

Information Brochure 2015

Department of Computer Science & Engineering

National Institute of Technology Hamirpur



Institute Vision

To build a vibrant multicultural learning environment founded on value based academic principles, wherein all involved shall contribute effectively, efficiently and responsibly to the nation and global community.

Programmes offered

- BTech in Computer Science & Engineering
- MTech in Computer Science & Engineering
- MTech in Mobile Computing
- MTech Integrated (Dual Degree)
- PhD in Computer Science & Engineering







Department Vision

To provide excellent technical education in computer science and engineering and produce competent engineers and professionals with high ethical values prepared for life long learning.

Department Mission

- To impart quality and value based education in computer science and engineering to solve real world problems with an inclination towards societal issues and research.
- To prepare students for professional career with continuous learning.

Introduction

Located in Hamirpur district of Himachal Pradesh, NIT Hamirpur enjoys a really scenic environment and pleasant weather. Established in the year 1986, as REC Hamirpur, NIT Hamirpur has been declared as the Institute of National Importance under the Act of Parliament, 2007.

Established in 1989 as the Department of Computer Science & Engineering, we have an excellent & rich history and an outstanding record of contributions to the profession and community. The Department is well recognized for excellence in facilities and teaching. We offer BTech, MTech and PhD programmes in the area of Computer Science & Engineering. The aim of these programmes is to enable students to acquire specialized knowledge for various subjects in computer science & information technology, as well as to enrich the students' personal, social and cognitive development to meet challenges of today and tomorrow.

The Department is well equipped with high end computers, latest software & state-of-the-art IT infrastructure and all these computing resources are inter-connected with high speed intranet. Our students are exposed to up-to-date curriculum, technology and techniques. The Department has well experienced & dedicated faculty members with different specializations. Our curriculum is modified, enhanced and updated regularly as we introduce new courses to reflect current topics in this fast changing discipline. Our faculty is involved in cutting-edge research areas, including computer networks, mobile computing, mobile ad hoc networks, wireless sensor networks, security, image processing, data mining, artificial intelligence, computer architecture and reconfigurable computing.

The Department prides itself on good career opportunities for students. Our students graduate with more than 100% placement through campus. Many companies of repute show their interest to visit our Institute for campus recruitment.

Programme Educational Objectives

The graduate of the B.Tech. programme will:

1. Acquire strong knowledge of theory and practices in computer science and engineering to have success in professional career/higher education.
2. Design efficient and technically sound computing solutions for real world problems as per the needs of society.
3. Demonstrate professional ethics, effective team work spirit and capability to continuously learn new technologies.

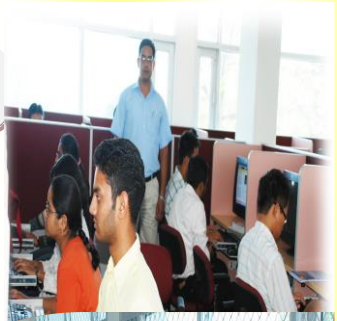
Programme Outcomes

1. Apply knowledge of mathematical foundations, science, algorithmic principles and engineering to solve the problems in computing and technology.
2. Identify, formulate and analyze engineering problems in reaching substantial conclusions using analytical tools appropriate to computer science and engineering.
3. Design hardware/software systems to meet desired needs within realistic constraints related to economic, environmental, social, political, ethical, health and safety, verifiability and sustainability concerns.
4. Conduct investigations of broadly defined problems; locate, search and select relevant data and conduct experiments to provide valid conclusions.
5. Use the technical skills and modern engineering/ICT tools, including applications, simulation and modeling, to broadly defined engineering activities.
6. Assess safety and legal issues and the consequent responsibilities relevant to the professional computer science and engineering practice.
7. Understand the impact of the professional computer science and engineering solutions in relations to societal needs, environmental concerns and sustainable development.
8. Understand the importance of professional ethics and norms of computer science and engineering practice.
9. Function effectively as a member and/or leader in diverse teams.
10. Communicate effectively with engineering community and society at large by being able to comprehend and write effective reports, prepare documentation and make effective presentations.
11. Demonstrate knowledge of management and financial principles to computer science and engineering projects.
12. Engage in life long learning and adapt to rapid changes in computer science and engineering and allied areas.

Key Highlights

- Excellent teaching learning environment.
- Young, dynamic and energetic faculty. Out of 11 regular faculty members 8 are PhDs and others are pursuing.
- Excellent infrastructure: building, space, faculty cabins, class-rooms, seminar hall, conference hall, seating arrangements, etc.
- Adequate teaching aids like black/white boards, LCD projectors, etc.
- Excellent results. Our students are highly sought by industry and get lucrative jobs.
- Involvement of faculty members in Institutional development work (office automation, video conferencing, networking, purchase, etc.).
- Transparency in academic and administrative processes.
- Faculty members are acting as expert members of selection boards for various commissions/organizations such as UPSC, HPSC, DRDO, etc.
- Active participation of faculty members as Program Committee members of various international/national conferences and editorial boards of journals.
- More than 400 research publications.

Laboratories and Facilities



The Department has several well equipped laboratories catering to the needs of not only the CSE students but also students from other departments. The present infrastructure is excellent to carry out research and other academic work by UG and PG students. Major facilities in different laboratories are listed below:

Computer Network Lab

- Sun Fire X4150 Server - 1 No
- Sun Blade 150 Workstations - 2 Nos
- IBM P-IV Desktops - 20 Nos
- Dell M4300 Mobile Workstations - 20 Nos
- HP Handheld Terminals - 2 Nos
- Security Analyzer - 1 No
- HP Scanjet 4850 - 1 No
- HP Laserjet 3500 Printer - 1 No
- Qualnet Simulator - 2 Licenses
- Netz Network Simulator - 10 Licenses

Capabilities: Academic support and R&D activities on computer networks, mobile computing, ad hoc networks and wireless sensor networks



Parallel Processing Lab

- Sun Fire X4150 Server - 1 No
- HP Workstations - 20 Nos
- IBM P-IV Desktops - 10 Nos
- Solaris 10
- RHEL 4
- Windows 2003 Advanced Server

Capabilities: Academic support and R&D activities on high end computing, cluster computing and parallel processing



Computer Graphics Lab

- HP Workstations - 18 Nos
- Sun Blade 2500 Workstation - 1 No
- Windows XP
- Matlab

Capabilities: Academic support and R&D activities on computer graphics and CAD

Image Processing Lab

- Sun Fire X4150 Server - 1 No
- Dell Workstations - 20 Nos
- Sun Blade 150 Workstation - 1 No
- HP Lasejet 9040dn - 1 No
- Windows XP
- Matlab
- Open Inventor

Capabilities: Academic support and R&D activities on image processing and computer vision

DBMS Lab

- IBM P-IV Desktops - 20 Nos
- Windows 2003 Advanced Server
- Linux
- My SQL
- Oracle
- Rational Rose - 20 Licenses

Capabilities: Academic support and R&D activities on databases and data mining

Computational Lab

- Lenovo PCs - 171 Nos
- Compilers (C/C++/ Fortran)
- Visual Studio

Capabilities: Academic support and R&D activities on operating system, programming languages and algorithms

Project Lab

- Acer P-IV Desktops - 30 Nos

Capabilities: Facilities for R&D activities and consultancy works

Microprocessor Lab

- Microprocessor Kits - 20 Nos
- Zigbee Kit - 1 No
- RFID Kits - 2 Nos
- Bluetooth Kit - 1 No
- Embedded Microcontroller Kit - 1 No
- Universal Programmer - 1 No

Capabilities: Academic support and R&D activities on microprocessor and microcontroller



R&D and Consultancy

The Department has a proud record of research and has generated expertise in various areas. The Department has sufficient infrastructure to carry out research and consultancy in the following areas:

- Mobile, ad hoc & wireless sensor networks
- Computer networks
- Database and data mining
- Computer architecture and reconfigurable computing
- Artificial Intelligence and NLP
- Image Processing
- Design & development of software
- Design & evaluation of campus wide networks
- IT solutions and training in the cutting-edge technologies

Major projects are as under:

Sponsored and R&D Projects

- LMS under NMEICT, MHRD, in collaboration with IIT Kanpur [PI: Dr. Narottam Chand]
- Software Development for Optimization of Real Time Operation of Hydro Power Plants, BHEL Bangalore, with EED [Co-PI: Dr. Narottam Chand]
- Energy Efficient Wireless Sensor Network Routing Protocol for Snow Bound Himalayan Region, SASE Lab, DRDO, Chandigarh, with ECED [Co-PI: Dr. Narottam Chand]
- Post Disaster Communication Recovery Using Integrated Mobile Ad hoc Network, State Council for Science Technology and Environment [PI: Dr. Naveen Chauhan, Co-PI: Er. Rajeev Kumar]
- Information Security Education and Awareness Project Phase II under Ministry of Electronics and Information Technology, Govt of India [CI: Dr. Narottam Chand]
- SMDP-C2SD Project under Ministry of Electronics and Information Technology, Govt of India [Co-CI: Dr. Narottam Chand]
- Information Security Education and Awareness Project Phase I under Ministry of Electronics and Information Technology, Govt of India [CI: Dr. Lalit Awasthi/Dr. Kamlesh Dutta]
- SMDP-VLSI Project under Ministry of Electronics and Information Technology, Govt of India [Co-CI: Dr. Lalit Awasthi/Dr. Kamlesh Dutta/Dr. Narottam Chand]

Consultancy Projects

- Consultancy Service to KCCB for Establishment of CBS and Internet Banking [PI: Dr. Narottam Chand]
- Consultancy service to Kangra Central Cooperative Bank for Establishment of Surveillance and Biometric System [PI: Dr. TP Sharma, Co-PI: Dr. Narottam Chand]
- Automation of Dr. Rajendra Prasad Govt. Medical College Kangra [PI: Dr. Siddhartha Chauhan]

Conferences and Training



The training is a continuous and regular feature in the Department. The faculty members and technical staff update their knowledge by regularly attending various conferences, training programmes and workshops. The Department is also in the forefront for organizing conferences, training programmes, workshops and invited lectures. More than 2000 participants from reputed organizations and community have attended different programmes organized in the Department. The major activities undertaken in the recent years are:

International Conference

International Conference on Advances in Computing and Communication (ICACC 2011)

National Conferences

National Conference on Emerging Trends in Computing and Communication (ETCC-2007 & ETCC-2008)

Faculty Development Programmes

- SESD [2016] under GIAN, MHRD
- STMASS [2016]
- MC [2013], MDS [2013]
- IINS (2010), IE (2010)
- LSAP (2009) , IT (2009), Cloud Computing (2009)
- Mobile Computing (MC-2006 & MC-2009)
- ISTE Annual Convention (2007)

Training Programmes

- Information Security
- Ethical Hacking
- Network Administration
- Linux System Administration
- Programming in Java
- Computer Programming
- Computer Fundamentals, MS Office & Internet
- ICT Awareness
- Solaris Administration
- Networking Fundamentals
- Web Designing
- PHP, MySQL and Apache
- Basics of Operating System
- Computer Applications

Renowned Speakers/Visitors from Industry/Academia

- Dr. Dharma P Agrawal, Cincinnati University, USA
- Dr. Richard Stallman, FSF, USA
- Dr. Sudhir Dhawan, IBM, USA
- Dr. Sanjeev Kumar Singh, Patent Consultanr, USA
- Prof. Vijay Kumar, Univ of Missouri-Kansas, USA
- Prof. Rajkumar Buyya, Univ of Melbourne, Australia
- Prof. Dheeraj Sanghi, IIT Kanpur
- Prof. Sukumar Nandi, IIT Guwahati
- Prof. Saroj Kaushik, IIT Delhi
- Prof. RC Joshi, IIT Roorkee
- Prof. Manoj Misra, IIT Roorkee
- Prof. NC Shivaprakash, IISc Bangalore
- Prof. YN Singh, IIT Kanpur
- Prof. Ajay Sharma, Director, NIT Delhi
- Prof. Aditya Trivedi, IIITM Gwalior
- Prof. Prof. Sandeep Sancheti, Director, NIT Surathkal
- Prof. Moin Uddin, Director, NIT Jalandhar
- Prof. SC Sahasrabudhe, Director, DAIICT
- Prof. MR Murlidharna, IISc Banglore
- Prof. Mahesh Govil, NIT Jaipur
- Prof. AK Singh, NIT Kurukshetra
- Prof. Mayank Dave, NIT Kurukshetra
- Prof. Krishan Kant, NIT Allahabad

Faculty

The Department has highly qualified and experienced faculty. Experience of our faculty ranges from 2 to 27 years in teaching and research. The faculty members are actively involved in their respective fields of expertise.

- Lalit K. Awasthi, PhD, Mobile Computing
- Narottam Chand, PhD, Mobile Computing
- Kamlesh Dutta, PhD, Artificial Intelligence
- TP Sharma, PhD, WSN
- Siddhartha Chauhan, PhD, WSN
- Naveen Chauhan, PhD, MANET
- Rajeev Kumar, MTech, CSE (pursuing PhD)
- Pardeep Singh, MTech, Soft Computing (pursuing PhD)
- Nitin Gupta, MTech, CSE (pursuing PhD)
- Madhu Kumari, PhD, Data Mining
- Lokesh Chouhan, PhD, Mobile Networks

Future Plans

The Department has a major role to play in providing academic excellence in computer science and information technology. The Department has great potential for expansion in the upcoming years. Future plans include:

- To attract faculty on regular basis
- Increase research activities
- Addition of new equipment to the labs related to coursework
- Attract better quality undergraduate and graduate students
- Better placement of students in industry and institutions
- Improve alumni and industrial interactions
- Collaborative projects with industry
- To establish a Centre of Excellence in Mobile Computing

Director's Message



The Institute continues its 30 years long journey towards excellence at a frantic pace and is being recognized in learning and by the stakeholders and the society. Department of CSE has continuously upgraded itself in terms of academic programmes and state-of-the-art infrastructure. The Department attracts the bright young and dynamic faculty members and the best of students for its bachelors, masters and doctoral programmes. The excellent facilities, active institute-industry interaction, exchange programmes and industrial/research training opportunities help the students to excel in the competitive professional life. This information brochure provides glimpses of the efforts put in by the faculty, staff and students of the Department. The Department has facilities at par with any leading CSE Department at National and International level. It is my great pleasure and honour to invite you to visit the Department for a memorable journey.

Prof. Ajay Kumar Sharma

HoD's Message



It is my pleasure and honour to introduce the Department of Computer Science & Engineering at NIT Hamirpur (HP). We have state-of-the-art infrastructure, laboratory facilities and highly qualified and experienced faculty to impart quality education. We are proud to contribute to their advancement and the society at large. This brochure highlights the key areas of our activities, strengths, and accomplishments. With the strong support of our dynamic faculty, hard working staff, and ambitious students, we have created an environment that fosters collaboration, a culture of accomplishment and strong support of ethnic and intellectual diversity. I invite you to come and see for yourself. More information about our programs and activities can be found on http://www.nith.ac.in/.

Dr. Narottam Chand Kaushal

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