammad Zaki	Internal	Common to all
4	EN-6109	Microprocessor-based System Design	Dr. Khawaja Shafiq	Internal	Electronic System Design

			Haider		
5	EN-6110	Computer Architecture	Dr. Syed Azhar Ali Zaidi	Internal	Electronic System Design
6	EN-6213	Electromagnetics Field Theory	Dr. Aamir Rashid	Internal	Microelectronic Materials and Devices
1	EN-7001	Advanced Engineering Mathematics	Prof. Dr. Yaseer Arafat Durrani	Internal	Common to all
2	EN-7003	Advanced Linear System Theory	Dr. Hammad Zaki	Internal	Common to all
3	EN-7109	Advanced Microprocessor Architecture	Dr. Khawaja Shafiq Haider	Internal	Electronic System Design
4	EN-7110	Advanced Computer Architecture	Dr. Syed Azhar Ali Zaidi	Internal	Electronic System Design
5	EN-7213	Advanced Electromagnetics Field Theory	Dr. Aamir Rashid	Internal	Microelectronic Materials and Devices

List of MSc/PhD Courses for <u>Spring-2022</u>					
S.no	Course Code	Course Name	Teacher Name	Teacher	Specialization
1	EN-6004 EN-7004	Solid State Electronic Devices Physics of Microelectronic Devices	Prof. Dr. Yaseer Arafat Durrani	Core	Common to All
2	EN-6106 EN-7106	FPGA-Based System Design Advanced FPGA-Based System Design	Dr. Syed Azhar Ali Zaidi	Elective	Electronics System Design
3	EN-6203 EN-7203	Optoelectronic Devises Photonic and Optoelectronic Devices	Dr. Bilal Aslam	Elective	Microelectronic Materials and Devices

1.13.4 Meeting of Board of Postgraduate Studies

Sr. No	Meeting No.	Date
01	1/2019	25-07-2019
02	2/2019	19-12-2019
03	3/2019	19-12-2019
04	1/2020	04-09-2020
05	2/2020	22-10-2020
06	1/2021	22-04-2021
07	2/2021	11-10-2021
08	3/2021	16-12-2021
09	1/2022	18-03-2022
10	2/2022	25-08-2022
	3/2022	5-10-2022
	1/2023	02-02-2023

CHAPTER 2

RESEARCH AND DEVELOPMENT

2.1 Overview

The ENCD Department was established in 2010 to fulfill the needs of the country by producing responsible graduates equipped with sound knowledge and skills along with highest professional and ethical values through conducive learning environment. The Department offers four years Undergraduate Degree Program leading to BSc. in Electronics Engineering. The Department also offers Postgraduate Degree Program leading to MSc and PhD in Electronics Engineering. The Department is located on the 2nd Floor of newly constructed Combined Academic Block.

2.2 Current Enrolment

PhD. Engg 10
MSc. Engg 10
BSc. Engg 187

2.3 Building Area

27,155 sq. ft.

2.4 Laboratories

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

I. Basic Electronics Lab
II. Digital Electronics Lab
III. VLSI Design Lab
IV. Embedded Systems Lab
V. Instrumentation and Control Lab
VI. Digital Signal Processing & Communication Lab
VII. Computer Simulation Lab
VIII. Project Lab

2.5 Post Graduate Studies

The Department was mandated by the University to start its postgraduate program in 2014. At present, it has an academic staff of 15, including 10 faculty members, involved in postgraduate teaching and research work. The Department offers both MSc. and PhD. postgraduate programs recognized by the HEC with the following specializations:

iv. Electronics System Design
v. Semiconductor Materials, Devices and Design
vi. Bio-Electronics

The courses contain a balance of professional as well as research aspects and are designed to cater the needs of fresh graduates pursuing career development in both industry and research domains. The faculty of Electronic Engineering Department is highly qualified and holds diverse research interests in the above mentioned areas. In addition to their academic responsibilities, the faculty is actively involved in conducting quality research in their respective areas of investigation.

2.6 Research Facilities and Groups:

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

1. Electronics System Design Research Group:

This group is working in areas such as VLSI Design, FPGA-based Design and Mixed signal Design. The following faculty members are part of this research group:

- Dr Yaseer Arafat Durrani
- Dr. Azhar Ali Zaidi
- Engr. Qummar Zaman

2. Electromagnetics and Optics Research Group:

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

- Dr. Aamir Rashid
- Dr. Usman Masud
- Engr. Muhammad Faraz
- Engr. Syed Zohaib Hassan Naqvi

3. Control & Automation Research Group:

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

- Dr. Khawaja Shafiq Haider
- Engr. Adil Usman
- Engr. Muhammad Atif Imtiaz

2.7 Publications

The faculty members are actively involved in research. 13 journal papers are published in 2022-2023. Details are given in (Annex-II).

2.8 Workshop/ Seminar/Conferences

- Prof. Dr. Yaseer A. Durrani, Advanced Electronics Meetup on 13-01-2023
- Azmat Hayat, International Pak-Turk Conference on 2-12-2022
- Dr. Aamer Rashid, Research Capacity Building Program on 2022
- Engr. Shujjat Hussain, Developing Entrepreneurs for Future, HEC, Lahore 08-12-2022
- Engr. Shujjat Hussain, Planning and Design of Macro Hydro Power 16-07-2022
- Engr. Shujjat Hussain Personal Branding & Career Choices, 05-07-2022

2.9 Industrial Collaboration

A meeting was held with an industrial representatives 08-02-2023, at the Conference Room of Electronics Engineering Department (ENCD) to discuss the Industrial-Academic collaboration. Prof. Dr. Yaseer Arafat Durrani, Chairman ENCD, chaired the meeting. The list of the Meeting Attendees is as:

1.	Prof. Dr. Yaseer Arafat Durrani	Chairman, ENCD
2.	Dr. Bilal Aslam	In-charge Industrial Linkages, ENCD
3.	Mr. Muhammad Kashif	GM, Radar and Communication, AWC
4.	Engr. Salahuddin Zafar	GM (Tech) NESCOM, Islamabad

The meeting started with the recitation of the Holy Quran. Following this, the chairman gave a brief introduction of the department to the industrial representative (Mr. Kashif) including faculty, the curriculum, and the research groups. Afterward, a detailed discussion session took place identifying the areas of common interest and the possibility of sharing the resources. A summary of the recommendations is listed below.

1. Research projects with joint industrial-academic supervision will be offered to undergraduate and postgraduate students. In this regard, the details of a few identified projects with deliverables.
2. Mr. Kashif, through his organization, will facilitate the lab resources (fabrication, testing) required for the joint projects.
3. The outcome of the research projects will be targeted for publication in international peer-reviewed conferences and high-quality journals.
4. Joint seminars and workshops will be conducted to impart knowledge to the students regarding the latest research/industrial trends, and the skill set required to remain relevant.
5. The possibility of industrial-academic collaboration will also be explored to target joint research grants.

CHAPTER 3

FACULTY DEVELOPMENT

3.1 Faculty Development Programs

The faculty members avail different scholarships offered by HEC and International Universities for MS/PhD. Paid leave can be avail by the Faculty member for higher studies after 3 years of service as per University rules.

The following faculty members of the department are on higher studies abroad:

Sr. No	Name	Designation	Country
1	Engr. Atif Imtiaz	Lecturer	Germany
2	Engr. Qummar Zaman	Lecturer	Germany
3	Engr. Misbah Younus	Lab Engineer	Luxumberg

CHAPTER 4

STRENGTH OF INFRASTRUCTURE & NEW INITIATIVES

4.1 Classrooms

Currently there are 6 class rooms and 1 lecture theatre. All classrooms have been upgraded with two white boards, multimedia and other facilities. Request for the up gradation of Lecture Theatre is submitted for the approval.

4.2 Undergraduate Labs

Recently, following 9 state-of-art labs have been established and upgraded:

I. Basic Electronics Lab
II. Digital Electronics Lab
III. VLSI Design Lab
IV. Embedded Systems Lab
V. Instrumentation and Control Lab
VI. Digital Signal Processing & Communication Lab
VII. Computer Simulation Lab
VIII. Project Lab

New furniture for different labs has been purchased with the amount of Rs.0.6 million.

4.3 Postgraduate Lab

The PC-1 for the postgraduate lab is currently in process.

4.4 Departmental Library

The Departmental Library has been established with 120 books.

4.5 Plantation

The department is decorated with more than 40 plants.

4.6 Upgradation of Computers

There are total 137 computers in the department. Among them 121 computers for students use and 16 for faculty and staff members. Existing computers are upgraded, while core i7 computers have been purchased for the up gradation of different labs.

4.7 Girls Student Common Room

For girls, separate common rooms is provided for their extra-curricular activities. The request for indoor Table-Tennis and other indoor activities are submitted for approval.

(Prof. Dr. Yaseer Arafat Durrani)
Chairman ENCD

Appendix 1
LIST OF FINAL YEAR PROJECTS

Final Year Project List for Session-2K18				
Sr.#	Reg. Nos	Names	Project Title	Supervisor
1	18-ENC-04 18-ENC-36	Heera Ghaffar Zunaira	Design of obstacle avoiding Robot	Prof. Dr. Yaseer A. Durrani
2	18-ENC-25 18-ENC-17	Rashid Sharif Muhammad Shahbaz	Design of Digital Architecture for Removal of Impulse Noise in Image Using edge Preserving Filter	Prof. Dr. Yaseer A. Durrani
3	18-ENC-08 18-ENC-09	Muhammad Farhan Habib Ur Rehman	Design of an autonomous maze solving robot.	Dr. Azhar Ali Zaidi
4	18-ENC-21 18-ENC-35	Syeda Mehwish Nizami Abdul Rafay Hameed Malik	FPGA based SoC Design for Autonomous Robot.	Dr. Azhar Ali Zaidi
5	18-ENC-01 18-ENC-03	Ahmad Salal Sana Naz	Design of Plant Watering Autonomous Mobile Robot solution for indoor environments.	Dr. Aamir Rashid
6	18-ENC-34 18-ENC-27	Muhammad Yasir Muhammad Asjad	Design of a three-dimensional peristaltic crawling robot.	Dr. Aamir Rashid
7	18-ENC-26 18-ENC-32	Zohaib Azhar Usama Shehzad	Design of gesture to text application for visually impaired.	Dr. Usman Masud
8	18-ENC-06 18-ENC-23	Usama Tabassum Hamza Shakeel Kiani	Design of biomedical application that can detect COVID-19 signature from X- ray images	Dr. Usman Masud
9	18-ENC-10 18-ENC-37	Rehman Ali Haider Ali	PLC based Automation design of an industrial process.	Dr. Khawaja Shafiq Haider
10	18-ENC-30 18R/17-ENC-43	Ameer Hamza Annus Omar	Low-cost Passive UHF RFID Tag Antenna design for Item-level Tagging Applications.	Dr. Bilal Aslam
11	18-ENC-02 18-ENC-33	Urooj Zeeshan Abbasi	Antenna design for non-invasive detection of breast tumor.	Dr. Bilal Aslam
12	18-ENC-24 18-ENC-19	Imran Abbas Muhammad Taha ur Rehman Khan	Embedded system design for motor fault detection	Engr. Adil Usman
13	18-ENC-13 18-ENC-22 18-ENC-29	Hamza Tanveer Areeba Zainab Abdullah Saud	An efficient detection and classification technique for power quality disturbance events.	Engr. Adil Usman

14	18-ENC-15 18-ENC-20	Mashal Raza Aqsa Arshad	Diagnosis and Classification of Diabetes Mellitus Using Bio-Signals.	Engr. M. Atif Imtiaz
15	18-ENC-05 18-ENC-16	Areeba Mobeen Sana Samer	Automatic identification of respiratory diseases from stethoscope lung sound signals using Machine Learning Techniques.	Engr. Zohaib Hassan
16	18-ENC-28 18-ENC-31	Usman Babar Muneeb Asif	Mosquitoes Wingbeats Analysis and their Classification Using Machine Learning Techniques.	Engr. Zohaib Hassan

ANNEXURE 2

List of Publications (2022-2023)

1. F. Siddique, **Yaseer A. Durrani** "Efficient power macromodeling approach for heterogeneously stacked 3d ICs using Biogeography based optimization" PLOS ONE journal, https://doi.org/10.1371/journal.pone.0264181, **2022** (IF: 1.890)
2. F. Siddique, **Yaseer A. Durrani** "Efficient power modeling approach for IP based SoC system using discrete water cycle algorithm" Turkish Journal of Electrical Engineering & Computer Sciences, Vol.28, Issue 5, ISSN: 1300-0632, E-ISSN: 1303-6203, **2020** (IF: 0.703)
3. K. S. Haider, A. Ghafoor, M. Imran, F. M. Malik, "Model reduction of large scale descriptor systems using time limited Gramians", Asian Journal of Control, vol. 19, no. 4, pp. 1-11, 2017. Impact factor: 1.407.
4. S. Haider, A. Ghafoor, M. Imran, F. M. Malik, "Frequency interval Gramians based structure preserving model order reduction for second order systems", Asian Journal of Control, Impact factor: 1.407.
5. K. S. Haider, A. Ghafoor, M. Imran, F. M. Malik, "Frequency limited Gramians based structure preserving model order reduction for discrete time second order systems". International Journal of Control, Impact factor: 2.2.
6. K. S. Haider, A. Ghafoor, M. Imran, F. M. Malik, "Time limited Gramians based model order reduction for second order systems". Impact Factor: 1.579
7. S. Ali, R. Mohd-Mokhtar and S. Haider, "Infinite and Finite Time-Frequency Interval based Variants of Second-Order Balanced Truncation for Stable and Unstable Systems," in IEEE Access, doi: 10.1109/ACCESS.2020.3034797. Impact Factor: 3.75.
8. Ali, S., Mohd-Mokhtar, R., Haider, S., Bukhari, S. H. R., & Rasool, A. (2021). Model Reduction Techniques for Unstable Second Order-Form Systems. IEEJ Transactions on Electrical and Electronic Engineering, 16(3), 445-454.
9. Haider Shafiq; Bintul Huda, Aamina, Rasool Akhtar, Bukhari Syed Hashim Raza, "Subspace Identification of Fault Modes for Twin Rotor System", International Journal of Intelligent Unmanned Systems, Impact Factor: 1.17
10. Saba Rani, Shafiq Haider, Usman Masud, Aamina Bintul Huda, "Accurate Measurement of Gas Concentration using Apodized FBG for Variation in Temperature and Presence of Noise", Sensor letters, Impact Factor: 0.60
11. Raza, H., Zaidi, S. A. A., Rashid, A., & Haider, S. (2021). An area efficient and high throughput implementation of layered min-sum iterative construction a posteriori probability LDPC decoder. Plos one, 16(3), e0249269. , Impact Factor: 2.740
12. Rani, Saba, Shafiq Haider, Syed Hashim Raza Bukhari, Syed Azhar Ali Zaidi, and Aamina Bintul Huda. "Performance Optimization of Apodized FBG Biomedical Sensor for Variation in Temperature and Presence of Noise." IEEJ Transactions on Electrical and Electronic Engineering (2022).
13. M. Saqlain, M. Riaz, and K. S. Haider, "Controller design for performance analysis and optimization of twin rotor system", International Science Journal, vol. 29, no 2, pp. 349-355, 2017.
14. S. Haider, A. Ghafoor, M. Imran, F. M. Malik, "Techniques for computation of frequency limited H-Infinity norm", 4th International Conference on Mechanical, Electronics and Computer Engineering, China, pp. 1-5, 2017.
15. K. S. Haider, I. H. Kazmi, M. I. Rehman, "Kalman filter based state estimation for Linearized Twin Rotor System", Frontiers of information technology, CIIT IEEE Pakistan, 2011.

16. Sadaqat Ali, Rosmiwati Mohd-Mokhtar and Shafiq Haider, Structure Preserving Balanced Truncation for Discrete Time Second Order Systems, Electrical and Electronic Postgraduate Colloquium 2019, 11 Dec 219, Pulau Pinang, Malaysia, pp. 1-2.
17. Mubashir Rehan, Shafiq Haider, Stable Reduced Order Model for Index-3 Second Order Systems, NED University, 2022
18. Humaira Rauf Qazi, Shafiq Haider, Model Reduction of Discrete time Index-3 Second Order Form Systems for Limited Frequency Interval
19. **[J10]** Raza H, Zaidi SAA, **Rashid A**, Haider S, "An area efficient and high throughput implementation of layered min-sum iterative construction a posteriori probability LDPC decoder." PLOS ONE 16(3): e0249269. https://doi.org/10.1371/journal.pone.0249269 [IF=2.74 Q2 2020 Ranking]

20. **[J09]** Ijaz M, Zaidi SAA, **Rashid A** (2021) Uniform patterns based area-efficient and accurate stochastic computing finite impulse response filter. PLOS ONE 16(1): e0245943. https://doi.org/10.1371/journal.pone.0245943 [IF=2.74 Q2 2020 Ranking]

21. **[J08]** Muhammad Fahim Zafar, Usman Masud, **Aamir Rashid**, Mudassir Murtaza & Tariq Ullah (2021) Comment on 'An ultrathin and broadband radar absorber using metamaterials', Waves in Random and Complex Media, DOI: 10.1080/17455030.2020.1869350 [IF=3.33 Q1 2020 Ranking]

22. **[J07]** Ullah, T, **Rashid, A**. Angularly stable and broadband chiral metamaterial based design for asymmetric transmission of linearly polarized waves. *Microw Opt Technol Lett.* 2021; 63: 226–234. https://doi.org/10.1002/mop.32564 [IF=0.957 Q4 2020 Ranking]

23. **[J06]** Murtaza, M, **Rashid, A,** Tahir, FA. A highly efficient low-cost reflective anisotropic metasurface for linear to linearly cross- and circular-polarization conversion. *Microw Opt Technol Lett.* 2020; 1 8. https://doi.org/10.1002/mop.32748 [IF=0.957 Q4 2020 Ranking]

24. **[J05]** Saba Arshad , Farooq A. Tahir , **Aamir Rashid** , M. M. Saad Missen & James A. Flint (2020) Co-planar-waveguide fed Circularly Polarized Antenna for Wireless WLAN/LTE Applications, *Electromagnetics*, 40:5, 354-363, DOI: 10.1080/02726343.2020.1780379 (Tylor & Francis) [IF 0.553 Q4 2020 Ranking]

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Degradation Analysis of Robot Vision Sensor for Autonomous Inspection of Nuclear Sites," IEEE Sensors Journal, 2020 DOI:10.1109/JSEN.2021.3050168 (Peer-reviewed, IF=3.08)

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34. M. U. Khan, S. Aziz, M. Sohail, S. Z. H. Naqvi, S. Samer, και Z. Sajid, 'Detection of Subacute Intestinal Obstruction from Surface Electromyography Signatures', στο *2020 International Conference on Emerging Trends in Smart Technologies (ICETST)*, 2020, σσ. 1–6.

35. M. U. Khan, S. Aziz, S. Z. H. Naqvi, και A. Rehman, 'Classification of Coronary Artery Diseases using Electrocardiogram Signals', στο *2020 International Conference on Emerging Trends in Smart Technologies (ICETST)*, 2020, σσ. 1–5.

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46. M. U. Khan, M. Saad, S. Aziz, J. M. Ch, S. Z. H. Naqvi, και M. A. Qasim, 'Electrocardiogram based Gender Classification', στο *2020 International Conference on Electrical, Communication, and Computer Engineering (ICECCE)*, 2020, σσ. 1–6.

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53. M. U. Khan, S. Ibraheem, M. Sohail, S. Aziz, S. Z. H. Naqvi, και Z. Sajid, 'Cardiotocography: An indicator to predict Vaginal and Cesarean Deliveries', στο *2020 First International Conference of Smart Systems and Emerging Technologies (SMARTTECH)*, 2020, σσ. 77–82.

54. H. Shahid, A. Butt, S. Aziz, M. U. Khan, και S. Z. H. Naqvi, 'Emotion Recognition System featuring a fusion of Electrocardiogram and Photoplethysmogram Features', στο *2020 14th International Conference on Open Source Systems and Technologies (ICOSST)*, 2020, σσ. 1–6.

55. Z. Tariq, A. Rehman, T. Aslam, M. U. Khan, S. Aziz, και S. Z. H. Naqvi, 'Automatic Classification of Modulation Schemes under Blind Scenario', στο *2021 International Conference on Artificial Intelligence (ICAI)*, 2021, σσ. 203–208.

56. A. Malik, S. Z. H. Naqvi, S. Aziz, M. U. Khan, T. Hussain, και F. Hasan, 'Detection of Insomnia using Electrocardiography and Electromyography', στο *2021 International Conference on Artificial Intelligence (ICAI)*, 2021, σσ. 234–239.

57. F. Nazeer, S. Z. H. Naqvi, A. Kalam, A. G. Al-Sehemi, και H. Alrobei, 'Texture dependencies on flow stress behavior of magnesium alloy under dynamic compressive loading', *Vacuum*, τ. 191, σ. 110323, 2021.

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