# **Annual Progress Report 2020-2021**

# Department of Electronics Engineering



# University of Engineering & Technology, Taxila

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# **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 2<sup>nd</sup> 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.

## <u>Dean</u>

Prof. Dr. Aftab Ahmad

## <u>Chairman</u>

Prof. Dr. Yaseer Arafat Durrani

## <u>Professor</u>

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)

#### <u>Lecturers</u>

Engr. Adil Usman BSc Engg (Air Univ, Islamabad) MSc Engg (Air Univ, Islamabad)

Engr. Syed Zohaib Hassan Naqvi BSc Engg (IIUI), MSc Engg (IIUI) MBA (VU)

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

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

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

## <u>Lab Engineers</u>

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 activities done by the Department of Electronics Engineering, UET Taxila after the last PEC visit in 2018.

No.	Date	OBA Activities 2020-2022					
1	15-02-2022	Program Committee Minutes for Spring-2021 Course					
1.		Folders Evaluation					
2	27-01-2022	Program Committee Meeting Regarding Review of					
۷.		Entire Curriculum					
3.	18-01-2022	Spring-2021 Course Folders Evaluation					
1	16-12-2021	Program Committee Meeting Regarding Review of					
+.		Curriculum					
5	24-11-2021	Checking of All Course Folders of Spring 2021					
0.							
6.	26-05-2021	Fall-2019 Course Folders Evaluation					

		Spring-2020 Course Folders Evaluation				
7.	15-06-2021	Checking of All Course Folders-Fall-2019, Fall- 2019(Additional) Checking of Folders Spring-2020, Fall-2020				
8.	28-02-2021	Fall-2020 Course Folders Evaluation				
9.	26-10-2020	BoUGS meeting: Approval of Lab Rubrics & CLO Mapping with PLOs & Blooms taxonomy				
10.	05-10-2020	Program Committee meeting: Finalized Lab Rubrics				
11.	25-09-2020	CQI Committee meeting: Finalized Lab Rubrics				
12.	24-09-2020	Academic Council meeting; Approval of revised curriculum 2020 onwards. PEO, Program Mission				
13.	11-08-2020	Program Committee meeting: Mapping of 2K18 curriculum elective courses				
14.	04-08-2020	Subject/CQI Committee online meeting: Mapping of Curriculum Elective courses for 2K18 onwards				
15.	07-08-2020	Subject/CQI Committee online meeting: Finalized mapping of Curriculum Elective courses for 2K18 onwards				
16.	03-02-2020	BoUGS meeting: Approval of revised curriculum 2020 onwards				
17.	12-01-2020	IAB meeting: Approval of revised curriculum 2020 onwards				

# **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 42/2020 held on 24-09-2020:

- 1. Approval of Program Mission and Program Educational Objectives of Electronics Engineering Department, Main Campus.
- 2. Approval of BSc Undergraduate Revised Curriculum of Electronics Engineering Department, Main Campus.
- 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 Main Campus.

# **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. On 25-11-2020, the Self Assessment Report (SAR) has been submitted to PEC for ReAccreditation Visit for 2K17 and onward sessions.

Sr. No.	Session	Status	PEC Notification No.	
1	2K10 Session (1 <sup>st</sup> Session)	Accredited	PEC/AD/UET-T/CL- 70/2014 Dated: 24-10-2014	
2	$\begin{array}{ccc} 2K11 & \& & 2K12 \\ \text{Sessions} & & \\ (2^{nd} & \text{and} & 3^{rd} \\ \text{Sessions} & & \end{array}$	Accredited	PEC/AD/UET-T/DL- 73(EAB)/2015 Dated: 20-08-2015	
3	2K13&2K14Sessions(4th and 5thSession)	Accredited	PEC/AD/UET-T/DL- 83(OBA)/2017 Dated: 08-11-2017	
4	$\begin{array}{ccc} 2K15 \& 2K16 \\ (6^{th} & and & 7^{th} \\ Sessions) \end{array}$	Accredited under Level-II (OBA)	PEC/AD/UET-T/DL- 87(OBA)/2018 Dated: 17-08-2018	
5	$\begin{array}{cccc} 2K17, & 2K18 & \& \\ 2K19 \\ (8^{th} , 9^{th} \text{ and } 10^{th} \\ \text{Sessions)} \end{array}$	Accredited under Level-II (OBA)	PEC/AD/UET-T/DL- 103/2021 Dated: 28-10-2021	

BSc Electronics Engineering Program Accreditation Status

## **1.8 Students Teacher Ratio**

The following table lists the student teacher ratio.

Session	Current Strength
2K18	36
2K19	48
2K20	48
2K21	50

Total	182
Full-Time Dedicated Faculty (FTDF)	12
Shared Faulty	3 (25% of FTDF = 3)
TAs/RAs	0 (9*0.5=4.5; 20% of FTDF = 2)
Student Teacher Ratio	182/(12+3)=12.13

## 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.	Intake	Total	Total	Total	Present	No. of	
No	Batch	Applicants	Admissions	Students	Strength	Section(s)	
_		11	Offered	Admitted			
4	01110	4001	4.0	20	26		
1	2K18	4291	40	38	36	1	
2	2K19	735	50	50	48	1	
3	2K20	3575	50	48	48	1	
-						_	
4	2K21	3575	50	48	48	1	
						-	
Total			187	182	169	4	
- 510	-					•	

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	А	S	Х
	(Open Merit)	(Partial-Subsidized)	(Overseas)
2K21 Merit	65.059	52.671	49.800
No. of Seats	(22nd list)	(7 <sup>th</sup> list)	(1 <sup>st</sup> list)

## 1.9.2 Admission Response

As per record, 3575 applications were received last year for admission to BSc Electronics Engineering. Only 1.34% 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 2K17 and 2K18 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 2020-2021 are as follows:

- PoF, Wah
- HIT, Taxila
- AWD, Islamabad
- Aeronautical Complex, Kamra
- IEE, Islamabad

## 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

Due to COVID19, there were no industrial trips arranged during 2020-2021. However, following Industrial trips were arranged in 2019-20:

- Microtech. Ltd., Lahore (2K15, 2K16 Sessions)
- Packages, Lahore (2K15 Session)

• National Institute of Electronics, Islamabad (2K16, 2K17 Sessions)

## 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.

-	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

# 1.13.1 Enrollment – 2020-21

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

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			

# 1.13.3 Courses Offered

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

# List of MSc courses for up to 2019 session:

S.	Course	Course Name	Teacher	r	Туре	Specialization
No	Code		Name			
1	EN-5101	Advanced VLSI Design	Prof.	Dr.	Elective	Electronic System
			Shabbir			Design
			Majeed			
			Chaudhry			

# List of MSc courses for 2020 session onwards:

S.	Course	Course Name		Teac	Teacher		Specialization
No	Code			Nai	me		
1	EN-6004	Solid-State	Electronic	Prof.	Dr.	Core	Common to All
		Devices		Yaseer	Arafat		
				Durrani			
2	EN-6106	FPGA-based	System	Dr.	Syed	Elective	Electronics System Design
		Design		Azhar	Ali		
3	EN-6112	RF and	Microwave	Dr.	Bilal	Elective	Electronics System Design
		System Desig	<u>j</u> n	Aslam			

4	EN-6212	Theory	of	Solid	Prof.	Dr.	Elective	Microelectronic	Materials
		Materials			Yaseer	Arafat		and Devices	
					Durrani				
5	EN-6101	Advanced	VLSI Des	sign	Prof.	Dr.	Elective	Electronics Syste	em Design
					Shabbir				

# List of PhD courses for 2020 session onwards:

S.	Course	Course Name	Teacher	Туре	Specialization
No	Code		Name		
1	EN-7004	Physics of Microelectronic	Prof. Dr.	Core	Common to All
		Devices	Yaseer Arafat		
			Durrani		
2	EN-7106	Advanced FPGA-based	Dr. Syed	Elective	Electronics System
		System Design	Azhar Ali		Design
			Zaidi		
3	EN-7112	High-Frequency System	Dr. Bilal	Elective	Electronics System
		Design	Aslam		Design
4	EN-7212	Advanced Theory of Solid	Prof. Dr.	Elective	Microelectronic Materials
		Materials	Yaseer Arafat		and Devices
			Durrani		

# 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

# 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. Engg09MSc. Engg13BSc. Engg178

## 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 handson 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. <u>Electronics System Design Research Group:</u>

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. <u>Electromagnetics and Optics Research Group:</u>

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. <u>Control & Automation Research Group:</u>

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 2017-18. Details are given in (Annex-II).

# 2.8 Workshop/ Seminar/Conferences

- Engr. Zohaib Hasan Naqvi participated in international conference in Jordan.
- Dr. Usman Masud participated in international conference in USA.
- Dr. Usman Masud participated in two international Conferences in Pakistan.

# **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

## 3.2 Faculty Training for OBE

Faculty members of Electronic Engineering department participated in various seminars and workshops for OBE implementation. Details are listed in the following table.

Agenda	Attendee(s)	Date and Venue
"Training Workshop on OBE/OBA System" by Ir. Prof. Azlan bin Abdul Aziz, Malaysia	Dr. Usman Masood Dr. Sajjad Hussain Engr. Adil Usman	Electronics Engineering Department, UET Taxila 6-7 February, 2018
Training Session on OBE System	Faculty members of Electronic Engineering department.	Electronic Engineering Department, UET Taxila 1 <sup>st</sup> February, 2018.

# 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-2K17							
Sr.#	Reg. Nos	Names	Project Title	Supervisor				
1.	17-ENC-11 17-ENC-01	Abdullah Mazhar Naheel Rizvi	Design of 256MB DDR SRAM memory using Hardware Descriptive language	Dr. Yaseer A. Durrani				
2.	17-ENC-20 17-ENC-48	Muhammad Adnan Zurria Sajid	Design a Robot Model for Surgical Assistance	Dr. Yaseer A. Durrani				
3.	17-ENC-04 17-ENC-14	Hamza Tariq Hamza Aziz	An FPGA based SoC design for an Autonomous Robot	Dr. Azhar Ali Zaidi				
4.	17-ENC-32 17-ENC-29	Abdullah Mustafa Hayat	Design and Implementation of a FPGA based autonomous car	Dr. Azhar Ali Zaidi				
5.	17-ENC-34 17-ENC-06	Awais Zulafqar Eamin Chaudhary	Design of a Smart Irrigation Solution	Dr. Aamir Rashid				
6.	17-ENC-28 17-ENC-26	Sonia Kiran Fahad Ali Khan	Design of Control System for an Electric Vehicle Motor (Dr	Dr. Aamir Rashid				
7.	17-ENC-19 17-ENC-12	Nadeem Asghar Ghulam Rasool	Design of a Low-Cost Mechanical Ventilator System.	Dr. Aamir Rashid				
8.	17-ENC-47 17-ENC-25	M Fezan-ul- Islam Ghulam Abbas	Smart Assistance System for the Visually Impaired	Dr. Usman Masud				
9.	17-ENC-46 17-ENC-07	Bilal Altaf Ali Hamza	Multipurpose Agribot	Dr. Usman Masud				
10.	17-ENC-41 17-ENC-52	Arslan Riasat Imran Niazi	Controller Design for a Control System	Dr. Khawaja Shafiq Haider				
11.	17-ENC-27 17-ENC-13	Muhammad Furqan Syed Zubair Zahid	PLC-based Automation of a Process	Dr. Khawaja Shafiq Haider				
12.	17-ENC-31 17-ENC-08	Hira Shaukat Awais Abbas	Model Order Reduction of Large- Scale Systems	Dr. Khawaja Shafiq Haider				
13.	17-ENC-49 17-ENC-18	Usama Gulzar Muhammad Zeeshan	Power controller design for electric bike	Engr. Adil Usman				
14.	17-ENC-38 17-ENC-16	Ahmad Zahoor Muhammad Ahmad	Multi-sensor signal data fusion using a machine learning technique for motor fault detection	Engr. Adil Usman				
15.	17-ENC-36 17-ENC-09	Asra Malik Ateeqa Sajjad	Design and Implementation of Brain Computer Interface for Electric Wheel Chairs with EEG and Eye-blinking Signals	Engr. M. Atif Imtiaz				
16.	17-ENC-39 17-ENC-17	Taimoor Aslam Mehran Ali	Assistive Navigation System design for Vision Impairers	Engr. M. Atif Imtiaz				
17.	17-ENC-50 17-ENC-40	Abdul Rehman Zain Tariq	Diagnostic System for Pulmonary Abnormalities	Engr. Zohaib Hassan				

	Final Year Project List for Session-2K18								
Sr.#	Reg. Nos	Names	Project Title	Supervisor					
1	18-ENC-04 18-ENC-36	Heera Ghaff ar Zunaira	Design of obstacle avoiding Robot	Prof. Dr. Yaseer A. Durrani					
2	18-ENC-25 18-ENC-17	Rashid Shar if 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 (2020-2022)

- F. Siddique, Yaseer A. Durrani "Efficient power macromodeling approach for heterogeneously stacked 3d ICs using Biogeography based optimization" PLOS ONE journal, <u>https://doi.org/10.1371/journal.pone.0264181</u>, 2022 (IF: 1.890)
- 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
- 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
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- 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. <u>https://doi.org/10.1371/journal.pone.0249269</u> [IF=2.74 Q2 2020 Ranking]
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- 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: <u>10.1080/17455030.2020.1869350</u> [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. <u>https://doi.org/10.1002/mop.32564</u> [IF=0.957 Q4 2020 Ranking]
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  8. <u>https://doi.org/10.1002/mop.32748</u> [IF=0.957 Q4 2020 Ranking]
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- 25. [J04] Hassan Tariq Chattha, Farooq A. Tahir, Zain B. Khalid & Aamir Rashid (2020) A novel compact folded zeroth-order resonant antenna for Internet of Things USB dongle applications, *Electromagnetics*, 40:4, 244-253, DOI: <u>10.1080/02726343.2020.1750676</u> (Tylor & Francis) [IF 0.553 Q4 2020 Ranking]
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- 28. [1] Zeba Khanam\*, **Bilal Aslam**\*, Sangeet Saha, Xiaojun Zhai, Shoaib Ehsan, Rustam Stolkin and KlausMcDonald-Maier, "Gamma-Induced Image

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- 33. S. Z. H. Naqvi, M. A. Choudhry, A. Z. Khan, και M. Shakeel, 'Intelligent System for Classification of Pulmonary Diseases from Lung Sound', στο 2019 13th International Conference on Mathematics, Actuarial Science, Computer Science and Statistics (MACS), 2019, σσ. 1–6.
- 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.
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- 37. S. Aziz, S. Z. H. Naqvi, M. U. Khan, και T. Aslam, 'Electricity theft detection using empirical mode decomposition and K-Nearest neighbors', στο 2020 International Conference on Emerging Trends in Smart Technologies (ICETST), 2020, σσ. 1–5.
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- 41. S. Z. H. Naqvi, S. Aziz, M. H. Tariq, M. U. Khan, H. A. Aslam, και M. A. Imtiaz, 'Effect of Al-Quran Recitation on Human Physiology', στο 2020 International Conference on Electrical, Communication, and Computer Engineering (ICECCE), 2020, σσ. 1–6.
- 42. M. U. Khan, F. Amjad, S. Aziz, S. Z. H. Naqvi, M. Shakeel, και M. A. Imtiaz, 'Surface Electromyography based Pakistani sign language interpreter', στο 2020 International Conference on Electrical, Communication, and Computer Engineering (ICECCE), 2020, σσ. 1–5.
- 43. M. U. Khan, Z. Mushtaq, M. Shakeel, S. Aziz, και S. Z. H. Naqvi, 'Classification of myocardial infarction using MFCC and ensemble subspace KNN', στο 2020 International Conference on Electrical, Communication, and Computer Engineering (ICECCE), 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.
- 47. S. Aziz, M. M. Hayat, S. Z. H. Naqvi, M. Furqan, M. U. Khan, και M. Z. Zahid, 'Electrocardiography based Biometric Verification System', στο 2020 International Conference on Electrical, Communication, and Computer Engineering (ICECCE), 2020, σσ. 1–5.
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- 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.
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