

## V. UNIVERSITY INSTITUTE OF ENGINEERING & TECHNOLOGY

### ABOUT THE INSTITUTE

University Institute of Engineering & Technology (UIET) was established by Panjab University as a Department in 2002. *With the vision to be the front runner in Engineering Education and Research, the mission of University Institute of Engineering and Technology (UIET) is to produce professionally competent students for career in Engineering and Technology by providing value-based quality education.* It offers four years Bachelor of Engineering (B.E), two years Master Engineering (M.E), and full time Ph.D degrees in Biotechnology, Computer Science and Engineering, Information Technology, Electrical and Electronics, Electronics and Communication and Mechanical Engineering. It offers Nine post graduate programs in Biotechnology, Computer Science and Engineering, Computer Science and Engineering (Cyber security) Information Technology, Electrical, Engg.(Power system) Electronics and Communication, Mechanical Engineering, Microelectronics and Material Science & Technology. Four UG Programs (namely Computer Science and Engineering, Electrical and Electronics, Electronics and Communication and Mechanical Engineering) and three PG courses (namely Electronics and Communication, Mechanical Engineering and Computer Science and Engineering) have been NBA accredited. UIET has MOUs with industry leaders and academia like Infosys, Spice Digital Limited, PGIMER, CSIO, C-DAC, the University of Western Australia, IIT Kanpur, IIT Roorkee, Nottingham Trent University, UK etc. The Pedagogy at UIET places high emphasis on the development and application of Engineering principles across disciplines and training students for addressing the challenges faced by industry, research organizations and community. Hands on training in design Laboratories, and networking with industry makes our students ready for research, teaching, product development and problem solving, UIET nurtures exchange relationships with institutes abroad, wherein our students are facilitated to participate in summer training programs.

The faculty attracts various sponsored research projects at the national and international level. A number of sponsored research projects from agencies like DIT, AICTE, DST, Department of Biotechnology Welcome Trust, Meity etc. have led to the establishment of a number of specialized research laboratories which are freely available to students for learning by working. Some of the major projects that have developed UIET in recent years include, grants under TEQIP-III, a world Bank project and a Design Innovation Centre (DIC) from the Ministry of Education (MOE), Government of India, DBT-BUILDER grant, NTU-PU collaboration grant

### FACULTY

Designation	Name	Field of Research Specialization
Professors	J. K. Goswamy <b>(Director)</b>	Nuclear Structure through gamma ray spectroscopy, Materials Characterization for Sensor applications
	Renu Vig	Signal Processing and Fuzzy Logic
	Savita Gupta	Bio-medical image Processing, cognitive Enhancement & Sensor Networks & Sensor Networks
	Sanjeev Puri	Polycystic Kidney Disease and Stem Cell Biology & Pathophysiology of kidney diseases
	Gurdeep Singh	Data warehousing and data mining
	Harmesh Kumar	Advanced Manufacturing, Technology, Quality Control, Design and , Welding Technology
	Sunil Agrawal	Neural Networks & Applications, Signal Processing and Wireless Communication
	Vinay Kanwar	Numerical Analysis, Fluid Dynamics
	Manu Sharma	Active Vibration Control Product design
	Harish Kumar	Information Retrieval, Cyber Security, Next Generation Telecom Networks.
	Sakshi Kaushal	Cloud Computing, Security, Telecommunication Networks
	Sarbjeet Singh	Cloud Computing, Machine Learning, IOT, Social Networks Analysis
	Krishan Kumar	Cyber Security
	Amrinder Pal Singh	System Modelling and Control, Dynamic Analysis nano composites, rapid manufacturing
	Naveen Aggarwal	Data Mining, Image Processing
	Ajay Mittal	Image processing, Computer vision and machine learning
	Monika Randhawa	Theoretical High Energy physics
	Arvind Rajput	Semiconductor and VLSI
	Roopali Garg	Electronics & Communication, Wireless Communication, Optical Communication
	Inderdeep Kaur Aulakh	Wireless Communication Networks, Cognitive Radio Networks
Yajvender Pal Verma	Distributed generation Micro and optimization, Renewable energy integration and electrical market issues	
Kalpana Dahiya	Operations Research	
Sukhwinder Singh (on deputation)	Bio-medical image Processing, Wireless Sensor networks	

Associate Professors	Sanjay Vohra	Mechanics of Materials
	Manoj Kumar Sharma	Active Noise Control, Control Systems, Renewable Energy Sources and Neural Networks & Fuzzy logic
	Veenu Mangat	Data Mining & Warehousing, Machine Learning
	Naresh Kumar	Wireless and Mobile Communication
	Shuchi Gupta	Theoretical & Computational condensed matter physics
	Damanjeet Kaur	Power systems optimization, Distribution systems Planning Optimization using AI Techniques
	Mukesh Kumar	Social Media Analysis, Natural Language Processing Machine Learning
	Shankar Sehgal	Finite element model updating, Microwave joining, Design and Manufacturing
	Jaget Singh	Antenna and Microwave Engineering
	Amit Chauhan	Tribology, journal bearing, Metal Composite and wind energy
	Vishal Gupta	Natural Language Processing, Information Retrieval
	Mandeep Kaur	Image Processing, Digital Forensics, Machine Learning
	Amandeep Verma nee Puri	Rot dynamics Machines and Engg. Mechanics
	Puneet Jai Kaur	Software Engg
	Nisha Tayal	Microcontroller, Embedded systems and Automation Smart grid
	Rajesh Kumar	CAD/CAM, Robotics, Nano technology
	Mamta Juneja	Digital Image Processing, Data Mining, Machine Learning, Deep learning, Biomedical Imaging
Assistant Professors	Saurabh Bhatia	Numerical Analysis
	Sharmelee Thangjam	Signal Processing
	Deepak Kumar	Microgrids, Power systems issues
	Vishal Sharma	VLSI and Microelectronics
	Sumit Budhiraja	Signal Processing and Image Processing
	Jaspreet Kaur	Microbial And Environmental Biotechnology
	Hema Setia	Polymer Science, Environmental Engineering
	Anupreet Kaur	Chemical Engg. Water remediation, Environmental Biotechnology
	Makhan Singh	Software Engg, Cloud computing
	Shailendra Kumar Arya	Enzyme Engineering, Waste water Engineering
	Harbhinder Singh	Theory of Machines and Robotics
	Surjeet Singh	Rot dynamics Machines and Heat Transfer
	Poonam Sood	Vibration Control, Model Updating, FEM
	Amandeep Singh Wadhwa	Rot dynamics Machines and Engineering Mechanics
	Jaswinder Singh Mehta	Design Engineering, Industrial Engg.
	Prashant Jindal	Nano Composites, materials cauterization, 3d Printing, Biomedical Devices
	Preetika Sharma	Analog and Digital Electronics, semiconductor technologies, Nano Electronics
	Sarpreet Kaur	Smart Grid, Power Systems Analysis, Designing of electrical machines using Finite element Analysis
	Preeti Gupta	Digital System Design, Control System and Biometrics
	Neeraj Sharma	Optical Fiber Communication
	Charu Madhu	Nanophotonics, Optical Communication
	Nidhi	Bio -Signal Processing
	Puneet Kaur	Power Electronics
	Preeti	Optical Communication (wired and wireless) and Optical Biosensor; Wireless Communication Bio-signal Processing
	Amit Chaudhary	Semiconductor and VLSI
	Parveen Goyal	Manufacturing Process and Technology, Non-Conventional Machining
	Anjali Gupta	Sustainable Manufacturing with Minimum Quantity Lubrication, Nanofluidics
Gaurav Sapra	Nano Technology, Wireless Communication, Digital Signal Processing, Microcontroller and Embedded System design	
Parul Gaur	Power Electronics, Optimization using PSO techniques and other Algorithm, Communication Engg.	
Raj Kumari	Parallel & Distributed Computing, Cloud Computing	
Suksha	Embedded System, Automatic Control	
Monika	Software Engg.	

	Akashdeep	Machine Learning, Deep Learning, Digital Image Processing,
	Nirmal Kaur	Parallel and distributed computing, Cloud Computing image processing
	Rohit Kumar	Software Engineering
	Gagandeep Singh	Machine Design, Refrigeration and Air Conditioning
	Aditya Kaushik	Numerical Analysis
	Tukesh Soni	Mechanical Vibration
	Minto Rattan	Solid Mechanics
	Anil Kumar	Organic Chemistry
	Renu Thapar	B-Lactam Antibiotics
	Prashanta Kumar Nanda	Nuclear medicine & Synthetic in organic materials
	Madhu Khatri	Nanotechnology & Environmental Biology
	Mary Chatterjee	Cancer Biology
	Jagjit Singh	Matrix Analysis
	Neelam Goel	Bioinformatics, Soft Computing, Machine Learning
	Sunil Bansal	Experimental High Energy Physics
	Aditi Gupta	Power System Deregulation Congestion Management, Control System
	Suresh Kumar	Experimental Condensed Matter Physics/Material Science
	Vivek Pahwa	Electrical Machines and drives, Power systems power Electronics
	Sabhyata Uppal Soni	Digital Communication , optical & Wireless Communication
	Nishima	Nano Science And Nano Technology
	Preeti Aggarwal	Digital Image Processing, Medical Imaging, Data Mining
	Ravreet Kaur	Parallel and distributed computing, computer networks, algorithm analysis and design
Temporary Faculty	Deepti Gupta	Wireless Sensor Networks
	Jyoti Sood	Theoretical condensed Matter Physics
	Hitesh Kapoor	HR & Marketing
	Anu Jhamb	Human Resource Management
	Geetu	Quantum Information Processing
	Sarvjit Singh	Communication Systems
	Garima Joshi	Gesture Recognition and Machine Learning
	Daljeet Kaur	Material Science & Nanotechnology
	Rajni Sobti	Speech Recognition
	Sukhvir Singh	Wireless Networks, Machine Learning
	Renuka Rai	Theoretical Stochastic processes
	Pardeep Kaur	Optical Fiber Communication & Embedded Systems
	Ranjana Bhatia	Environmental Microbiology, Agricultural Microbiology
	Prabhjot Kaur	Operation Research; Transportation and Assignment Problems
	Parminder Kaur	Biochemistry & Molecular Biology
	Minakshi Garg	Bioinformatics and Food biotechnology
	Jyoti Sharma	Instability of nano fluids
	Rajneesh Singla	Image processing, Network Security
	Sanjiv Kumar	Optical Communication
	Harvinder Kaur	Optical Communication
	Anu Priya Minhas	Plant and Microbial Biotechnology
	Vijay Kumar	VLSI Design, Nanophotonics , Optoelectronics
	Gurpreet Kaur	Digital Signal Processing
Kuldeep Singh Bedi	Power Electronics Photovoltaic System, Power System	
Amit Thakur	Carbon Nanotubes, Fibers, Material Characterization, Bio Composite	
Mamta Sharma	Experimental Condensed Matter Physics/Material Science	

**COURSES OFFERED (SEMESTER SYSTEM):**

Course	Seats	Duration	Eligibility*	Admission Criteria
B.E. in Computer Science & Engineering	108+5 EWS +11NRI +5 FN	4 years	As per Joint Admission Committee (JAC 2022) Information Brochure 2022.	Based on JEE (Mains) Merit-2022.
B.E. in Information Technology	108+5 EWS +11NRI+5 FN	4 years		
B.E. in Electronics & Communication	120+6 EWS +12 NRI+6 FN	4 years		
B.E. in Bio-Technology	81+4 EWS +8 NRI+ 4 FN	4 years		
B.E. in Electrical and Electronics	81+4 EWS +8 NRI+ 4 FN	4 years		

B.E. in Mechanical	81+4 EWS +8 NRI+ 4 FN	4 years		
M.E. in Computer Science & Engineering	20+2 NRI+ 1 FN	2 years	<b>Eligibility Conditions:</b> B.E. or B.Tech. or equivalent in Computer Science and Engineering / Information Technology with at least 60% marks in aggregate from Panjab University or any other University recognized by Panjab University as equivalent thereto.	<b>Mode of admission:</b> Preference will be given to GATE qualified candidates. Candidate appearing for PU-CET (PG) will be given admission if some seats remain vacant after exhausting the list of GATE qualified candidates.
M.E. in Electronics & Communication	20+2 NRI+ 1 FN	2 years	<b>Eligibility Conditions:</b> B.E. or B.Tech. or equivalent degree in Electronics / Electronics & Communication Engineering / Electronic and Telecommunication Engineering with at least 60% marks in aggregate from Panjab University or any other University recognized by Panjab University as equivalent thereto.	<b>Mode of admission:</b> Preference will be given to GATE qualified candidates. Candidate appearing for PU-CET (PG) will be given admission if seats remain vacant after exhausting the list of GATE qualified candidates.
M.E. in Mechanical Engg.	20+2 NRI+ 1 FN	2 years	<b>Eligibility Conditions:</b> B.E./ B.Tech. in Mechanical Engineering / Production Engineering with at least 60% marks in aggregate from Panjab University or any other University recognized by Panjab University as equivalent thereto.	<b>Mode of admission:</b> The admission shall be made on the basis of Entrance Test P.U. CET (PG) to be conducted by the Panjab University. GATE qualified candidates shall be exempted from the P.U.-CET (P.G.) Test. However, in case of eligible GATE qualified candidates, the merit list shall be as per the GATE Score obtained and shall be offered the seat at the first instance.
M.Tech. Microelectronics	12+3 SC/ ST +2 NRI + 1FN	2 years	<b>Eligibility Conditions:</b> B.E. / B.Tech. or equivalent degree in Computer Science and Engineering / Electrical / Electrical & Electronics / Electronics / Microelectronics / Electronics & Electrical Communications / Electronics & Telecommunication / Electronics & Communication / Information Technology / Instrumentation Engineering/ M.Sc. Applied Physics / M.Sc. Physics with specialization in Electronics or M.Sc. in Electronics (as approved by AICTE) with minimum 60% marks in aggregate from Panjab University or any other University recognized by Panjab University as equivalent thereto.	<b>Mode of admission:</b> Preference will be given to GATE qualified candidates. Candidates appearing for PU-CET (PG) will be given admission if seats are left vacant after the GATE qualified candidates' admissions.
M.E. in Information Technology	20+2 NRI+ 1 FN	2 years	<b>Eligibility Conditions:</b> B.E. or B.Tech. or equivalent degree in Information Technology / Computer Science & Engineering / Electronics & Communication Engineering / Electrical & Electronics Engineering /	<b>Mode of admission:</b> Preference will be given to GATE qualified candidates. Candidate appearing for PU-CET (PG) will be given admission if some seats will be left vacant after the GATE qualified candidates admissions.

			Computer Science & Electronics Engineering / Software Engineering with at least 60% marks in aggregate from Panjab University or any other University recognized by Panjab University as equivalent thereto.	
M.E. in Electrical Engg. (Power System)	20+2 NRI+ 1 FN	2 years	<b>Eligibility Conditions:</b> Any candidate who has completed B.E. / B.Tech. in Electrical / Electrical & Electronics Engineering with at least 60% marks in aggregate from Panjab University or any other University recognized by Panjab University as equivalent thereto.	<b>Mode of admission:</b> Preference will be given to GATE qualified candidates. Candidate appearing for PU-CET (PG) will be given admission if some seats will be left vacant after the GATE qualified candidates admissions.
M.Tech. Material Science & Technology	20+2 NRI+ 1 FN	2 years	<b>Eligibility Conditions:</b> M.Sc. (Physics), M.Sc. (Chemistry), B.E. (Mechanical / Electrical / Electronics and communication / Civil / Production) with at least 60% marks in aggregate from Panjab University or any other University recognized by Panjab University as equivalent thereto.	<b>Mode of admission:</b> Preference will be given to GATE qualified candidates. Candidate appearing for PU-CET (PG) will be given admission if some seats will be left vacant after the GATE qualified candidates admissions.
M.E. in Biotechnology	20+2 NRI+ 1 FN + 1**	2 years	<b>Eligibility Conditions:</b> B.E. / B.Tech. Biotechnology Engineering with at least 60% marks in aggregate from Panjab University or any other University recognized by Panjab University as equivalent thereto.	<b>Mode of admission:</b> Preference will be given to GATE qualified candidates. Candidate appearing for PU-CET (PG) will be given admission if some seats will be left vacant after the GATE qualified candidates admissions.
ME Computer Science and Engineering (Cyber Security)	15+2 NRI+ 1 FN	2 years	<b>Eligibility Conditions:</b> B.E. or B.Tech. or equivalent degree in Computer Science & Engineering / Information Technology with atleast 60% marks in aggregate from P.U. or any other recognised University.	<b>Mode of admission:</b> Admission will be done on the basis of GATE Score. In Case of left over seats, admission will be done on the basis of Entrance Test P.U.-CET-(P.G.) to be conducted by the Panjab University.
<p>* 5% Concession is admissible in eligibility marks to SC/ST/BC/PwD Candidates.</p> <p>** one seat in ME Biotechnology course of UIET, every year consecutively for four years, starting from coming session (2022-2023), be enhanced, as stipulated in DBT BUILDER grant received by UIET</p>				

### Ph.D. Programs

S.No.	Name of the Department	Seats	Duration	Admission Criteria
1.	Computer Science Engineering		3-6 years	See Ph.D. Prospectus 2022
2.	Information Technology	24		
3.	Electrical and Electronics Engineering	35		
4.	Bio-Technology	13		
5.	Mechanical Engineering	-		
6.	Electronics & Communication Engineering	16		
7.	Applied Science	00		

**SCHEME AND SYLLABI:** Detailed scheme and syllabi of the courses are available at Panjab University official website: <https://puchd.ac.in/syllabus.php?qstrfacid=5>

**THRUST AREAS:** Faculty is involved in research in thrust areas like Design and Manufacturing, Traffic Sensing and Information Technologies, Medical Devices and Restorative Technologies, Energy Harvesting and Management Technologies, Medical Image Processing, computer Networking, Cloud Computing, Nano-Materials, Stem Cells, Wireless Communications, Power Systems, Composite Materials, New Physics Searches with Collider Experiments at LHC, CERN and KEK, Japan etc.

**PLACEMENTS:** The objective of Training and Placement Cell (TPC) is to provide the best training and placement opportunities to students. Efforts are made by the dedicated members of the team to approach companies and to invite them on campus to recruit students and to provide them the placement and internship opportunities. Over the past many years, UIET has built a strong relationship with many companies that visit UIET on regular basis to recruit students.

TPC also organizes special lectures and soft skills programs regularly, wherein experts from industry are invited and they make students aware about the latest technologies/ processes in industry and guide them about how to appear for interviews and prepare for group discussions.

On an average, around 55 companies visit UIET every year and around 350 offers are made to final year students who participate in the placement process. The highest package in the session 2021-22 was 32 LPA offered by Amazon and the average package was around 7.5 LPA.

The major recruiters in the session 2021-22 include Amazon, American Express, Samsung, Deloitte, KPMG, Amdocs, Paytm, Indiamart, Infosys, Cognizant, Accenture, ZS Associates, ZScaler, Utrade, Gemini Solutions etc.

**University TECHNOS Society (UTECHNOS) at UIET** was established with the motive to give a platform for students to accelerate their all round development. There are six committees under UTECHNOS: Academic & Literary Committee, Sports Committee, Cultural committee, Brand Promotion Committee, Fund Management Committee and Discipline Committee. All committees are managed synergically by a group of students and faculty members. The student conveners, co-conveners and members for each committee are selected for tenure of one year by inviting applications from the interested students followed by interaction demonstrating individual's vision and zeal for the task. A number of clubs are registered under each committee. Each club has its own set of activities which are conducted throughout the year. Annual TechFest-cum-Cultural event GOONJ is organized under UTECHNOS for promotion of socio-cultural activities in addition to the technological upliftment of the students. Annual inter-college level sports-fest UMANG is organized under UTECHNOS to boost the enthusiasm among the students and to provide them with an opportunity to showcase their talent in the field of sports. In addition to this inter-branch and Intra-UIET sports events are organized under the flagship of Sports Committee. University Institute of Engineering and Technology Model United Nations (UIET-MUN) is organized annually under the Brand Promotion Committee to give an exposure about the current national and international issues.

#### **Alumni Affairs Cell, UIET, Panjab University, Annual Report (2021-2022)**

Since its inauguration the Alumni Affairs Office at UIET has successfully engaged with over 9,000 plus alumni globally. Any institution's alumni are key to its growth. Keeping this in mind, the Alumni Affairs Cell aims at fortifying the bond between the alumni and their alma mater. Its mission is to bridge the gap between students and alumni, thereby facilitating an exchange of resources, opportunities, and mentorship. The Alumni Affairs Cell has successfully gathered and maintained a database of alumni from the 2006 to 2021 class. This cell encourages alumni engagement through events and interactions with the students. All these events and activities are carried forward by a devoted group of students called STAR (Student Team for Alumni Relations), which is supervised and supported by faculty members of UIET.

From January to December 2021, the STAR hosted a lot of events mainly alumni talks through online interactive sessions such as "A-Talk Seasons" and a new series titled "Safarnama", celebrations on World Laughter Day. On Independence Day, STAR also launched its official website and newsletter.

In the months of July and August, the office hosted three alumni interactions for placements. Every year, the Flagship event is held for UIET 3rd year students. The major goal of the event is to give students a perspective of how group discussions and personal interviews are conducted at top companies like Amazon, Google, Texas Instruments, Goldman Sachs, and many more and prepare for the same.

Pre-placement online seminars were offered by STAR. The topics covered include successful resume creation as well as interview preparation tactics for the top technology companies such as Meta, Amazon, Apple, Microsoft and Google. LinkedIn training was also provided in order to train students to identify and explore better career opportunities.

Student mentorship program was started to implement the envisioned purpose of increasing alumni-student relations. In this program, STAR invites experts from the industry and academia to conduct workshops on industry-relevant tools and practises.

#### **DBT BUILDER GRANT**

Panjab University has been awarded the prestigious DBT-Builder grant by Department of Biotechnology, GOI, New Delhi, in which Biotechnology at UIET is one of the major participating department. The key objectives of the grant focuses on creating state of art research facility to perform high-end research in biotechnology and to train manpower in the upcoming areas of life sciences and for industrial needs. The environmental biotechnology will be the thrust area for developing innovative solutions to both local and worldwide issues related to environmental health and safety. The department aims to become self-sustaining by providing consultancy services in the biotechnology. Additionally, the research shall focus on developing cost effective solutions for sensing and removal of environmental contaminants (including the microbial, chemical, organic and inorganic components) from polluted Environment. At the end of the project the animal model-based toxicology studies will help in evaluating the effect of various emerging pollutants for developing futuristic methodologies for bioremediation of such contaminants. The research on biosensors to develop quantitative measurements along with the visible detection of analytes for on-field applications will also be focused.

#### **NTU-PU Science and Technology Partnership Centre (STPC)**

Nottingham Trent University (NTU), United Kingdom had signed an agreement with Panjab University in February 2020 to develop areas of synergy for advanced research and training in engineering and science. Thereafter, NTU-PU Science and Technology Partnership Centre was established to facilitate longer-term research collaborations, broaden engagement through partnership, and to contribute to the development of key areas of research activity.

Further, to promote development of collaborative research projects with the Panjab University in Engineering, Science; Collaborative Research Grants-2021 were announced by NTU with the total funding up to £100,000 per annum for 3 years. The purpose of the funding was that academia at NTU and PU could work together on research projects. It supported bursaries for student assistants, software licencing, cloud computing credits, job outsourcing, and purchase of small components and consumables and other direct costs, for use in either the UK or India. The focussed areas under this collaboration included Medical Implants, Wearable Biochemical Sensors and Sensor Array for Lower Limb Prosthesis, Robotics, BTMS (Battery solutions), AI based

automated solutions for industrial applications, Computational tools for disease detection, CAE/digital modeling/digital twins. A total of 9 projects with 9 faculty members as Principal Investigators (PI) from PU and 9 PIs from NTU involving 25 students from UIET were appointed as visiting researchers

NTU-PU STPC would promote six months internship of UIET students at NTU including bursary, Accommodation and Travel grants, Joint PhD and Master Degrees with exchange of students at PU and NTU, Collaborative Course curriculum development programs, Collaborative FDP/Workshops/Conferences, Purchase of common software as central repository for all projects.

Center would also explore prestigious collaborative grants under newer themes related to global challenges such as Smart Medical Devices and Health care, Identification of Biomarkers, Diagnostic Kits, Viral detections, Composite materials, Novel manufacturing, Water Desalination, Microfluidics, Gas Sensing Mechanism.

### **INNOVATION AND STARTUP ACTIVITIES**

#### **Design Innovation Centre (DIC)**

The Ministry of Education (MoE) formerly known as MHRD, as a part of its 12th Five-year plan (2012-17) has taken a national initiative to set up a network of Design Innovation Centres (DICs) across the country. One Open Design School and a National Design Innovation Network have linked these DICs to evolve a nationwide ecosystem of resource and knowledge sharing to impart education and training to foster the innovative culture of designing products, processes and technologies of need to society. The MoE has approved the establishment of a DIC at Panjab University, Chandigarh to focus on innovations around engineering products, add value to the available engineering designs and promote early-stage start-up companies. It works on Hub and Spoke model where UIET Panjab University is the Hub and CSIO, PEC and HSJIDS PU are its spokes. Several ideas are being perused for developing a new pedagogy in teaching and training in design, new fabrications and innovations. A number of design technologies for smart cities, biomedical devices, advanced materials, navigational and tourism aids, green environment, energy & traffic management, communication etc. are being taken up at the DIC at PU.

#### **Institution's Innovation Council**

Institution's Innovation Council (IIC, scheme of MHRD) is a committee of faculty, students and experts from industry which conducts multiple activities to promote the Innovation and Entrepreneurship round the year in HEIs campuses. UIET, Panjab University, Chandigarh is one such HEI whose IICs aim is to streamline and strengthen the Innovation and startup ecosystem in the campus. The primary mandate of IIC is to encourage, inspire and nurture young students by supporting them to work with new ideas and transform them into prototypes. The objective is to prepare the students with the skills like Critical Thinking, Design Thinking, Innovative thought process and Entrepreneurial mindset. Several activities are conducted throughout the year to meet the desired target of IIC:

- Various Innovation, IPR and entrepreneurship-related activities are conducted in time bound fashion.
- Several reward innovations are Identified and their success stories are shared with the students.
- Periodic workshops/ seminars/ interactions with entrepreneurs and investors are organized
- Hackathons, idea competition, mini-challenges etc. are organized with the involvement of industries.
- A network with peers and national entrepreneurship development organizations is created.

Innovative projects carried out by institution's faculty and students are highlighted on the Institutes IIC portal.

#### **Technology Business Incubator at UIET (TBIU)**

UIET has inculcated a culture to promote 'Make in India' Campaign of GoI among faculty and students and has inaugurated a Technology Business Incubator at UIET (TBIU), Panjab University. TBIU has been created to provide a co-working ecosystem among faculty, students and industry by providing a common space at UIET. This space would primarily be utilized by Ventures that qualify as a nursery incubation project – initiated by one or more members of the academic staff, students and/or alumni of one of a premier institute, supported by the Institute, TBIU or some other technology promotion agency (government or non-government). UIET incubator provides a co-working platform where all engineering expertise converges. UIET provide an ecosystem to evolve and refine technologies and products that require expertise at the interphase of engineering sciences. To this end, TBIU facilitate the incubatees to utilise the resources in all engineering branches at UIET and even in Panjab University, depending upon technical needs of the project. It also connects the incubatees for the technology-downstream commercialisation aspects that may become available through TEC, CIIPP, CRIKC, DIC, IIC and other places in Chandigarh and around. In this respect, TBIU will function as a nodal centre, primarily for engineering technologies and knowhow and enter into suitable MOUs with other Units and organisations to efficiently achieve the synergy required for traversing the journey of engineering students from laboratory to marketplace. It will function as a single point of contact to offer the facilities and resources at UIET for providing various services and consultancies to industry and other outside organisations.

## **Dr. S.S. BHATNAGAR UNIVERSITY INSTITUTE OF CHEMICAL ENGINEERING & TECHNOLOGY PANJAB UNIVERSITY**

### **ABOUT THE DEPARTMENT**

Dr. S.S.Bhatnagar University Institute of Chemical Engineering and Technology, Panjab University, Chandigarh (<http://www.uicet.puchd.ac.in>) is a premier Institute in Northern India imparting quality education in Chemical Engineering, Food Technology and allied areas. Institute is currently running the courses in B.E. (Chemical Engineering), B.E. (Food Technology), Integrated B.E. (Chemical Engineering)-MBA, M.E. (Chemical Engineering), M.Tech. (Polymer), M.E. (Food Technology), M.Sc. (Industrial Chemistry) and M.E. (Chemical with specialization in Environmental Engineering). The faculty of the institute is involved in guiding students under Faculty of Engineering & Technology to pursue their research leading to award of Ph.D. degree. The Institute was set up in 1958 in collaboration with Illinois Institute of Technology, Chicago, USA and continues to maintain global standards of excellence in education and research. The Institute has attained status of eminence in academia, R&D within

India and abroad. Over the years, the Institute have been bestowed with research grants from premier funding agencies like DST, AICTE, UGC, DRDO, MOFPI, CSIR, ICAR, TEQIP, etc. The faculty works in collaboration with Industry, Research Organizations etc. contributing extensively towards high quality research.

### FACULTY

Designation	Name	Field of Research Specialization
Professors	Amrit Pal Toor <b>(Chairperson)</b>	Mass Transfer and Environment Engineering
	Meenakshi Goyal Sanchita Chauhan	Chemical Technology (Inorganic & Organic), Science & Technology of Carbon Modeling and Simulation, Environmental Engineering, Chemical Reaction Engineering
	Anupama Sharma	Polymer Science Engineering, Synthesis of Biodegradable Polymers and their Nanocomposites, Nanocellulose Extraction and its Utilization
	Anupama Thakur	Polymer Science Engineering
	Seema Kapoor	Thermodynamics, Energy Technology, Nano Biomaterials Engineering
	Ritu Gupta	Hydrodynamics, Process Dynamics & Control, Modeling & Simulation
	Urvashi Gupta	Hydrodynamic and Hydromagnetic Stability Problems for Viscoelastic Fluids, Micropolar Fluids and Nanofluids for Thermal Convection / Double-Diffusive Convection.
	Sushil Kumar Kansal	Mass Transfer, Environmental Engineering, Nano Technology
	Gaurav Verma	Polymers and Material Science, Nano Technology
	Gargi Ghoshal	Fermentation Technology, Cereal Technology
Associate Professor	Maninder Kaur	Power System, Energy and Environment
	Amit Sobti	Complex Flow Hydrodynamics
	Baljinder Kaur Gill	Chemical Engineering Thermodynamics
	Gaurav Rattan	Reaction Engineering, Pollution Control
	Surinder Singh	Petroleum Engineering, Separation Technology, Energy & Environment
	Sonia Sharma	Nano Biomaterial
	Jodh Singh	Mechanical Engineering
	Nidhi Singhal	Management
	Harjit Kaur	Management
	Sanjeev Gautam	Experimental Condensed Matter Physics, Materials Science, Advanced Functional Materials
Assistant Professors	Twinkle Bedi	Database & Operating System

### COURSES OFFERED (SEMESTER SYSTEM)

Course	Seats	Duration	Eligibility*	Admission Criteria
B.E. (Chemical Engineering)	89+11 NRI + 4 Foreign National	4 years	As per Joint Admission Committee (JAC 2022) Information Brochure 2022	Based on JEE (Main) Merit-2022 Admission to NRI and Foreign National through DASA
B.E. (Food Technology)	30+3 NRI+ 2 Foreign National	4 years	-do-	-do-
Integrated B.E. (Chemical)-MBA	36+5NRI+ 2 Foreign National	5years	-do-	-do-
M.E. (Chemical Engineering)#	20+2 NRI + 1 Foreign National	2 years	B.E./B.Tech (Chemical) 04 years or Five Year Integrated B.E.(Chem.)-MBA at least 60% marks in the aggregate from Panjab University or any other University recognized by Panjab University as equivalent thereto.	<b>Mode of Admission:</b> Preferences will be given to GATE qualified candidates. Candidate appearing for PU-CET (PG) will be given admission if some seats remain vacant after exhausting the list of GATE qualified candidates. <u>Please visit <a href="http://www.puchd.ac.in">www.puchd.ac.in</a> and <a href="http://www.uicet.puchd.ac.in">www.uicet.puchd.ac.in</a> for update, if any.</u>
M.Tech. (Polymer)#	15+5 Part-time+2 NRI+ 1 Foreign National	2 years	B.E./B.Tech.(Chemical) 04 years or Five Year Integrated B.E.(Chem.)-MBA at least 60% marks in the aggregate from Panjab University or any other University recognized by Panjab University as equivalent thereto.	Mode of Admission: Preferences will be given to GATE qualified candidates. Candidate appearing for PU-CET (PG) will be given admission if some seats remain vacant after exhausting the list of GATE qualified candidates.



			OR Master's degree in Technical Chemistry/Applied Chemistry/Industrial Chemistry/Chemistry (with Mathematics upto graduation) or an equivalent examination) with at least 55% marks in aggregate from Panjab University (in case students are awarded degree in CGPA, they must have the conversion formula issued by the concerned University or head of the department) or any other University recognized by Panjab University as equivalent thereto.	Please visit <a href="http://www.puchd.ac.in">www.puchd.ac.in</a> and <a href="http://www.uicet.puchd.ac.in">www.uicet.puchd.ac.in</a> for update, if any.
M.E. (Chemical with specialization in Environmental Engineering)#	10+1 NRI+ 1 Foreign National	2 years	B.E./B.Tech (Chemical) 04 years or Five Year Integrated B.E.(Chem.)-MBA at least 60% marks in the aggregate from Panjab University or any other University recognized by Panjab University as equivalent thereto.	<b>Mode of Admission:</b> Preferences will be given to GATE qualified candidates. Candidate appearing for PU-CET (PG) will be given admission if some seats remain vacant after exhausting the list of GATE qualified candidates. Please visit <a href="http://www.puchd.ac.in">www.puchd.ac.in</a> and <a href="http://www.uicet.puchd.ac.in">www.uicet.puchd.ac.in</a> for update, if any.
M.E. (Food Technology)#	10+1 NRI+ 1 Foreign National	2 years	B.E./B.Tech. degree in Food Technology / Dairy Technology / Agricultural Engineering / Food Engineering with at least 60% marks in the aggregate from Panjab University or any other University recognized by Panjab University as equivalent thereto.	<b>Mode of Admission:</b> Preferences will be given to GATE qualified candidates. Candidate appearing for PU-CET (PG) will be given admission if some seats remain vacant after exhausting the list of GATE qualified candidates. Please visit <a href="http://www.puchd.ac.in">www.puchd.ac.in</a> and <a href="http://www.uicet.puchd.ac.in">www.uicet.puchd.ac.in</a> for update, if any.
M.Sc.(Industrial Chemistry) #	17+2 NRI+ 1 Foreign National	2 years	B.Sc. (Three Year Course) with Mathematics and Chemistry as compulsory subjects / B.Sc. (Hons.) Chemistry with Mathematics as a compulsory subject / B.Sc. (Three Year Course) with Industrial Chemistry and Mathematics as compulsory subject at least 55% marks in the aggregate from Panjab University or any other University recognized by Panjab University as equivalent thereto.	<b>Mode of Admission:</b> Candidate appearing for PU-CET (PG) will be given admission. Please visit <a href="http://www.puchd.ac.in">www.puchd.ac.in</a> and <a href="http://www.uicet.puchd.ac.in">www.uicet.puchd.ac.in</a> for update, if any.
Ph.D.	Subject to availability	3-6 years	See Ph.D Prospectus 2022	
<p>* 5% Concession is admissible in eligibility marks to SC/ST/BC/PwD Candidates. Common mode of admission condition for all ME/M.Tech/M.Sc. courses are as under:-</p> <ol style="list-style-type: none"> <li>PU CET (PG)-2022 Entrance Test will be conducted for all PG courses of all branches of Dr. SSBUI CET.</li> <li>CET Cell will prepare subject wise merit list of all appeared candidates &amp; there will be no cut off / qualifying marks.</li> <li>The following order of preference is recommended for admissions to PG course offered at Dr. SSBUI CET: <ol style="list-style-type: none"> <li>GATE qualified candidates on the basis of their valid GATE score.</li> <li>CET (PG) appeared candidates on the basis of rank scored by them in CET (PG).</li> <li>B.E. / B.Tech percentage of marks.</li> </ol> </li> <li>After exhausting all the candidates of GATE score and CET PG, then admission shall be done on the basis of B.E. / B.Tech percentage.</li> </ol>				

**TITLES OF SYLLABI :** Detailed Syllabi available at <http://puchd.ac.in/syllabus.php>

**B.E. (Chemical Engineering)**

<b>Semester I</b>		<b>Semester II</b>	
Paper 1	Mathematics –I	Paper 1	Mathematics –II
Paper 2	Physics	Paper 2	Chemistry II
Paper 3	Chemistry-I	Paper 3	Electrical & Electronics Engineering
Paper 4	Computer Programming for problem solving	Paper 4	Introduction to Engg and Technology
Paper 5	Engineering Graphics	Paper 5	Communication Skills
Paper 6	Engineering Graphics	Paper 6	Electrical & Electronics Engineering Lab.
Paper 7	Engineering Workshop	Paper 7	Chemistry II Lab.
Paper 8	Physics Lab.	Paper 8	Communication Skills Lab.
Paper 9	Chemistry-I Lab.	Paper 9	Ethics and self-awareness
Paper 10	Computer Lab.		
Paper 11	Introduction to Env. Science		
<b>Semester III</b>		<b>Semester IV</b>	
Paper 1	Physical Chemistry	Paper 1	Heat Transfer
Paper 2	Fluid Flow	Paper 2	Chemical Engineering Thermodynamics
Paper 3	Energy Technology	Paper 3	Mechanical Operations
Paper 4	Strength of Materials	Paper 4	Numerical Methods in Chemical Engineering
Paper 5	Open Elective I	Paper 5	Engineering Materials
Paper 6	Process Equipment Design	Paper 6	Heat Transfer Lab.
Paper 7	Physical Chemistry Lab.	Paper 7	Mechanical Operation Lab.
Paper 8	Fluid Flow Lab.		
<b>Semester V</b>		<b>Semester VI</b>	
Paper 1	Chemical Reaction Engineering-I	Paper 1	Chemical Reaction Engineering II
Paper 2	Mass Transfer I	Paper 2	Mass Transfer II
Paper 3	Chemical Technology (Inorganic)	Paper 3	Process Dynamics & Control
Paper 4	Department Elective-I	Paper 4	Chemical Technology (Organic)
Paper 5	Chemical Reaction Engineering Lab.	Paper 5	Mass Transfer Lab.
Paper 6	Chemical Technology (Inorganic Lab.)	Paper 6	Process Dynamics & Control Lab.
Paper 7	Process Plant Design I	Paper 7	Chemical Technology (Organic) Lab.
Paper 8	Chemical Engineering Computation Lab.	Paper 8	Department Elective I Lab.
		Paper 9	Industrial Training*
<b>Semester VII</b>		<b>Semester VIII</b>	
Paper 1	Transport Phenomena	Paper 1	Process Instrumentation
Paper 2	Environmental Engineering	Paper 2	Process Engineering Economics
Paper 3	Process Modelling and Simulation (Pr)	Paper 3	Project work (Pr)
Paper 4	Industrial Training	Paper 4	Comprehensive viva (Pr)
Paper 5	Process Plant Design-II (Pr)	Paper 5	Literature survey and Report Writing and Seminar (Pr)
Paper 6	Project work (Pr)	Paper 6	Open Elective-II
Paper 7	Open Elective – I	Paper 7	Open Elective-III
Paper 8	Department Elective-II	Paper 8	Department Elective-III

**B.E. (Food Technology)**

<b>Semester I</b>		<b>Semester II</b>	
Paper 1	Mathematics –I	Paper 1	Mathematics –II
Paper 2	Chemistry (Organic)	Paper 2	Physics
Paper 3	Electrical & Electronics Engineering	Paper 3	Chemistry (Inorganic)
Paper 4	Material & Energy Balance	Paper 4	Communication Skills
Paper 5	Computer Programming for problem solving	Paper 5	Engineering Graphics
Paper 6	Electrical & Electronics Engineering Lab.	Paper 6	Engineering Workshop
Paper 7	Chemistry (Organic) Lab.	Paper 7	Physics Lab.
Paper 8	Computer Lab.	Paper 8	Chemistry (Inorganic) Lab.
		Paper 9	Communication Skills Lab.
<b>Semester III</b>		<b>Semester IV</b>	
Paper 1	Element of Bio & Food Science	Paper 1	Heat Transfer
Paper 2	Fluid Flow	Paper 2	Food Chemistry
Paper 3	Biochemistry & Nutrition	Paper 3	Food Microbiology
Paper 4	Chemical Engineering Thermodynamics	Paper 4	Processing of Cereals & Pulses
Paper 5	Mechanical Operations	Paper 5	Strength of Materials
Paper 6	Element of Bio & Food Science Lab	Paper 6	Process Equipment Design

Paper 7	Biochemistry & Nutrition Lab	Paper 7	Heat Transfer Lab
Paper 8	Fluid Flow Lab	Paper 8	Processing of cereal and Pulses Lab
Paper 9	Mechanical Operations Lab	Paper 9	Food Chemistry Lab
		Paper 10	Food Microbiology Lab
<b>Semester V</b>		<b>Semester VI</b>	
Paper 1	Mass Transfer -I	Paper 1	Mass Transfer-II
Paper 2	Processing of Oil Seeds, Oils and Fats	Paper 2	Chemical Reaction Engineering-I
Paper 3	Processing of Fruits and Vegetables	Paper 3	Processing of Milk and Milk products
Paper 4	Environmental Engineering	Paper 4	Beverage Technology
Paper 5	Numerical Methods in Chemical Engineering	Paper 5	Confectionery Technology
Paper 6	Process Plant Design-I	Paper 6	Mass Transfer-Lab
Paper 7	Processing of Oil Seeds, Oils and Fats Lab	Paper 7	Chemical Reaction Engineering-Lab
Paper 8	Processing of Fruits and Vegetable Lab	Paper 8	Processing of Milk and Milk products Lab
Paper 9	Environmental Engineering Lab	Paper 9	Chemical Engineering Computation Lab
<b>Semester VII</b>		<b>Semester VIII</b>	
Paper 1	Process Dynamics and Control	Paper 1	Environmental Engineering
Paper 2	Open Elective I	Paper 2	Department Elective II
Paper 3	Process Engg. Economics	Paper 3	Open Elective II
Paper 4	Departmental Elective- I	Paper 4	Open Elective III
Paper 5	Project Work (Pr)	Paper 5	Departmental Elective III
Paper 6	Literature Survey, report writing and Seminar (Pr)	Paper 6	Project work (Pr)
Paper 7	Industrial Training	Paper 7	Process Modelling and Simulation Lab (Pr)
		Paper 8	Comprehensive Viva (Pr)

**Integrated B.E. (Chemical)-MBA**

<b>Semester I</b>		<b>Semester II</b>	
Paper 1	Mathematics -I	Paper 1	Mathematics -II
Paper 2	Chemistry (Organic)	Paper 2	Physics
Paper 3	Electrical & Electronics Engineering	Paper 3	Chemistry (Inorganic)
Paper 4	Material & Energy Balance	Paper 4	Communication Skills
Paper 5	Computer Programming for problem solving	Paper 5	Managerial Economics
Paper 6	Management & Organizational Behaviour	Paper 6	Engineering Graphics
Paper 7	Electrical & Electronics Engineering Lab.	Paper 7	Engineering Workshop
Paper 8	Chemistry (Organic) Lab.	Paper 8	Physics Lab.
Paper 9	Computer Lab.	Paper 9	Chemistry (Inorganic) Lab.
		Paper 10	Communication Skills Lab.
<b>Semester III</b>		<b>Semester IV</b>	
Paper 1	Fluid Flow	Paper 1	Heat Transfer
Paper 2	Mechanical Operations	Paper 2	Physical Chemistry
Paper 3	Chemical Engineering Thermodynamics	Paper 3	Strength of Materials
Paper 4	Engineering Materials	Paper 4	Process Equipment Design
Paper 5	Business Statistics	Paper 5	Energy Technology
Paper 6	Operations Research	Paper 6	Production & Operations Management
Paper 7	Workshop on Business Research	Paper 7	Open Elective I
Paper 8	Fluid Flow Lab.	Paper 8	Physical Chemistry Lab.
Paper 9	Mechanical Operations Lab.	Paper 9	Heat Transfer Lab.
<b>Semester V</b>		<b>Semester VI</b>	
Paper 1	Numerical methods in Chemical Engineering	Paper 1	Transport Phenomena
Paper 2	Mass Transfer-I	Paper 2	Chemical Reaction Engineering-I
Paper 3	Chemical Technology (Organic)	Paper 3	Chemical Technology (Inorganic)
Paper 4	Process Plant Design-I	Paper 4	Mass Transfer-II
Paper 5	Environmental Engineering	Paper 5	Departmental Elective-I
Paper 6	Total Quality Management	Paper 6	Process Plant Design-II
Paper 7	Human Resource Management	Paper 7	Mass Transfer Lab.
Paper 8	Chemical Technology (Organic) Lab.	Paper 8	Chemical Reaction Engineering Lab.
Paper 9	Environmental Engineering Lab.	Paper 9	Chemical Technology (Inorganic) Lab.
		Paper 10	Chemical Engineering Computation lab
		Paper 11	Industrial training#
<b>Semester VII</b>		<b>Semester VIII</b>	
Paper 1	Chemical Reaction Engineering-II	Paper 1	Transport phenomena
Paper 2	Process Dynamics and Control	Paper 2	Environment Engineering

Paper 3	Industrial Training-I	Paper 3	Process Modelling and Simulation (Pr)
Paper 4	Project Work (Pr)	Paper 4	Project Work (Pr)
Paper 5	Process Engineering Economics	Paper 5	Comprehensive Viva (Pr)
Paper 6	Literature Survey, Report Writing and Seminar (Pr)	Paper 6	Open Elective-III
Paper 7	Open Elective-II	Paper 7	Department Elective-III
Paper 8	Department Elective-II	Paper 8	Financial Accounting
Paper 9	Marketing Management	Paper 9	Business Environment
<b>Semester IX</b>		<b>Semester X</b>	
Paper 1	Financial Management	Paper 1	Strategic Management
Paper 2	Project Management and Entrepreneurship	Paper 2	Business Law
Paper 3	Supply Chain and Logistics Management	Paper 3	Strategic Cost Management
Paper 4	Marketing Research & Consumer Behaviour	Paper 4	Human Resource Management
Paper 5	Organizational Behaviour	Paper 5	Management of Financial Services
Paper 6	Elective-I	Paper 6	Business Process Reengineering
Paper 7	Technology Management & Excellence	Paper 7	Elective-II
Paper 8	Industrial Training (Management)-II	Paper 8	Research Project (management) Pr
Paper 9	Research Project (Management) (Pr)	Paper 9	Comprehensive Viva Management (Pr)
Paper 10	Workshop on Developing Entrepreneurial Skills (Pr)	Paper 10	Seminar on Corporate Governance (Pr)
Paper 11	Workshop on Communication and Soft Skills (Pr)	Paper 11	Workshop on Management Information Systems (Pr)

**M.E. (Chemical Engineering)**

<b>Semester I</b>		<b>Semester II</b>	
Paper 1	Mathematical Methods in Chemical Engineering	Paper 1	Heat Transfer
Paper 2	Fluid Mechanics	Paper 2	Research Methodology
Paper 3	Mass Transfer	Paper 3	Chemical Reaction Engineering
Paper 4	Chemical Engineering Thermodynamics	Paper 4	Process Dynamics & Control
Paper 5	Transport Phenomena	Paper 5	Process Modeling & Simulation
		Paper 6	Process Modeling & Simulation (Pr)
		Paper 7	Seminar (Pr)
<b>Semester III</b>		<b>Semester IV</b>	
Paper 1	Open Elective		Thesis
Paper 2	Elective		
	Preliminary Thesis		

**M.E. (Food Technology)**

<b>Semester I</b>		<b>Semester II</b>	
Paper 1	Food Engineering	Paper 1	Food Packaging
Paper 2	Biochemical Engineering	Paper 2	Selected topics in Fruits and Vegetable Processing
Paper 3	Food Safety and Quality Management	Paper 3	Food Process Equipment Design
Paper 4	Selected Topics of Cereals, Oilseeds and Pulses	Paper 4	Research Methodology
Paper 5	Functional Foods and Nutraceuticals	Paper 5	Food Product Development
Paper 6	Biochemical Engineering-I (Pr)	Paper 6	Food Processing and Analysis (Pr)
Paper 7	Food Process Engineering (Pr)		
<b>Semester III</b>		<b>Semester IV</b>	
Paper 1	Analytical Techniques		Thesis
Paper 2	Electives		
	Preliminary thesis		

**M.Sc. (Industrial Chemistry)**

<b>Semester I</b>		<b>Semester II</b>	
Paper 1	Chemical Process Calculation	Paper 1	Chemical Engineering-II (Heat & Mass Transfer)
Paper 2	Chemical Engineering-I (Fluid Flow & Mechanical Operations)	Paper 2	Industrial Pollution Control
Paper 3	Chemical Technology	Paper 3	Pharmaceutical Chemistry
Paper 4	Organic synthesis	Paper 4	Electrochemistry and material chemistry
Paper 5	Analytical techniques	Paper 5	Thermodynamic and Chemical Reaction Engineering

Paper 6	Fluid Flow & Mechanical Operation Lab.	Paper 6	Heat & Mass Transfer Lab
Paper 7	Chemical Technology Lab.	Paper 7	Electrochemistry Chemistry and material chemistry Lab.
Paper 8	Analytical techniques Lab.		
Paper 9	Organic synthesis Lab.		
<b>Semester III</b>		<b>Semester IV</b>	
Paper 1	Organic Spectroscopy		Thesis
Paper 2	Polymer Science & Technology		
Paper 3	Elective*		
Paper 4	Open Elective**		
Paper 5	Organic spectroscopy lab		

**M.Tech. (Polymer)**

<b>Semester I</b>		<b>Semester II</b>	
Paper 1	Polymer Physics	Paper 1	Polymer Processing Techniques
Paper 2	Polymer Chemistry & Characterization	Paper 2	Polymer Reaction Engineering
Paper 3	Macromolecular Hydrodynamics	Paper 3	Composite Materials
Paper 4	Polymer Materials	Paper 4	Polymer Product Design
Paper 5	Numerical Methods	Paper 5	Process Modeling & Simulation in Polymer Systems
Paper 6	Chemical Engineering Fundamentals	Paper 6	Process Modeling & Simulation Lab (Pr)
Paper 7	Polymer Science Laboratory-I (Pr)	Paper 7	Seminar (Pr)
Paper 8	Computer Applications (Pr)		
<b>Semester III</b>		<b>Semester IV</b>	
Paper 1	Elective		Thesis
Paper 2	Open Elective		
Paper 3	Preliminary Thesis		
Paper 4	Polymer Science Lab.-II (Pr)		

**M.E. (Chemical with Specialization in Environmental Engineering)**

<b>Semester I</b>		<b>Semester II</b>	
Paper 1	Mathematical Methods in Chemical Engineering	Paper 1	Heat Transfer
Paper 2	Fluid Mechanics	Paper 2	Research Methodology
Paper 3	Mass Transfer	Paper 3	Chemical Reaction Engineering
Paper 4	Chemical Engineering Thermodynamics	Paper 4	Process Dynamics & Control
Paper 5	Transport Phenomena	Paper 5	Process Modeling & Simulation
Paper 6	Air Pollution Control Engineering	Paper 6	Solid Waste Management
	<b>Semester III</b>	Paper 7	Process Modeling & Simulation (Pr)
Paper 1	Open Elective	Paper 8	Seminar (Pr)
Paper 2	Elective		<b>Semester IV</b>
Paper 3	Waste Water Treatment Technology		Thesis
	Preliminary Thesis		

Scheme and Syllabi of all above UG and PG courses offered are based on the year of enrollment of the students and subject to change as per requirements.

**THRUST AREAS:** Agro Waste and Food Processing, Biomaterials, Biopolymers, Carbon Technology and its application, Chemical Reaction Engineering, Chemical Engineering Thermodynamics, Environmental Engineering, Food Product Development, Modeling and Simulation, Nanomaterials and their applications, Polymer Nanocomposites, Polymer Rheology.

**ALUMNI RELATIONS:** Institute has a very strong alumni base. The alumni of the Institute occupy coveted positions in all spheres of Corporate, Academia and Government Sector in India and abroad. They are associated with industries like IOCL, Petronet-LNG, HMEL, Hindustan Unilever Ltd., Vedanta, Honeywell UOP, Loreal, Ranbaxy, ITC, Nestle, Wrigley, KBR, ONGC, Shell India Ltd., Cairn India, EIL, Bechtel, Fluor Daniel, GAIL and many more.

**PLACEMENT:** Numerous MNCs and many reputed companies are regularly visiting the institute. They includes; Universal Oil Products (UOP), Reliance Industries Limited (RIL), Petronet LNG, Indian Synthetic Rubber Limited (ISRL), Infosys, Kellogg Brown & Root (KBR), Samsung Engineering, Technip KT India Ltd., SRF Chemicals, ZS Associates, Jubilant Life Sciences, IOL Chemicals & Pharmaceuticals Limited, Chandigarh Distillers & Bottlers Limited, HPCL Mittal Energy Limited, EXL Service, Bechtel, Aakash Institute, Chambal Fertilizers, The Safety Masters, Fluor Daniel, Vedanta Resources Ltd, Mahindra & Mahindra, Gujarat Fluorochemicals Limited, ITC Foods, Source Fuse Technologies, Nestle India, Cadbury, HMEL, Tirupati Life Sciences, Centriant Pharmaceuticals, Mount Meru Group etc. Students have over the year secured high GATE scores making their way to public sector companies like IOCL, BPCL, EIL, BARC, HPCL etc. The maximum package offered to the B.E. students during placements in the Institute is about Rs. 12.02 lacs/annum (2019-20).

## UNIVERSITY CENTRE OF INSTRUMENTATION AND MICROELECTRONICS

### ABOUT THE CENTRE

The University Centre of Instrumentation and Microelectronics (UCIM) was established in 1995 and offers M.Tech. (Instrumentation) and M.Sc. (Instrumentation) Courses, each of 2 years (4 semesters) duration. The objective of the centre is to generate trained manpower for Modern Sophisticated Instrumentation and for Microelectronics applications. The facilities available have been supplemented by combining it with the DST funded Sophisticated Analytical Instrumentation Facility (SAIF), Central Instrumentation Laboratory (CIL) and University Science Instrumentation Centre (USIC) which are housed in the same building.

### FACULTY

Professor	Ganga Ram Chaudhary ( <b>Director</b> )
Associate Professor	H.P.S.Kang
Assistant Professors	Poonam Kumari Ramesh Kumar Sharma Anil Kumar

### COURSES OFFERED (SEMESTER SYSTEM)

Course	Seats	Duration	Eligibility*	Admission Criteria
M.Tech (Instrumentation)	10+3 SC/ ST+2NRI + 1 Foreign National	2 years	B.E./B.Tech.(Chemical / Computer / Electrical/ Electronics/Mechanical/ Production /Instrumentation/ Bio-medical Engineering or equivalent degree or M.Sc. in Physics / Electronics /Instrumentation in (as approved by AICTE) with minimum 50% marks in aggregate.	GATE qualified only <b>Weightage:</b> GATE Score:50% Academic 50%
M.Sc. (Instrumentation)	Offered (10) + 2 NRI + 1 Foreign National	2 years	B.Sc. ( <b>Medical / Non-medical</b> / Physics / Electronics/ Instrumentation Science / Computer Science / Vocational Physics/ Electronics) or B.E. (E & TC / Instrumentation / Electrical and Electronics / Electronics & Electrical Communication Engineering) with minimum 50% marks in aggregate	PG-CET qualified in any of following Physics, Chemistry, Biophysics, Biochemistry, Botany, Environment studies, Geology, Forensic Science & Criminology, Microbiology, Biotechnology, System biology & Bioinformatics, Zoology. <b>Weightage :</b> Academics: 75% PUCET(PG): 25% Note: If seats remain vacant, the admission would be done on the basis of merit list prepared from academic weightage of the eligibility qualifications

\*5% concession is admissible in eligibility marks to SC/ST/BC/PwD candidates.

**TITLES OF SYLLABI** : Detailed Syllabi available at <http://puchd.ac.in/syllabus.php>

### M.TECH (INSTRUMENTATION)

Semester I		Semester II	
INS 61.01	Signal Processing-1	INS 62.01	Microprocessors in Instrumentation
INS 61.02	Analog & Digital Electronics	INS 62.02	Automatic Control System
INS 61.03	Transducers-I	INS 62.03	Analytical Instrumentation
INS 61.04	*Foundation of Measurement	INS 62.04	*Robotics
INS 61.05	*Photonics	INS 62.05	*Medical Instruments
INS 61.06	Design of Mechanical Elements	INS 62.06	*Signal Processing-II
INS 61.07	Process Dynamics & Control	INS 62.07	*Transducers-II
Semester III		Semester IV	
INS 71.01	*Computer Aided Design & Computer Aided Manufacturing	INS 72.01	Major Project & Thesis
INS 71.02	*Instrumentation for Special Applications		
INS 71.03	*Selected Topics		
INS 71.04	*Virtual Instrumentation		
INS 71.05	Major Project		

**\*Elective Subjects****M.Sc (INSTRUMENTATION)**

<b>Semester I</b>		<b>Semester II</b>	
SEM PO 11	Sensors, Transducers, and Actuators for Instrumentation	SEM PO 21	Microprocessor based Instrumentation & System Design
SEM PO 12	Signal conditioning, processing and interfacing techniques	SEM PO 22	Control System Design
SEM PO 13	Instrumentation components, devices and assemblies	SEM PO 23	Power Electronics
SEM PO 14	Principles of Test and Measuring Instruments	SEM PO 24	Process Control and Automation
SEM PO 15	Digital Electronics	SEM PO 25	Optical Instrumentation & Photonics
<b>Semester III</b>		<b>Semester IV</b>	
SEM PO 31	Biomedical Instrumentation	SEM PO 41	Seminars
SEM PO 32	Instrumental methods of Analysis	SEM PO 42	Comprehensive Viva
SEM PO 33	Advanced Fabrication Technique	SEM PO 43	Project Work & Project Report
SEM PO 34	Instrumentation Laboratory visit		
SEM PO 35	Project Work		

**THRUST AREA :** The Centre houses sophisticated instruments and facilities under SAIF viz-TEM, SEM, FE-SEM, NMR 400 MHz, NMR 500 MHz, LC-MS/MS, XRD powder, CHNS-O, UV-VIS-NIR, WD-XRF, FTIR, LIQUID NITROGEN PLANT, CONFOCAL MICROSCOPE, ICP-MS ICAP, HR-TEM, AA SPECTROMETER, RF-DC SPUTTER COATER, SAXS, MALDI-ESI-Q-ToF Mass Spectrometry. The SAIF has undergone a rejuvenation phase by replacing some key instruments by state-of-art counterparts. The facilities of the centre go a long way in improving the quality of Research being carried out in Research Institutes and Universities in the entire region comprising the states of Punjab, Haryana, HP, UP, Rajasthan and even Eastern, Western and southern parts of the country. These facilities are also made available to the Industry. It also runs training programmes in technical skills for the benefit of scientific community and associated laboratory staff from different institutes.

**TRAINING AND PLACEMENT CELL:** The students in our department are less in number. Thus students are advised to submit their bio-data along with UIET students during the AVSAR UIET Job Fair conducted at University Campus.

**ALUMNI RELATIONS:** Department has its alumni association with strong alumni base.

**SEMINARS / SYMPOSIA / WORKSHOP:** Department is actively organizing large number of Seminars / Symposia / Workshop for the benefit of faculty/ students