



# WELCOME

**“Institution of Eminence”**

**under MHRD/MoE**

**#1 university (2016-2022)  
#1 Research institution (2021)**

**National Institutional Ranking Framework  
(MHRD/MoE)**

**#18 in Emerging Economies**

**# 37 Asia Universities**

**# 81 Computer Science**

**#101-125 Engineering & Technology**

**#91-100:World Reputation**

**Times Higher Education (2021)**

**World #1 Research Institute in  
Citations/faculty**

**#186 Globally**

**QS World University Rankings (2022)**





# Indian Institute of Science

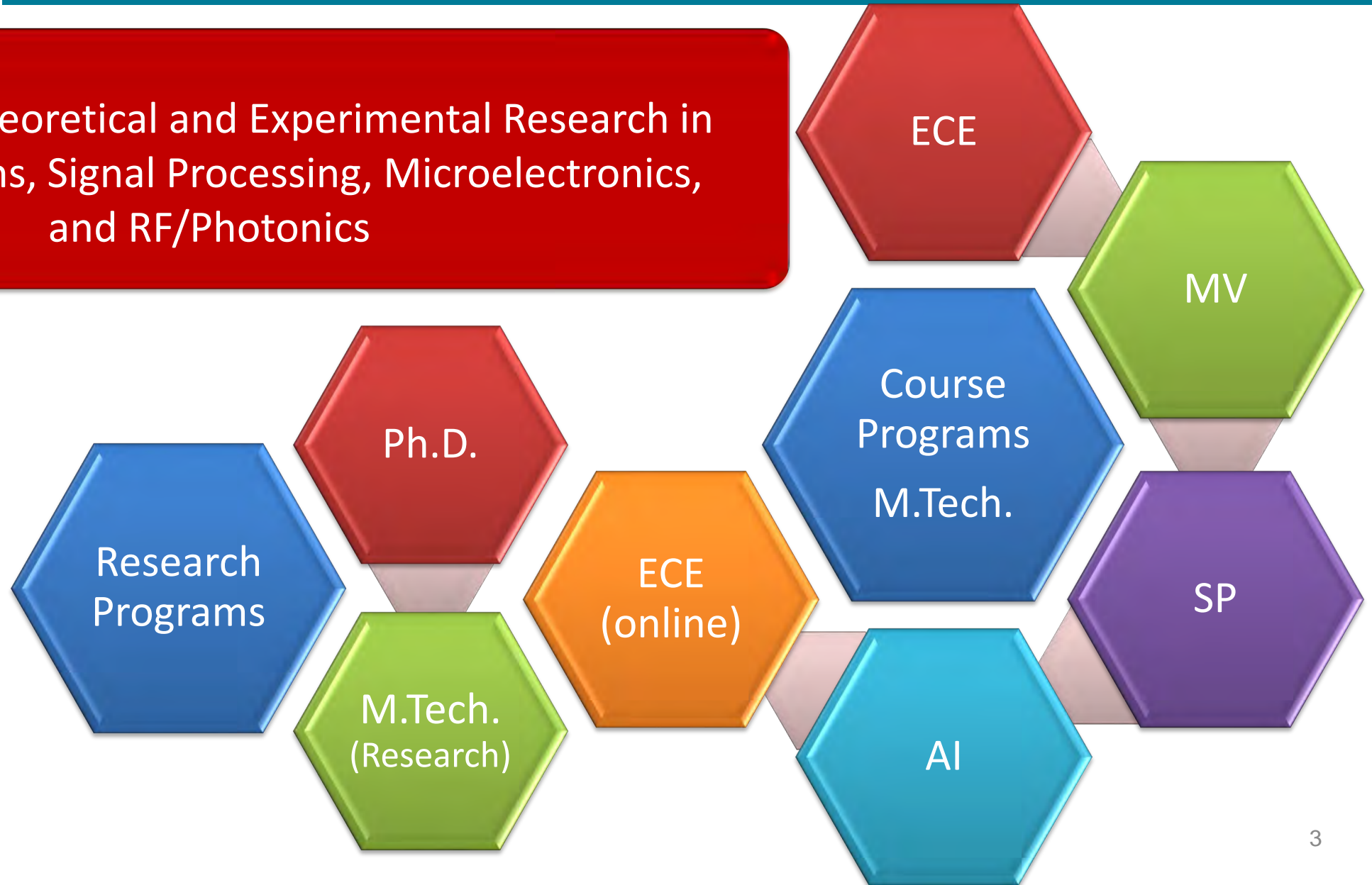
- 20+ M.Tech. Programs
  - 40+ Academic Departments
  - 450+ Faculty Members
  - 4000+ Students
  - 110+ years of rich History
- Accomplished Alumni
  - Top-notch faculty, Globally
  - Cutting edge Research
  - Serene Environment





# ECE: Vision & Programs

Excellence in Theoretical and Experimental Research in  
Communications, Signal Processing, Microelectronics,  
and RF/Photonics





# Research Topics in ECE Dept.

## Communications, Networks Cyber Physical Systems

- Wireless Communications
- Coding Theory, Information Theory
- Cognitive Radio, Full Duplex
- Visible Light Communication
- Quantum Communication
- Wireless Networks
- Social Networks
- Sensor Networks, IoT/CPS
- **5G & Beyond**

## Signal Processing Machine Learning

- SP for Communication
- Compressive Sensing
- Indoor positioning
- Image, video and Vision
- Assistive Technologies
- Graph Signal Processing
- **Machine Learning**
- **Digital Health**

## RF, Applied EM, Photonics, Nano-electronics

- Antennas
- Metamaterials
- Low Power Radars
- CMOS for RF
- Low Power Circuits
- Integrated Photonics
- Optical Communication, VLC
- Computational EM
- Nano Materials, Devices, Sensors;
- **Quantum Technologies**





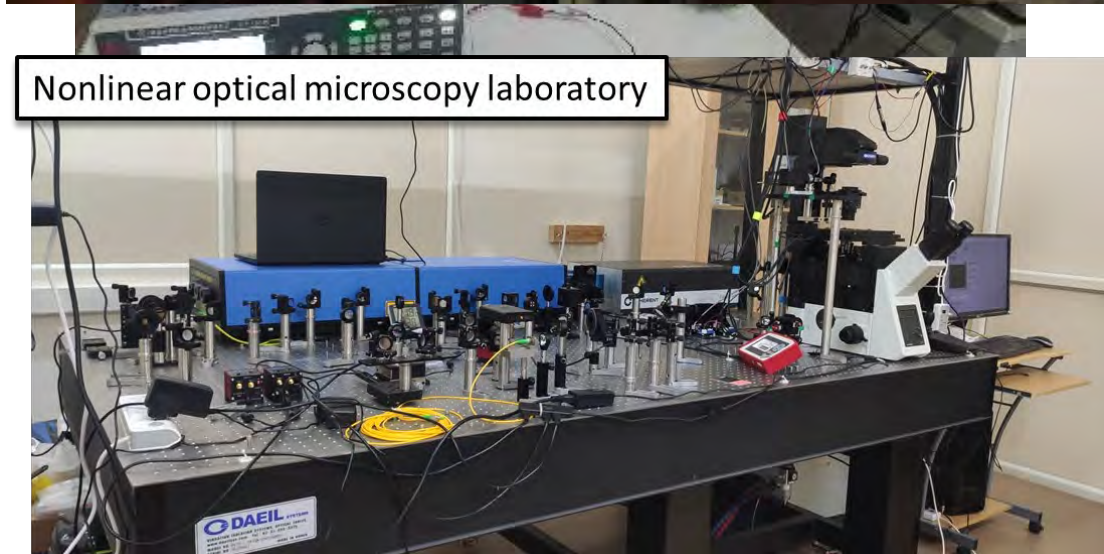
# State of the art Research Infrastructure



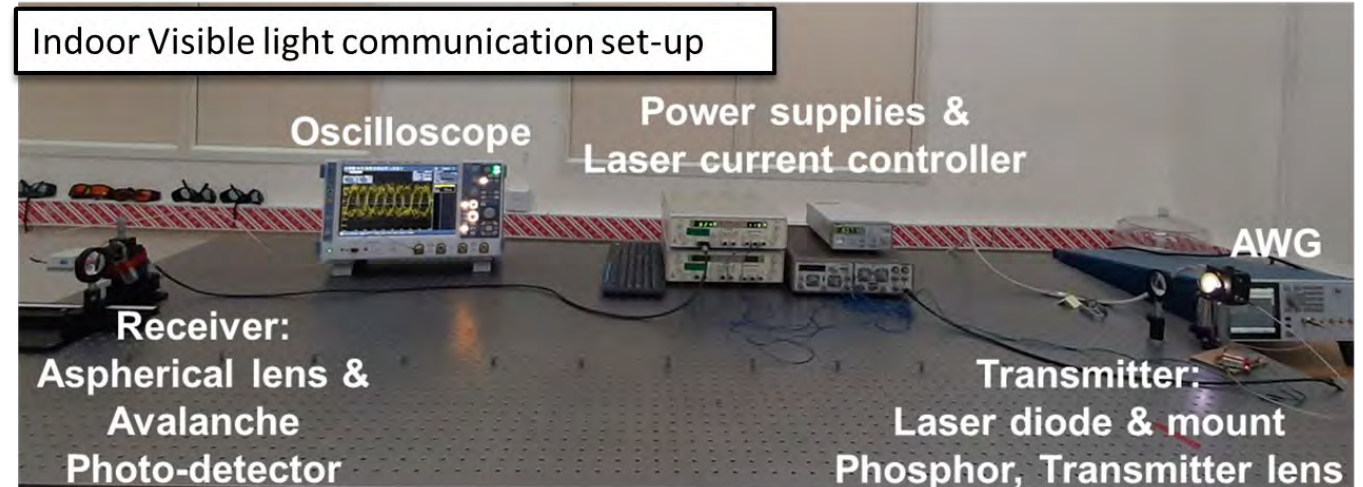
Testbench for radar-on-chip



MM wave 5G Communication Testbed



Nonlinear optical microscopy laboratory



All of these facilities established during the last 10 years



# Highly Decorated Faculty

**Professors: 11; Honorary Professors: 2**

**Assoc. Professors: 8; Asst. Professors: 5**

**Adjunct Faculty: 4; Ind. Adv. Board: 7**

**Associate Faculty: 3; Scientific Staff: 3**

**Admin Staff: 2; Technical Assistants: 2**

4 JC Bose National  
Fellows

SS Bhatnagar  
Award

Kalam Innovation  
Award

4 Swarna-Jayanti  
Fellows

Inspire, Ramanujan  
Fellow

Visvesvaraya  
Young Faculty  
Fellow

6



8



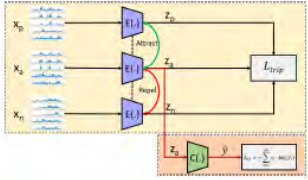
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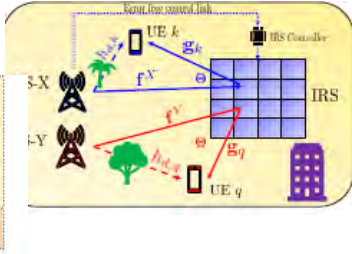




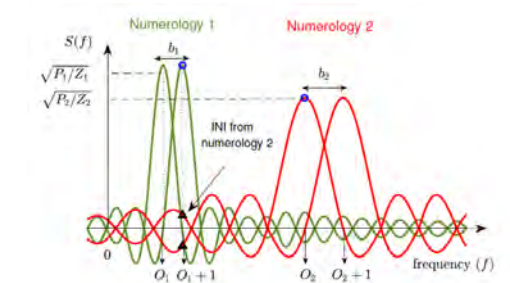
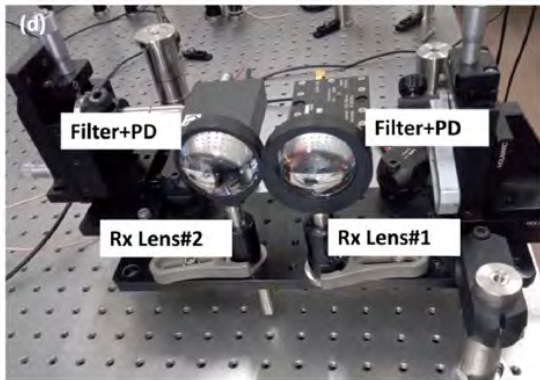
# Core Faculty Representation on Research Areas



AI/ML & SP

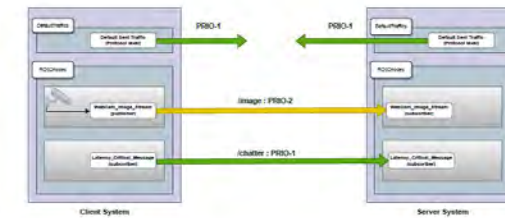


HF Circuits & Systems



Communications

Networks, Control



Current focus:

**Intelligent Sensing & Communication Systems**

6G & beyond communication; Photonics, Quantum Science & Technology,



# Outreach to Industry

Alumni in  
Leadership

Industrial Advisory  
Board Members

Funded Research/  
Grants

Sponsored  
Fellowships

Internships &  
Placements

Startups by Faculty  
and Alumni







# Faculty Entrepreneurship

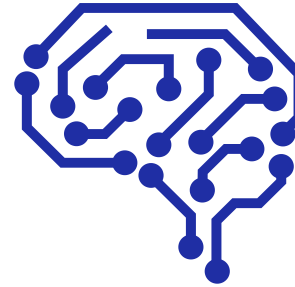
Prof. Dipanjan Gope



Compliance Scope

Virtual Laboratory for EMI/EMC

EMC behavior of Electronic Hardware at an early design stage to meet the compliance standard



COGNIA

Enabling Special Needs lives, the data way

work on helping children with special needs (Autism) using Deep Learning and Computer Vision techniques.

Dr Prathosh AP

Prof Himanshu Tyagi



Banyan Intelligence

Advanced Observability and AIOps  
for Connected Applications

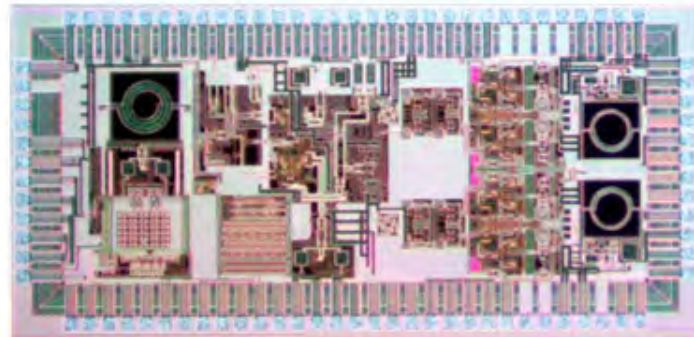
**Observability:** Aggregate and correlate || Charting and annotation  
Domain-specific KPIs and procedures integrated

**AIOps:** Explainable anomaly detection || Collaborative data analytics  
AI Labs for co-building and interpreting with experts

Prof Gaurab Banerjee

AagyaVision [www.aagyavision.com](http://www.aagyavision.com)

imaging and sensing systems using a combination of state-of-the-art semiconductor chip designs, radar technology, signal processing and artificial intelligence.



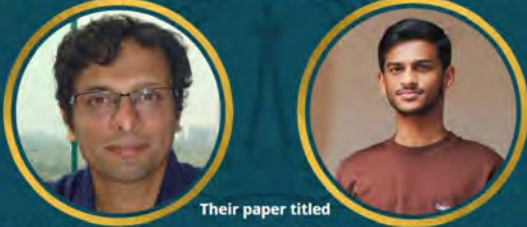




# Research/Student Accomplishments

*Congratulations*

**Prof Chandra R Murthy and Sudarsanan A K**



Their paper titled

On the Optimal Tradeoff of Age of Information and Transmission Power for Point-To-Point Links

Won the best paper award in the networking track at NCC 2023



CONGRATULATIONS

IEEE JACK KEIL WOLF ISIT STUDENT PAPER AWARD

IEEE ISIT 2023, August 27-31, 2023, Melbourne, Australia



CONGRATULATIONS ON WINNING  
QUALCOMM INNOVATION FELLOWSHIPS  
INDIA, 2021



*Congratulations*  
**ECE Alumnus!**

**DR PRATHAMESH PRAMOD**

His PhD Thesis:

Compression for Distributed Optimization and Timely Updates

has been selected as

runner-up for the IKDD Best Doctoral Dissertation in

Data Science Award



*Congratulations*

**DR. GEETHU JOSEPH**

**ECE Alumnus!**

Her PhD Thesis:

Linear Dynamical Systems with Sparsity Constraints:

Theory and Algorithms

won the

**2022 IEEE SPS Best PhD Dissertation Award**



*Congratulations*

Selected Students of

**Prime Ministers Research Fellowship**

cycle 10



Niladri Halder



Pavan S Karjol



Sachin Sampath



Saurav Roy

CONGRATULATIONS

**PRIME MINISTER RESEARCH FELLOWSHIP -2022**



SAYANTAN ADHIKARY



YASHVANTH L



SOHAM SHREERAM LAKHOTE



PRAGYA MISHRA



VINEETHA YOGESH



# About our PhD Program

World-class faculty and facilities to take your research to the best venues internationally

## Eligibility

- B.E./B.Tech./M.Sc. degree with a good GATE score above cutoff
- No GATE score needed if 4 year degree from CFTI with a CGPA of 8
- M.E./M.Tech.
- No prior research experience/publications required, but useful

## Stipend/Fellowships

- All admitted students get JRF equivalent stipend
- Prime Ministers Research Fellowships (PMRF) (25% current students)
- Sponsored projects (Govt/Industry) or Industry sponsored grants/fellowships (Qualcomm, CISCO, THALES, Google, IBM, TCS)
- Twinning programs





# Selection Process

- Selection is entirely by interviews
- No prior research experience required, but useful
- What is valued?
  - Excellent academic preparation
  - Strong motivation
  - Problem solving skills
- What is evaluated at interviews?
  - Ability to THINK on go
  - Willing to LISTEN
- SP/ML/Comm.
  - strong mathematical foundations in probability theory, linear algebra, transform theory required
- Photonics/RF/nanoE & Quantum Tech.
  - Some exposure relevant topics
- Mapping of research supervisor
  - List of faculty members with openings and their research outlines announced
  - Choices in google form non-binding
  - Before the interview you can mark Research Topics and/or Faculty Names which will be clarified during/after interviews
  - Selection will be based on your expressed interests. Expect administrative constraints
  - Department maps your interests with the closest faculty member/research area



# Life as Ph.D. Student

- Regular PMRF, ERP, QIP, Foreign
- Research supervisor
  - Based on research interest of students and distribution among research programs/ faculty
  - Will assist in choosing the right set of coursework
- **Research Training Program (RTP)**
  - Student registers for a set of courses
  - Number of credits:
    - With Masters: Min. 12, Max. 21
    - With Bachelors: Min. 24, Max. 33
  - Complete RTP in 1.5 years, (max. 2 years for direct Ph.D)
- Comprehensive exam (normally within 2 years)
- Annual review of research
- Research → Results → Publications → Colloquium → Thesis submission → Oral defense

## Frequently Asked Questions about PhD in ECE Department, IISc

### 1. How do I get admitted to PhD in the ECE Dept?

In order to get admitted to PhD in the ECE Department, you must (i) have a B.Tech. degree in ECE, EE, or IISc, or (ii) secured a Master's degree in a relevant field. If you satisfy the eligibility criteria, you will be eligible to apply for admission. Shortlisted applicants will be called for an interview. The specifics of the interview and the research indicated in the application form will be discussed during the interview.

### 2. How do I prepare for the technical interview?

The specifics of the interview and the research indicated in the application form will be discussed during the interview.

### 3. How do I know which faculty members in ECE will be taking students in the current year?

The number of students admitted by a faculty member depends on various factors, including the faculty member's research interests and the department's research areas. Faculty members willing to admit students in the current year will be listed on the department's website.

### 4. What are the active research areas under ECE?

The faculty in the ECE department broadly work in the areas of communication and network systems, signal processing, and microwave engineering and cyber-physical systems. Please look up individual faculty pages for more details.

Visit Dept. website for an FAQ on our PhD program  
Separate page for M.Tech. (Research)



# Interview Preparation Sessions

Day	Time	Topic	Instructors
Monday May 8 <sup>th</sup>	5:30 - 6:30 pm	Linear Algebra	Nagabhushan/Prasobh
Tuesday May 9 <sup>th</sup>	4:00 – 5:30 pm	Probability	Janaky/Tejashree
Thursday May 11 <sup>th</sup>	5:30 - 6:30 pm	Transform Theory	Nithin/Sravanthi
Friday, May 12 <sup>th</sup>	5:30 - 6:30 pm	Semiconductor physics, Analog circuits	Easha/Arpita Mishra





<https://ece.iisc.ac.in>

Please connect with us



ECE.Dept.IISc



Ecedeptiisc



Department-of-ece-IISc



IISc ECE Department

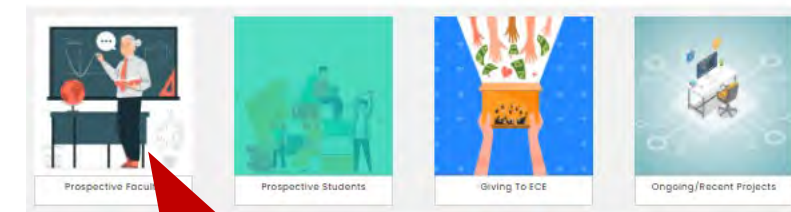


#### About the Department

Vision Statement: Excellence in Theoretical and Experimental Research in Communications, Signal Processing, Microelectronics and RF/Photonics.

The ECE Department is recognized by UGC as a Center for Advanced Studies and has a rich heritage and a strong reputation for R&D activities of internationally acclaimed standards, predominantly in the areas of Communications, Signal Processing, Microelectronics and RF/Photonics.

#### Spotlights



Information for  
Prospective Students