



ENGINEERS WITH  
SOCIAL RESPONSIBILITY

# B.Tech.

## Information and Communication Technology & Honours in ICT with minor in Computational Science







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# DA-IICT at a Glance

**DA-IICT** was founded in 2000 as a unique university devoted to the cutting-edge interdisciplinary area of Information and Communication Technology (ICT). ICT was emerging as the technology of the future bringing in the fourth Industrial Revolution. Well known and highly qualified faculty members joined DA-IICT and developed a curriculum and research program steeped in all aspects of ICT, societal, scientific, and technical. This spirit has been nurtured for the last 23 years and DA-IICT wants to continue its excellence in interdisciplinary teaching and research well into the future.

The Act No. 6 of 2003 of the Gujarat Legislature provided for the establishment of the DA-IICT and conferred on it the status of a University. On 30 November 2004, the DA-IICT was included in the list of Universities maintained by the University Grants Commission under Section 2(f) of the UGC Act, 1956. DA-IICT is a member of the Association of Indian Universities (AIU) as approved by the AIU at its 84th Annual Meeting held during 12-14 November 2009. The National Assessment and Accreditation Council, Government of India has accredited DA-IICT with an **A<sup>+</sup> Grade in 2023**.

## Vision and Mission

The vision of the institute is to become a globally recognized institution that offers innovative programs, outstanding faculty, an atmosphere of innovation, a responsive administration, a vibrant campus and a collaborative learning environment that continuously adapts to the changing landscape of research and innovation and the future of work. Toward this, we plan to design and deliver academic programs in both disciplinary and multidisciplinary domains to prepare students for a rapidly evolving work environment.

**Ranked among top 100 Engineering Institution by MHRD, Govt of India (NIRF-2019 rankings)**

**NAAC (Accreditation): A<sup>+</sup> Grade (Year- 2023)**  
**Selected for Center of Excellence award**  
**Annual Student Scholarships: INR 3-4 Crores**

**First Private University** to mentor PPP model based (central, state and industry funded) Institute - IIIT Vadodara (build academics and provided faculty support)

Only **Anchor Institute** in Gujarat to mentor the Faculty members of Engineering Colleges in Gujarat

Awarded the **Best University** in Innovation in Gujarat by Govt. of Gujarat in 2017



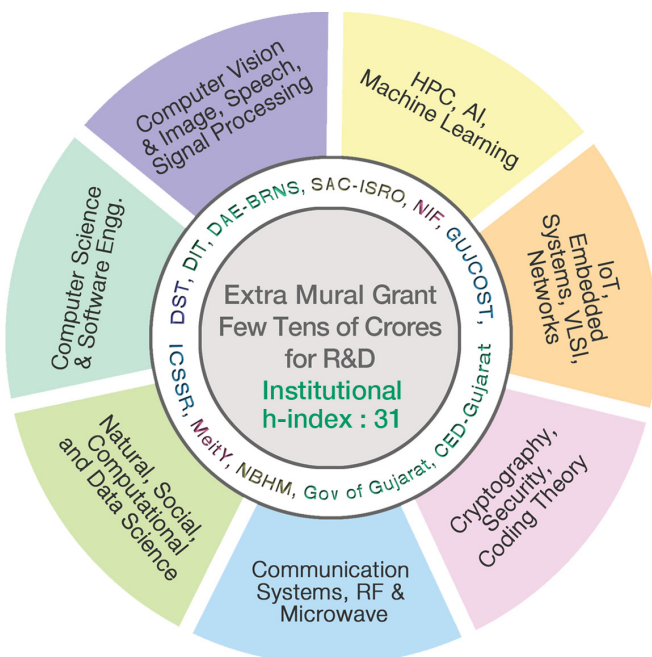


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# Academics and Research at DA-IICT

Interdisciplinary and Multidisciplinary Research Oriented Academic Programs

Level	Name of the Program	Duration	Unique Features
Doctoral	PhD	4-6 years	- Entry through national level entrance test & interview - Fellowship (PM) <b>INR 35000 - 40000</b>
PG	<b>MTech</b> (ICT)	2 years	- Four specializations: <b>ML, SS, VLSI &amp; ES</b> and <b>WCSP</b>
	<b>MSc</b> (IT)	2 years	- Industry oriented IT program
	<b>MSc</b> (Data Science)	2 years	- Hands-on & case study-based program
	<b>MSc</b> (Agriculture Analytics)	2 years	- In collaboration with <b>AAU, IIRS</b>
	<b>MDes</b> (CD)	2 years	- Fusion of ICT and Design
UG	<b>BTech</b> (ICT)	4 years	- 1 <sup>st</sup> Institute in India to offer <b>unique program</b> in ICT in 2001
	<b>BTech</b> (Hons in ICT; minor in Computational Science)	4 years	- 1 <sup>st</sup> Institute in India to offer UG program in Computational Science
	<b>BTech</b> (Mathematics and Computing (MnC))	4 years	- Intersection of Computer Science & Applied Mathematics to solve complex problems
	<b>BTech</b> (EVD) Electronics & VLSI Design	4 years	- 1 <sup>st</sup> Institute in Gujarat to offer



## International Projects

NSF-USA, Indo-French, Indo-Spain

## Industry / Consultancy Projects

nVIDIA (USA), FactSet (UK), Vista (India), ISRO Amnax Technology, GoG (Climate Dept.)

## Major MOUs / LOUs

Univ. of Oregon (USA), Univ. of Auckland (NZ), Univ. of Swaziland (UoS), Univ. of Dayton (USA), Univ. of Hildesheim (Germany), Univ. Mara (Malaysia), Univ. of Evora (Portugal), ISEP (France), ISRO, Indian Navy, ISI Kolkata, TCS, Samsung R&D, IIT Gandhinagar, IIT Jammu, IIIT Vadodara, C R Rao AIMSCS, EDII





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# Program Overview

## Why a B.Tech. in ICT & CS?

Computational Science is an interdisciplinary field combining mathematical modeling, computer simulations, and analysis to study various complex systems in disciplines such as physics, biology, economics and finance, social science, etc. Studying such problems requires a strong foundation in mathematical and algorithmic thinking and the ability to abstract complex phenomena through simple models and large-scale computer simulations using high-performance and parallel computing.

The B.Tech. (Honours) in ICT with minor in computational science at DA-IICT is a unique program that introduces undergraduate students to some aspects of the tools and thinking required in computational science. The program is meant for academically inclined, inquisitive students interested in advanced learning. In addition to the foundational courses in ICT, the program also has courses in computational physics, numerical and computational methods, modeling and simulation, and high-performance computing. Through these courses, the students learn model building, analyze and understand complex phenomena through scientific computing, draw inferences, and make predictions.

The students in the program often take advanced electives such as computational Finance, Quantum computing, complex networks, time series analysis, nonlinear dynamics, econophysics, etc., that enable them to delve deeper into many interdisciplinary domains and knowledge areas. The program started in 2013 and has been a preferred one for many of the top-performing students. In a short span, it has developed a strong alumni network with students in top positions in industry, academia, and research labs. In addition to the strength of capabilities of the ICT graduates, students of the program have also been observed to develop a strong interest in advanced learning and research. Over the years,

a significant fraction of the graduates have gone on for advanced degrees in computer science, computational, and data science departments at some of the top universities in India and abroad.

## DA-IICT philosophy and vision

DA-IICT since its inception has been an institute of interdisciplinarity and contemporary domains. B.Tech. programs in ICT and ICT honours with minor in computational science are testimonials to this. With its experience and expertise at institutional innovation and knowledge reform, DA-IICT is well-poised to provide knowledge and training to young minds to provide solutions to the challenges mentioned earlier. The ICT embodies the convergence of Computer and Communication systems and has obtained wide acceptance as a distinct discipline. It is also expected that ICT graduates would enjoy a special niche only if they have certain performance capabilities not found in conventional CSE and/or ECE graduates. Logically this convergence takes place at the systems level, but at the same time it is necessary to accept a certain level of granularity as one goes down to the level of circuits, devices and materials. All programs are designed to operate on a semester-based framework that follows choice-based credit system.

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# Program Structure

The course structure of the curriculum is broadly classified into four categories.

- **Foundational or Core Courses:** Set of compulsory courses taken by every student for first five semesters. These courses are from the technical areas of Computer Science and Information Technology, Electronics and Communication, as well as courses in Humanities, Mathematics and Basic Sciences.
- **Elective Courses:** These courses add to both, the technical strength and humanities and social science skills of the program. The students can choose the elective courses from the available ones from fifth semester onwards. The elective courses are grouped into the following categories.
  - ICT Electives (ICTE)
  - Technical Electives (TE)
  - Humanities and Social Sciences Electives (HASSE)
  - Science Electives (SE)
  - Open Electives (OE)
- **Internships and BTech Projects:** Students will do a rural internship during the third semester winter break at NGO or Government Organization. The students will do an industrial or research internship during the summer break in the end of their 6th semester. Finally the student will take a semester long on-campus project (BTP) or the off-campus project – Industrial Training Project (ITP).
- **Co-curricular Activities:** These are non-class activities like sports, cultural and technical club activities. These courses run over the first four semesters and are graded Pass/Fail.
- **Exploration Projects:** Exploration projects allow students to explore their surroundings to identify interesting problems that admit a design based and/or hardware based solution and make such a product by leveraging the introduction to ICT skills learnt in the first semester. Students are expected to work in groups of 8 to 10 under a faculty mentor over two semesters - second and third semester. This course will be graded on a Pass/Fail basis.







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# Course Curriculum

## Semester-1

Introduction to ICT  
Language and Literature  
Calculus  
Introduction to Programming  
Programming Lab  
Basic Electronic Circuits  
Co-curricular Activities-1

## Semester-3

Science, Technology, Society  
Linear Algebra  
Design and Analysis of Algorithms  
Computer Systems Programming  
Signal and Systems  
Exploration Project-2  
Co-curricular Activities-3

## Semester-5

Software Engineering  
Digital Communications  
Computer Networks  
ICTE-1  
TE-1  
Numerical and Computational Methods

## Semester-7

BTP-1  
ICTE-3  
TE-4  
HASSE-1  
SE-2

## Semester-2

Approaches to Indian Society  
Discrete Mathematics  
Digital Logic and Computer Organization  
Data Structures  
Data Structures Lab using Object Oriented Programming  
Electromagnetic Theory  
Exploratory Project-1  
Co-curricular Activities-2

## Semester-4

Principles of Economics  
Probability and Statistics  
Database Management System  
Embedded Hardware Design  
Introduction to Communication Systems  
Introduction to Computational Physics  
Co-curricular Activities-4

## Semester-6

Environmental Science  
SE-1  
ICTE-2  
TE-2  
TE-3  
Modelling & Simulation

## Semester-8

BTP-2  
OE-1  
OE-2

## Representative list of electives

Graph Theory and Algorithms	Human Computer Interaction	Intro to Data Science
Approximation Algorithms	Data Mining and Visualization	Introduction to Robotics
Computational Complexity	Human Computer Interaction	Introduction to Complex Network
Randomized Algorithms	Natural Language Processing	Stochastic Simulation
Quantum Computing	Natural Computing	Computational Number Theory
Introduction to Cryptography	Software Engineering	Einstein's Physics
Blockchain and Cryptocurrencies	Optimization	Operating Systems
Adversarial Machine Learning	Computational Financial	Nanoelectronics
Machine Learning and Security	Modern Algebra	Introduction to VLSI Circuits
Intro. to coding theory and Applications	Software Project Management	Analog IC Design
Compiler Design	Specification & Verification of Systems	Logic for Computer Science
Digital Image Processing	Models of Computation	Modern European Philosophy
Internet of Things	System and Network Security	Art: Ideas and Perspectives
Digital Signal Processing	No SQL Database	Human Behaviour Management
Statistical Communication	Web Data Management	Culture, Politics, Identity
Wireless System Design	Speech Technology	Organisational Behaviour
RF and Antenna Engineering	Deep Learning	Publics in South Asia: Contemporary Perspectives
Microwave Propagation	Recommendation Systems	
Control Theory	Intro. to AI	Systems, Policies and Implications





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# Admissions

## Total Seats: 90

33% of the seats are reserved under Gujarat Category. Seats under Gujarat Category will be filled as per the guidelines of ACPC. The candidate has to apply to ACPC, GoG, separately.

## Eligibility Criteria

The minimum academic qualification for admission to the programs is that the candidate must have passed or appearing in 2024 in the final examination of 10+2 (Class XII) or its equivalent with Mathematics, Physics and any one of Chemistry/Bio-technology/Computer Science/Biology.

## Selection Process

Admission to the B. Tech (Honours) in ICT with minor CS program will be based on the All India Rank of Joint Entrance Examination 2024 (JEE-2024) Main, which is conducted by the National Testing Agency, Government of India.

The short-listed candidates will be offered admission (confirmed/waitlisted) in order of their merit (based on the All India Ranking of JEE Main 2024) and preferences selected.

## How to Apply

Candidates submit an online application by clicking on the link given on the Institute website.

## Important Dates

Online application website opens	14 <sup>th</sup> March 2024
Last date for submission of online applications	17 <sup>th</sup> June 2024

## Fees Structure\*

**Tuition Fee:** Rs. 1,50,000 per Semester

\*Subject to revision every Academic Year from 8 to 10%.

## Scholarships

### DA-IICT Merit and Merit-cum-Means

#### Scholarships:

A few students admitted to the program are awarded merit and merit-cum-means scholarships equivalent to full tuition fees.

### Mukhya Mantri Yuva Swavalamban Yojna, Government of Gujarat:

The Scheme provides financial support to bright and needy students whose parents yearly income is upto Rs. 6.00 lakh. Students are encouraged to apply for different other scholarships as follows:

### Hon. Chief Minister Scholarship Scheme Digital Gujarat Portal National Scholarships Portal

### Cybage Scholarships:

This scholarship is granted to students whose parents annual income is upto Rs. 3.00 lakh. The scholarship is limited to 80% of the semester tuition fee.

### Education Loan:

The Institute will facilitate the students to avail educational loan from selected banks.

For Inquiries

Email: [ug\\_admissions@daiict.ac.in](mailto:ug_admissions@daiict.ac.in) | Voice call: 079 69 08 08 08

For more details please visit: [www.daiict.ac.in](http://www.daiict.ac.in)