PhD Admissions Brochure Department of Electrical Engineering, IIT Hyderabad

October, 2016



भारतीय प्रौद्योगिकी संस्थान हैदराबाद Indian Institute of Technology Hyderabad

IITH Facts

- Started in August 2008
- PhD program started in January 2009
- MTech program started in August 2009
- 14 Departments covering all major engineering, science and humanities
- BTech, MTech, MDes, MPhil, MSc, PhD degrees offered
- More than 1850 students and 145 full time faculty (by Aug 2015)

- ▶ 900 BTech, 450 MTech, MPhil, MSc and MDes, 500 PhD
- Permanent campus construction work in progress
- All classes and labs running from permanent campus



Innovations at IITH

- IITH has 934 publications, 15 patents filed, and over 238 sponsored projects and consultancy projects
- ► Nearly 80% faculty have sponsored projects.
- IITH has strong industry collaboration with four PM fellowships are with industry collaboration.
- IITH has nearly Rupees 137 Crores in sponsored research funding and nearly 15 Crores of industrial research and consultancy.
- IITH has 105 laboratories for teaching, teaching plus research, and for only research.
- very active collaboration with Japan in research, academics and infrastructure development
- IITH has launched its technology incubator and 4 companies have already been incubated

Electrical Engineering Department @ IITH

- Faculty: 23 (fulltime), 5 (visiting)
- Programs:
 - BTech
 - MTech:
 - Comm. and Signal Processing (CSP),
 - Microelectronics and VLSI (Micro),
 - Power Electronics and Power Systems (PEPS),
 - Systems and Control (SysCon)
 - PhD

- Students: 375
 - ▶ BTech: 172
 - MTech: 120
 - PhD: 83
- Research Labs: 20
- Teaching Labs: 15
- Projects: 32
- Journal publications: 44
- Conference publications: 106
- ► Student feedback average: 4.26/5.00
- Products/prototypes: 6
- Total research funding in excess of 35 crores



Amit Acharyya (Micro) Assistant Professor Research interests: Signal Processing Algorithms, VLSI Architectures, Low Power Design Techniques



Sumohana Channappayya (CSP) Assistant Professor Research interests: Image and video quality assessment, perceptually optimal algorithms, multimedia communication



Ravikumar Bhimasingu (PEPS) Assistant Professor Research interests: Computer-aided power system analysis and modeling, Al techniques applications for power systems security improvement



U. B. Desai (CSP) Professor Research interests: Wireless communications, cognitive radio



Sushmee Badhulika (Micro) Assistant Professor Research interests: Nanomaterials, devices and circuits.



Ketan Detroja (Systems and Control) Associate Professor Research interests: Fault detection and diagnosis, Statistical (process) control, state estimation and MPC



Ashudeb Dutta (Micro) Assistant Professor Research interests: Analog Circuit Design, RFIC, Semiconductor Devices.



Sri Rama Murty Kodukula (CSP) Assistant Professor Research interests: Signal Processing, Speech Analysis, Pattern Recognition



Swati Gupta (Micro) Assistant Professor Research interests: Organic thin film transistors (OTFTs), Organic Solar Cells (OSCs).



Mohammad Zafar Ali Khan (CSP) Professor Research interests: Space-Time Coding for MIMO Channels, Cognitive Radio and MIMO Radar



Soumya Jana (CSP) Associate Professor Research interests: Multimedia signal processing and compression, Network communication, Information theory



Abhinav Kumar (CSP) Assistant Professor Research interests: Wireless comm. and networking,green cellular networks, user network selection, device to device communications, and radio resource management in heterogeneous wireless access networks.

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Kiran Kuchi (CSP) Associate Professor Research interests: Communication theory, Signal processing for communications, Network MIMO, Interference mitigation



Kaushik Nayak (Micro) Assistant Professor Research interests: Physics of semiconductor devices and electronic transport, Micro/Nanoelectronics, Modeling and simulation of electron devices, Quantum phenomena in nanostructures, Physical and wave electronics.



Shishir Kumar (CSP) Assistant Professor Research interests: Applications of 2D materials, especially graphen to electronics, sensors and fluidics.



Lakshmi Prasad Natarajan (CSP) Assistant Professor Research interests: Coding and Modulation for Communication



Siva Kumar K. (PEPS) Assistant Professor Research interests: Multilevel inverters, open-end winding induction motor drives, Switched Mode Power Conversion, micro grids, Power quality and control.



P. Rajalakshmi (CSP) Associate Professor Research interests: Wireless Sensor Networks, Cognitive Radio; Embedded Systems; Optical Networking

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Vaskar Sarkar (PEPS) Assistant Professor Research interests: Power system restructuring, voltage stability, transmission expansion planning, microgrids, distribution system analysis



Siva Rama Krishna Vanjari (Micro) Assistant Professor Research interests: Biosensors, Lab on Chip applications, VLSI Technology



G. V. V. Sharma (CSP) Assistant Professor Research interests: Communication Theory, Signal Processing



Pradeep Yemula (PEPS) Assistant Professor Research interests: Smart Grids, Power System Control Centers, Information Technology Architectures Smart Grid Standards, Smart Cities

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Shiv Govind Singh (Micro) Associate Professor Research interests: 3-D ICs technology, Micro/Nano fluidics, Lab on chip 3D solar cell

Research facilities @ EE, IITH

Immersive Multimedia



Smartgrids





Next-gen communication



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Who can apply?

- ► Candidates with BE/BTech with following specialization:
 - ► Electrical/Electronics and Communication Engineering
 - ► Any other related branch of Engineering/Technology

OR

- ► Candidates with ME/MTech with following specialization:
 - ► Electrical/Electronics and Communication Engineering
 - Any other related branch of Engineering/Technology

OR

 Candidates with a valid GATE score in the following: EC GATE paper

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Eligibility for Micro

Who can apply?

- ► Candidates with BE/BTech with following specialization:
 - Electrical/Electronics/Nanotechnology and Communication Engineering
 - Any other related branch of Engineering/Technology

OR

- Candidates with ME/MTech with following specialization:
 - Microelectronics/VLSI/Nanoelectronics
 - Any other related branch of Engineering/Technology

OR

 Candidates with a valid GATE score in the following: EC, EE or IN GATE paper Who can apply?

- ► Candidates with BE/BTech with following specialization:
 - Instrumentation and Control/Control Engineering
 - Any other related branch of Engineering/Technology

OR

- ► Candidates with ME/MTech with following specialization:
 - Systems/ Control & Computing/ Automation Engineering

Any other related branch of Engineering/Technology

OR

 Candidates with a valid GATE score in the following: IN/EE/EC GATE paper The following categories are available for Direct PhD

- Direct admission to PhD right after B Tech at an IIT: CGPA≥8.0 for admission without GATE;
- 2. Direct admission to PhD right after B Tech at a non-IIT institution: GATE + interview for students with CGPA \geq 8.0

- Candidates employed in recognised R&D Organisations can opt for applying in the external (or sponsored) category
- In case shortlisted for further selection process, kindly note that the No Objection Certificate (NOC) issued by your organization has to be presented for verification

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more details are available at: This Link

Interested candidates can apply online through IIT Hyderabad's website:

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- Candidates called for selection should choose one of the four groups for consideration
- Selection is a two-stage process:
 - Written test (see syllabus in following slides)
 - Candidates selected after the written test will have to appear for a technical interview
- ► Final selection is based on performance in the interview.
- It is advisable that shortlisted candidates bring a hard copy of recommendation letter from two referees in sealed envelopes for the selection process.

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In addition to GATE EC syllabus, emphasis will be on:

- Signals and Systems
- Discrete time signal processing
- Linear Algebra
- Probability and random processes
- Analog and digital communications

In addition to GATE EC syllabus, emphasis will be on:

- Semiconductor Fundamentals and devices
- Discrete time signal processing
- Electrical networks
- Digital electronics and circuits
- Analog electronics and circuits
- Candidates will be allowed to appear for either 1 of the following question papers:
- Semiconductor technology: Device physics and synthesis/fabrication/characterisation/nanotechnology

- ► OR
- Design: Digital, Analog design and RF

In addition to GATE IN syllabus, emphasis will be on:

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- Electrical Networks
- Linear Algebra
- Control systems
- System design
- Advanced Control
- State Space Techniques
- Optimization

The department reserves the right to set any cut off criteria for shortlisting the candidates. The shortlisted candidates will be called for further selection process. The department has the right not to select any if appropriate candidates are not found.

Please note that in this round PhD applications are accepted only for the following streams/funding types

- MHRD funded PhD positions are only available in Micro
- Project funded PhD positions are available in Micro and CSP
- PhD Applications in Sponsored Category will be accepted in Micro, CSP, and Control

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No PhD positions are available in PEPS

All the Best!!

