

Indian Institute of Technology Indore

Advertisement for Admission to Ph.D. Program in Electrical Engineering for Spring Semester of Academic Year (AY) 2018-19

IITI/Acad/PhD Admissions/2018-19

September 5, 2018

IIT Indore is a premier institute for higher education and research in India and is currently ranked 14th in 2018 NIRF in Engineering. IIT Indore invites applications from highly motivated and research-oriented students for admission to its PhD Program in the Discipline of Electrical Engineering for the Spring Semester of Academic Year (AY) 2018-19 as per the prescribed categories of admission and time schedule. Candidates MUST visit the profiles of the faculty members available at <http://ee.iiti.ac.in/faculty.html> before applying for the PhD Program.

Categories of Admission: Kindly refer to the main PhD Advertisement of the Institute available at <http://academic.iiti.ac.in/phdadvt.php>

Last date of Online Application through <http://academic.iiti.ac.in:8080/nregistration.jsp>

October 1, 2018 (Monday)

Date of Written Test and/or Interview

October 12-13, 2018 (Friday and Saturday)

Electrical Engineering

Qualifying Degree and Examination (Minimum Eligibility)

1. Minimum first class* Masters degree in the relevant discipline of Engineering/Technology, OR
 2. Minimum first class* Bachelors degree in the relevant engineering/technology discipline with a valid GATE score or UGC/CSIR-JRF qualification or equivalent fellowship, OR
 3. B.Tech. degree from an Indian Institute of Technology (IIT) with a minimum CPI of 8.0, OR
 4. Minimum first Class* Masters degree in the relevant discipline of Science with valid GATE qualification or UGC/CSIR-JRF qualification or equivalent externally funded fellowship
- *A first class is defined as
- (i) 60 % marks for GEN/OBC (55% for SC/ST) category in aggregate or as specified by the university/institute, OR
 - (ii) CPI/CGPA of 6.0 for GEN/OBC (5.5 for SC/ST) category on the scale of 10 with corresponding proportional requirements when the scales are other than on 10 (for example 4.8 for GEN/OBC category (4.4 for SC/ST) on a scale of 8), OR
 - (iii) A first class as specified by the University/Institute awarding the degree.

IMPORTANT INSTRUCTIONS (for Indian Nationals):

1. Prospective applicants must apply online through our website (<http://academic.iiti.ac.in:8080/nregistration.jsp>). After submitting the online application, the candidates should send the signed hard copy of the application along with a recent photograph, printout of SBI i-Collect payment receipt, self-attested relevant certificates and other documents by post to **DPGC Convener, Electrical Engineering, Scandium Building (Pod 1A), Indian Institute of Technology Indore, Simrol 453552, Indore, Madhya Pradesh**, so as to reach IIT Indore latest by **October 9, 2018**. Please do NOT post any original certificates/testimonials or recommendation letters.
2. PhD written test and/or interviews shall be conducted on **October 12-13, 2018 (Friday and Saturday)** at **Manganese Building (Pod 1E), IIT Indore, Simrol 453552, Indore**. Eligible candidates who have submitted online application (before the last date) and fulfil the minimum eligibility criterion are strongly encouraged to report at **9 am on October 12, 2018**. Candidates must take a note that no separate email/communication will be sent to applicants regarding PhD selection process. **No communication, in any form, regarding short listed candidates, accommodation, change of date, syllabus of written test and/or interview etc. will be entertained.** Mere fulfilment of the minimum eligibility does not entitle a selection into the PhD program.
3. In addition to sending the documents by post (refer to instruction 1), prospective candidates may also bring along the following documents on **October 12, 2018, to present before the selection committee.**
 - (a) Printout of the application form submitted online and recent passport size photograph. Self-attested photocopies and originals of all relevant supporting documents such as degree certificates, mark sheets, date of birth certificate, etc., from Xth class onwards. Candidates may also bring original and attested photocopies of any other testimonials, documents or certificates that they wish to present to the selection panel.
 - (b) A printout of the SBI i-Collect receipt confirming the payment of the application fee of Rs. 100.
 - (c) Letters of recommendation duly **signed and sealed in a confidential envelope** from a minimum of **two referees** who have known the candidate in professional capacity. The letters are mandatory for PhD selection process and should be addressed to the **Chairperson, PhD Selection Committee, Electrical Engineering, IIT Indore**.
4. No TA/DA will be paid for attending the PhD selection process.
5. Candidates who wish to appear for the PhD selection process and fulfil the minimum eligibility criteria may also send their resume/CVs to the faculty members (from the list below) of their interest in addition to applying online through the website as stated above. Candidates are strongly advised to visit webpage of each faculty member to know about ongoing research and areas of interest. Applicants with UGC/CSIR Junior Research Fellowship (JRF) award in Electronic Sciences/Physical Sciences or any other external fellowship/scholarship are strongly encouraged to apply under the Fellowship Awardee (FA) category.

The discipline invites applications in the **three broad areas** namely, (A) Communication and Signal Processing, (B) Nanoelectronics, Molecular Electronics and VLSI, and (C) Power Electronics, Power Systems and Instrumentation. While filling the application form, please **select your preference amongst (A, B and C listed above)** very carefully as **only the first preference** will be considered. Faculty members working in the above-mentioned areas and their research interests:

Broad Specialization (A): Communication and Signal Processing

Prof. Prabhat Kumar Upadhyay (pkupadhyay@iiti.ac.in) Prof. Prabhat K. Upadhyay is leading a Wireless Communications (WiCom) Research Group at IIT Indore. The WiCom research group is intended to conduct fundamental and applied research to cater to the emerging needs of the next generation wireless communication systems. The various research projects are technically and financially supported by MeitY, CSIR, and DST, Government of India. The group is also involved in collaborative research with peers from UK, France, Brazil, China, South Africa, and Greece. The graduated PhD students from WiCom group have secured regular faculty positions in IIT and NITs. Prof. Upadhyay has recently been selected for IETE-Prof SVC Aiya Memorial Award-2018 in recognition of his significant contributions and providing research guidance in the field of wireless communications. The broad research areas of the WiCom group are cooperative relay communications, MIMO systems, cognitive radio, satellite communications, energy harvesting, physical layer security, and molecular communications. For more details, please visit the following websites: URL:<http://iiti.ac.in/people/-pkupadhyay/>, <http://pkupadhyay.webs.com/> Research Group:<http://wicom.webs.com/>.

Prof. Ram Bilas Pachori (pachori@iiti.ac.in) Prof. Ram Bilas Pachori works on the development of new methodologies based on the non-stationary signal models for analysis and classification of biomedical signals. He also works on time-frequency analysis based methods for speech signal processing and non-stationary signal processing. He is looking for the Ph.D. students to work in the areas of Speech Signal Processing, Biomedical Signal and Image Processing, Signal Processing, Machine Learning, Brain-Computer Interfacing. Please visit his homepage for more details: <http://www.iiti.ac.in/people/-pachori/>

Prof. Vimal Bhatia (vhatia@iiti.ac.in) Prof. Bhatia completed his Ph.D. from The University of Edinburgh (UK), and is currently leading Signals and Software Group (SaSg) @ IIT Indore with active collaborations with researchers from the UK, Ireland, Norway, South Africa and the US, with external funding of over 12.5 Crores. The SaSg research group is actively involved in R&D on a) Performance analysis of cooperative relay communication links, b) Adaptive algorithms, c) OFDM, MIMO, NOMA, Cognitive Radio, Visible Light Communications for 5G and beyond networks, d) RADAR signal processing, and e) Bio-inspired signal processing, machine and deep learning algorithms. Bright and highly motivated candidates, having background in **Communications/Signal Processing/Physics/Mathematics/Statistics/Electronics/Electrical Sciences/Electrical Engineering/Computer Science & Engineering or equivalent** are encouraged to apply. **Former post-graduate students from SaSg placed as regular faculty in NIT, IIIT, NMIMS, and Qualcomm.** For more information, please visit: <http://iiti.ac.in/people/-vhatia>

Prof. Vivek Kanhangad (kvivek@iiti.ac.in) Prof. Vivek Kanhangad's research group at IIT Indore conducts theoretically sound and application-oriented research in the overlapping areas of **image analysis, computer vision and pattern recognition** with focus on **biometrics and biomedical applications**. Specifically, the areas of our current research include high-resolution fingerprint matching and periocular biometrics, biometric solutions for smartphones, presentation attack detection in biometrics and development of local descriptors for signal classification. The applicants should be highly motivated with an excellent academic record and programming skills. For more details, please visit <http://iiti.ac.in/people/-kvivek/>.

Broad Specialization (B): Nanoelectronics, Molecular Electronics and VLSI

Prof. Abhinav Kranti
(akranti@iiti.ac.in)

Low Power Nanoelectronics Research Group is engaged in pioneering research on **Capacitorless Dynamic Random Access Memory (1T-DRAM)** and **Steep Switching Transistors** for the development of next generation memory and logic technology. The group has very strong collaborations with leading international researchers, and after completing PhD, students often receive offers for post-doctoral positions abroad. Exceptionally talented and motivated candidates, with strong background in Semiconductor Devices, Electronics and Physics, intending to work on emerging research problems are strongly encouraged to apply. For more information and latest publications, please visit the web link: <http://iiti.ac.in/people/~akranti/>.

Prof. Vipul Singh
(vipul@iiti.ac.in)

Dr. Vipul Singh's research group (Molecular & Nanoelectronics Research Group) focuses on wide range of topics primarily related to semiconductor device physics. Members of MNRG are presently engaged in carrying out research and development on the following themes:-

- i) Organic electronic devices viz. OFETs, OSCs, OLEDs and OPDs.
- ii) Hybrid optoelectronic devices.
- iii) ZnO based optoelectronic/photonic devices.
- iv) LSPR effect in optoelectronic devices.
- v) Biosensors/chemical sensors incorporating Graphene, CNTs and other functional materials.
- vi) Photo generated charge carrier dynamics in organic thin films.
- vii) Si- nanodevices, MOSFETs, SETs, and LFN in Si nanodevices etc.
- viii) Growth of Nanostructures

Five students have already finished their Ph.D. from MNRG and several more are presently pursuing their respective research work. MNRG strives for academically brilliant and motivated students looking to pursue challenging research problems on the forefront of science and technology. For more details the prospective students are encouraged to visit our homepage: <http://iiti.ac.in/people/~vipul/>

Prof. Santosh Kumar Vishvakarma
(skvishvakarma@iiti.ac.in)

Dr. Santosh Kumar Vishvakarma is leading the research group "Nanoscale Devices, VLSI Circuit and System Design" at Discipline of Electrical Engineering, IIT Indore, MP, India. His research interests are: Custom SoC Design for IoT WSN; Ultra Low Power SRAM Memory Design; High Speed SerDes Design; Bluetooth Low Energy (BLE) Design for IoT; Microcontroller Design for IoT Node; PLL Design for IoT Node; Secure IC Design for IoT Node; Internet of Things (IoT) Enabled System Design; Reliable SRAM Memory Design: Device Circuit Co-Design Approach; SRAM Design using 3D TFET Devices; Performance analysis of 2D/3D Flash Memory Devices; Graphene-based MOS Transistor for analog/RF Circuit Applications; On-chip Memory Architecture and Efficient Data Flow for DCNN Accelerators; Design of Low power SRAM and In-Memory Computation and Patent of Electronics and IoT Circuits and Systems. Please visit his homepage for more detail: <https://sites.google.com/site/svishvakarma/>

Prof. Shaibal Mukherjee
(shaibal@iiti.ac.in)

Hybrid Nanodevice Research Group (HNRG) led by Dr. Shaibal Mukherjee works in advanced devices in **Nanoelectronics, VLSI, Plasmonics and Photonics, HEMT/HFET/RF/Artificial Neural Network/Hardware Security, Organic Electronics, Non-volatile Memory, Bio-chemical Sensors, and Solar Energy** (<http://iiti.ac.in/people/~shaibal/>). HNRG has been involved in strong collaborative research activities with industries and institutions in India (Intel, EnviroWisers, IISc Bangalore, IIT Bombay, CEERI Pilani, RRCAT etc.) and in USA, Russia, France, Japan, Australia, and Germany. Bright and inspired candidates, having a background in Physics/ Materials Science/ Electronics/ Instrumentation are strongly encouraged to apply. Former PhD graduates from HNRG are successfully placed in IIT Ropar, IIT Patna, IIIT Pune, and IIIT Una (http://iiti.ac.in/people/~shaibal/phd_graduated.php).

Prof. Mukesh Kumar
(mukesh.kr@iiti.ac.in)

The research group of Dr. Mukesh Kumar, in **Optoelectronic Nanodevice Research Laboratory (OptoNano Group)**, has been working in **Optoelectronic Devices, Nanoelectronics, Integrated Photonics, and Device fabrication** for applications in optical interconnects, high speed communications and bio-sensing. OptoNano Group is actively involved in Device Innovations through novel designs and cost-effective fabrication of smart on-chip devices based on Silicon and other hybrid materials (Graphene, ITO, Zinc Oxide, Silicon Nitride etc.) for future communication, computing and sensing. The group has ongoing research collaborations with leading scientists in India, UK, Russia, South Korea, Germany and USA. Motivated and bright candidates, having a background in **Electronics and related areas** are ideally suitable and thus strongly encouraged to apply. **Candidates with UGC/CSIR JRF or DST INSPIRE fellowship or equivalent fellowship will be given preference.** For further details, please visit <http://iiti.ac.in/people/~mukesh.kr>.

Broad Specialization (C): Power Electronics, Power Systems and Instrumentation

Prof. Trapti Jain
(traptij@iiti.ac.in)

Dr. Trapti Jain's research group at IIT Indore works in various operational issues related to smart grid. Currently, the focus of our group is towards application of signal processing in power systems, synchrophasor technology and microgrids. The applicants should be highly motivated with an excellent academic record and good programming skills. For more details, please visit: <https://poweriiti.weebly.com/>

Prof. Amod C. Umarikar
(amodu@iiti.ac.in)

High Step Up DC DC converters, Application of Power Electronics in Renewable Energy Systems, Control of Power Electronic Inverters in Microgrid

Prof. Srivathsan Vasudevan
(svasudevan@iiti.ac.in)

Our research mainly focuses on biomedical instrumentation. We are working towards developing the compact and cost efficient instrument for photoacoustic sensing and imaging. Photoacoustic sensing and imaging is an emerging area in the field of biomedical research. We have collaborations with hospitals and different research labs in India, where we go and perform experiments during surgery and also work with biological tissues. Any dedicated and self-motivated student who finds interest in working on real life problems in the field of Biomedical and Electronics Instrumentation, Biomedical Imaging should apply. For further details you can email svasudevan@iiti.ac.in