ADMISSIONS Fall 2021
2 Year MS Electrical Engineering in Integrated Circuits (IC) and Systems

ICD Integrated Circuit Design Lab

"A training from Idea to Product Design"

Department of Electrical Engineering at FAST-NUCES offers a MS program with expertise in Integrated Circuits and Systems . This is a first and most mature MS IC design program in Pakistan, each student in this program will do the real-world tape out from project conception to the working silicon microchip under the guidance of faculty supervisor from university and industry experts

WHY INTEGRATED CIRCUITS (ICs) DESIGN ?

- Pivotal in 21st century technology trends; e.g. 5G, AI, and IoT systems.
- High demand for skilled IC designers in global > 360 Billion $ industry.
- More than four IC Design Startups in Pakistan.
- Recent IC design center established in the Public Sector Organizations.
- Huge demand of skilled IC designers in China and Far East.

WHY from FAST NUCES ?

- Pioneer of IC design program in Pakistan.
- Established **collaboration with public and private industrial** partners.
- **25 fully industrial funded MS** students already enrolled in Spring-2020 will tape-out 8 group projects on two ICs in Spring-2021.
- An established **theoretical and experimental** program with a hands on experience of **conceptualization to end product IC design process**.
- Fully developed ICD lab with four full time faculty members with degrees in IC design and cumulative **experience of over a dozen IC tapeouts**.
- An opportunity to learn modern **IC design technique from experts**.
- Introduction and experience design experience on licensed Cadence tools suite (Worth: US$ 35000/-) and advanced **65nm, 130nm, and 180nm** process development kits (PDKs).
- Bright prospect of **placement in public and private organizations** after MS

PROGRAM AND COURSES OUTLINE

Integrated Circuits Masters Program

SEMESTER-1 Fall-2021	SEMESTER-2 Spring-2022	SEMESTER-3 Fall-2022	SEMESTER-4 Spring-2023
1. Research Methodology 2. Digital Integrated Circuits 3. Analog & DT ICS 4. Elective-I	1.Mixed Signal Integrated Circuits 2. Signal Integrity, Packaging and SoC Design 3. Elective-II	1.Master Thesis (Part-I) 2. IC Design Project: From Schematic to Chip Tapeout	1.Master Thesis (Part-II) 2. Elective-III

Tapeout Projects (Session-2020)

- **Gp-1:** Logic Family for Self-Powered ASICs
- **Gp-2:** Fault Tolerant CLB Design
- **Gp-3:** 28-32 GHz LNA for 5G NR applications
- **Gp-4:** mm Wave Phase Shifter for massive MIMO application
- **Gp-5:** MMIMO Channel Estimation with $\Sigma\Delta$ ADC
- **Gp-6:** Capacitor Less High Efficiency Triboelectric Energy Harvester
- **Gp-7:** ASIC Implementation of ALU based Approximate Computing
- **Gp-8:** True Random Number Generator for 5G NR

ELIGIBILTY

- Bachelor in
  - Elect./ Electronics Engineering
  - Computer Engineering
  - Telecommunication Engineering
  - Mechatronics Engineering

Fellowships

Multiple Fellowships Available with Full or Partial Tuition Fee Wavier for Excellent performance or Financial Needs
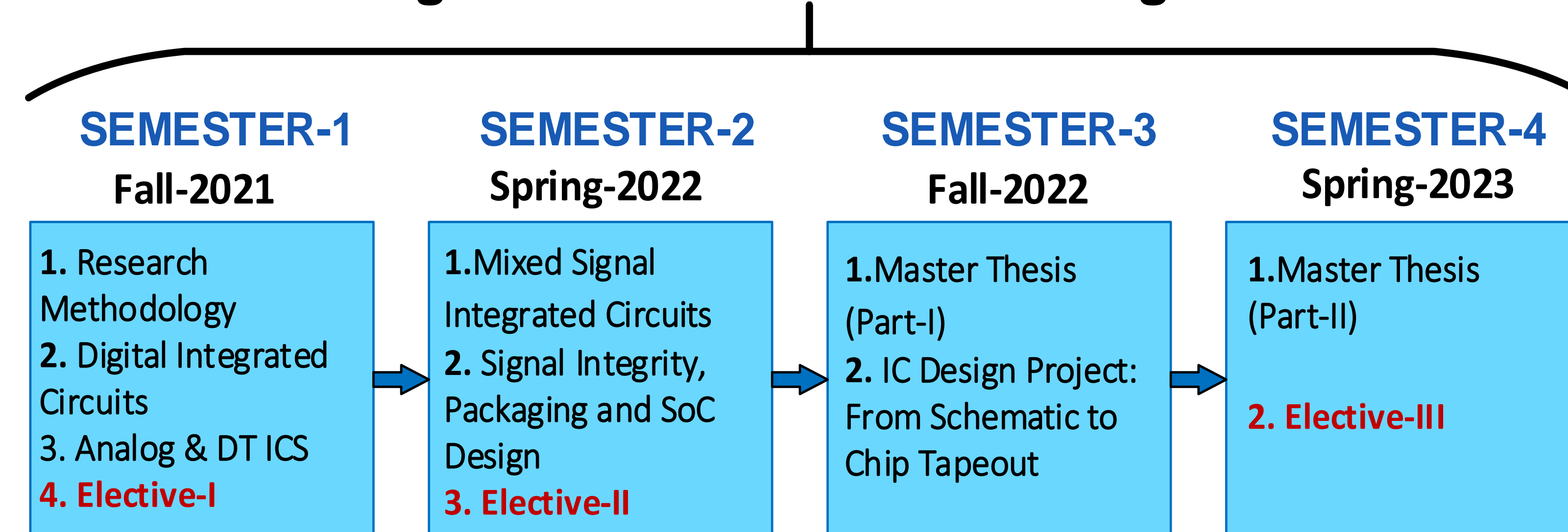Tuition fee 250K Rs/ 2-Years (Approx.)
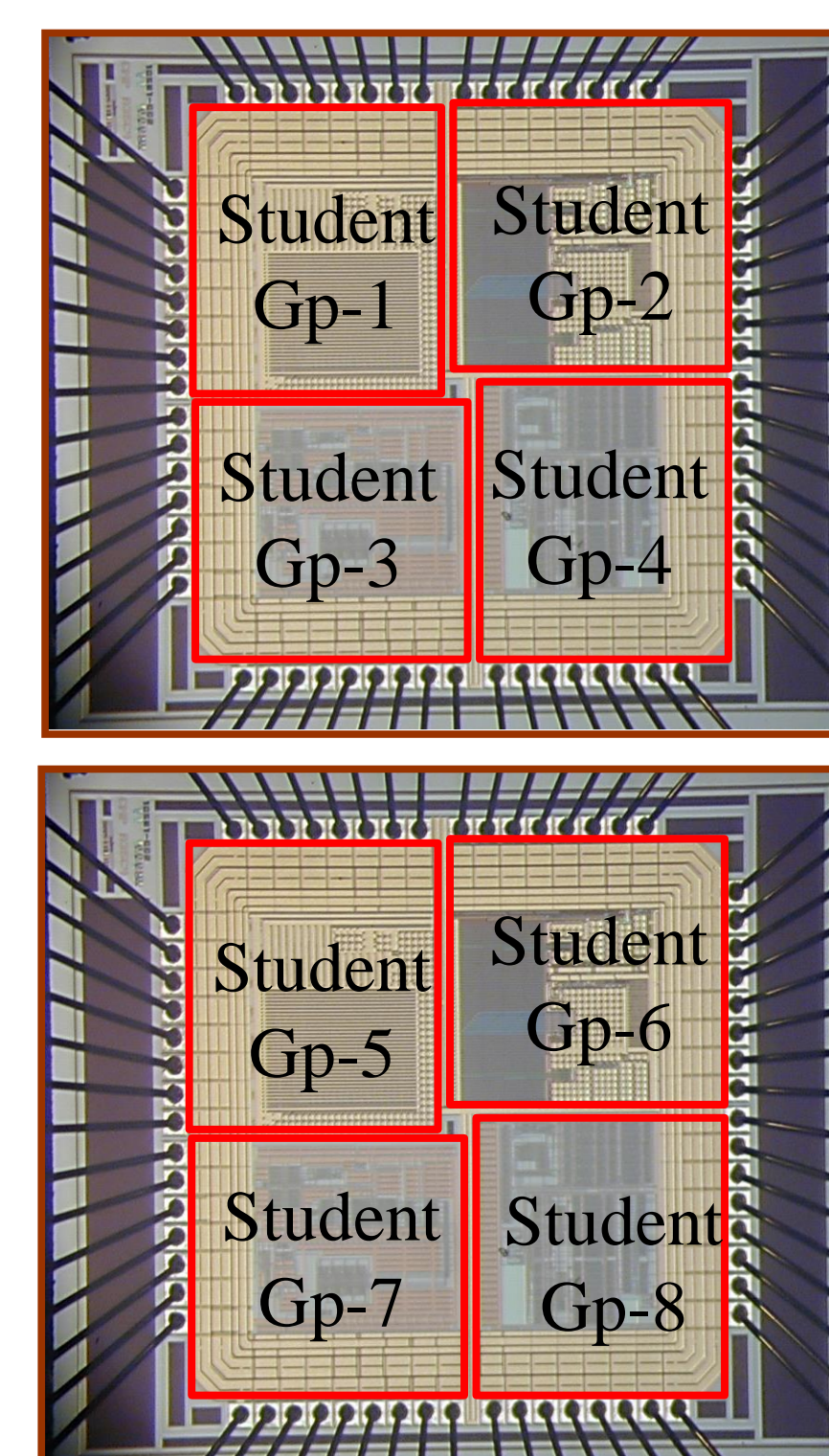
Teaching and Technical Staff

Prof. Dr. Rashad Ramzan
Professor & Director RFCS^2 Lab
FAST, NUCES, ISB.

http://isb.nu.edu.pk/rfcs2/team_files/CV_Rashad_06_Dec_2020.pdf

Dr. Hassan Saif
Asst. Professor at
FAST, NUCES, ISB.

http://isb.nu.edu.pk/rfcs2/team_files/Hassan%20Saif%20FAST%20Lab%20CV.pdf

Engr.Sidra Saeed
Design Engineer
MS EE (IC Design)
FAST, NUCES, ISB.

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

PROGRAM DETAILS

- For more details about MS IC design and our research group please visit http://isb.nu.edu.pk/rfcs2/
- Contact: hassan.saif@nu.edu.pk , hamza.atiq@nu.edu.pk

HOW TO APPLY

- Apply Online at http://admissions.nu.edu.pk/ or visit https://www.nu.edu.pk

School of Electrical Engineering