Indian Institute of Information Technology Sri City, Chittoor
(An Institute of National importance under an Act of Parliament)

PhD Admissions (Part-Time) - Spring 2023

Indian Institute of Information Technology Sri City Chittoor (IIITS) was established by Government of India as an Institute of National Importance under the Act of Parliament along with Government of Andhra Pradesh and Industry Partners-Sri City Foundation and Sri City Pvt. Limited.

IIITS is located in Sri City (www.sricity.in), a decade-old state of the art industrial city located about 60 KMs North of Chennai on "Chennai – Nellore – Kolkata highway" (AH45). Sri City is spread over 8000 acres encompassing a multi-product Special Economic Zone (SEZ), Domestic Tariff Zone (DTZ), Free Trade & Warehousing Zone (FTWZ) and Electronics Manufacturing Cluster. Sri City is hosting over 120 companies from 27 countries. The institute has access to the industries and social infrastructure available in Sri City through the Industry Partner.

IIITS envisions to be a globally known institution for IT education, research and development. The institute has special thrust to attract and retain talented faculty members who can make a mark in teaching and research at the international level. The current faculty members at IIITS are from leading universities from India and abroad with excellent teaching and research credentials.

Applications are invited from motivated middle and senior-level Professionals of IT industries and Scientists in Govt. of India Research Labs for admissions in Ph.D. (Part-Time) Programme [Spring 2023].

1. **PhD (Part-Time)**
(Only for working IT professionals employment based in India and scientists from Govt. of India Research Labs such as DRDO, ISRO etc.)

Research Areas (CSE):
Agent based modeling & simulations, Algorithms, Authentication and Access Control, Cognitive modelling - relational patterns, Computational Geometry, Computer Architecture, Computer networks, Cryptography and Network Security, Cyber Physical Systems, Data Analytics, Design Automation of Electronic Systems, Distributed Algorithms, EEG Data Analysis, Embedded Systems, System architecture, Healthcare informatics, High performance computing, Human Computer Interaction, Image Processing and Computer Vision, Intelligent Control, Machine/Deep Learning, , Multi-objective optimization, Natural Language Processing, Security and Blockchain, Self Organizing and Self-Assembly Systems, Soft Computing, Spatial/Spatio Temporal/Multivariate Statistical modeling, Statistical and machine learning models for Environmental Applications, Text Data Mining / Information Retrieval, VR/AR,

Web/Information/Cloud/IoT/SDN Security, Wireless Sensor Systems, Human Robot Interaction, Unmanned Aerial Vehicles, Advanced Cryptography, AI driven intrusion Detection System, Bioinformatics and Computational Biology with Deep Learning, Bio-Medical Image/Data Analysis using Artificial Intelligence, Number Theory, Graph theory.

Research Areas (ECE):
Adaptive Driver Assistance System, Applications of Pattern Recognition, Biomedical Signal Processing, Cyber Physical Systems, Deep learning, Electromagnetic scattering, Energy harvesting, MEMS and VLSI Technology, Microfabrication, Microfluidics and micropumps, Passive components, Propagation modeling, Protocols for IoT, Sensor Technology, Speaker recognition, Speech/voice activity detection, Statistical Signal Processing, Vehicular Communication, Wireless Networks, Quadrotor Control, Renewable Energy, Performance analysis of nano scale molecular communication system with different channel conditions, Interfacing of Tera hertz communication with in body communications for health care applications, 5G-OFDM Communication Systems, MIMO Communication system.

Research Areas (Mathematics and Data Science):
Number Theory, Graph theory, Statistics

Eligibility:

Working IT Professionals with rich technical background from IT industry/MNCs with employment and residence based in India or Scientists working in Govt. of India Research labs such as DRDO, ISRO etc. Additionally, the candidates should also fulfill any one of the following criteria:

a) Master's degree (M.E./M.Tech) with bachelor's (B.E./B.Tech) degree in the applicable areas in engineering/technology with a minimum of 60% (or above) aggregate marks (CGPA ≥ 6.5/10) in UG and PG for admission under GEN/GEN-EWS/OBC-NCL category and 55% (or above) aggregate marks (CGPA of ≥ 6.0) for SC/ST/PwD candidates, currently working in technical areas or CSE / ECE or related areas.

b) B.E./B.Tech. degree in the applicable areas (in engineering/technology in any branch) with a minimum of 60% (or above) aggregate marks (CGPA ≥ 6.5/10) in UG for admission under GEN/GEN-EWS/OBC-NCL category and 55% (or above) aggregate marks (CGPA of ≥ 6.0) for SC/ST/PwD candidates and a minimum of

three years of documented experience in technical areas CSE / ECE or related areas.

c) Master's degree in Mathematics or equivalent discipline a minimum of 60% (or above) aggregate marks (CGPA ≥ 6.5/10) in UG and PG for admission under GEN/GENEWS/OBC-NCL category and 55% (or above) aggregate marks (CGPA of ≥ 6.0) for SC/ST/PwD candidates, currently working in Mathematics/Data Science or related areas with a minimum of 3 years of documented experience in Mathematics/Data Science or related areas.

PhD (Part-Time) Admission Process:

1. Candidates recommended by the Ph.D. Admissions Committee will be called to appear for a written test*.
2. The candidates shortlisted based on the written test performance need to appear for a personal interview before the Ph.D. Admissions Interview panel.

* Syllabus for the written test is provided in Appendix I.

2. Application Fee:
Application Fee of Rs. 500/- for GEN/GEN-EWS/OBC-NCL category and Rs. 200/- for SC/ST/PwD candidates (to be paid through SB Collect only) and the the transaction receipt must be uploaded in google form and attach a hard copy with the application. The details on the payment through SB collect are given below.

3. Last date for all Applications:
Candidates may submit the detailed application using Google Form:

https://forms.gle/rW35en9uyhNmrBUw7

Note: NoC and other format to be submitted by the applicant are also available on the website:

Last date for submission of applications via online with relevant documents is **9th Jan 2023**.

Late date for submission of hard copy of the application with related documents via speed post/courier is **16th Jan 2023**.

For any further queries, you may write an email to phd.admissions@iiits.in

4. **Fee Payment Through SB Collect:**

- Payment through State Bank Collect portal only
- Applicants have to visit **www.onlinesbi.com** and follow the process
- Click on State Bank Collect, and accept terms and conditions
- Select - Andhra Pradesh
- Select - Educational institutions
- Select - Indian Institute of Information Technology Sri City Chittoor
- Select - PhD Application Fee
- Enter Name and other details. Click Submit
- Choose your Payment option
- Pay Application Fee
- Please download receipts generated in SB collect for record
- Please upload SB collect payment receipt while filling up the application form (Google Form link is given above) for the payment confirmation

5. Additional Information:

The Fee structure for the Part-Time is given below. Admission fee and caution deposit has to be paid only when joining the PhD program. Further, applicable fees must be paid at the beginning of each semester.

Fee Structure:

Fee Category	Amount
Admission Fee	Rs. 15000.00 (non-refundable) - one time payment
Caution Deposit	Rs. 15000.00 (refundable after successful completion of the program)
Tuition Fee	Rs. 60,000.00 per Semester
Note: These fees are subject to revisions from time to time.	

Contact us:

For Admission related queries:		
Mrs. Supriya	7780476453	phd.admissions@iiits.in
Programme related queries:		
Dr. Raja Vara Prasad	73373 24920	asstdean.pgr@iiits.in

Dr. Sreeja SR	78935 94848	phd.coordinator@iiits.in

Disclaimer: The Institute reserves the right to accept/reject any or all applications without assigning any reason and also the institute reserves the right to modify/cancel the application/admission process at any point in time without assigning any reason.

Appendix I

Syllabus for Written Test :

Computer Science and Engineering:

Discrete Mathematics: Propositional and First-order Logic. Sets, Relations, Functions, Partial Orders, and Lattices, Groups, Graphs: Connectivity, Matching, Coloring Combinatorics: Counting, Recurrence Relations, Generating Functions.

Probability: Random Variables. Uniform, Normal, Exponential, Poisson, and Binomial Distributions. Mean, Median, Mode, and Standard Deviation. Conditional Probability and Bayes Theorem.

Computer Programming: Programming in C, Scope of Variables, Loops, Functions, Structures, Pointers, Dynamic Memory Allocation, File Management.

Data Structures: Stacks, Queues, Linked Lists, Trees, Binary Search Trees, Binary Heaps, Graphs.

Algorithms: Searching, Sorting, Hashing. Asymptotic Worst-case Time and Space Complexity, Algorithm Design Techniques: Greedy, Dynamic Programming, and Divide-and-Conquer. Graph Search, Minimum Spanning Trees, Shortest Paths.

Operating System: Processes, Threads, Interprocess Communication, Concurrency, and Synchronization, Deadlock, CPU Scheduling, Memory Management, and Virtual Memory, File Systems.

Computer Networks: Concept of Layering, LAN Technologies (Ethernet), Switching, TCP/UDP and Sockets, Congestion Control, Application Layer, Network Security: Authentication, Basics of Public Key and Private Key Cryptography, Digital Signatures and Certificates

Electronics and Communication Engineering:

Basic electronics
Circuit laws, theorems (superposition, thevenin and norton, max power), passive elements, transients (RL and RC circuits) and op amps and applications, filters active and passive). Diode characteristics, half wave and full wave rectifier. Transistors, and amplifiers.

Electromagnetics
Maxwell's equation, boundary conditions, time-varying fields, wave propagation in different media, transmission line basics, terminated transmission line and the special cases, antenna characteristics, FRIIS transmission equation and radar range equation.

Digital logic design
Combinational logic: Logic circuits of Code Converters such as Binary to Gray Code Converter, BCD converter etc., K-maps, multiplexers, decoders, PROMs and PLAs Sequential circuits: Latches and flip-flops, counters and shift-registers
Data converters: sample and hold circuits, ADCs and DACs; Memories.

Signal Processing
Classification of signals and systems, basic deterministic signals, Linear systems and convolution, frequency domain representation of continuous and discrete signals, sampling theory, z-transform, circular convolution, discrete Fourier transform, Fast Fourier Transform, Digital filter design and implementation.

Analog and Digital Communication
Basics of Analog and Digital modulation, Basics of Cellular, Interference, Noise, Channel, Wireless channel fading, Shannon Capacity.

Embedded Systems
Basic Definitions, Embedded - C concepts, Python Programing, Real-Time Operating systems, microcontroller and its submodules. Additional topics: Knowledge on hardware boards like Arduino and raspberry Pi, sensors and actuators.

Mathematics and Data Science:

Algebra
Groups, subgroups, normal subgroups, quotient groups, homomorphisms, cyclic groups, permutation groups, Cayley's theorem, class equations, Sylow theorems. Rings, ideals, prime and maximal ideals, quotient rings, unique factorization domain, principal ideal domain, Euclidean domain. Polynomial rings and irreducibility criteria. Fields, finite fields, field extensions.

Linear Algebra
Vector spaces, subspaces, linear dependence, basis, dimension, algebra of linear transformations. Algebra of matrices, rank and determinant of matrices, linear equations. Eigenvalues and eigenvectors, Cayley-Hamilton theorem. Matrix representation of linear transformations. Change of basis, canonical forms, diagonal forms, triangular forms, Jordan forms. Inner product spaces, orthonormal basis. Quadratic forms, reduction and classification of quadratic forms.

Real Analysis
Elementary set theory, countable and uncountable sets, Real number system as a complete ordered field, Archimedean property, supremum, infimum. Sequences and series, convergence, limsup, liminf. Bolzano Weierstrass theorem, Heine Borel theorem. Continuity, uniform continuity, differentiability, mean value theorem. Sequences and series of functions, uniform convergence. Riemann sums and Riemann integral.

Complex Analysis
Analytic functions, Cauchy-Riemann equations. Contour integral, Cauchy's theorem, Cauchy's integral formula, Liouville's theorem, Maximum modulus principle, Schwarz lemma, Open mapping theorem. Taylor series, Laurent series, calculus of residues.

Ordinary differential equations
Existence and uniqueness of solutions of initial value problems for first order ordinary differential equations, singular solutions of first order ODEs, system of first order ODEs. Systems of first order differential equations, equations with regular singular points, stability of linear systems.

Probability
Random Variables. Uniform, Normal, Exponential, Poisson, and Binomial Distributions. Mean, Median, Mode, and Standard Deviation. Conditional Probability and Bayes Theorem.