ADMISSIONS OPEN FALL 2023

MS Electrical Engineering Specialization

in Integrated Circuits (IC) & Systems

ICD Integrated Circuit Design Lab

"A Training from Idea to Product Design"

Department of Electrical Engineering at FAST-NUCES ISB offers an MS program with expertise in Integrated Circuits and Systems .Pioneer and most mature IC Design MS program in Pakistan, student will do the real-world tape out from project conception to the working silicon microchip.

WHY INTEGRATED CIRCUITS (ICs) DESIGN ?

- **High demand for skilled IC designers in global 500 Billion $ industry**
- **Recent IC design center established in the Public Sector Organizations.**
- **More than six IC startups in Pakistan over the last two years.**

WHY from FAST NUCES ?

- **First and most established program in Pakistan having licensed Cadence tools suite (worth: US$ 35000/-) and 28nm, 65nm, and 130nm TSMC PDKS.**
- **8 graduate level courses purely related to IC Design, covering all domains of IC Design from Analog, Digital, Mixed Signal.**
- **All of the MS ICD batches have 100% employment track record.**
- **More than 200 hours training of graduates on Cadence Tool Suite.**
- **Program tailored to train graduates in 10 Months to enter Semiconductor Industry.**
- **Proven track record of more than a dozen fabricated graduate projects in Pakistan with two graduate student batches.**
- **International Training collaboration with Si-Valley company**

Feedback from Alumni and Industry

- **The courses were specifically designed to provide the students with a strong knowledge of electronics and IC design skills. (Dr. Nasir, Sr Director, NECOP)**
- **This program is perfect for Engineers seeking in-depth training from concept to tape-out in analog and digital IC design. (Aziz ur Rehman GM, NECOP)**
- **One thing I must say! After working with the faculty, if you put your whole effort too, you will be a practical Chip designer. (Hamza Saleem, MS IC)**
- **The program offered me a variety of skills including design, plan, management, economy, and art of designing practical Integrated circuits, (M Usman, MS IC)**

Teaching and Technical Staff

Prof. Dr. Rashad Ramzan
M.S. Royal Institute of Technology Stockholm, Germany
Ph.D. Linkoping University, Sweden
Professor at Department of Electrical Engineering
FAST, NUCES, ISB.

Dr. Hassan Saif
M.S. & Ph.D. Sungkyunkwan University, South Korea.
Asst. Professor at
Department of Electrical Engineering
FAST, NUCES, ISB.

Engr. Hamza Atiq
MS (IC Design),
Design Engineer
FAST, NUCES, ISB.

Engr. Ali Sabir
Lab Engineer
FAST, NUCES, ISB.

HOW TO APPLY

- **Apply Online at**
  - **http://admissions.nu.edu.pk/**
  - **Or Scan QR Code**
- **For more details about MS IC design**
- **and our research group please visit**

http://isb.nu.edu.pk/rfcs2/

Info: hassan.saif@nu.edu.pk ; ali.sabir@nu.edu.pk

Application Deadline: 5th July 2023

SCAN ME

PROGRAM AND COURSES OUTLINE

Integrated Circuits Master's Program

SEMESTER-1 Fall-2023	SEMESTER-2 Spring-2024	SEMESTER-3 Fall-2024	SEMESTER-4 Spring-2025
1. Research Methodology **2.** Digital Integrated Circuits **3.** Analog & DT ICS **4. Elective-I**	**1.**Mixed Signal Integrated Circuits **2. Elective-II** **3. Elective-III** **4. Elective-IV**	1. Master Thesis / Project(Part-I) Or **Elective-V**	**1.**Master Thesis / Project(Part-II) Or **Elective-VI**

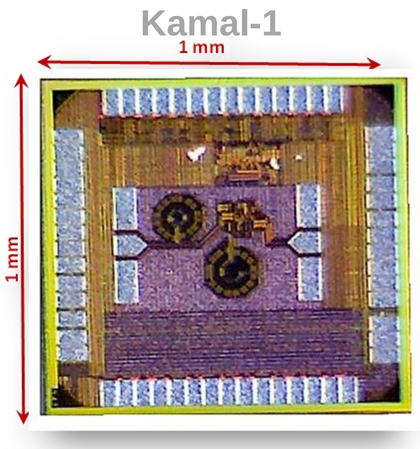
10 Months (2 Semesters) on Campus Course Work **(Sept-23 to June 24)**

Students Free to Join Industry.
Option-1: Opt Project, no campus visit.
Option-2: Opt thesis, 1 day/Week on campus arrival for thesis.
Option-3: 6 Credits course work.

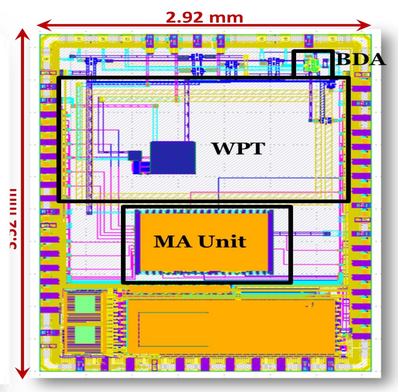
Note: Electives are selected depending on the type of specialization i.e. Analog, Digital, RF or verification.

18 Graduate Students Tapeout Projects (Sessions 2021 & 2022)

TSMC 65nm Tapeouts 2021

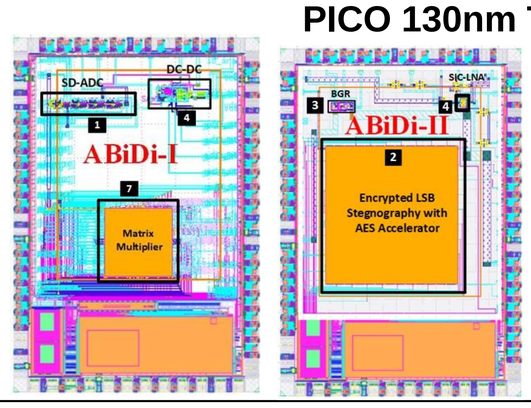


PICO 130nm Tapeouts 2021



1) Approximate ALU, 2) mm-Wave LNA, 3)Triboelectric Energy Harvester, 4) AC Logic, 5) mm-Wave Phase Shifter, 6) Sigma-Delta ADC 7) True Random Number Generator, 8) Configurable Logic Block, 9) Bi-Directional Amplifier, 10) WPT, 11) Multiply-Add Unit

PICO 130nm Tapeouts Nov, 2022



Sr	Project Title	Affiliation	Link
1	CMOS Bandgap Voltage Reference	FAST-NU, ISB	https://platform.efabless.com/projects/874
2	Spatial Sigma Delta ADC	FAST-NU, ISB	https://platform.efabless.com/projects/872
3	Fast Transient Response DC/DC Conv.	FAST-NU, ISB	https://platform.efabless.com/projects/879
4	Subthreshold Ultra Low Power SRAM	FAST-NU, ISB	https://platform.efabless.com/projects/883
5	Self-Interface Cancelation LNA	FAST-NU, ISB	https://platform.efabless.com/projects/888
6	Matrix Multiplier for AI on Edge Applications	FAST-NU, ISB	https://platform.efabless.com/projects/889
7	Low Power Approximate Processor	FAST-NU, ISB	https://platform.efabless.com/projects/921
8	ReRAM Based DNN	FAST-NU, ISB	https://platform.efabless.com/projects/904

The other 14 projects were selected from MIT-USA, UT Austin-USA, North Carolina University-USA, Austria, Egypt, and few more.

ELIGIBILTY

- **Bachelor from PEC recognized University in: (Min CGPA=2.0)**
  - **Electrical/Electronics Engineering**
  - **Mechatronics Engineering**
  - **Telecommunication Engineering**
  - **Computer Engineering**

Scholarships Criteria

- **Selection Procedure**

Step1: NUCES MS EE Admission Test
GAT or GRE are not valid for MS ICD program

Step2: NUCES, Islamabad IC Design Lab Test/Interview