# INDIAN INSTITUTE OF INFORMATION TECHNOLOGY KOTTAYAM

(*An Institution under the Ministry of Education, Govt. of India governed by an Act of parliament*)

**Valavoor (PO), Pala, Kottayam, Kerala - 686635**

## Admission to Ph.D. Programme – August 2024

### IMPORTANT DATES

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| ONLINE APPLICATION PORTAL OPENS | 12th April 2024 |
| LAST DATE FOR RECEIVING APPLICATIONS | ~~31st May 2024~~ 10 June 2024 |
| WRITTEN TEST AND INTERVIEW | 15th - 23rdJune 2024 |
| CLASSES BEGIN | 24th July 2024 |

IIIT Kottayam invites applications from motivated and research-oriented students for the Ph.D. programmes starting in August 2024.

The major areas of research are as follows:

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| **Computer Science and Engineering** | Artificial Intelligence (AI): Responsible AI, AI Security, Optimization algorithms; Machine Learning and Deep learning: Biomedical signals, Agriculture domain, anomaly detection in network layer/transport layer, Optimization algorithms, placement prediction; Computer Vision and Image Processing: Agriculture and medical domain, Speech, Image, Signal; Natural Language Processing, LLM; Data Analytics, Video analytics, Big Data Analysis, Social Network Analytics; Theoretical Computer Science; Algorithms and Graph Theory, Explainable AI (XAI) -healthcare; Distributed Computing; Edge computing; Cloud computing; Energy efficiency in computing paradigm; Emerging Databases; Bioinformatics and computational biology; Data Privacy and Security, Cyber security, Information security, ML in Cyber Security, Cloud data security, Quantum Computing and Security, Distributed computing security, Hardware security, ML for cyber security systems and memory; Soft Defined Network - security; Blockchain technology; Digital Forensics and Crime Investigation; Cryptography, Quantum cryptography, Applied cryptography, Post Quantum cryptography, Multi party computation, Differential privacy; Intelligent Transportation and Connected Vehicles, Digital Technologies for wildlife and nature conservation; Internet of Things; Communications and Signal Processing; Optimization in Systems Engineering; Remote Sensing Applications; Resource management and scheduling for future compute continuum; Detection and estimation problems in IRS-assisted communication and in spatial modulation, enhancing physical layer |

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| | security using IRS. |
| **Electronics and Communication Engineering** | Synthesis, Characterisation and Functionalization of Nano-materials, Optoelectronics, Quantum materials, 3-D Printing, Lasers, Ocean Optics, Spectroscopy, Free Space Optics, Optical Communication, Photonics, Instrumentation, Signal Processing, Image processing, Speech processing, Machine learning, Deep Learning, VLSI and Embedded Systems, VLSI, FPGA, VLSI Design & FPGA based system design, Material-Device-Circuit Co-design for Robust SRAM Cell, Advanced MOS Devices modeling and simulation, Steep Switching Devices, Digital Integrated Circuit Design, Reliable and Secure Circuits, Wireless Communication/ Beyond 5G Wireless Communication Technologies, Wireless Sensor Networks, Wireless Communication Networks, IoT, Security and Privacy, UAVs, Cyber Physical Systems, Machine Learning enabled wireless communication systems, IoT, Communications and Signal Processing, Optimization in Systems Engineering, Remote Sensing Applications, Antennas for Biomedical Applications and Therapeutic Modalities of Cancer treatment , Design of 5G Rectenna systems for IoT based Indoor Smart Home Automation platforms, Detection and estimation problems in IRS-assisted communication and in spatial modulation, Enhancing physical layer security using IRS, Microstrip Antenna Design for MIMO 5G/6G and small satellite applications, RF and Microwave, Machine learning and neural networks for anomaly detection in computer network layer/transport layer, ANN/DNN-based solutions for problems involving biomedical signals, Healthcare monitoring systems, Wireless Sensor Systems |
| **Computational Mathematics** | HR Analytics; Supply Chain Analytics; Fuzzy Mathematics; Mathematical and Computational Finance; Fluid Mechanics; Bio Fluid Mechanics; Fluid Mechanics with Machine Learning; Partial Differential Equations; Graph Theory |

**Categories of Ph.D. Students**

**i) SCHOLARSHIP HOLDERS (FULL-TIME)**

A candidate with an assistantship/fellowship from INSPIRE/CSIR/UGC/NBHM/KSCSTE or any other recognized funding agency to do Ph.D. can apply under this category. Such a candidate receives the assistantship or fellowship from the concerned funding agencies. The Institute does not provide any financial assistantship/fellowship to such candidates.

**ii) SPONSORED (FULL-TIME)**

A candidate in this category is sponsored by a recognized R&D organization, academic institution, government organization, or industry or QIP candidates for doing research in the Institute

on a full-time basis. The candidate must be a regular employee of the sponsoring organization with at least **one year** of professional experience in the respective field. The Institute does not provide any financial assistantship/fellowship to such a student. A sponsorship letter must be attached with the application.

**iii) SELF-FINANCED (FULL-TIME)**

A candidate in this category works full-time towards the Ph.D. Programme. The Institute does not provide any financial assistantship/fellowship to such a student except teaching assistantship to a limited number, on a case-to-case/need basis.

**iv) EXTERNAL REGISTRANTS**

A candidate of this category working in Industries/Institutes/Research Organisations can register as an External registrant and can pursue a Ph.D. Programme at IIIT Kottayam while continuing the duties of his/her service at the parent organization. The Institute does not provide any financial assistantship/fellowship to such a candidate. No Objection Certificate in the prescribed format must be attached with the application. An external registrant scholar is required to spend a one-semester residential program preferably in the first year, during the course work. Other academic regulations are the same as those applicable to regular students.

**Eligibility Criteria for Admission into Ph.D. Programme**

For admission to the Ph.D. Programme, a candidate must satisfy the following criteria:

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| Computer Science and Engineering: | (i) Master's degree in Computer Engineering/Information Technology/Computer Applications/Electronics and Communication Engineering(ECE) or equivalent area with a minimum CGPA of either 6.5 on a 10- point scale or 60% of marks in appropriate branches.<br>OR<br>(ii) Four-year Bachelor's degree in Computer Science and Engineering/ Information Technology/ ECE from any IITs, NITs and IIITs / Other Institutions of National Importance with a minimum CGPA of either 8.0 in a 10 point scale or 75% of marks. Such students will be awarded both MS and Ph.D. degrees on completion of Ph.D. Programme without any exit option during the programme. |
| Electronics and Communicatio n Engineering: | (i) Master's degree in ECE/EEE or equivalent area with a minimum CGPA of either 6.5 on a 10-point scale or 60% of marks in appropriate branches.<br>OR<br>(ii) Four-year Bachelor's degree in ECE/Electrical Engineering from any IITs, NITs, and IIITs /Other Institutions of National Importance with a minimum CGPA of either 8.0 in a 10 point scale or 75% of marks. Such students will be awarded both MS and Ph.D. degrees on completion of Ph.D. Programme without any exit option during the programme. |

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| Computational Mathematics: | 2 years M.Sc./Integrated M.Sc. in Mathematics/Mathematics and Computing/ Applied Mathematics/Statistics or an equivalent degree with a minimum of 60% aggregate in the qualifying examination. |

**APPLICATION FEE**

An application fee of Rs.**1000/-** for general/OBC and Rs.**500/-** for SC/ST/PWD/Female candidates will have to be paid through State Bank Collect.

**SELECTION CRITERIA**

Selection of the candidate will be based on the performance in the written test and /or interview. Appearing for the test and/or interview does not entitle any candidate to admission to the Ph.D. programme.

Registrar