राष्ट्रीय प्रौद्योगिकी संस्थान,
उत्तराखण्ड
National Institute of Technology,
Uttarakhand

Institute Brochure

2021-22

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Vision and Mission

Vision

To provide a global impetus to education and innovation for sustainable development of industry and society.

Mission

1. To provide an encouraging environment for education and training of technical professionals.

2. To establish as a centre of excellence for research on challenges and demands of future generations.

3. To promote innovation and leadership skills for producing competent professionals.

4. To develop research collaborations with institutions of repute.

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NITUK Ranking

National Institute of Technology, Uttarakhand has been ranked 186 in Engineering Category in the recent National Institutional Ranking Framework (NIRF) 2021 by Ministry of Education, Government of India.

Why NIT Uttarakhand

INSTITUTE OF NATIONAL IMPORTANCE

National Institute of Technology, Uttarakhand (NITUK) is an Institute of National Importance and one of the 31 National Institutes of Technologies in the country. Since its inception, this Institute has grown many fields and has established itself as one of the best Technical Educational Institutes. NITUK is established in 2009 under the Act of Parliament by Ministry of Education (Shiksha Mantralaya). At present, the Institute have about 594 undergraduates, 86 postgraduates and 106 Ph.D. scholars. The Institute offers full time B. Tech. and M.Tech. Program in Computer Science & Engineering, Electrical & Electronics Engineering, Electronics & Communication Engineering, Mechanical Engineering and Civil Engineering with an intake of 65 (including 5 DASA students) and 15 students respectively in each branch.

EXCELLENT FACULTY

NITUK is known for excellent and well qualified faculty who have obtained their Master and/or Doctorate degrees from prestigious Institutes such as IITs/NITs/Central Universities and other reputed national and International universities. Most faculty members are with a PhD degree in their respective disciplines. The students are groomed under the expert guidance of the faculty members in academic and co-curricular areas.

NEW EDUCATION POLICY

NITUK follows a Choice based credit system (CBCS) which is very helpful for cultivating student interests in interdisciplinary areas. Further, the Institute has started multi entry and multi exit points from different courses in engineering. This will be fruitful for pursuing courses in a partial manner and provides the flexibility of completing the courses according to the students need.

DESIGN INNOVATION CENTRE

Ministry of Education (Shiksha Mantralaya), Government of India has approved to establish a Design Innovation Centre (DIC) at Indian Institute of Technology Roorkee as a Hub and NIT Uttarakhand as one of the spokes. The centre will focus on innovations around engineering products, add value to the available Engineering designs and promote early stage startup companies. The sanctioned amount for the centre is Rs. 10 Crores. Several ideas will be perused for development of new pedagogy in teaching and training in design and innovations. A number of design technologies for Hilly terrain will be taken up at DIC, NIT Uttarakhand.

AUTONOMOUS ACADEMIC FUNCTIONING

NITUK is an autonomous Institute which has all the privileges to induce new academic programmes to incorporate contemporary global trends and practices in curriculum to make the teaching and learning process effective and competitor this cutting edge era. Different department level bodies are formed which continuously seeks inputs from reputed industry as well as educational institutes for revision of syllabus in UG and PG programs.

INDUSTRY TRAINING

A healthy interaction with the industry exists, where students are sent for practical training, internship and industry exposure trips. In addition, expert lectures by industry personnel, consultancies with the industry, as well as project work based on industry requirements are undertaken as part of the curriculum NITUK has a separate Training and Placement Department for this purpose.

NATIONAL COLLABORATIONS

NITUK has signed various MoUs at National and International level with other universities for provising a better learning experience to the students of NIT Uttarakhand. The MoUs at national level are signed with IIT Kanpur, IIT Roorkee, IIT Delhi, IIT Ropar, MNIT Jaipur, HNB Garhwal University, Semi-Conductor Laboratory (SCL) – ISRO, AIIMS Rishikesh, CSIR – IIP, Dehradun, BHEL, Haridwar, National Highways Authority of India (NHAI), Central Manufacturing Technology Institute, Bengaluru, Institute of Informatics & Communication, University of Delhi, New Delhi for Implementation of Non-SaaS SAMARTH ERP(SHSM) system, Manipal University, Jaipur, Jawaharlal Nehru Government Engineering College (JNGEC) Sundernagar.

INTERNATIONAL COLLABORATIONS

The MOUs at International level are signed with Eötvös Loránd University, Hungary and National Formosa University, Taiwan.

CROSS CULTURAL LEARNING EXPERIENCE

NITUK being an Institute of National Importance attracts students from all over india and offers a cross-cultural experience to students as many states like Uttar Pradesh, Haryana, Panjab, Jammu and Kashmir, Rajasthan, Madhya Pradesh, Bihar, Andhra Pradesh, Tamilnadu, Maharashtra, Gujrat, north eastern states, Kerala, Karnataka have enrolled and added the multicultural dimensions to the NITUK family.

ALL-ROUND DEVELOPMENT OF STUDENTS

NITUK campus is vibrant with many activities as it provides to the students various opportunities to showcase their academic, technical, cultural and sport talents through many events like CLIFFESTO Techno-Cultural Festival, PRODYOGEEKY, Life Changing Motivational Seminar, Department Gathering, Institute Gathering, Freshers Evening, Farewell Party, Institute Day, Innovation Competition, Community Project Program, Robo War, National Unity Day, Blood Donation Camp, International Yoga Day, Anti-Terrorism Day, Entrepreneurship Development Programme, Hindi Pakhwada and Students' societies of different departments arrange host of activities both technical & cultural to foster all-round development of students. They are also encouraged to participate in events and competitions showcase their talent and skills.

ENHANCEMENT OF STUDENT CULTURAL INTERESTS

There are several clubs run at the Institute such as Rocktave - the Music Club, Klick - Photography Club, Literary Society, Dance Club, Robotics Club (Kalam Robotics), Verbatim Club, Movie Club, Mountaineering Club (Aarohan), Nauseekhiye, Q&A CLUB SAEINDIA Collegiate Club to promote wide range of cultural activities among the students.

BEAUTIFUL LOCATION

NIT Uttarakhand is situated in scenic natural beauty in the hilly place called Srinagar Garhwal which is the most beautiful city and serves as an education hub after Dehradun in the state of Uttarakhand. Most of the facilities are available nearby the Institute. It is surrounded by mountains all around and Alaknanda river flows near to the Institute. The environment is very healthy around with no pollution.

OUTSTANDING PLACEMENTS

NITUK student placements have been good in the past and getting improved every year. For the 2018-22 batch, out of 127 eligible students of the Institute, 85 students have received job offers with a highest package of Rs. 34 Lacs with average package of 8.87 lakh, while 15 students have received double job offers.

STRONG ALUMNI BASE

Alumni Association is spread across the country and Globe. Annual Alumni meets are conducted and the distinguished alumni award is given to the outstanding alumni.

FINANCIAL SUPPORT FOR EDUCATION

The students who are not capable of paying the Institute fee due to limited or low income of their parents are supported in getting scholarships from various schemes of Government of India. Hence, money is not a problem for meritorious students for getting admission at NITUK.

LIBRARY

The Institute Library has a rich collection of books on Engineering, Science and Technology, Humanities and Social Sciences and also a good collection of English and Hindi Fiction. The Institute Library has four stack rooms with subject-wise arrangement of books on the shelves according to the Universal Decimal Classification Scheme. The Institute Library has one reading room which remains open 24x7 for the students and the staff members.

SPORTS ACTIVITIES

The motto of National institute of technology Uttarakhand is **Sports for all and all for Sports.** The vision of the sports section is to provide the good sports facilities, equipment's, recreational and competitive sports programs to the students and encouraged them to take part in games & sports to keep themselves fit and inculcate a spirit of sportsmanship amongst themselves & also encouraging student to participate in Inter-NIT sports competitions and other open competition in the country.

HOSTEL ACCOMMODATION

Based on the principle of "Homes away from home", hostels available in the campus provide all the basic facilities to the students with proper care. Institute has residential facilities for six hundred students in the campus. Institute has five boys and two girls hostels, having rooms available on sharing basis (two/three seater) accommodating maximum institute students in comfortable and conducive manner.

Facilities in the Campus

Wi-Fi Campus, Keeping you connected

The technology-rich environment for students on NIT Uttarakhand campus includes, high-speed, high-capacity gigabit Ethernet fiber optic data network infrastructure. All labs are connected for high-speed Internet. All the hostels class rooms are facilitate with wireless access points. Student can also download important software, lectures from institute FTP server from anywhere in campus.

ATM

An ATM of SBI is installed in the Poly technic Campus of the Institute.

Auditorium

The Institute has a multi-purpose auditorium that is used for seminars, workshops, recreation, gatherings, screening movies, etc. The auditorium has the seating capacity of 300 persons.

Open Air Theater

An open air theater is established at the ITI Campus of the Institute which hosts various cultural events.

Canteen in Polytechnic Campus

The canteen of the Institute serves cafeteria items at a reasonable price.

Conference Hall

The Conference Hall of the Institute has the seating capacity of 70 people. It is used for conducting meetings, seminars, workshops, etc.

Gymnasium

"A Sound Soul Resides in a Sound Body"

The Institute boasts of a well-equipped gymnasium, with all the necessary and modern facilities, for the enhancement of health and stamina of its students.

Alternate Power Sources

nstitute have six Diesel Generator Sets (200 kVA) for the backup electricity supply in the campuses of the Institute. The Administrative block, Academic block and all departments of the institute are equipped with Diesel Generator facility for emergency electricity supply in the institute. Also all hostels of the institute are provided with 24 x 7 electricity supply.

Movie Club

The Movie Club at NIT Uttarakhand screens 2 movies every week at its Auditorium. The auditorium has a seating capacity of around 350 people and is equipped with fire safety devices, 5000 lux projector, 3 speakers, 3 amplifiers, sound mixer, 8 surround sound speakers, and a DSP processor procured from JBL. The movie club caters not only to the students but also to staff and faculty members of the Institute.

Medical Facility

The dispensary provides basic medical facilities for the students and staff members. A Doctor offers daily service at the dispensary in the evening. A nurse is available in the Institute for 24 hours. The Institute has tie-ups with hospitals in Srinagar and Dehradun. All students are offered health insurance facilities. The Institute plans to procure an ambulance in the near future. NIT Uttarakhand provides basic medical facilities for looking after the good health of its students and employees within the campus at the institute health center. It is prepared

with modest medical services and in case of specialized medical treatment students are referred to the base Hospital, Srinagar (Pauri-Garhwal). At present, institute health center is looking after around 500 B.Tech. Students and around 100 employees. The OPD remains open for all 24 hours and 7 days and the medical facilities are completely free for the institutes students and employees.

Campus Security

Presently the Security comprises 7 Supervisors and 76 (70 male + 6 female) security guards. The guards are deployed at Main Gate, Hostels, Academic Building, Administrative Building, Departments etc. round the clock in three shifts on rotation basis. One Supervisor is posted in each shift to supervise the security guards. The main duty of security guards is to look after the assets of the Institution besides maintaining discipline in the campus. All guards are issued identity card, uniform, shoes, caps, belts & batton etc.

Academic Programs

a. Undergraduate Programmes

S. No.	Department	Program Title	Program Code	Qualification
1	Civil Engineering	B. Tech. in Civil Engineering	CIV	As per the notification published by CCB/ JAB/Competent Authority designated by MHRD, GoI.
2	Computer Science and Engineering	B. Tech. in Computer Science and Engineering	CSE	
3	Electrical Engineering	B. Tech. in Electrical and Electronics Engineering	EEE	
4	Electronics Engineering	B. Tech. in Electronics and Communication Engineering	ECE	
5	Mechanical Engineering	B. Tech. in Mechanical Engineering	MEC	

b. Postgraduate Programmes

S. No.	Department	Program Title	Program Code	Specialization	Qualification
1	Civil Engineering	M. Tech. in Civil Engineering	CIV	1.Strucural Engineering 2.Transportation Engineering	As per the notification published by CCMT/

2	Computer Science and Engineering	M. Tech. in Computer Science and Engineering	CSE	1.Artificial Intelligence 2.Computing systems	/Competent Authority designated by MHRD, GoI.
3	Electrical Engineering	M. Tech. in Electrical and Electronics Engineering	EEE	1.Power System & Control 2.Power Electronics & Drives	
4	Electronics Engineering	M. Tech. in Electronics and Communication Engineering	ECE	1. Microelectronics and VLSI Design 2. Communication Systems	
5	Mechanical Engineering	M. Tech. in Mechanical Engineering	MEC	1. Microelectronics and VLSI Design 2. Communication Systems	

c. Research Programmes

S. No.	Department	Program Title	Program Code	Qualification
1	Civil Engineering	PhD in Civil Engineering	CIV	M.E., M. Tech. , M.S. and M. Sc. (Engg.) in relevant engineering and technology disciplines
2	Computer Science and Engineering	PhD in Computer Science and Engineering	CSE	B. E./B. Tech. in Computer Science and Engg./Computer Engg./ Information technology/ Communication and Computer Engg./Electronics and Communication Engg. M.E./M.Tech. in Computer Science and Engineering/ Computer Engg./ Software Engg.Information technology/ Information Security/ VLSI
3	Electrical Engineering	PhD in Electrical and Electronics Engineering	EEE	M.E/M.Tech, or equivalent degree in respective & relevant Engineering disciplines
4	Electronics Engineering	PhD in Electronics and	ECE	B.E/B. Tech. and M.Tech..in Electrical Electronics / Computer/

		Communication Engineering		Communication/ Telecommunication / Instrumentation/ Control/ Microelectronics/ Signal Processing or equivalent discipline consistent with research areas of the department.
5	Mechanical Engineering	PhD in Mechanical Engineering	MEC	B.Tech./M.Tech. degree or equivalent degree in Mechanical/ Industrial/ Production Engineering, Manufacturing Engineering, Automobile Engineering, other allied branches of Engineering and Technology. B.Tech/M.Tech. degree/ disciplines consistent with the research areas of the department
6	Physics	PhD in Physics	Physics	M.Sc. Physics/Applied Physics/Engineering Physics/allied Physics/interdisciplinary areas in physical sciences
7	Chemistry	PhD in Chemistry	Chemistry	M.Sc. in Inorganic Chemistry/Organic Chemistry/Physical Chemistry/Analytical Chemistry/Nuclear Chemistry/Medicinal Chemistry/Environmental Chemistry and related disciplines with Chemistry as one of the optional subjects.
8	Mathematics	PhD in Mathematics	Mathematics	M.A./M.Sc. in Mathematics/Applied Mathematics
9	Humanities and Social Sciences	PhD in English	English	M.A./M.Com. or equivalent degree with 6.75 CGPA on a 10-point scale or 60% marks (where CGPA is not awarded)

Department Profiles

Civil Engineering

Department of Civil Engineering, N.I.T. Uttarakhand was established in 2013 with an intake of 60 students. The department offers a four-year course leading to the bachelor's degree in Civil Engineering. Department of Civil Engineering has advanced academic structure with core course and variety of elective courses so that the students' knowledge is not only enhanced in core discipline but also in the related disciplines. The department also offers postgraduate courses in Structural Engineering, Transportation Engineering and Geotechnical Engineering along with Ph. D. degree program in all the specialization of civil engineering.

Vision:

To dispense sound technical expertise in sustainable infrastructural solutions for complex geographical terrains and pioneer in providing transformative education in Civil Engineering.

Mission:

(i) To nurture students with an engineering education providing an understanding of local infrastructural issues, and develop enough skills to tackle them.

(ii) To develop state-of-the-art research and development facilities to find solutions to pertinent natural hazards such as floods, landslides, and earthquakes.

(iii) To provide outreach services and technical expertise to various stakeholders of the society, and create common platforms to share knowledge.

(iv) To achieve excellence in professional ethics and code of conduct.

Programme Education Objectives (PEO) :

PEO1: Civil Engineering graduate shall have sound knowledge of infrastructural issues.

PEO3: Civil Engineering graduate shall develop acumen for higher studies and research.

PEO3: Civil Engineering graduate shall be able to participate in the various Infrastructure related community projects.

PEO4: Civil Engineering graduate shall practice high standards of professional ethics throughout their life.

Programme Specific Outcomes (PSO)

PSO1: To develop critical thinking and aptitude to analyze & design problems in Civil Engineering.

PSO2: To inculcate the ability and understanding for sustainable development in the field of Civil Engineering.

PSO3: To develop interdisciplinary approach related to infrastructural issues.

Faculty Profile

S. No.	Faculty Name	Specialization
1.	**DR. KRANTI JAIN (HEAD)**	• Structural Concrete, • Structural Behavior of Steel Fibre Reinforced Concrete, • Repair and Restoration of Structures, • Sustainable Advanced Materials
2.	**DR. ADITYA ANUPAM**	• Pavement Materials and Pavement Construction • Analysis and Design of Pavements • Pavement Evaluation, Rehabilitation and Maintenance • Soil Stabilization
3.	**DR. SMITA KALONI**	• Structural dynamics, • Structural health monitoring, • System identification and inverse problems in vibration, • Finite element methods
4.	**DR. SHASHANK BHATRA**	• Finite Difference Methods • Lumped Parameter Modelling of Reinforced earth bed • Influence of dynamic loads on geotechnical engineering structures • Stability Analysis of Underground Excavations • Ground Improvement Techniques.

5.	**DR. BIBHASH KUMAR**	• Soil Mechanics, • Foundation Engineering, • Computational limit analysis • Underground Excavations/Tunneling • Strength Behavior of Rocks • Ground Improvement Techniques
6.	**DR. MUSKAN MAYANK**	• Flow and transport of contaminants through porous media, • Groundwater Hydraulics
7.	**DR. SHASHI NARAYAN**	• Finite Element Method, • Meshfree Method, • Dynamic Analysis, • Plastic Analysis, • Energy Based Design
8.	**DR. LAIJU A R**	• Water & Wastewater Treatment, • Solid Waste Management, • Removal of Trace Contaminants, • Hybrid Exchanger, • Sustainable energy, • Advanced Oxidation Processes
9.	**MR. AMARDEEP**	• Modelling of Mechanical Properties of Concrete using Finite Element Methods, • Construction Materials, • Numerical Methods and their application in Structure Analysis
10.	**DR. ABHINAV KUMAR**	• Transportation Engineering, • Traffic Engineering, • Road Traffic Safety, • Traffic Conflict Technique, • Pedestrian Safety, • Signalized Intersection

Major facilities in the Department

- Testing Facilities
- Tri Axial Test
- Universal Permeability Test
- Consolidation Test
- Plate Load test
- Creep Testing machine
- Servo Controlled Compression Testing Machine (CTM)
- Rebound Hammer
- Self-Compacting Concrete equipments
- Air/Water Permeability test for concrete
- CBR Test
- Marshall Test
- Benkelman Beam Test
- Diamond Core Cutter
- Dynamic Shear Rheometer
- Centrifugal Extractor
- Centrifuge
- Muffle Furnace
- UV-Vis Spectrophotometer
- Distill water Apparatus
- COD Digester
- Photometer
- Skid Resistance test

Lab facilities in the Department

Building Material and Testing Lab

List of Experiments:

1. Bricks- Shape and Size, Efflorescence, Water absorption and Compressive strength test

2. Cement- Specific gravity of cement, Soundness and Fineness of cement.

3. Cement- Normal Consistency of cement, Initial setting time of cement and Final Setting time of cement.

4. Compressive strength test for cement (OPC-43 and PPC).

5. Fine Aggregates- Specific gravity, Grain/Particle size distribution and Fineness Modulus test for fine aggregates.

6. Coarse Aggregates- Specific Gravity, Absorption value and Grain/Particle size distribution and Fineness Modulus test for Coarse aggregates.

7. Coarse Aggregates-Crushing Value, Impact Value, Elongation and Flakiness determining tests

8. Concrete- Slump flow test, compaction factor test, Vee-Bee Consistency test.

9. Concrete- Compressive strength test.

10. Basics of Mix Design- IS:10262-2019.

Soil Testing Lab

List of Experiments:

1. Determination of Water Content (Oven Drying)

2. Determination of Specific Gravity (Pycnometer)

3. Grain Size Analysis

4. Grain Size Analysis (Hydrometer)

5. Determination of Dry Density of Soil in Place (Sand Replacement Method)

6. Determination of Dry Density of Soil in Place (Core Cutter Method)

7. Determination of Liquid Limit (Soil Cone Penetrometer, Casagrande's Apparatus)

8. Determination of Plastic Limit and Shrinkage Limit

9. Light Compaction Test

10. Permeability test- constant head and falling head methods.

11. Undrained Shear Strength using Vane Shear Test.

12. Consolidation test: estimation of settlement, compression index parameter, rate of settlement, coefficient of consolidation.

13. Shear strength tests: direct shear test, Triaxial compression test-unconsolidated - undrained tests, consolidated undrained tests with pore pressure measurement, consolidated drained tests.

14. Plate load test

15. California Bearing Ratio test

Fluid Mechanics Lab

List of Experiments

1. To verify Bernoulli's equation.

2. To determine the Metacentric height of a floating body (i.e. a model of ship) and to locate the center of Buoyancy, metacenter and center of gravity.

3. To reproduce the dye line experiment as performed by Reynolds and to obtain the criteria for Laminar and Turbulent flow

4. Determination of coefficient of discharge, coefficient of contraction, coefficient of velocity of orifice & mouthpiece.

5. To calculate coefficient of discharge, Cd of Venturi meter.

6. To calculate coefficient of discharge, Cd of Orifice meter.

7. To determine the percentage error in Rotameter with the actual flow rate.

8. To determine the friction factor of a given pipe of circular cross section.

9. To compare theoretical and actual value of flow over notch.

Environmental Engineering Lab

List of Experiments

1. Water pollution

Determination of characteristics given below from the given sample

1. pH
2. Conductivity
3. Turbidity
4. Alkalinity
5. Acidity
6. Hardness
7. DO
8. BOD
9. COD
10. Chloride
11. Sulphate
12. Available chlorine and Residual chlorine
13. Total solids
14. Nitrate
15. Phosphate
16. Iron
17. Chromium

2. Air pollution

Determination of air pollutants given below using a high volume air sampler

1. PM
2. Nitrogen dioxide
3. Sulphur dioxide

3. Sound pollution

Determine the intensity of sound at different locations using a sound level meter

Geology Lab

List of Experiments

1. Physical properties of minerals by observation of various collection boxes
2. Identification of common rock forming minerals (Hand specimen).
3. Description of physical properties of 20 minerals used in civil construction
4. Textures of common rocks
5. Identification of rock type (Igneous, Sedimentary, Metamorphic)
6. Field identification using Brunton's Compass
7. Identification of common geological discontinuity: Bedding plane, Folds, Faults, Joints, Foliation Plane
8. Measurement and plotting of geological structures.
9. Extracting information from geological maps: Introduction to topographic sheets

Concrete Testing Lab

List of Experiments

1. Mix Design- High Strength Concrete as per IS:10262-2019 and relevant flowability and strength tests.

2. Mix Design- Self consolidating Concrete as per IS:10262-2019 and relevant flowability and strength tests.

3. Mix Design- Pumpable Concrete as per IS:10262-2019 and relevant flowability and strength tests.

4. Evaluation of Heat of hydration for Cement

5. Tests on effects of Superplasticizers- Marsh Cone, mini-slump and flow table test

6. Studying the effect of temperature on compressive strength of concrete

7. Measurement of effects of fibers on the strength of Concrete.

8. Rebound hammer test for concrete strength

9. Measurement of specific gravity, loss on ignition, sieve analysis and lime reactivity of pozzolans

10. Determination of chloride content in concrete, Phenolphthalein test for carbonation depth and pH of concrete

Surveying Lab

List of Experiments:

1. Linear Measurement by Tape: a). Ranging and Fixing of Survey Station. b). Plotting Building Block by offset with the help of cross staff.

2. Compass Survey: Using Surveyor's and Prismatic compass a). Measurement of bearing of lines b). Adjustment of included angles of compass traverse.

3. Levelling: Using Tilting/ Dumpy/ Automatic Level a). To determine the reduced levels in closed circuit. b). To carry out profile levelling and plot longitudinal and cross sections for road.

4. Theodolite Survey: Using Vernier Theodolite a). To carryout temporary adjustment of Theodolite & Measurement of horizontal and vertical angle: by method of repetition and method of Reiteration. b). To measure and adjust the angles of a braced quadrilateral.

5. Trigonometric Levelling: To determine the Height of an object by trigonometric levelling: a). By using Instruments in same vertical plane. b). By using Instruments in different vertical planes.

6. Tacheometry Survey: a). To determine the tachometric constant. b). To determine the horizontal and vertical distance by tachometric survey.

7. To study the various electronic surveying instruments like EDM, Total Station etc.

Transportation Engineering Laboratory

List of Experiments:

1. To determine the CBR value of a given soil sample.

2. To determine crushing value of given road aggregates with the help of a compression testing machine

3. To determine the abrasion value of given coarse aggregates sample

4. To determine the aggregate impact value of road aggregates.

5. To determine the Flakiness Index of given aggregates

6. To determine the specific gravity and water absorption of coarse aggregates

7. To determine the softening point of bitumen

8. Penetration value test of bitumen.

9. To find out optimum bitumen content of given bituminous mix by Marshall Stability test.

10. To determine the particle size distribution of coarse aggregates by means of sieve analysis.

11. To determine the Ductility test of bituminous materials

12. To determine the Viscosity of the given bitumen

13. To determine the Elongation Index of given aggregates

14. To determine the rheological properties of the given bitumen/gel

15. Evaluation of the structural capacity of existing flexible pavements and also for estimation and design of flexible overlays for the strengthening of any weak pavement for highways by Benkelman beam deflection method.

16. To determine the percent of bitumen content of exiting pavement.

Computing Facilities

- 30 COMPUTER SYSTEM
- 2 WORKSTATIONS
- ABAQUS
- ANSYS
- VISSIM & VISWALK
- PLAXIS 2D AND PLAXIS 3D
- MATLAB
- KENPAVE
- TOSCA (FLUID + STRUCTURE)
- FE SAFE,
- ISIGHT

Consultancy offered by the Department

The department offers constancy to the industry in several fields of civil engineering. The department has offered consultancy worth 30lakhs in the pandemic hit year 2020. The broad area of consultancy offered by the department are as follows

- Aggregate test
- Sand test
- Tests on subgrade soil
- Bitumen tests
- Bituminous mix / GSB, WMM mix design
- Pavement design and evaluation
- Cement tests

- Concrete test
- Soil Testing
- Proof check/vetting - reinforced earth walls, soil nailing techniques
    - Proof check/vetting- foundations design for various structure
    - Designing- foundations for various structures
- Designing - reinforced earth walls, soil nailing technique
- Proof check/vetting of structures
- Designing of structures
- Property assessments for potential contamination concerns
- Environmental impact assessments and audits
- Air, water, and soil assessment
- Environmental management and remediation solutions
- Waste management policies
- Water testing and management
- Sustainability and energy solutions
- Identifying unknown contaminant sources

Computer Science and Engineering

The Department of Computer Science and Engineering is an integral part of National Institute of Technology, Uttarakhand. The department came into existence in 2010 and thereafter has been imparting significant contribution in the growth of the Institute. The department is equipped with latest computers including workstations with Intel Xeon processors and two powerful servers from Dell and IBM. The department has got good mixture of fresh as well as experienced faculties for fostering quality education to students. The faculty members are working in the potential research areas like Network Security, Image Processing, Computer Vision, Cloud Computing, Pattern Recognition and Machine Learning, etc. Presently, the department is offering an undergraduate programme (B.Tech.), postgraduate programme (M.Tech. specialised in Computing Systems and Artificial Intelligence) and a Ph.D. programme.

Vision:

To foster an ecosystem of global standard in the field of computing to serve industry and society.

Mission:

(i) Establish high end computing facilities for technical education, research and skill development.

(ii) Impart education to meet next generation computing challenges.

(iii) To promote recent and futuristic advances in the field of computing for sustainable development.

(iv) To produce skilled engineers and researchers to serve industry and society globally.

Program Educational Objectives (PEO):

PEO1: To build a strong understanding of fundamentals in computational, logical and analytical skills.

PEO2:. To imbibe competency in analysing, designing and development of real-world computing applications for the industry and society.

PEO3:. To instill in ethical and social practices for sustainable development among students and enabling them for employment of their choice.

PEO4:. To inculcate communication, team work and management skills for leadership and entrepreneurship.

Program Specific Outcome (PSO):

PSO1: Inculcate comprehensive knowledge in computing paradigm.

PSO2: Analyze problems in computational domain and design viable prototype.

PEO3: Ability to develop sustainable solutions for real time computational challenges.

Faculty Profile

S. No.	Name	Areas of Specialization
1.	**PROF. LALIT K. AWASTHI (DIRECTOR)**	Mobile distributed systems, Fault tolerance, Sensor Networks, P2P networks, Network Security
2.	**DR. KAMAL KUMAR (HEAD)**	WSN, Security, Cloud Computing, Deep Learning, Artificial Intelligence.
3.	**DR. NITIN KUMAR**	Biometrics, Pattern Recognition, Image Processing, Visual Attention Modeling, Machine Learning.
4.	**DR. ABHIMANYU KUMAR**	Cryptography, Cryptographic Key Establishment, Secure Multicasting.
5.	**DR. MAROTI DESHMUKH**	Secret Sharing Schemes, Cryptography, Neural Network.
6.	**DR. MAHEEP SINGH**	Network Security, Image Processing, Computer Vision.
7.	**DR. PARVEEN KUMAR**	Digital Image Processing, Pattern Recognition and Machine
8.	**DR. KRISHAN KUMAR**	Real-time Systems, Cloud Security, Virtualization, Computer Vision, Multimedia Analysis, Bioinformatics.
9.	**DR. SURENDRA SINGH**	Computer Networks, Secure Real Time System, Network Security, Vehicular and Mobile Ad-hoc network.
10.	**MS. SNEHA CHAUHAN**	Cryptography

Laboratories

The Computer Science and Engineering department of the institute consists of five which are equipped with software's such as C/C++ compilers, Java Run Time Environment, Python, Oracle 11g, MATLAB, Weka, Cisco Packet Tracer, PHP with MySQL, Microsoft Office, Quick Heal Antivirus, Ubuntu 13.10 etc.

S. No.	Name of Laboratory	No. of Computer Systems	Software Installed
1	Programming Lab	20	C/C++, JAVA, MATLAB
2	Linux Lab	35	Ubuntu Linux, C/C++, JAVA, MATLAB,LEX and FLEX
3	Network Lab	35	C/C++, JAVA, MATLAB
4	Software Lab	30	C/C++, JAVA, MATLAB
5	Project Lab	17 Workstations	Matlab, Weka,Cisco Packet Tracer PHP with MySql

Programming Laboratory:

Name of Laboratory	Hardware Configuration	
Programming Lab	Operating System	Windows, Ubuntu
	Processor	Intel core i3
	RAM	4 GB
	Hard Disk	500 GB
	Graphics Card	Inbuilt
	Display	19 inch

Software Lab I: CSP 501

List of Experiments:

1. Design of Secure Recommender System.

2. Image based Recommender System using Transfer Learning.
3. Code for Markov chain.
4. Code for k-Means clustering.
5. Code for Diffie-Hellman Key Exchange.
6. Code for elliptic curve cryptography.
7. Code for edge detection.
8. Code for Shamir secret sharing.
9. Code for LDA (Linear Discriminant Analysis).
10. Code for image to comma separated value in python.
11. Code for El Gamal Cryptosystem.
12. Code for perceptron learning algorithm.
13. Project 1 (MTech 1st year)
14. Project 2 (MTech 1st year)
15. Final evaluation assessment project.
16. Basic C program for Addition, Multiplication, Subtraction, Division, Modulo and Average of two user defined numbers.
17. Swapping of two numbers.
18. Convert temperature to Celsius to Fahrenheit and vice versa.
19. Calculate simple interest and compound interest.
20. Find the reverse of an integer number.
21. Convert days into years, weeks and days.
22. Find the power and square root of an integer number.
23. Find the first and last digit of an integer number.
24. To find whether a given number is prime or not.
25. To find whether a given year is leap or not.
26. To find whether a three-digit number is palindrome or not.
27. To find whether a given number is even or odd.
28. To find a maximum of two number.

Network Laboratory:

Name of Laboratory	Hardware Configuration	
Network Lab	Operating System	Windows, Ubuntu
	Processor	Intel core i3
	RAM	4 GB
	Hard Disk	500 GB
	Graphics Card	Inbuilt
	Display	19 inch

List of Experiments:

Computer Network Lab CSP 255

1. Using TCP sockets or network socket programming.
2. Client-server application for chat.
3. PC to PC file transfer using serial port.
4. Implementation of shortest path routing.
5. Implementation of Sliding Window Protocol.
6. Implementation of Address Resolution Protocol.
7. Implementation of Open Shortest Path First Protocol.
8. Using n/w simulators like: NS2, DLC/DLL simulator.
9. Implementation of multi thread client server application.
10. Implementation of TCP/IP Echo.
11. Using simple UDP.

Compiler Design Lab (CSP352)

1. Write a program by taking input as C files.
   Identify the total number of tokens as output.
   a. Identify the total number of unique tokens as output.
   b. Identify whether a given line is a comment or not.
2. Write a separate program for finite automata that accepts identifier for C, Java, Python and PHP.
3. Tokenizing a file using C.
4. Implementation of Lexical Analyzer using Lex Tool.
5. Study the LEX and YACC tool and evaluate an arithmetic expression with parentheses, unary and binary operators using Flex and Yacc (CALCULATOR).
6. Write a program to check weather a grammar is left recursive or not.
7. Write a program to remove left recursion.
8. Write a program to remove left factoring.
9. Program to implement LL (1) top down parser.
10. Program to implement LR(0), SLR(1), CLR(1) and LALR(1) bottom up parser.
11. Program to check semantic analysis for given syntax tree.
12. Program to construct SDT that would give the total no of 1's present in the string.
13. Program to check S-attributed definition and L-attributed definition for given input.
14. Write a program to generate the three address code for given input.
15. Draw the CFG for given input program.
16. Write a program to optimize the three address code for given input.
17. Write a program to generate the machine code for given input.

Network Security Lab (CSP354)

1. Write a program to implement monoalphabetic classical ciphers.
2. Write a program to implement polyalphabetic classical ciphers.
3. Write a program to implement modern block ciphers DES, AES etc.
4. Write a program to implement modern stream ciphers RC4, A5/1 etc.
5. Write a program to implement block mode operations.
6. Write a program to implement RSA public key cryptosystem
7. Write a program to implement ElGamal public key cryptosystem

8. Write a program to implement digital signature using RSA.
9. Write a program to implement digital signature using DSS.
10. Write a program to implement Hash function SHA-512, MD5.
11. Write a program to implement Diffie Hellman key exchange protocol
12. Write a program to implement Kerberos protocol.
13. Write a program to perform DoS and DDoS attacks.
14. Write a program to perform Session Hijacking.
15. Write a program to perform Sql injection.
16. Write a program to perform phishing attack.
17. Write a program to perform buffer overflow attack
18. Write a program to perform ARP spoofing

Introduction to Object Oriented Methodology Lab (CSP253)

1. Write a program using Java Loops to obtain 05 distinct patterns to be specified in Lab sessions.
2. Write a program to realize the concept of encapsulation by designing a Class called STACK with PUSH, POP, PEEK, STACK_EMPTY and STACK_FULL methods with STACK_EMPTY and STACK_FULL as private methods.
3. Write a program to implement the concept of Circular Queue and Implement Insert, Delete, Traverse, Queue Empty, Queue Full operations. Queue Empty, Queue Full methods should be private methods.
4. Define outer class STACK. Demonstrate the concept of inner class and implement STACK_EMPTY and STACK_FULL as methods of inner class and remaining methods should be implemented in outer class STACK.
5. Define two classes Queue and Stack, add them to separate packages. Import packages for use by one program. Create a new package called data structure and add Queue and Stack to it as sub packages. Demonstrate the usage though program to use only Stack Class from one of the sub package. Add sufficient codes to permit queue and stacks of 03 data types at least.
6. Use String Class to demonstrate all the functionality available in Java for string manipulation. Apply the concepts to obtain the frequency of certain character, words, and count of words, count of sentences, number of punctuation marks, and number of paragraphs in a given text. Use Java Program to reverse a string without using String inbuilt function reverse () to revert all the text you are working upon.
7. Use the concept of Inheritance and implement vehicles categories on the basis of kind of fuels, number of wheels and category of usage such as passenger and commercial vehicles. Demonstrate the concept of Run time Polymorphism and Compile time Polymorphism.

8. Demonstrate the usage of varargs through a program which computes the sum of ASCII/Unicode values for different number of inputs such as integers and characters. Use separate arrays for different kind of inputs.
9. Write programs on a scenario of GeoShapes classified into different categories such as Triangles, Rectangles, Rhombus, Square, Cone, Cube, and Parallopiped etc. to realize Single, Multi-Level and Multiple Inheritance for interfaces in Java. Incorporate the concept of Default method, Static Method and Private Method. Write separate programs for each case.
10. Use Java to construct a calculator which may through exceptions. First Implement the same using built in exceptions and secondly use your own exception class created out of extending Exception class. Also in each case show the usage of finally to complete closing chores.
11. Use generics programming in Java and create a generic stack for integers and doubles only. Also compute average of the numbers saved on the stack. Take care of concept of bounded types so that inappropriate data type is not considered. Also, establish that the average of similar magnitude integer and double values are same through a function.
12. Use generics programming in Java and create a generic circular queue for integers, doubles and string.

Software Laboratory:

Name of Laboratory	Hardware Configuration	
Software Lab	Operating System	Windows, Ubuntu
	Processor	Intel core i7
	RAM	8 GB
	Hard Disk	1 TB
	Graphics Card	1 GB NIVDIA
	Display	23 inch

Software Lab (CSP256)

The main aim of the software lab is to prepare the students to develop the software's using the appropriate Software Development Life Cycle (SDLC). As a outcome of the course the students are able to work in a project group for developing the software's using SDLC phases. The following approach is adopted in the software lab.

List of Experiments:

1. A project group with 2-3 students is formed.
2. A Software Project is assigned to the Project group.
3. The project group has to develop the software using the suitable Software Development Life Cycle (SDLC) and following the various phases starting from Requirement analysis till the Maintenance phase.
4. The output of each phase has to be submitted by the students in the form of a phase outcome/deliverables after performing the required activities in each phase.
5. The deliverables submitted by the students include SRS document, Design documents, Test documents which includes testing approaches along with the test cases and other required documents.
6. Project group has to write the code with proper documentation.
7. Project Group is also required to submit the software usage manual as an external document.
8. All the groups have to submit the output of each phase as a document in the given timeline.
9. After completion of the project, each group has to submit the project report.

Operating System Lab (CSP252)

1. Linux Operating System, components of Linux system.
2. Basic LINUX commands and its Use.
3. Execution of various file/directory handling commands.
4. Commands related to standard I/O, Redirection, Pipes and Filters.
5. Process Management Commands in Linux.
6. Implementation of CPU Scheduling Algorithms.
7. Implementation of Semaphores.
8. Implementation of Banker's Algorithm for Deadlock Avoidance.

9. Implementation of the page replacement algorithms.
10. Implementation disk scheduling algorithms.

Data Structure Lab (CSP251)

1. WAP for insertion and deletion of nodes from the sequence: A, B, C, D, E, F, G, H, I, J, K, L, M, N, O. using binary search tree algorithm.
2. WAP to implement max heap sort for the sequences: A, B, C, D, E, F, G, H, I, J, K, L, M, N, O.
3. Implementation of Quick sort, Insertion Sort, Selection, Bubble and Merge sort.
4. Implement Polynomials with Arrays and supporting Addition, Multiplication, Scalar Multiplication and Subtraction.
5. Implement Polynomials with Linked List and supporting Addition, Multiplication, Scalar Multiplication and Subtraction.
6. Implement Doubly Linked Lists with all possible Addition and Deletion cases. Consider Linked List Header/start node.
7. Implement Stacks with Arrays and Linked Lists.
8. Implement Queue with Arrays and Linked Lists.
9. Implement Circular Queue with Arrays and Linked Lists.
10. Implement Linear and Binary Search on Arrays of Elements.
11. Demonstrate matrix addition, Subtraction, rank, multiplication operations through modularization concept.
12. Implementation of Binary Search Tree with:
    a. In-order traversal
    b. Pre-order Traversal
    c. Post-order traversal
13. Implementation 4-way B-Tree using 12, 13, 76, 77, 89, 94, 48, 19, 55, 35, 35, 87, 11, 32, 31.
14. Implementation of Heap Sort using Binary heap on 12, 13, 76, 77, 89, 94, 48, 19, 55, 35, 35, 87, 11, 32, 31.

Project Laboratory:

Name of Laboratory	Hardware Configuration	
Project Lab	Operating System	Windows, Linux
	Processor	Intel Xeon(R)E52620 v3
	RAM	16 GB
	Hard Disk	1 TB
	Graphics Card	2 GB NIVDIA
	Display	23 inch

List of Experiments:

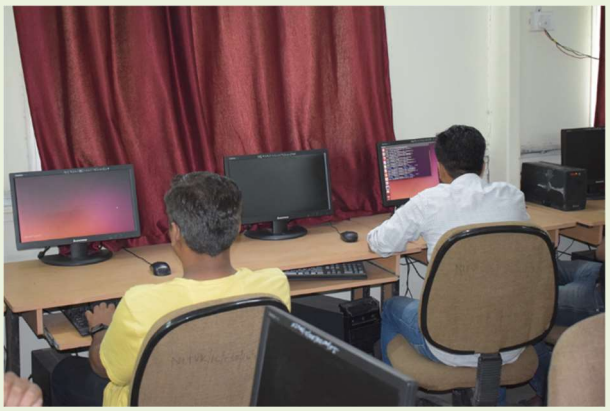
Artificial Intelligence Lab (CSP355)

1. Take one graph of 20 Cities in India with distance as cost of edges. Use Un-directed graph. Compute all states that your agent will be in while exploring one goal/destination city. I/P Map, Output Goal state, Operation Expanding current state, Action is moving to next city.
   State is defined is current exploration status.
2. Consider a graph of Romania as per Text Book and apply A*, IDA* and RBFS Search strategies to arrive at Goal States. Goal state is City of Bucharest. Start City is ARAD. Use Straight Line Distance Heuristic and Distance between cities as path cost. Generate Goal Path to Optimal Solution? Display results.
3. Take one task assignment problem with different burst time. Consider Multiprocessor CPU or a Cloud Environments with few numbers of VMs with different MIPS/FIPS. Apply Local Beam Search and GA to obtain a schedule which reduces the makespan of the set of tasks.
4. Considering any heuristic such as Nearest Neighbor/KNN etc. generate initial population for GAs.
5. Compare the performance of GA, Local Beam Search and Scenario above.
6. Use Mini-max and Alpha-Beta Pruning to implement Adversarial Search in game trees. Consider any tree of at least 5 depth and use both Bad Ordering and Good Ordering as possible cases.
7. Implement Bidirectional Search on any map of cities in Uttarakhand with the State Dehradun and Goal State Rudrapur. Provide a map to students.
8. Implementation of 4 Queen Solution and generate at all intermediate states from some given random initial state.
9. Implementation of A* Algorithm on Uttarakhand Map with start state Dehradun and Goal State Rudrapur. Provide a map to students.

10. Implement the CSP paradigm based upon the concepts such as Backtracking, Ordering of Variables and Value heuristics to solve the N-Queen Problem or N-Puzzle.
    Display the positions of Queens/Tiles on the board.
11. Implement one AI Agent based upon Proposition Logic which can draw conclusions on the basis of
    Forward Chaining, Backward Chaining, Resolution
12. Implement the algorithm to implement the conversion of Predicates to Clausal Form.
13. Implement the algorithm to implement the concept of Unification in Predicate Logic.
14. Implement one AI Agent based upon Predicate Logic which can draw conclusions on the basis of
    a. Backward Chaining
    b. Resolution

Linux Laboratory:

Name of Laboratory	Hardware Configuration	
Linux Lab	Operating System	Windows, Ubuntu
	Processor	Intel core i3
	RAM	4 GB
	Hard Disk	500 GB
	Graphics Card	Inbuilt
	Display	19 inch



List of Experiments:

Database Management System Lab (CSP351)

1. Perform Data Definition Language (DDL) sql queries.
2. Perform Data Manipulation Language (DML) sql queries.
3. Perform Data Control Language (DDL) sql queries.

4. Perform different types of sql functions with the help of relations.
5. Perform different types of sql operations with the help of relations.
6. Implementation of different types of Join operations.
7. Implementation of different types of sql constraints
8. Draw an E-R diagram for NIT Uttarakhand database.
9. Covert an ER diagram of NIT Uttarakhand database to relations.
10. Write a program to identify the highest normal form (1NF, 2NF, 3NF, BCNF, 4NF, 5NF) for the given relation.
11. Write a program to check the decomposed relations are lossy or lossless
12. Write a program to check the decomposed relations are preserve dependency or not.
13. Write a program for mysql/postgresql/ms access/oracle etc database connectivity.
14. Write a program for data insertion and deletion from the database.
15. Write a program for execute DDL, DML sql quries by using mysql database through front end.
16. Write a program to implement B and B^+ trees.
17. Write a program to implement sparse and dense indexes.
18. Implementation of query optimization techniques
19. Implementation of locking protocol in transaction management
20. Implementation of time stamp based protocol in transaction management

Ph.D Research Facilities:

1.	**Project Lab**	Operating System	Windows, Linux
		Processor	Intel Xeon(R)E52620 v3
		RAM	16 GB
		Hard Disk	1 TB
		Graphics Card	2 GB NIVDIA
		Display	23 inch

S. No.	**Name of Laboratory**	**No. of Computer Systems**	**Software Installed**
1.	Project Lab	17Workstations	Matlab, Weka,Cisco Packet Tracer PHP with MySql

Electrical Engineering

The Department of Electrical Engineering was established during the inception of the Institute in 2010 and has a fine blend of young and dynamic faculty. The Department is currently offering B.Tech. in Electrical & Electronics Engineering and M. Tech program in Electrical Engineering with two specializations i.e., Power System & Control, and Power Electronics & Drives. The department is also offering Ph.D. program in the emerging areas of Electrical Engineering for both full time and part time researchers. The major areas of expertise of faculty of department are Power Systems, Power Electronics, and Control Systems. The faculty of the department has been constantly carrying out research on state of art technologies and regularly publishing research work in top international journals and conferences. The department is well equipped with laboratories and research facilities for B.Tech., M.Tech. and Ph.D. programs. The department is also running IEEE student branch chapters.

VISION:

To be a centre of eminence in Electrical Engineering and contributing sustainable development for industry and society by nurturing human resources.

MISSION:

The department aims to realize the vision through the following mission:

- To empower the students and professionals with state of art knowledge and technological skills in Electrical Engineering.
- To enable industries to adopt effective solutions in the domain of Electrical Engineering through research and consultancy.
- To inculcate the sustainable technical development for social needs.

Program Educational Objectives (PEOs) for UG Programme

PEO1: To develop the ability to resolve the practical problems of Electrical Domain as per the society needs.

PEO2: Imbibed with the state of art knowledge to adapt ever transforming technical scenario.

PEO3: Encourage the students to become entrepreneur by providing inter-disciplinary course curriculum.

Program Specific Outcomes (PSOs) for UG programme

PSO1: To acquire the understanding of electrical components and circuits applied for practical engineering.

PSO2: Develop the competence to provide professional engineering solutions as per the societal and industrial needs.

Program Educational Objectives (PEOs) for PG Programme

PEO1: To strengthen the cognizance in the specialization of Power System, Power Electronics & Drives and Control System thereby enhancing the employability of the graduates in various organizations.

PEO2: To inculcate the ability to model, analysis and evaluation of challenges in accordance with various opportunities in the industry, research and development.

PEO3: To enhance the communication skills and willingness to work as team for realization of multidisciplinary projects.

Program Specific Outcomes (PSOs) for PG programme

PSO1: To develop the proficiency in use of professional simulation software & its use to provide challenges in Electrical Engineering.

PSO2: To impart state of art knowledge in the specialized domain of Electrical Engineering by developing the course curriculum to satisfy the current needs of Industry & Society.

Faculty

S.No.	Name of Faculty	Specialization
1.	**DR. SOURAV BOSE**	Power Electronics, Electric Drives & Renewable Energy
2.	**DR. PRAKASH DWIVEDI**	Control System
3.	**DR. MAHIRAJ SINGH RAWAT**	Power System & Renewable Energy
4.	**DR. V. G. DURGARAO RAYUDU**	Control System

5.	**DR. SURYANARAYANA GANGOLU**	Power System
6.	**DR. TRIPURARINATH GUPTA**	Power Electronics
7.	**MR. NITESH KUMAR**	Electric Drives
8.	**DR. ROHIT KUMAR**	Power Electronics
9.	**MR. HIMESH KUMAR**	Power System

Laboratories:

S.No.	Laboratory Name	S.No.	Laboratory Name
1.	Basic Electrical Circuit Laboratory	**6.**	Measurement Laboratory
2.	Control System Laboratory	**7.**	Power Electronics Laboratory
3.	Electrical Drives Laboratory	**8.**	Simulation Laboratory
4.	Electrical Machine Laboratory	**9.**	Switch Gear & Protection Laboratory
5.	Elementary Electrical Engineering Laboratory	**10.**	Advanced Electrical Drives Laboratory

Basic Electrical Circuit Laboratory:

List of Experiments

1. To verify and finding the equivalent circuit of a Thevenin's theorem.
2. To verify and finding the equivalent circuit of a Norton's theorem.
3. To verify Maximum Power Transfer theorem.
4. To verify Super Position theorem.
5. To study the operation of Series and Parallel Resonance of a RLC circuit.
6. To find the power of a 3-Ø balanced and unbalanced system.
7. To study the operation of a Transformer as a Coupled circuit and determination of its
    a) Self-Inductance
    b) Mutual Inductance

c) Coupling Coefficient.

8. To verify Telligen's theorem.
9. Transient response of a RL and RC Circuits.
10. To find the various Two- Port network parameters of a given network.

List of Major Equipment's

1. Maximum Power Transfer Theorem kit
2. Series and Parallel Resonance of a RLC circuit kit
3. Verification of Telligen's theorem kit
4. Two- Port network parameters Kit

Control System Laboratory:

List of Experiments

1. Error Detector Using Potentiometer and Synchros.
2. Time Response Behavior of Different Blocks of Control System.
3. System Identification.
4. Ziegler-Nichols tuning of PID Controller.
5. To study the effect of addition of pole on transient response to the second order closed loop control system by using MATLAB & LABVIEW.
6. To study the stability analysis of linear system.
7. To study the effect of addition of zero & pole to open loop transfer function of second order unity feedback control system by using root locus technique (using MATLAB& LABVIEW).
8. Additional Experiments
9. To study the effect of addition of pole on frequency response to the second order closed loop control system by using MATLAB & LABVIEW.

10. To study the frequency response of Lag, Lead, Lag-Lead network.
11. To study the speed characteristics of BLDC Motor.

List of Major Equipment's

1. Temp. Control System Trainer
2. BLDC Motor trainer system
3. PID Controller
4. Relay Control System
5. Stability analysis of Linear System
6. Transducer Instrumentation & Control trainer
7. Qbot
8. AERO
9. Inverted Pendulum

Electrical Drives Laboratory:

List of Experiments

1. Study of chopper/DC-DC converter-controlled DC Drive.
2. Study of Rectifier controlled DC Drive.
3. Study of PWM controlled Inverter fed Induction Motor
4. Study of electrical braking operation of DC Motor
5. Study of electrical braking operation of AC motor
6. Study of V/f control operation of 3phase induction motor drive.
7. Study of permanent magnet synchronous motor drive fed by PWM Inverter.
8. Study of Closed-Loop Control of DC Drives.
9. Study of slip power recovery control of induction motors.

10. Study of two-quadrant operation of DC-DC Converter.

List of Major Equipment's

1. DC-Motor Gen System (3kw)-NI LabVIEW based
2. Induction Generator System- NI LabVIEW based instruments.
3. 3-phase Synch motor gen System, 3 kW
4. Three Phase Squirrel Cage Induction –Controlled by NI-LabVIEW and VFD Drives
5. Switched reluctance Motor kit 0.3 kW
6. 3-Phase Universal Motor Controller
7. PM Synch Motor Kit 3 kW
8. PMBLDC- Kit 0.25 kW
9. Solar and Wind Power Trainer Kit (NI LabView)
10. Smart Grid Monitoring Module
11. Three-phase half and fully controlled rectifier.
12. Variable frequency drives.
13. Voltage Source Inverter.

Electrical Machine Laboratory-I:

List of Experiments

1. To determine the efficiency of single-phase Transformer by conducting Sumpner's back- to- back test.
2. To conduct load test on DC shunt generator and to draw the external and internal characteristics of DC shunt generator.
3. To conduct Hopkinson's test on a pair of identical DC machines to pre-determine the efficiency of the machine as generator and as motor.

4. To perform the scott connection of transformer and to obtain the two-phase supply from three phase supply.
5. To determine the efficiency of the two given dc series motors which are mechanically coupled.
6. To study of the speed control of a dc shunt motor using conventional Ward- Leonard method.
7. To draw the magnetization characteristics of dc shunt generator.
8. To conduct brake test on DC compound motor for long shunt cumulative &differential connections and to draw the performance characteristics.
9. To perform parallel operation of two dissimilar Transformer and determine combined and individual transfer efficiency.
10. To perform the Swinburne's test of the DC machine and pre-determine the efficiency of the machine as generator and as motor.

Electrical Machine Laboratory-II:

List of Experiments

1. To determine speed- torque characteristics of single-phase Induction motor and study the effect of voltage variation.
2. To draw the circle diagram of 3-phase induction motor by conducting no load and blocked rotor test.
3. To study speed control of three phase Induction motor by varying supply voltage and keeping v/f constant.
4. To determine V-curve and inverted V-curve of a three-phase synchronous motor.

5. To predetermine the regulation of 3-phase alternator by EMF and MMF methods and also draw the vector diagram.
6. To determine the efficiency of 3-phase induction motor by performing load test.
7. To study synchronization of an alternator with infinite bus using
   (A)Dark lamp method
   (B)Two bright and one dark lamp method
8. To determine the percentage regulation of an alternator by ZPF method.
9. To study the power angle curve of synchronous generator.
10. To determine x_d and x_q of a salient pole synchronous motor using the slip test.

List of Major Equipment's

1. 3-Phase Rectifier
2. DC Shunt Motor
3. Squirrel Cage IM
4. Dc Power Supply SCR Based
5. DC compound Gen Set
6. Slip Ring Motor
7. Synchronous Motor 4 pole coupled with DC Shunt Generator
8. Synchronous Motor, with Induction motor Coupled Dc Shunt gen. 220V,3 kW, 1500rpm
9. Synchronous Motor, 1HP, Coupled Dc Shunt gen. 220V, 3kW, 1550 rpm
10. Servo Stabilizer 3-ph
11. Multi Winding Transformer

Elementary Electrical Engineering Laboratory:

List of Experiments

1. To study and verify Kirchhoff's current and voltage laws for a circuit.
2. To study the performance & phasor diagram of RLC series circuit.
3. To study the speed control of DC shunts motor.
4. To perform the open circuit & Short circuit test for measuring the losses of the transformer.
5. To study the performance & phasor diagram of RLC parallel circuit.
6. Study of different types of machines.
7. To test the polarity of the single phase transformer.
8. Determine B/H curve for magnetic material.
9. To calculate the efficiency & voltage regulation of a single phase transformer.
10. Calculation of slip(s) of Induction motor for clock wise and anti-clock wise rotation of rotor.

List of Major Equipment's

1. DC Supply 110-220 V.
2. Ammeter DC 1-0-1 Amp.
3. DC 0.5-1 Amp.
4. Rheostat 110Ω, 2.8 Amp; 1089 Ω, 0.6 Amp.
5. Variac Input 220 V, output 270V, 5 Amp
6. Ammeter AC 2.5-5 Amp.
7. Voltmeter 150-300 V.
8. Transformer 220 V, 1KVA, 4.5 Amp.
9. Wattmeter 2.5-5 Amp, 75-150-300 V.
10. Capacitor 0-10 μF
11. Single Phase lamp load input 220 V

Measurement Laboratory:

List of Experiments

1. Measurement of unknown medium resistance by using Wheat Stone Bridge
2. Measurement of unknown small resistance by using Kelvin Double Bridge
3. Measurement of unknown medium inductance by using Maxwell Bridge
4. Measurement of unknown high inductance by using Hay' Bridge
5. Study of analog meters—PMMC, Electro Dynamo Meter, Moving Iron
6. Measurement of small distance variations by using LVDT
7. Measurement of weight by using Strain Gauge
8. Measurement of Torque
9. Study of CRO (Cathode Ray Oscilloscope)
10. Measurement Wind using Digital Anemometer
11. Measurement of solar irradiance using Digital Pyranometer (Solar Power meter)

List of Major Equipment

1. **Wheat Stone Bridge** Source-5V R1 -1KΩ, 10KΩ, 100KΩ. R2- 10K. R3-, 10Ω, 100Ω, 1KΩ, 10KΩ, 100KΩ
2. **Kelvin Double Bridge** Source-5V. R1 -1KΩ, 10KΩ, 100KΩ. R2- 100Ω, R3-1KΩ, 10KΩ, 100KΩ.
3. **Maxwell Bridge Source**-1KHz Oscillator R1-10K. R2-0.1mf. R3 -10Ω, 100Ω, 1KΩ, 10KΩ, 100KΩ
4. **Hay' Bridge Source**-1KHz Oscillator R2 -10Ω, 100Ω, 1KΩ, 10KΩ, 100KΩ. R3 -10Ω. R4 -10Ω

5. PMMC, Electro Dynamo Meter, Moving Iron
6. **LVDT** Input 203 AC Display 0-10 V Displacement range 0-20 mm
7. **Strain Gauge** Measuring Range-0-5,Kg Non-linearity Error - ±1% Excitation Source-D.C. Excitation (5Volts) Display- 3(1/2) Digit LED
8. **Torque** Measuring Range-0-2.5Newton meter. Non-linearity Error - ±1% Source-D.C. Excitation (5Volts) ; Working Temperature-0-500C Display- 3(1/2) Digit LED
9. **CRO (Cathode Ray Oscilloscope)**
10. **Anemometer** Display-LCD ,Size-65x25 mm Operating Temperature-0-500C(32-1220F) Air Velocity Sensor Structure- Conventional twisted vane arms and low friction ball-bearing design. Power supply-006P DC 9V battery Power Consumption-Approx DC 9mA Weight-325g/0.72lb(Including Battery)
11. **Pyranometer** (Solar Power meter) Sensor-High Sensitivity Silicon Photodiode Range-0~2000W/m2(0~634BTU/ft2.h) Tilt angle range- 00~90 Store temp .&relative humidity- -100C~600 C(140F~1400FLess than 85%RH) Memory-20 point memory Accessories-9V battery

Power Electronics Laboratory:

List of Experiments

1. To study the V-I characteristics of SCR.
2. To study the V-I characteristics of TRIAC.
3. To study UJT characteristics.
4. To study SCR phase control.
5. To study SCR commutation techniques.
6. To study the performance of boost converter.

7. To study the performance of buck converter.
8. To study the operation of full bridge-controlled converter with R-Load.
9. To study single phase full bridge inverter.
10. To study single phase ac voltage controller
    a. Based on SCR
    b. Based on TRIAC

List of Major Equipment's

1. PEC16M1B Trainer Kit
2. PEC16M1C Trainer Kit
3. ME547D Trainer Kit
4. SCR-06 Trainer Kit
5. SCR commutation (ME-793) Trainer Kit
6. DC-DC Boost converter (VSMPS-06A)
7. DC-DC Buck converter (VSMPS-05A)
8. SPBC-101 Trainer Kit
9. PEC16M3 & 16HV2B Trainer Kit
10. PEC14M14AC Trainer Kit

Simulation Laboratory:

List of Experiments (Soft Computing Techniques Lab)

1. Programs on Matrix operations to understand the basic concepts of MatLab.
2. To print all the Continues Discrete Membership Functions by using MatLab.
3. To perform different fuzzy operations on Membership Functions by using MatLab.
4. Design a Fuzzy controller for Air conditioning system/Washing Machine.
5. Identification of a system using Perceptron/Radial Base Function Network (RBFN).
6. Identification of a system by using Backpropagation algorithm.
7. Minimizing the objective function by using Genetic Algorithm (GA)

8. Minimizing the objective function by using Particle Swarm Optimization (PSO)
9. Minimizing the objective function by using Cuckoo Search Algorithm (CSA)
10. Minimizing the objective function by using Ant Colony Optimization (ACO)
11. Minimizing the objective function by using Differential Evolutionary (DE) algorithm
12. Minimizing the objective function by using Cat Swarm Optimization (CSO)

List of Experiments (Power System Lab)

MATLAB/SIMULINK Based Experiments

1. Static Load Flow Analysis of Standard IEEE bus system using N-R method.
2. Dynamic Analysis of IEEE 9 bus System.
3. Small signal Stability Analysis of Single Machine Infinite Bus System.
4. Short circuit Analysis of IEEE 9 bus power system.

DIgSilient Power Factory Based Experiments-

1. Modeling and Analysis of Low Voltage Distribution Network (Mesh and Radial).
2. Study of Relay Coordination and Time grading Calculation using PowerFactory.
3. Power Quality and Harmonics Analysis of Power System.
4. Modeling IEEE 8 bus power system and analyzing/creating different operation Scenarios using PowerFactory.
5. Transient stability & Voltage Stability Analysis of Standard Power System.
6. Contingency Analysis of standard Power System.

List of Software

1. DigSalient PowerFactory 2018
2. MatLab 2019b
3. LabView 2013

Desktop Computer Details

Total No of Computer- 27

Specification Intel Core I i5-4590 CPU @3.30 GHz, RAM – 4GB, OS-64bit Microsoft Windows 10

Switch Gear & Protection Laboratory:

List of Experiments

1. To study the protection of transformer with percentage biased differential relay (Microcontroller based numerical relay).
2. To study IDMT over current relay (single phase) and to determine the pickup and reset value and determine the time and current characteristics.
3. To study the working of Buchholz relay.
4. To analyze the underground cable fault using Varley loop test.
5. To study the directional over current protection.
6. To study the breakdown voltage of transformer oil by adjusting electrode gap length.
7. To study and draw the characteristics of numerical overcurrent relay.
8. To study and analyze the different type of symmetrical and unsymmetrical faults occurs in transmission line.
9. To study microcontroller based over/under voltage relay.
10. To study the complete protection of alternator unit.
11. To study the protection of feeder system.
12. To study the principle of reverse power protection.

List of Major Equipment's

1. IDMT over current relay kit (ME2471R)

2. Buchholz relay unit
3. Varley loop test kit (VPL-83A)
4. Transformer oil test kit
5. Feeder protection unit
6. Symmetrical and unsymmetrical fault analysis (NVI57065)
7. Microcontroller based over/under voltage relay (VPL-05)
8. Reverse power protection Panel
9. Protection of Alternator unit (PWS-3012A)
10. Percentage biased differential relay
11. (ME2473RD)
12. Directional overcurrent relay (JRP 011)
13. Numerical overcurrent relay (ANSI NO. 50&51)

Advanced Electrical Drives Laboratory:

List of Experiments

1. Design simulation of Single phase rectifier with R, RL and RLE loads using MATLAB.
2. Study and analysis of open and closed loop control of three phase induction motor using DSP microcontroller board.
3. Study and analysis of open and closed loop control of BLDC motor using DSP microcontroller board.
4. Study and analysis of open and closed loop control of Switch Reluctance Motor using FPGA.

5. Study and analysis of open and closed loop control of PMDC motor using DSP microcontroller board.
6. Study and analysis of three level diode clamp three phase MLI for open and closed loop control of Induction motor using FPGA Board.
7. Study and analysis of five level cascaded MLI operation through FPGA control Board.
8. Study and analysis of various operation by Matrix Converter through FPGA Controlled Board.
9. Study and analysis of closed loop control of BLDC and Three Phase Induction Motor parameter on Real Time GUI FPGA platform.

List of Major Equipment's

1. Real Time – GUI FPGA Controller Based
    I. Induction Motor Set up
    II. DC Motor Drive Set Up
    III. BLDC Motor Drive Set up
    IV. SR Motor Drive Set up.
2. Matrix Converter Power Module
3. Three Phase Five Level Cascaded Multilevel Inverter.
4. Three Phase Three Level Diode Clamped Multilevel Inverter Power Module.
5. DSPIC4011 Microcontroller Based PWM Controller.
6. FPGA PWM Controller
7. AC/DC Current Measurement Cards with auxiliary power supply
8. AC/DC Voltage Measurement Card with auxiliary power supply
9. Single IGBT Project card with Opt coupler based driver circuit
10. Dual IGBT Project card with Opt coupler based driver circuit
11. Opal RT Real Time HIL Simulator and HIL Controller
12. Typhoon HIL Simulator.
13. Workstation Dell

Ph.D. Research Facilities

1	Aero
2	Qbot
3	Inverted Pendulum

4	FPGA PWM Controller
5	OPAL-RT-Real Time Digital HIL Simulator for Power System, Power Electronics Machine and Drives Applications
6	Typhoon HIL Hardware in the Loop Real Time Simulator Power Electronics and Renewable Energy (Simulator)-
7	Digital Signal Processor (TMS320F28335)
8	Matrix Converter Power Module
9	Three Phase Five Level Cascaded Multilevel Inverter.
10	Electrical Vehicle (E-Rickshaw)
Software	
1	MatLab 2019b
2	DigSalient PowerFactory 2018
3	Labview 2013

Industry Collaborative Laboratory

The Department of Electrical Engineering, NIT Uttarakhand has an Industry Collaborated lab established by Mitsubishi Electric India Pvt. Ltd. under MoU between NITUK and MITSUBISHI Electric India Pvt. Ltd. The following equipment's/software are provided to the Electrical Engineering Department of NIT Uttarakhand under MoU between NITUK and MITSUBISHI Electric India Pvt. Ltd.

1. MELSOFT MX OPC Server (Integrated solution for plant engineering)
2.MELSOFT MC Works 64 (Integrated solution for plant engineering)
3. FA learning kit; Inverter (FR-A820)and Servo Amplifier(MR-J4W3).

Electronics Engineering

Department of Electronics Engineering, N.I.T. Uttarakhand was established in 2013 with an intake of 60 students. The department offers a four-year course leading to the bachelor's degree in Electronics Engineering. Department of Electronics Engineering has advanced academic structure with core course and variety of elective courses so that the students' knowledge is not only enhanced in core discipline but also in the related disciplines. The department also offers postgraduate courses in Microelectronics & VLSI Design, Communication Engineering along with Ph. D. degree program in all the specialization of Electronics Engineering.

Vision:

To offer academic excellence in the field of Electronics and Communication Engineering with a strong emphasis towards research and development to cater to the needs of the society.

Mission:

(i) Establish a vibrant learning environment for the students of Electronics and Communication Engineering.

(ii) Enable students to develop skills to solve complex technological problems by promoting collaborative and multidisciplinary activities.

(iii) To establish the Centre of Excellence to nurture the spirit of innovation and creativity among faculty and students.

(iv) Provide ethical and value based education by promoting activities addressing the societal needs.

Programme Educational Objectives (PEOs)

PEO1: To understand and apply the fundamental concept of Electronics and Communication engineering for designing and developing modern electronic systems

PEO2: To make students capable of being as innovators, researchers, technologists and entrepreneurs by engaging themselves in relevant multidisciplinary projects.

PEO3: To prepare the graduates as professionals with effective communication skills, leadership qualities and imbibing concern for eco-system for uplifting of society

PEO4: To inculcate the habit of life-long learning needed for research and higher studies to develop new methodologies and technologies for solving real life problems.

Programme Specific Outcomes (PSO)

PSO1: To identify and categorize problems so as to recommend suitable solutions.

PSO2: To apply the experience of using modern tools (both hardware and software) in the areas of VLSI, Signal Processing and Microwave for industrial and research purpose.

PSO3: To communicate effectively in order to adapt, understand and solve the practical problems as an individual as well as in a team with a responsible view towards the society and environment.

Faculty Profile

Sr.No.	Name of Faculty	Areas of Research
1	**DR. SARIKA PAL (HEAD)**	Optical Communication
		Optical Sensors, Plasmonics
		Applications of nanomaterials in sensing field
		Magneto -optic surface plasmon resonance sensor
2	**DR. HARIHARAN MUTHUSAMY**	Biomedical Signal and Image Processing
		Hyperspectral Image Processing
		Soft Computing Methods for Microwave and Millimeter-Wave Design
		Application of AI Techniques in VLSI Design and Communication Systems
3	**DR. SIVA KUMAR TADEPALLI**	Multidimensional Systems
		Finite Wordlength Effects
		Delayed and Uncertain Systems
		Robotics
4	**DR. TAJINDER SING ARORA**	Analog Circuit design
		Analog Signal Processing
		Current-mode circuits
		Electronic Devices and Circuits
5	**DR. GHANAPRIYA SINGH**	Signal Processing for IoT
		Machine Learning
		Image Processing
		Biomedical signal processing
6	**DR. TUSHAR GOEL**	Planner Antennas
		Microwave energy Harvesting
		Radar Image Processing
		Microwave Hazards
7	**DR. HEMANT KUMAR SINGHAL**	Radio Frequency Active Circuits and Passive Circuits such as Power Amplifier
		low loss power combining topology
		RF and Microwave applications in interdiscipline domains such as agriculture

		Baluns
8	**DR. PANKAJ KUMAR PAL**	Novel MOS Based Device/ Circuits Design
		Design of Advance Spin Based Memories for Cache Application
		Semi-Conductor Device Modeling
		Low Power & Energy Efficient Memories
9	**MRS. SARITA YADAV**	Semi-Conductor Device Modeling
		Novel MOS Based Device Circuit
		3D Interconnects Indirection
		Low Power Design
10	**MR. NITANSHU CHAUHAN**	Novel Nano-Scale Devices & Circuits Design
		In Memory Computation
		Reliability of Semiconductors Memories & Novel Devices
		Self-heating in Novel Devices
		Negative Capacitance FETs
11	**MR. VIVEK KUMAR**	Nano-scale Device Simulator
		Thermal Modeling of Nano-scale Device
		RF Nano-scale Device
		Reliability of Nanosheet

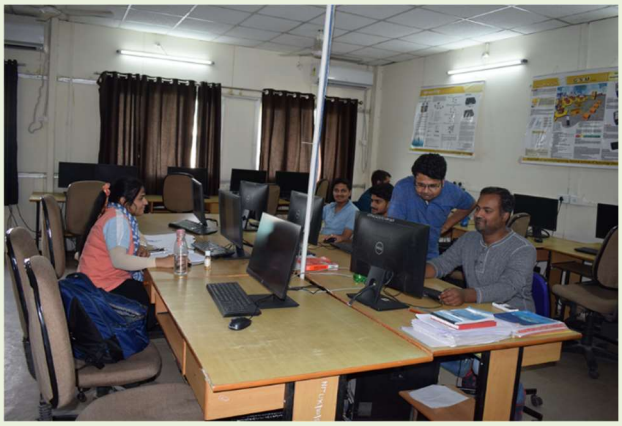
Department Labs:

Analog Electronics Lab

Communication Lab

Digital Electronics Lab

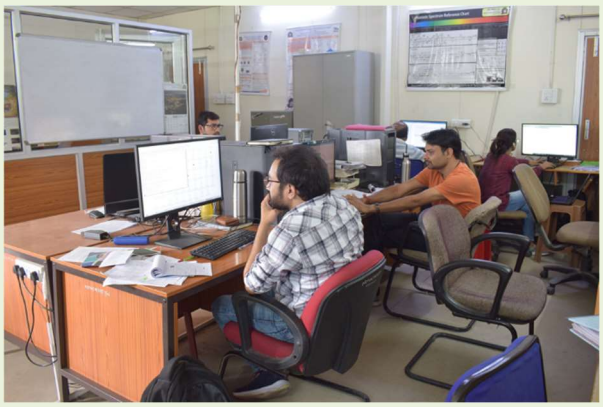
Digital Signal Processing Lab



Electronic System Design Lab

Microprocessor Lab

Research Lab



Microwave Lab

Electronics Workshop Lab

List of Experiment (Communication lab)

1) Study of DSB Amplitude modulation (AM).
2) Study of DSB Amplitude demodulation.
3) Study of SSB Amplitude modulation.
4) Study of SSB Amplitude Demodulation.
5) Study of Frequency modulation (FM) using Varactor Modulator
6) Study of Frequency modulation (FM) using Reactance Modulator.
7) Study of Frequency demodulation.
8) Study of Pulse amplitude modulation. (PAM)
9) Study of Pulse width modulation. (PWM)
10) Study of Pulse position modulation. (PPM)
11) Study of Time-division multiplexing. (TDM)

List of Experiment (Digital Electronics Lab)

1) To verify operation of basis logic gates.
2) Realization of Logic functions with the help of Universal Gates (NAND /NOR Gate).
3) Design a BCD to Excess 3 code /Binary to Gray code converter.
4) Simplify the Boolean function using K-map and implement it using logic gates.
5) To construct half adder, full adder and subtractor circuit and verify it's working.

6) Implementation of Full adder using half adder.

7) Implementation of a 4-bit adder using 7483 IC.

8) Implementation of a Boolean function using 4:1 Multiplexer.

9) Realize a 1-bit and 2-bit magnitude comparator.

10) To construct a 4-bit ripple counter using two 7476 ICs.

11) Verify the truth tables of S-R, J-K, T and D type flip-flops.

12) Design a 4-bit left/right shift register.

13) Design and verify a 4-bit synchronous counter.

14) Design and Verify a 4-bit asynchronous counter.

15) Design and verify a BCD counter.

List of Experiment (Microcontroller & Interfacing Lab)

1) To perform Addition of Two 8 Bit Numbers.

2) To perform Subtraction of Two 8 Bit Numbers.

3) To perform Addition of Two 16 bit Numbers.

4) To perform Subtraction of Two 16 bit Numbers.

5) To perform multiplication of two 8 bit Numbers.

6) To perform Division of two 8 bit Numbers.

7) To Arrange given no. of arrays in ascending order.

8) To Arrange given no. of arrays in descending order.

9) To perform square of a given Number.

10) To find Factorial of a given Number.

11) To print Fibonacci series.

12) To find Smallest Number from given array.

13) To find square root of a given Number.

14) To find largest number from given array.

15) To find 1s 2s compliment of a given Number.

List of Major Equipment Available:-

1) Logic Analyser,34 Channel, 250 MHz State (2015)
2) HP Workstation Z840 and Z440
3) Dell Workstation with Intel Xeon silver 4214 Processor 64GB (Precision 7920DT)
4) Spectrum Analyzer 1GHZ
5) 100 MSPS Analog Discovery Kit.
6) DSO (TDS-2024C, 200MHZ, 4channel color Display)
7) Multimeter 4.5 digital Model - U1252B
8) ARM9 Development board (ST6201)
9) Arbitrary Waveform Generator, Keysight 33521B, 30MHz, 1CH
10) Weller Non-integrated Temperature Controlled Soldering Station with platinum sensor
11) Programmable Triple Output DC Power Supply (Model- 2230G-30-3)
12) Data Gloves (Left hand), Data Gloves (Right hand), Wireless Kit for Data Gloves

Software Available with Department

1) Synopsys AsiaPAC Advance TCAD (3D) University Bundle
2) Advanced Design System Software (ADS)
3) CAD Tool
4) Optisystem V15.1
5) CST Studio Suite Electromagnetic Solver/Simulator
6) Cadence Front End and Backend Tools with 5 licenses. (2015-16)
7) Mentor Graphics Front End and Backend Tools with 1000 licenses (2015-16)
8) Xilinx HLS Vivado with 25 licenses. (2015-16)
9) NI Academic site license lab view software (2013)
10) Mat Lab Software

Mechanical Engineering

The Department of Mechanical Engineering at the National Institute of Technology, Uttarakhand was established in 2012 and currently has an intake of 20 students per year. The Department offers a four-year B. Tech. course, M.Tech. Program in Manufacturing Technology and Machine Design.and a Ph.D. program. The department has flexible academic structure with numerous core and elective courses, to facilitate the students to opt for the courses of their interest.

Presently, the department has Three Associate Professors, Twelve Assistant Professors. All the faculty members are well qualified from reputed institutions like IITs and NITs. The area of specialization of all faculties has a lot of diversity that covers various aspects of Mechanical Engineering and is capable to mold young minds into successful professionals.

The department is fully equipped with laboratories for core courses such as Machine Tools Laboratory, Strength of Materials Laboratory, Fluid Mechanics and Machines Laboratory, Applied Thermodynamics Laboratory, Heat Transfer Laboratory, Kinematics and Dynamics of Machines Laboratory, Computer Aided Design Laboratory and Mechanical Workshop. These laboratories have state of the art experimental setups and machineries for enhancing the practical knowledge of students at par with the cutting edge technology. The department is now expanding its wings towards elective course laboratories such as Additive Manufacturing, Measurement Laboratory, Robotics Laboratory, Mechatronics Laboratory, Automobile Laboratory, CNC Laboratory, Vibration Laboratory etc

VISION:

To become a Centre of Excellence in Mechanical Engineering education and research for sustainable socio-economic development

MISSION:

- To develop a state-of-the-art infrastructure for imparting quality education.
- To impart technical skills and professional ethics to the students for making them employable and thus contributing in nation building.
- To perform inter-disciplinary as well as collaborative research in the frontier areas of technology for sustainable development of the society.
- To promote leadership, innovation and entrepreneurship among the students.

Program Educational Objectives (PEOs):

PEO1: Imparting engineering skills among the students for the sustainable development of the society.

PEO2: Developing communication skills, leadership and professional ethics among the students.

PEO3: Inculcating the design capability among the students and promote product development, innovation and entrepreneurship.

Program Specific Outcome (PSOs) for UG Programme:

PSO1: Apply innovative ideas for design and development of devices to solve real world problems related to Mechanical Engineering

PSO2: Utilize the renewable energy resources for sustainable development of the society

Faculty Profile:

S.No.	Name	Specialization
1	**DR. SANAT AGRAWAL (HEAD)**	Design Engineering
2	**DR. LALTA PRASAD**	Thermal Engineering
3	**DR. GURINDER SINGH BRAR**	Manufacturing Engineering
4	**DR. VINOD SINGH YADAV**	Thermal Engineering
5	**DR. PAWAN K. RAKESH**	Manufacturing Engineering
6	**DR. VIKAS KUKSHAL**	Design Engineering
7	**DR. APURBA MANDAL**	Design Engineering
8	**DR. NIRAJ K MISHRA**	Thermal Engineering
9	**DR. YOGESH K PRAJAPATI**	Thermal Engineering
10	**DR. DUNGALI SREEHARI**	Manufacturing Engineering
11	**DR. HITESH SHARMA**	Manufacturing Engineering
12	**DR. T. SUDHAKAR**	Thermal Engineering
13	**DR. DEEPAK KUMAR**	Thermal Engineering
14	**DR. GAURAV KUMAR**	Manufacturing Engineering
15	**DR. PRASANT TIWARI**	Design Engineering

Department Laboratories

1. Heat Transfer Lab

- Refrigeration Test Rig
- Stefan's Law Apparatus
- Cooling Tower Test Rig
- Pool Boiling apparatus.
- Air Conditioning Test Rig
- Heat Transfer in Forced Convection
- Air Duct Test Ring

List of Experiments

1. To determine Stefan Boltzmann constant for radiant heat transfer.
2. To determine efficiency and effectiveness of the fin by natural using Pin fin apparatus.
3. To determine efficiency and effectiveness of the fin by forced convection using Pin fin apparatus.
4. To determine forced convection heat transfer coefficient for flow through the given Horizontal tube.
5. Determination of thermal conductivity of pipe insulation by lagged pipe apparatus.
6. To study the pool boiling phenomenon up to critical heat flux apparatus.
7. To determine thermal conductivity of metal rod.
8. To determine heat transfer coefficient in parallel and counter flow in a tubular heat exchanger.

9. To determine performance of cooling tower
10. Shell and tube heat exchanger

2. Applied Thermodynamics Lab

One Cylinder 4 Stroke Diesel Engine Test Rig

One Cylinder 4 Stroke Diesel Engine Test Rig 7.5kw

One Cylinder 2 Stroke Petrol Engine Test Rig

Single Stage Air Compressor Test Rig

Double Stage Test Air Compressor

Babcock & Wilcox Boiler Model

Lancashire Boiler Model

Model of 4 Stroke Diesel Engine

Model of Fuel Supply System

List of Experiments

1. Study of different type of boilers
2. To study the working and function of mountings & accessories in boiler.
3. To determine the viscosity of lubricating oil by Redwood Viscometer.
4. Determination of calorific value of liquid and solid fuels using oxygen bomb calorimeter
5. To study the construction and working of 2-stroke petrol engines.

6. To study the construction and working of 4-stroke diesel engine
7. To Study of fuel supply system for petrol engine.
8. To study the fuel supply system of diesel engine
9. To draw the valve timing diagram of the given four stroke diesel engine
10. To find out the volumetric efficiency of double stage air compressor
11. To find out the volumetric efficiency of an air compressor.
12. To study the performance of 2-Stroke Single cylinder Petrol engine connected to a rope brake dynamometer.
13. To study the performance of 4-Stroke Single cylinder diesel engine connected to an electric brake dynamometer.
14. To prepare a heat balance sheet for 4-Stroke Single cylinder diesel engine connected to an electric brake dynamometer.

3. Fluid Mechanics Lab

- Pelton Wheel Turbine Test Rig
- Francis Turbine Test Rig
- Gear Pump Test Rig
- Bernoulli's Theorem kit
- Coriolis's Force Demonstration
- Reynolds's Apparatus
- Losses in Pipes Apparatus
- Orifice meter, Venture meter, Rota meter Apparatus
- Free and Forced Vortices Apparatus

- Models of Different Types of Pumps and Turbines

List of Experiments

1. To study of the different types of hydraulic turbines.
2. To verify the momentum equation experimentally.
3. To study the performance characteristics of a centrifugal pump and to determine the characteristic with maximum efficiency.
4. To study the performance characteristics of a reciprocating pump and to determine the characteristic with maximum efficiency.
5. To draw the characteristics curves of gear oil pump and also to determine efficiency of given gear oil pump.
6. To conduct load test on pelton wheel turbine and to study the characteristics of pelton wheel turbine
7. To conduct load test on Francis turbine and to study the characteristics of Francis turbine.
8. To study the two pump performances, both in series and parallel operation and to draw the characteristics curves in both series and parallel arrangement.
9. To verify Bernoulli's equation.
10. To reproduce the dye line experiment as performed by Reynolds and to obtain the criteria for Laminar and Turbulent flow.
11. Determination of coefficient of discharge, coefficient of contraction, coefficient of velocity of orifice & mouthpiece.
12. To calculate coefficient of discharge, Cd of Venturi meter.
13. To calculate coefficient of discharge, Cd of Orifice meter.
14. To compare theoretical and actual value of flow over notch.
15. To study free and forced vortices.
16. To find the Coriolis component of acceleration and verify the result.
17. To determine the friction factor of a given pipe of circular cross section.
18. To determine the Metacentric height of a floating body (i.e. a model of ship) and to locate the center of Buoyancy, metacenter and center of gravity.
19. To determine the percentage error in Rotameter with the actual flow rate.

4. Mechanical Workshop

- Are Welding Machine-1.
- Gas Welding Setup
- Spot Welding Machine.
- Muffle Furnace -1
- Anvil Big & Small
- Carpentry Vice-4
- Bench Vice-2
- Bench Vice-9
- Carpentry Vice-8
- Cope & Drag-3
- TIG Welding Machine
- Wood Lathe Machine
- Reciprocal Shaker
- Jack Planer-2
- Arc Welding Machine
- Moulding Box-03

List of Experiments

1. To file the given two Mild Steel pieces in to a square shape of 48 mm side as shown in Figure.

2. To file the given Mild Steel pieces in to a stepped cut piece of having equal step-dimention E1
3. To make V- fit from the given two MS plates as shown in Figure -E2
4. To make a T-lap joint
5. To make a dovetail lap joint
6. To make a mortise and tenon joint
7. To make a single v-butt joint, using the given mild steel pieces of by arc welding.
8. To make a double lap joint, using the given mild steel pieces and by arc welding.
9. To make a corner joint, using the given mild steel pieces and by arc welding.
10. To make a T- joint, using the given mild steel pieces and by arc welding
11. To make a cylinder using the given G-I SHEET joint by the spot welding process.
12. To prepare a wooden pattern (solid pattern).
13. To make a square tray of given dimension (75 mm x 75 mm) using given GI sheet.

5. Kinematics of Machine Lab

- Static and Dynamic Balancing
- Whirling of Shafts Apparatus
- Motorized Gyroscope
- V-Belt Drives Model.
- Double Hook Coupling
- Winch Apparatus
- Combined Flat & V belt friction Apparatus
- Worth Quick Return Mechanism

- Smart Structure Instrument
- Vibration Shakers
- Universal Vibration Apparatus

List of Experiments

1. To calculate the efficiency of Single Start Worm and Worm Wheel.
2. To determine the coefficient of friction between a belt and pulley with the help of a combined coil and belt friction apparatus
3. To determine the moment of inertia of sample object by using Tri-filar suspension system.
4. To calculate the mechanical advantage, velocity ratio and efficiency of double purchase winch crabs machine.
5. To check experimentally the method of calculating the position of counter balancing weight in rotating mass system.
6. To perform experiment on Watt Governors to prepare performance characteristic Curves, and to find stability & sensitivity.
7. To determine the whirling speed of shafts with various diameters experimentally and compare it with theoretical values.
8. To analyses the motion of a motorized gyroscope when the couple is applied along its spin axis.
9. Experimental studies of vibration of a cantilever beam on mode shapes.
10. To study gyroscopic effects through models.
11. To study the various types of dynamometers.
12. To perform the experiment for static balancing on static balancing machine.

6. Computer Aided Design Lab

- Auto Cad Software
- ANSYS 18.0Software
- CATIA R6Software

List of Experiments

To draw a part drawing in catia

7. Measurement Lab

- Microscope.
- Sine Bar, Slip Gauges
- Vernier height gauge
- Micrometer
- Vernier caliper
- Go &No-Go-gauges
- LVDT Apparatus
- Microwave for Material Processing

List of Experiments

1. To understand construction of Vernier Caliper and calculate its least count.
2. To understand construction of outside micrometer and calculate its least count
3. Study & Observe Vernier Height gauge, Digital Height gauge and Vernier Depth gauge.
4. Study of Depth micrometer
5. Direct and indirect measuring instruments like Screw pitch gauge, radius gauge, small hole gauge, Telescopic gauge and Feeler gauge.
6. To study and use Vernier Bevel Protractor.
7. To find unknown angle of a given component using Sine Bar.
8. Micrometer calibration by Slip Gauges
9. To study characteristic graph of LVDT sensor.

8. Machine Tool Lab

- Lathe Machine

- Milling Machine
- Wood Turning machine
- Shaper Machine
- Surface Grinder
- Drilling Machine
- Hydraulic Punching Machine
- Fly Press

List of Experiments

1. Study about the machining processes
2. To study the characteristic features of lathe Machine
3. To perform the Turning, Facing, Grooving and Threading operations on given mild steel rod
4. To study the characteristic features of Milling Machine
5. To study the characteristic features of Shaper Machine
6. To machine a V block
7. To drill and tap holes on the mild steel rod as shown in the sketch
8. To perform the grinding operation on surface grinder Machine
9. Introduction about non-conventional machining processes

9. Strength of Material Lab

- Brinell hardness testing.
- Universal Testing Machine.

- Impact Testing Machine.
- Buckling behavior bars apparatus.
- Hook's law apparatus.
- Deformation of curved axis beam.
- Deformation of the straight beam apparatus.
- Deformation of U/S shaped from apparatus.
- Euler column experiment apparatus.
- Try filler suspension.
- Izod & Charpy testing M/C
- Torsion Testing Machine
- Fatigue Testing Machine
- Digital Weigning Balance
- Shore Hardness Tester

List of Experiments

1. To verify Hooke's law for a spring and to determine the spring's elastic constant by static deformation
2. To study the Brinell hardness testing machine and the Brinell hardness test
3. To determine the impact strength (toughness) of steel by Izod impact test.
4. To determine the impact strength (toughness) of steel by Charpy impact test.
5. To conduct tensile test on mild steel specimen using Universal Testing Machine
6. To find the compressive strength of given specimen.
7. To determine experimentally the value of flexural (EI) rigidity for a cantilever beam carrying point loads and to verify the result with analytical method.
8. To determine experimentally the deflection at mid-point on a simply-supported beam carrying point loads and to verify the result with analytical method.
9. To conduct torsion test on mild steel specimens to find out modulus of rigidity.
10. To determine the endurance limit of given specimen under fatigue loading or cyclic loading.
11. To determine the moment of inertia of sample object by using Tri-filar suspension system.

10. Vibration Lab under KOM Lab

- Universal Vibration Setup
- Multi channel Sensing and Actuation Unit
- Multi channel Band Pass Filter
- Dynamic Vibration Shaker with Power Oscillator

List of Experiments

1. To verify the relation of simple pendulum
2. To determine the radius of gyration 'k' of a given compound pendulum
3. To determine the radius of gyration of given bar by using Bi-Filer suspension.
4. To study the Torsional Vibrations of single rotor system.
5. To study the Free Vibration of Two Rotor System and to determine the Natural Frequency of Vibration Theoretically & Experimentally.
6. To study the Damped Torsional Oscillation & to determine the damping co-efficient C.
7. To verify the Dunker ley's Rule Viz.
8. To study the longitudinal vibration of helical spring and to determine the frequency and time period of oscillation theoretically and actually by experiment.
9. To study the undamped free vibration of equivalent spring mass system and To find the frequency of undamped free vibration of equivalent spring mass system.

10. To study the Forced damped Vibration of Equivalent Spring Mass System and To find the frequency of forced damped equivalent spring mass system and To find amplitude of vibration.
11. To study the forced vibration of the beam for different damping. and
12. To find frequency of beam at different damping.

Department of Physics

Vision:

To impart quality education and focus on interdisciplinary research in Physics and Nanotechnology to meet the global standards.

Mission:

1. To develop state of art educational and research environment for students.

2. To educate undergraduate students about principles & applications of Physics in Engineering.

3. Excel in scientific R & D and consultancy.

The Department of Physics is established in June 2019. Earlier it was the part of Department of Sciences and Humanities. Department offers core and elective courses in Physics for undergraduate B.Tech. programme of the Institute. Our courses are created in such a way that they are interdisciplinary in nature and can be chosen from any department within NIT UK, so one can tailor their degree to their interests. In addition, the department offers Ph.D. programme in Physics. Doctoral research is carried out in all major areas of Physical sciences. Major thrust areas are Condensed Matter Physics, Optics and Theoretical Physics. The Department has a dedicated team of distinguished faculty and staff members, trained at renowned Institutes in India and abroad. The Department offers a vibrant atmosphere to students and faculty to nurture the spirit of scientific inquiry and to pursue cutting-edge research in a highly encouraging environment.

Faculty Profiles

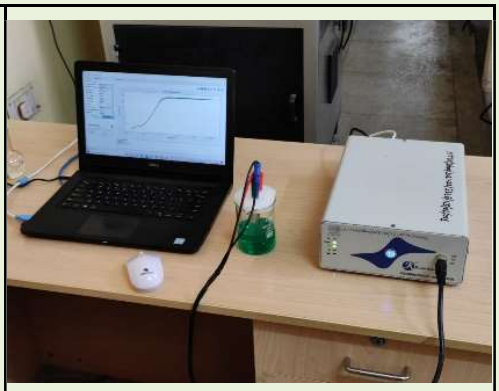
Sr. No.	Faculty Profile	Specialization
1.	**DR. MANVENDRA SINGH KHATRI (HEAD)**	Thin films, Nanowires, Multilayers, Composite Materials

2.	**DR. INDRAJIT M. NAGPURE**	Optical, Biomedical, Solar Cell Materials and Devices
3.	**DR. HARDEEP KUMAR**	Magnetism, Thin films, Spintronics, Nanotechnology, Sensors
4.	**DR. JAGRATI SAHARIYA**	X-Ray Scattering, Charge and Magnetic Compton Profile, Ab-Initio Calculations, Density Functional Theory, Solar Cell Materials

Laboratories

Physics laboratory was established in 2010 for 1st year B.Tech courses and are fully functional. Following experimental facilities are available for B.Tech students.

S. No.	List of Major Equipment Available
1	Spray Pyrolysis

2	Electrochemical Workstation	
3	Weighing Balance	
4	Magnetic Stirrer with Hot Plate	

Equipments in Physics Lab

Compact Newton's Ring

Steward Tangent Galvanometer

Plank Constant By LED·

Standard Spectrometer for Determination of Wavelength of Sodium Light

Semiconductor Zener Characteristic Apparatus

Faraday Effect Set-up

CdS Cell

Hall Effect Experiment Kit

Four Probe Experiment Set-up

Platinum Resistance Thermometer

Copper Constant Thermocouple

Sonometer

Solar Cell Experimental Kit

Optical Fiber Kit

Dielectric constant Kit

PN Junction Kit

List of Experiments

1. To study the I-V characteristics of a PN junction diode

2. Determination of Planck's constant using LED

3. To study the Hall Effect and to determine

    (i) Hall voltage VH

    (ii) Hall coefficient

    (iii) Charge carrier density

4. To standardize the grating and to determine the wavelength of sodium light by normal incidence method

5. To determine the resistivity and band gap of a semiconductor using four probe method

6. To determine the wavelength of sodium using Newton's ring

7. To determine the reduction factor of the given tangent galvanometer (K) and to find out the horizontal component of earth's magnetic field (Bh).

8. To determine the frequency of alternating current using a sonometer

9. To determine the wavelength of He-Ne laser using diffraction grating

10. To determine the rotation of polarization plane (ϕ) as a function of the magnetic field

11. To find the numerical aperture of a given optic fibre and hence to find its acceptance angle

12. To determine the dielectric constant of a given material

Department of Chemistry

Vision:

To build an interdisciplinary education and research platform of global standard in the field of sciences and humanities to achieve the comprehensive development of society and nation.

Mission:

1. To facilitate fundamental understanding of basic sciences and ignite young minds to deliberate upon critical matters of inquiry in sciences through an interdisciplinary state-of-art facility.

2. To ease and foster the learning process of the students through soft-skills to hone their professional skills and to let them achieve growth with value-based orientation.

3. To promulgate various ideologies and conceptions of society and industry to further contribute towards the sustainable development of these entities.

4. Conduct interdisciplinary research for their possible application addressing science and technology programmes and potential societal problems of the nation.

5. To constitute a system and culture capable of achieving holistic development of students and researchers by strengthening interdisciplinary learning.

Department of Chemistry was established in the year 2019 and erstwhile it was an integral part of Department of Science & Humanities since 2010. Department is teaching Applied Chemistry course and Applied Chemistry Lab Course for B. Tech 1st year (first and second semester). Courses. Faculty from the department are also teaching Engineering Chemistry and Quantum Chemistry courses to other than 1st year B. Tech. Department also offers various open elective courses for PhD course work. The main goal of offering these courses is to develop requisite proficiency and abilities to meet the challenges in engineering field to succeed in engineering career.

Department comprises well-equipped Chemistry Laboratory along with state-of-the-art research laboratory. Currently ten PhD students are working in the department whereas one PhD student has been awarded with PhD degree.

FACULTY:

Sr. No.	Faculty Profile	Specialization
1	**DR. RAMPHAL PANDEY (HEAD)**	Inorganic & Supramolecular Chemistry and Catalysis

2	**DR. SAROJ RANJAN DE**	Organic Synthesis & Catalysis
3	**DR. RAKESH KUMAR MISHRA**	Organic Chemistry & Responsive Materials
4	**DR. PANKAJ KANDWAL**	Membrane Science & Theoretical Calculations
5	**DR. KAMAL KANT TIWARI**	Inorganic Chemistry & Ground water Research

Patents:

1. **Rampal Pandey**, Neha Thakur, Mrituanjay D. Pandey, $Co(NO_3)_2$ Autocatalyzed Decarboxylation of Itaconic Acid Leads to the Formation of Methacrylic Acid and Co(II)-MOFs: Fluorescent Co(II)-MOFs Detect Hg^{2+}, Fe^{3+} and Cu^{2+} Ions, ***Indian Patent***, **2021** (**Granted**, Patent. No. 355202; Appl. No. 201811018132).

2. A. Ajayaghosh, A. Mal, **Rakesh K. Mishra**, D. B. S. Kumar, J. Jacob, S. Shankar "A Process for Carbon Dioxide Adsorption Induced Switchable Antibacterial Activity of a Smart Covalent Organic Framework". Indian Patent Application No. 202211000696, 2022 (Filed on 6th January, 2022).

3. R. Kumar, P. S. Behra, D. Tripathi, and **Rakesh K. Mishra**, "Portable Stair Climbing Mechanism For The Conventional Trolley", Indian Patent Application No. 202111055446, 2021 (Published on 10th December, 2021).

Laboratories:

1. **B. Tech Applied Chemistry Laboratory:**

(a) Conductometer

Experiment

- To find the strength of hydrochloric acid solution by titrating it against sodium hydroxide solution conductometrcally

(b) pH-meter

Experiment

- To determine the dissociation constant of acetic acid using pH meter.

(c) Titration Set-up

Experiments

1. To determine the hardness do the given hard water sample by EDTA method
2. To determine the rate constant of hydrolysis of ethyl acetate catalyzed by HCl
3. To determine of dissolved oxygen (D.O.) in the given sample of water
4. To determine the strength of given solution of ferrous ammonium sulphate (Mohr's salt) by titrating it against potassium dichromate Solution

(d) Synthesis

Experiment

- To Estimate the nickel content in the given sample using Dimethylglyoxime (DMG).

2. PhD Research Laboratory:

(a) Schleck line reaction setup

Experiments/Uses

1. To perform diverse reactions for safely and successfully manipulating moisture- and air-sensitive compounds.
2. To remove the last traces of solvent from a sample.

(b) Synthesis of Inorganic Compounds

Experiments

1. To perform various reactions to synthesize new ligands, workup and purification.
2. To execute the synthesis of diverse metal-complexes, sensor molecules, soft materials, covalent organic frameworks and metal-organic frameworks, their workup, purification and crystallization.

(c) Synthesis of Organic Compounds

Experiments

1. To make various reactions for preparing new organic molecules followed by workup and purification.
2. To perform the reactions for developing new catalysts suitable for enhancing the yield of organic products.

List of Major Equipment for PhD research

1. NMR Spectrometer

- NMR is used for analysis of organic compounds and diamagnetic inorganic metal complexes

2. Fume-Hood

- Fume-Hood is a reaction chamber employed for performing various dangerous reactions.

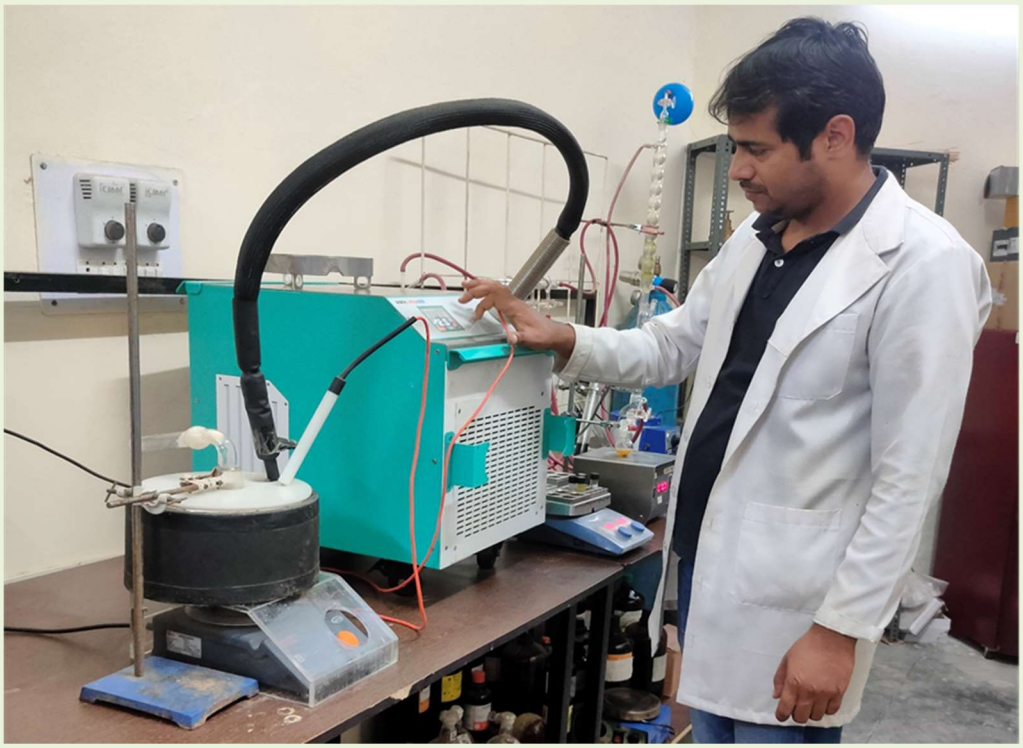
3. Rotary Evaporator.

- Rotary Evaporator is used for vacuum evaporation/drying of solvents/chemicals.

4. Schlenk line reaction setup

- It is used for performing various reactions for handling moisture- and air-sensitive compounds.

5. **Chiller.**



- Chiller set-up is created to perform various low temperature reactions which may be explosive at high temperature.

6. **Weighing Balance.**

- These balances are used for weighing of compounds with 0.0001 gm accuracy.

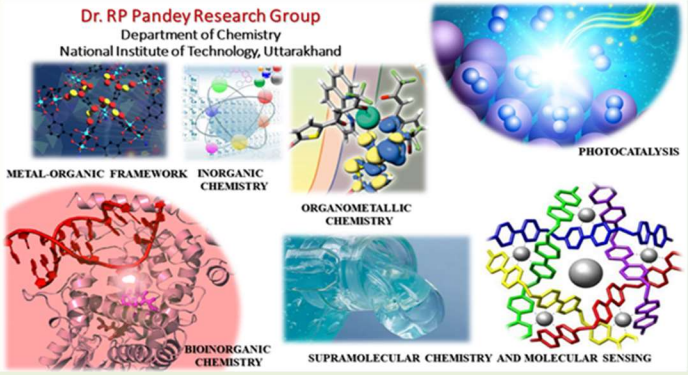
7. **Gaussian 16 & GaussView 6.**

These software are used for theoretical calculations of inorganic and organic compounds.

8. **UV-Chamber**

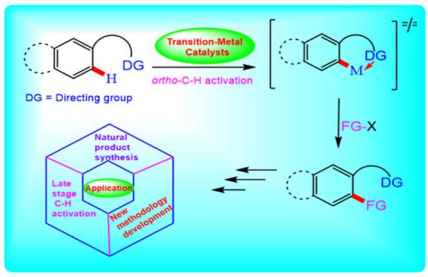
- It is useful for irradiation of samples, monitoring TLC and observing fluorescent compounds both in the solid and solution state.

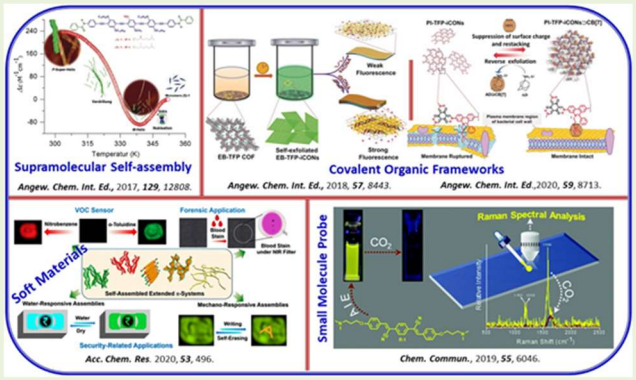
RESEARCH GROUP INFORMATION

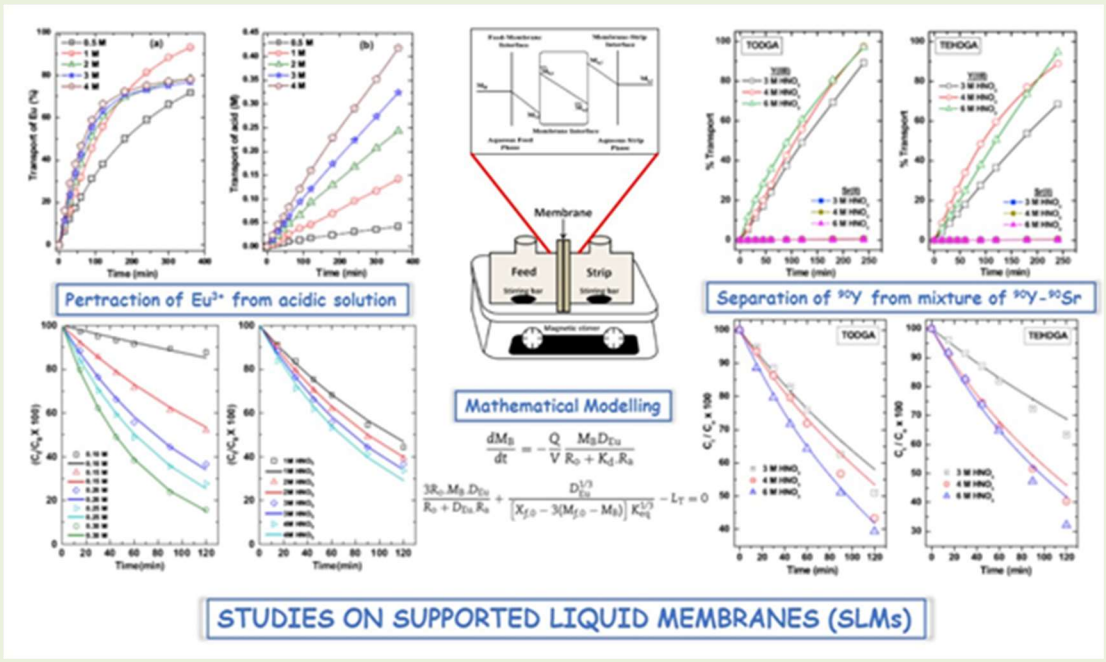


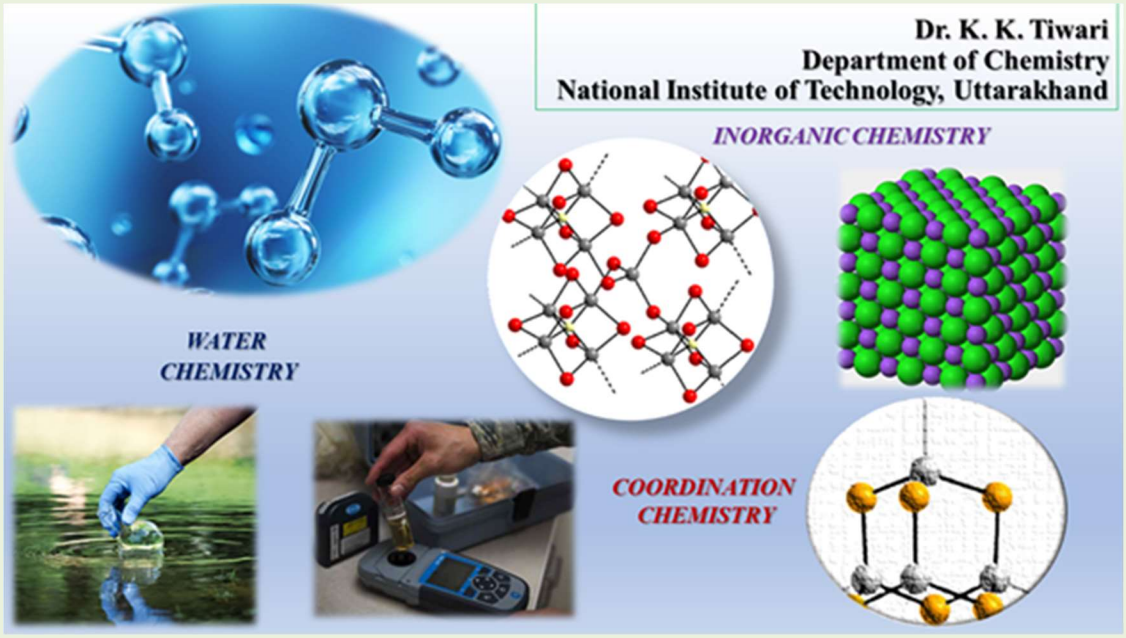
S. R. De Research group

- Total Synthesis of Bioactive Natural products.
- Development of New Methodology Reactions.
- Transition-Metal-Catalysed *ortho*-C-H bond Functionalization reactions of Arenes.









Department of Mathematics

With persistent commitment towards quality education, the Department of Mathematics came into existence in June 2019. Earlier it was the part of Department of Sciences and Humanities. The department has strength of 05 faculty members including one Associate Professor and four Assistant Professors to cater the needs of the Under-Graduate and Post-Graduate programs in the Institute. The department offers core as well as elective courses for B. Tech, M. Tech. and PhD programs of the Institute. The department offers Ph.D. program focusing on contemporary areas of fundamental importance and also involved in conducting workshops, seminars, expert lectures etc. to give extra edge to professional growth of students from time to time. As far now, two students have been successfully awarded with PhD degree in Mathematics and total 10 no. of students are currently pursuing their PhD degree in the department.

The Faculty members have published more than 100 research papers in various reputed national and international journals and presented many papers in international conferences. They are regularly invited for delivering guest lectures and invited lectures at many institutes.

Dr. D. Tripathi recognized by various journals of Elsevier, Springer, AIP, etc. as Guest Editor & Reviewers. He was listed as top 2% Indian researchers/scientist (World rank 375 & Indian Rank 6) as per Updated science-wide author databases of standardized citation indicators in field of Mechanical Engineering and Transport published on October 16, 2020. (https://journals.plos.org/plosbiology/article/authors?id=10.1371/journal.pbio.3000918).

Area of specialization of the faculty includes Mathematical Biology, Molecular Dynamics, Biofluid–Mechanics, Mathematical Modelling, CFD, Pumping Flow, Bone Mechanics, Microfluidics, Nanofluids, Non-Newtonian fluids, Computational Mechanics, Numerical Methods, Nonlinear Wave propagation, Gas-dynamics, Approximation Theory and Summability Theory.

Vision:

To be among one of the best Mathematics Department across the globe by application oriented teaching and research in Mathematics.

Mission:

1. Offering undergraduate and postgraduate integrated programs in multi-disciplinary / inter disciplinary and emerging areas of Mathematics.
2. Developing the world class infrastructure for the teaching and research environment for the students in the area of interdisciplinary Mathematics.
3. Escalating the interest of students in the discipline of Mathematics for applying it in complex engineering and scientific problems for the development of the nation.

Faculty Profile

S. No.	Faculty Name	Specialization
1.	**DR. KULDEEP SHARMA (HEAD)**	• Computational Mechanics • Numerical Methods & Analysis • Finite Element Method • Extended Finite Element Method • Computational Mechanics in Smart Materials
2.	**DR. DHARMENDRA TRIPATHI**	• Bio-fluid Mechanics • Peristaltic Transport • Microfluidics and Nano fluidics • Non-Newtonian Fluids • Nano-fluids
3.	**DR. D. B. SINGH**	• Nonlinear Waves • Quasi-linear hyperbolic systems of PDEs • Shock Waves and Riemann Problems • Computational Fluid Mechanics
4.	**DR. NITIN SHARMA**	• Mathematical Modelling • Mathematical Biology • Population Dynamics • Epidemiology • Infectious Diseases
5.	**DR. KUSUM SHARMA**	• Mathematical Analysis • Operator Theory • Fourier Analysis • Harmonic Analysis

Equipment available in the Department of Mathematics

Equipment	Specifications
Workstation-1	Processor-Intel(R) Xeon(R), CPU E5-2650 v4@2.20GHz, Dual Processor (12 Cores), RAM-8GB
Workstation-2	Intel(R) Xeon (R), W-2245 CPU@3.90GHz, 8 Cores, 16 Logical Processor, RAM-32GB

Department of Humanities and Social Sciences

With a persistent commitment towards value oriented education, the Department of Humanities and Social Sciences came into existence in June 2019. Striving to reach the higher goals of global standards as a part of department of Sciences and Humanities since 2010, the department facilitates multifarious and valued added learning to B. Tech, M. Tech. and PhD students. Catering to the academic and extra-curricular needs of the students, the department offers various courses in Communication English, Social Sciences, Literature and Cinema, Screenwriting and Creative Writing which strengthen the professional and personal growth of students. The department strives to create learning environment that is inclusive and diverse and promotes better learning experience and outcome. The department conducts workshops, seminars, conferences to give extra edge to professional growth of students from time to time. It also organizes expert lectures inviting eminent experts from IITs, NITs and Central Universities.

Vision:

To build an interdisciplinary education and research platform of global standard in the field of sciences and humanities to achieve the comprehensive development of society and nation.

Mission:

- To facilitate fundamental understanding of basic sciences and ignite young minds to deliberate upon critical matters of inquiry in sciences through an interdisciplinary state-of-art facility.
- To ease and foster the learning process of the students through soft-skills to hone their professional skills and to let them achieve growth with value-based orientation.
- To promulgate various ideologies and conceptions of society and industry to further contribute towards the sustainable development of these entities.
- Conduct interdisciplinary research for their possible application addressing science and technology programmes and potential societal problems of the nation.
- To constitute a system and culture capable of achieving holistic development of students and researchers by strengthening interdisciplinary learning.

Faculty Profile

S.No.	Name	Specialization
1.	**DR. RENU BHADOLA DANGWAL (HEAD)**	Postcolonial Studies, Environmental Studies, Cultural Studies, Children's Literature, Indian English Writing, ELT & Communication
2.	**DR AJAY KUMAR CHAUBEY**	Diaspora Studies, Popular Culture, Travel Writing, Translation Studies, Indian English Writing, ELT & Communication

Communication Skills Laboratory

The department has well equipped Communication Skill Laboratory. It is a platform which offers an assortment of tools to sharpen basic LSRW skills of students. It caters to students' unique needs by which each student feels confident, secure and appropriately challenged. The lab is furnished with 30 computers and audio-visual technical tools. Facilitators locate and incorporate a variety of resources to accommodate students via audio-visual, tactile and kinesthetic methods. The English language communication skills laboratory course is a great booster for the students. Some important features of laboratory are:

- Fully interactive lab with teacher to learner, learner to teacher and learner to learner interactions.
- It helps students to learn pronunciation, stress accent, intonation, rhythm, and all other nuances of the phonetics of English language.
- The learners have freedom to record and playback their own voice recordings, assess them and store it and then re-play it whenever needed. They can perform personal assessments
- Introduction of earphone/headphone/microphone provides a student his/her privacy that creates a better environment for their speaking practice with-out hesitation.
- The students can also do a periodical self-evaluation to measure the progress as well as evaluate his/her language with that of the expert

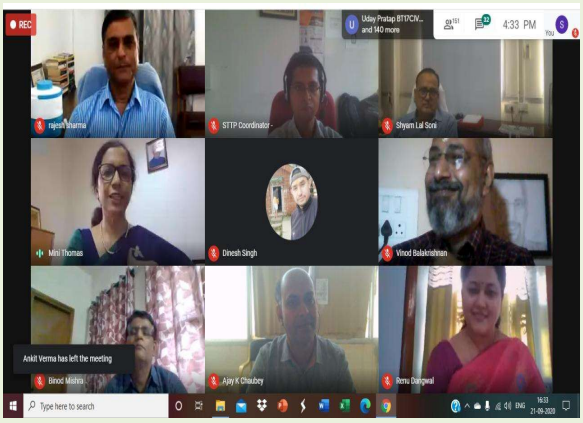
List of Experiments/Exercises:

1. Listening Skills Activity- To help students acquire necessary listening skills in order to follow and comprehend discourse such as lectures, conversations, interviews, and discussions.
2. Reading Comprehension- To acquaint the students with reading comprehension strategies and skills that facilitate their understanding and analysing of written texts effectively and easily.
3. Basics of Grammar (Applied grammar usage)- To develop the basic knowledge of parts of speech and help student's develop technical efficiency in English language communication.
4. Image/Content Interpretation- To improve the critical assessment ability of the students through the process of examining images and written content.
5. Story Writing-To assess students' imagination through collaborative writing and to develop writing skills as well as the ability to identify and use narrative tenses when writing.
6. Writing Job Application, Cover Letter and Resume- To help students draft impressive cover letters and Resume, aligning with the job position and organization.

7. Public Speaking & Presentation Skills (PPT/Oral) - To help students deliver effective presentations through PPTs in order to prepare them for placement and job interviews.
8. Group Discussion Activity- To evolve students' thinking ability through the process of discussions and help them gain clarity of their own thoughts, views and opinion and to prepare them for placement interviews where soft skills are evaluated.
9. Interview Skills- To help students deliver effective interviews guided by tips on body language and soft skills.
10. Articulatory Phonetics (Consonant Sound Identification/ Vowel Sound Identification/ IPA) - To help students identify the places of articulation in human speech producing system and to improve their pronunciation by identifying the correct consonant sound and manner of its articulation; to help students read the correct phonetic spelling for any word, in order to improve English pronunciation.
11. Intonation and Stress- To help students improve their speaking skills through proper usage of stress and intonation.

Lab Equipment:

30 computer systems equipped with headphones.



Training and Placement Cell

No. of Students placed in different companies.

B.Tech. 2016-20 Batch					
S. No.	**Branch Name**	**Total No. of Students**	**Total Students Eligible for Placement**	**Total Students Placed**	**Placement %**
1	Computer Science & Engg.	52	52	46	88.46
2	Civil Engg.	12	12	5	41.66
3	Electronics Engg.	26	25	20	80.00
4	Electrical Engg.	24	24	17	70.83
5	Mechanical Engg.	25	25	15	60.00
Total		**139**	**138**	**103**	**74.64**

B.Tech. 2017-21 Batch					
S. No.	**Branch Name**	**Total No. of Students**	**Total Students Eligible for Placement**	**Total Students Placed**	**Placement %**
1	Computer Science & Engg.	57	52	45	86.54
2	Civil Engg.	37	37	4	10.81
3	Electronics Engg.	55	50	32	64.00
4	Electrical Engg.	39	37	15	40.54
5	Mechanical Engg.	46	44	15	34.09
Total		**234**	**220**	**111**	**50.45**

B.Tech. 2018-22 Batch					
S. No.	**Branch Name**	**Total No. of Students**	**Total Students Eligible for Placement**	**Total Students Placed**	**Placement %**
1	Computer Science & Engg.	28	28	25	89
2	Civil Engg.	18	18	06	33
3	Electronics Engg.	29	28	22	79
4	Electrical Engg.	27	27	14	52
5	Mechanical Engg.	26	26	18	69
Total		**128**	**127**	**85**	**67**

Congratulations

Student of B.Tech (CSE) Passing out Batch 2019 from getting placed at "SAMSUNG R&D" with a package of 10.05 Lacs.

S. No	Name	Roll No	Company Name	Package
1	Ruchin Raja	BT15CSE051	Samsung R&D	10.5
2	Deepak Kumar Vishwakarma	BT15CSE059	Samsung R&D	10.5
3	Ram Chandra Singh	BT15CSE049	Samsung R&D	10.5
4	Manu Gupta	BT15CSE006	Samsung R&D	10.5
5	Mayank Gupta	BT15CSE005	Samsung R&D	10.5
6	Prakhar Gupta	BT15CSE057	Samsung R&D	10.5
7	Aditya Patwal	BT15CSE054	Samsung R&D	10.5

Congratulations

Student of B.Tech (CSE& ECE) Passing out Batch 2020 from getting placed at "DE Shaw Corporation, Google, CVENT, WHEELSEYE & SAMSUNG"

S. No	Name	Roll No	Company Name	Package
1	Abhishek singh	BT16CSE041	DE Shaw Corporation	37 LPA
2	Rahul goswami	BT16CSE053	GOOGLE	30 LPA
3	Prachi pandey	BT16CSE015	CVENT	15 LPA
4	Arvind negi	BT16CSE052	CVENT	15 LPA
5	Pankaj pundir	BT16CSE009	WHEELSEYE	13 LPA
6	Ravi Singh Patel	BT16CSE007	SAMSUNG	12 LPA
7	Ishani Dabral	BT16CSE044	SAMSUNG	12 LPA
8	Mayank Upadhyay	BT16ECE025	SAMSUNG	12 LPA
9	Deepak Singh	BT16CSE006	SAMSUNG	12 LPA
10	Ayush Jaiswal	BT16CSE056	SAMSUNG	12 LPA
11	Nupur Munda	BT16CSE011	Advance research voice labs	10 LPA

Congratulations

Student of B.Tech (CSE,ECE) Passing out Batch 2021 from getting placed at “Low’s India”, “Cvent”, “ZS Associates”, “Publicis Sapient”, “Uniacco”with a following packages.

S. No.	Name	Roll No	Company Name	Package
1	Satyam Kumar	BT17CSE014	Low,s India	19
2	Shivam Singla	BT17CSE036	Low,s India	19
3	Devbrat Anand	BT17CSE048	Cvent	10.5
4	Vinay Unal	BT17ECE022	ZS Assocites	9
5	Saurabh Rawat	BT17ECE024	ZS Assocites	9
6	Shagun Sharma	BT17ECE035	ZS Assocites	9
7	ANIMESH SHARMA	BT17ECE036	ZS Assocites	9
8	Vaibhav Tiwari	BT17ECE043	ZS Assocites	9
9	Shubham Chaudhary	BT17ECE059	Publicis Sapient	9
10	Sumitesh Naithani	BT17ECE062	Publicis Sapient	9
11	Sachin Choudhary	BT17ECE041	Uniacco	9

Congratulations

Student of B.Tech (CSE) Passing out Batch 2022 from getting placed at “Adobe & Atlassian”, “CVENT”, “Unicommerce”, “People Strong” with a package of 36.00 & 26 Lacs.

S. No.	Name	Roll No	Company Name	Package
1	Saumya Agarwal	BT18CSE017	Adobe	36
2	Anurag Sisodiya	BT18CSE022	Atlassian	26
3	Shanmukeswara rao Nalla	BT18CSE014	CVENT	14
4	Meenu Yadav	BT18CSE021	CVENT	14
5	Utkarsh Saxena	BT18ECE023	Unicommerce	12
6	Himanshu Pandey	BT18CSE020	People Strong	12
7	Esha Sachan	BT18CSE012	People Strong	12
8	Peddi Varun Kumar	BT18CSE031	People Strong	12
9	Kanha Khatri	BT18CSE025	People Strong	12
10	Sachin Singh	BT18EEE020	People Strong	12

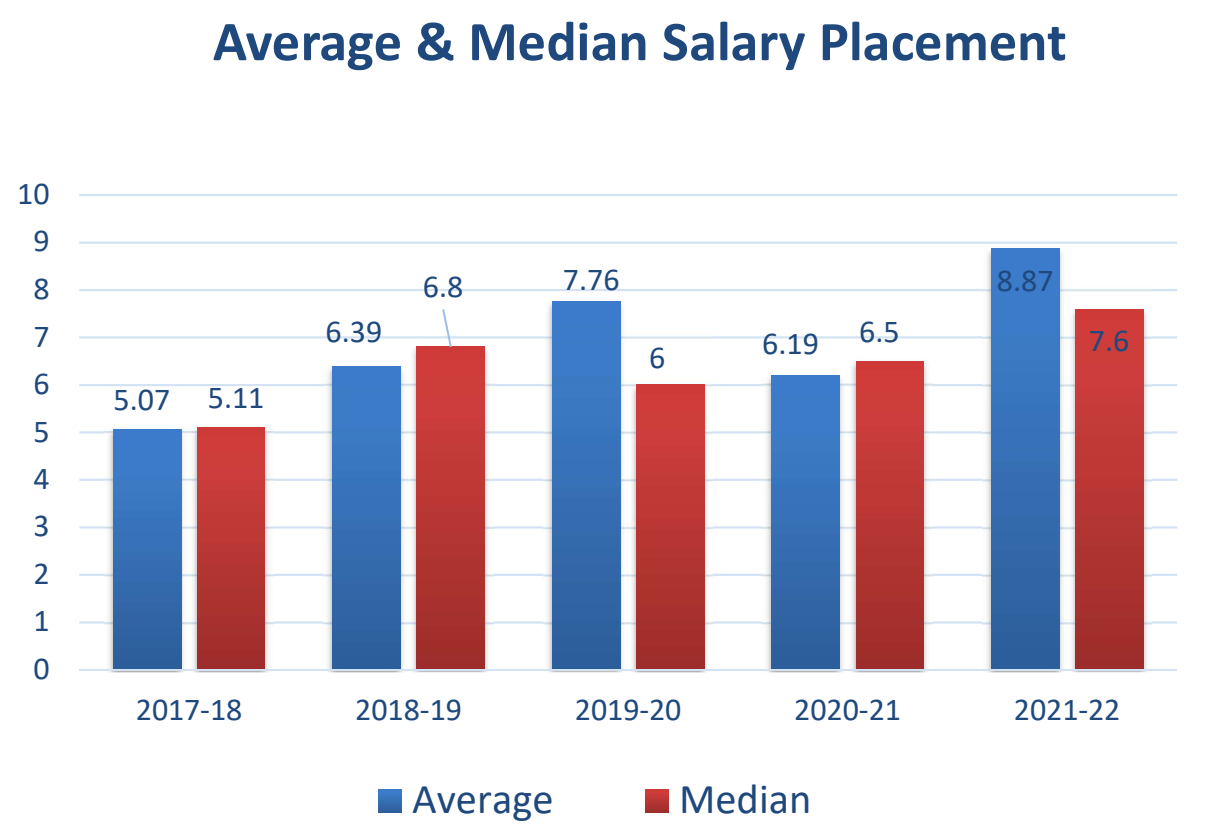
Congratulations

Abhishek Singh BT16CSE041 Student of B.Tech (CSE) Passing out Batch 2020 from getting placed at "DE Shaw Corporation" with a package of 37.00 Lacs.

Satyam Kumar BT17CSE014 Student of B.Tech (CSE) Passing out Batch 2021 from getting placed at "Lowe's India" with a package of 19.00 Lacs.

Shivam Singla BT17CSE036 Student of B.Tech (CSE) Passing out Batch 2021 from getting placed at "Lowe's India" with a package of 19.00 Lacs.

Saumya Agarwal BT18CSE017 Student of B.Tech (CSE) Passing out Batch 2022from getting placed at "Adobe" with a package of 34.00 Lacs



Internship Offers 2016-20

Sr. No	Name	Roll	Branch	Company Name	Stipend (In Rs.)
1	Sneha Chauhan	BT16CSE016	CSE	Sencedo Technologies Pvt. Ltd	10,000/-
2	Divya Jagid	BT16CSE033	CSE	Quillhash Technologies	10,000/-
3	Mr. Abhishek Singh	BT16CSE041	CSE	BNY Mellon Technology Pvt. Ltd.	30,000/-
4	Sushil Kumar	BT16CSE025	CSE	Newgen Payment Gateway Pvt. Ltd.	16,000/-
5	Prakhar Mittal	BT16CSE023	CSE	BNY Mellon Technology Pvt. Ltd.	30,000/-
6	Ravi Singh Patel	BT16CSE007	CSE	Shipsy	30,000/-
7	Abhishek Kumar Gupta	BT16CSE023	CSE	Loyalty Juggernaut Inc	15,000/-
8	Sandeep Sharma	BT16CSE017	CSE	Allincall Research and Solutions Pvt. Ltd.	15000/-
9	Prachi Pandey	BT16CSE015	CSE	Allincall Research and Solutions Pvt. Ltd.	17000/-
10	Aniket Gupta	BT16ECE021	ECE	Karlsruhe Institute of Technology	NA
11	Sohan Kathait	BT16CSE061	CSE	Koverhoop Technologies India Pvt. Ltd.	25000/-
12	Deepak Singh	BT16CSE006	CSE	LLAMA Logisol Pvt. Ltd	30000/-
13	Ashish Duklan	BT16CSE019	CSE	LLAMA Logisol Pvt. Ltd	30000/-

14	Arvind Negi	BT16CSE052	CSE	LLAMA Logisol Pvt. Ltd	30000/-
15	Nupur Munda	BT16CSE011	CSE	LLAMA Logisol Pvt. Ltd	30000/-
16	Supriya Bugalia	BT16CSE043	CSE	LLAMA Logisol Pvt. Ltd	30000/-
17	Rahul Goswami	BT16CSE053	CSE	LLAMA Logisol Pvt. Ltd	30000/-
18	Kunal Rai	Bt16CSE058	CSE	Max Life Insurance	15000/-
19	Ishani Dabral	BT16CSE044	CSE	Max Life Insurance	15000/-
20	Ajay Kandpal	BT16CSE022	CSE	Max Life Insurance	15000/-
21	Shreya Kumari	BT16CSE051	CSE	Max Life Insurance	15000/-
22	Priyanshi singhal	BT16ECE019	ECE	Mentor Graphics	30000/-
23	Manjulata Upadhyay	BT16CSE060	CSE	Mentor Graphics	30000/-
24	Amit Kishor Raturi	BT16CSE057	CSE	Parkwheeis	40000/-
25	Barkha Maheshwari	BT16CSE049	CSE	Trendydice Designtech Pvt. Ltd.	NA

Internship Offers 2017-21

Sr. No.	Name	Roll	Branch	Company Name	Stipend (In Rs)
1	Satyam Kumar	BT17CSE014	CSE	Dunzo	40000(WFH), 75000(in office)
2	Harshita Choudhary	BT17CSE030	CSE	BNY Mellon	30000+30000 HRA
3	Jyoti Kumari Jangid	BT17CSE046	CSE	Elocity Technologies	25000/-
4	Alok Singh Narvariya	BT17CSE059	CSE	ITH Technologies	22000/-
5	Chirag Rawat	BT17CSE061	CSE	Unicommerce	20000/-
6	Krishankant Mani	BT17ECE040	ECE	Vantage System	37500/-
7	Sathyam Rajpal	BT17ECE053	ECE	Unicommerce	20000/-
8	Pankaj Singh	BT17CSE041	CSE	Loyalty Jaggernaut	15000/-
9	Neha Hasija	BT17ECE011	ECE	Cataleya Pvt. Ltd.	15000/-
10	Neel Ratn	BT17ECE032	ECE	Webasko Web Service	3000/-
11	Ayush Vatsal	BT17ECE057	ECE	Golcha Group	10000/-
12	Shubham Aswal	BT17CSE012	CSE	Golcha Group	12000/-
13	Tarun Kumar	BT17ECE051	ECE	Bonami Software Pvt. Ltd.	15000/-
14	Anmol Goyal	BT17CSE028	CSE	Loyalty Juggernaut	15000/-

Internship Offers 2018-2022

Sr. No.	Name	Roll No.	Branch	Company Name	Stipend (In Rs.) Per Month
1.	Vedant Mamgain	BT18ECE030	Electronics Engineering	Nirvana Insurance San Fransico, Calfornia	2,62,575/-
2.	Saumya Agarwal	BT18CSE017	Computer Science & Engineering	Shipsy, Plot 149, Anu Tower, Sector-44, Gurgaon, Haryana	40,000/-
3.	Esha Sachan	BT18CSE012	Computer Science & Engineering	People Strong Technologies Pvt. Ltd., Gurgaon, Haryana	55,000/-
4.	Himanshu Pandey	BT18CSE020	Computer Science & Engineering	People Strong Technologies Pvt. Ltd., Gurgaon, Haryana	55,000/-
5.	Gajendar	BT18CSE011	Computer Science & Engineering	Unicommerce eSolutions pvt. Limited, Gurgaon, Haryana	20,000/
6.	Medha	BT18MEC014	Mechanical Engineering	Shipsy, Plot 149, Anu Tower, Sector-44, Gurgaon, Haryana	40,000/-
7.	Nalla Shanmukeshwara Rao	BT18CSE014	Computer Science & Engineering	Cvent Pvt. Limited, Gurugram, Haryana	40,000/-
8.	Abhishek Maletha	BT18ECE020	Electronics Engineering	OPTYM India Private Limited, Bangalore	50,000/-
9.	Utkarsh Bhandari	BT18CSE006	Computer Science & Engineering	Samsung SDS India Pvt. Ltd. DLF Cybercity, Gurgaon,Haryana	30,000/-
10.	Anchal Singh	BT18ECE019	Electronics Engineering	Samsung SDS India Pvt. Ltd. DLF Cybercity, Gurgaon,Haryana	30,000/-
11.	Anshul Kumar	BT18CSE008	Computer Science & Engineering	ITH Technologies, Kanpur, Uttar Pradesh	25,000/-
12.	Utkarsh Saxena	BT18ECE023	Electronics Engineering	Unicommerce eSolutions pvt. Limited, Gurgaon, Haryana	30,000/-
13.	Ashish Dyani	BT18ECE005	Electronics Engineering	Samsung Data Systems India Pvt. Ltd. Gurugram, Haryana	30,000/-
14.	Sunil	BT18ECE028	Electronics Engineering	ITH Technologies, Kanpur, Uttar Pradesh	25,000/-
15.	Pooja Daga	BT18CSE030	Computer Science & Engineering	Samsung SDS India Pvt. Ltd. DLF Cybercity, Gurgaon,Haryana	30,000/-
16.	Akhilesh Yadav	BT18CSE015	Computer Science & Engineering	Samsung SDS India Pvt. Ltd. DLF Cybercity, Gurgaon,Haryana	30,000/-
17.	Bharat Goyal	BT18CSE029	Computer Science & Engineering	Samsung SDS India Pvt. Ltd. DLF Cybercity, Gurgaon,Haryana	30,000/-
18.	Meenu Yadav	BT18CSE021	Computer Science & Engineering	Cvent Pvt. Limited, Gurugram, Haryana	40,000/-

19.	Abhishek Mehra	BT18ECE014	Electronics Engineering	Unicommerce eSolutions Pvt. Limited, Gurgaon, Haryana	30,000/-
20.	Chintoo Kumar	BT18CSE005	Computer Science & Engineering	Samsung SDS India Pvt. Ltd. DLF Cybercity, Gurgaon,Haryana	30,000/-
21.	Mayank Bhati	BT18EEE010	Electrical Engineering	Oracle Solution Services (India) Pvt. Ltd.	50,000/-
22.	Aradhya Purohit	BT18MEC001	Mechanical Engineering	Tiger Analytics India Consulting Pvt. Ltd. Chennai	30,000/-
23.	Himanshu Bohra	BT18MEC008	Mechanical Engineering	Envosys Evolutionary System Pvt. Ltd.	10,000/-
24.	Aditya Roda	BT18MEC022	Mechanical Engineering	Infoedge India Ltd.	**Offer Letter Pending**
25.	Akanksha Saini	BT18ECE002	Electronics Engineering	ZS Associates	**Offer Letter Pending**
26.	Shivansh Giri	BT18EEE003	Electrical Engineering	Unicommerce eSolutions Pvt. Limited, Gurgaon, Haryana	20,000/-
27.	Puneet Chhabra	BT18ECE018	Electronics Engineering	Samsung Data Systems India Pvt. Ltd. Gurugram, Haryana	30,000/-
28.	Vishnu Priy Agnihotri	BT18CSE018	Computer Science & Engineering	ZS Associates, Gurugram	35,000/-
29.	Ujjwal Khanduri	BT18CSE007	Computer Science & Engineering	Samsung R&D Institute, Noida	**Offer Letter Pending**
30.	Ujjwal Rawat	BT18CSE027	Computer Science & Engineering	Samsung SDS India Pvt. Ltd., Gurgaon	30,000/-
31.	Anil Singh	BT18CSE024	Computer Science & Engineering	Tiger Analytics India Consulting Pvt. Ltd. ,Chennai	30,000/-
32.	Ankit Agarwal	BT18EEE011	Electrical Engineering	Cogo. Freight Pvt. Ltd., Mumbai	40,000/-
33.	Akshobhya Pal	BT18CSE023	Computer Science & Engineering	Optym India Pvt. Ltd.	50,000/-
34.	Stanzin Eshey	BT18MEC005	Mechanical Engineering	ZS Associates	35,000/-
35.	Pranjul Agarwal	BT18ECE021	Electronics Engineering	AlgoSec India LLP	79,200/-

Research and Consultancy

R&D Project List						
S. No.	**Research Projects**	**PI/Co-PI**	**Govt./Non-Govt Body**	**Amount (Rs)**	**Year**	**Status**
01	Synthesis and development of polymeric compounds (phenylated quinolone based) for OLED (Organic light emitting devices) applications	Dr. I. M. Nagpure	DST-SERB, New Delhi	22,49,600.00	2015-2018	Completed
02	Regioselective synthesis of fused polyaryl compounds via nucleophilic addition to borylbenzenes: application to the synthesis of topopyrone C & D	Dr. Saroj Ranjan De	DST-SERB, New Delhi	18,60,000.00	2015-2018	Completed
03	Synthetic Structural and optical aspects of Photoactive MOFs	Dr. Rampal Pandey	DST, New Delhi	14,29,095.00	2013-2019	Completed
04	Special Man Power Development Programme Chip to System Design (SMDP–C2SD)	Dr. Pankaj Kumar Pal	Department of Electronics and Information Technolo	77,90,000.00	2015	Completed

			gy (DeitY)			
05	Development and Analysis of Cancelable Biometric Template Generation for Person Identification	Dr. Nitin Kumar	UCOST, Uttarakhand	02,09,000.00	2018	Completed
06	Design and Innovation Centre (DIC)	Dr. Pawan K. Rakesh	MHRD, Govt. of India	82,00,000.00	2018	Ongoing
07	Secret Sharing Scheme Based Technology for Multimedia Security Over Cloud	Dr. Krishna Kumar	DST, New Delhi	40,00,000.00	2019	Ongoing
08	Solar Pump Irrigation Based On PV Cell Technology	Dr. Vinod Singh Yadav (Co-PI)	CRS-MHRD scheme	9,67,000.00	2019	Ongoing
09	Hybrid Solar Air Heater Used For Commercial Purpose	Dr. Vinod Singh Yadav (Co-PI)	CRS-MHRD scheme	12,61,000.00	2019	Ongoing
10	Development of solar powered thermoelectric cooler using desiccant dehumidification	Dr. Yogesh Kumar Prajapati (Co-PI)	CRS-MHRD scheme	9,71,000.00	2019	Ongoing
11	Analysing Online Reviews of Universities and	Dr. Nitin Kumar (Co-PI)	TEQIP-III, UTU,	2,00,000.00	2019	Ongoing

	Colleges using Machine Learning		Dehradun			
12	Fault Tolerant Control Scheme for PWM Inverter Fed Induction Motor Based Electric Vehicle	Dr. Saurav Bose (Co-PI)	TEQIP-III, UTU, Dehradun	3,00,000.00	2019	Ongoing
13	Open Circuit Fault Tolerant Operation of Five Phase Induction Motor Drive Used in Electric Vehicle	Dr. Saurav Bose (Co-PI)	TEQIP-III, UTU, Dehradun	2,00,000.00	2019	Ongoing
14	Solar powered robust E-Rickshaw control with bidirectional DC-DC Converter using regenerative cycle boosts charging	Dr. Prakash Dwiedi & Dr. Saurav Bose	Ministry of Electronics & Information Technology	30,02,000.00	2020	Ongoing
15	Study of FeRh epitaxial films and heterostructures for spintronics applications	Dr Hardeep Kumar	UGC DAE CSR, Indore	7,47,846.00	2020	Ongoing
16	Secret Sharing Scheme based technology for multimedia security over cloud,	Dr. Krishan Kumar	ICPS, DST, GoI,	40,0000.00	2020-2023	Ongoing
17	Development of domestic cooking stove based on biomass	Dr. Niraj Kumar Mishra	SERB, DST under Core	21,13,000.00	2021	Ongoing

	gasification with porous radiant burner		Research Grant Scheme			
18	"DECONET- Development Of Indigenous System For Deciphering Envisioned Speech From EEG Signals Using Optimized Deep Convolutional Neural Network Models",	Dr. Hariharan Muthusamy	Core Research Grant Scheme, SERB, Govt. of India.	28,12,000.00	2021-2024	Ongoing
19	Fabrication and Testing of Lower Limb Prosthesis for Transtibial Amputee using Biocomposites with Energy Restoring Capability	Dr. Pawan Kumar Rakesh (PI) & Dr. Sanat Agarwal (Co-PI),	Indian Institute of Medical Research (ICMR),	27,70,000.00	2022	Ongoing
Total Amount				**4,09,60,135.00**		

Details of Consultancy Project

S. No.	Consultancy Project Given by	Name of Project Investigator	Co-PI	Consultancy Amount	Status	Date of Complete
1	M/s Patanka Construction Pvt. Ltd.	Dr. Aditya Kumar Anupam	-	₹ 32,200.00	Completed	-
2	M/s Hillways Construction Company Pvt. Ltd.	Dr. Aditya Kumar Anupam	-	₹ 4,500.00	Completed	-

3	M/s Vyome Technical Service	Dr. Devesh Punera	-	₹ 47,200.00	Completed	-
4	M/s P K Construction Simla Pvt. Ltd.	Dr. Aditya Kumar Anupam	-	₹ 1,41,600.00	Completed	17.12.18
5	M/s Mittal Construction Unit	Dr. Aditya Kumar Anupam	-	₹ 70,800.00	Completed	08.11.18
6	M/s Welspun Enterprise Limited	Mr. Amardeep	-	₹ 2,00,000.00	Completed	15.03.21
7	Airports Division/RITES Ltd., Plot 144, Sector 44, Gurugram, Haryana-122003	Dr. Aditya Kumar Anupam	-	₹ 1,38,060.00	Completed	22.04.19
8	66 Road Constr Cop (GREF), PIN: 930066, C/o 56 APO	Dr. Aditya Kumar Anupam	-	₹ 23,600.00	Completed	27.03.19
9	RIPL VKJ JV) 32/9 EC Road, Dehradun	Dr. Kranti Jain	-	₹ 70,800.00	Completed	-
10	The Mahatma Gandhi National Rural Employment Guarantee Act 2005 (MGNREGA), Ministry Of Rural Development, Government of India	Dr. Aditya Kumar Anupam	-	₹ 22,90,000.00	(Report submitted)	-
11	Unconfined Compressive Strength with OMC & MDD & Proctor Test	Dr. Aditya Kumar Anupam	-	₹ 27,730.00	Completed	19.08.20
12	M/s Rahee Infratech Limited, Camp Office Lachmoli, Srinagar	Dr. Aditya Kumar Anupam	-	₹ 23,600.00	Completed	-

13	M/s Rahee Infratech Limited, Camp Office Lachmoli, Srinagar	Dr. Aditya Kumar Anupam	-	₹ 36,000.00	Completed	-
14	M.G. Contractor Pvt. Ltd	Dr. Aditya Kumar Anupam	-	3,02,080	Completed	12.03.21
15	M/s Rahee Infratech Limited, Camp Office Lachmoli, Srinagar	Dr. Shashank Bhatra	Dr. Muskan Mayank	₹ 5,900.00	Completed	-
16	M/s Rahee Infratech Limited, Camp Office Lachmoli, Srinagar	Dr. Laiju A.R.	Dr. Muskan Mayank	₹ 44,604.00	Completed [Starting from: 06.01.2021]	06.04.22
17	LNA Infraprojects Private Limited, Vidhya Nagar, Jaipur	Dr. Aditya Kumar Anupam	-	₹ 59,000.00	Completed [Starting date: 17.11.2021]	06.04.22
18	M/s Dharamraj Contracts India Pvt. Ltd.	Dr. Aditya Kumar Anupam	-	₹ 2,41,900.00	Completed	-
19	M/s RCC Developers Limited **[GFC Drawings/ Design]**	PI - Dr. Aditya Kumar Anupam	Dr. Prakash Dwivedi	₹ 2,31,280.00	Completed [Starting date: 09.04.21]	04.03.22
20	PWD Srinagar **[Soil Testing – Liquid Limit, Plastic Limit, C.B. R. Value, Grain Size Distribution]**	Dr. Aditya Kumar Anupam	-	₹ 35,400.00	Under Process [Starting date: 07.06.21]	-
21	PWD Srinagar **[Soil Testing – Liquid Limit, Plastic Limit,**	Dr. Aditya Kumar Anupam	-	₹ 47,200.00	Under Process	-

	C.B. R. Value, Grain Size Distribution]				[Starting date: 07.06.21]	
22	NKG Infrastructure, New Delhi **[Soil Investigation]**	Dr. Aditya Kumar Anupam	Dr. Bibhash Kumar	₹ 1,77,000.00	Completed [Starting date: 07.06.21]	15.11.21
23	RCC Developers limited, Meerut **[Soil Investigation]**	Dr. Aditya Kumar Anupam	Dr. Bibhash Kumar	₹ 47,200.00	Completed [Starting date: 15.06.21]	15.11.21
24	Hillways Construction Company Pvt. Ltd **[Design Mix (JMF) of Dense Bituminous Macadam (DBM) and Bituminous Concrete (BC)]**	Dr. Aditya Kumar Anupam	-	₹ 70,800.00	Under Process [Starting date: 28.06.21]	-
25	M/s RCC Developers Limited **[GFC Drawings/ Design]**	Dr. Aditya Kumar Anupam	Dr. Prakash Dwivedi	₹ 29,500.00	Under Process [Starting date: 28.06.21]	-
26	M/s NKG Infrastructure Limited **[Technical vetting/approval for GFC Design and Drawing]**	Dr. Shashi Narayan	Dr. Aditya Kumar Anupam	₹ 7,08,000.00	Completed [Starting date: 06.07.21]	30.03.22
27	M/s RCC Developers Limited **[Technical vetting/Approval for GFC Drawings/Design]**	Dr. Shashi Narayan	Dr. Aditya Kumar Anupam	₹ 1,41,600.00	Completed [Starting date: 20.07.21]	30.03.22

28	URBAN SOLUTIONS **[Quotation for Material Testing]**	Dr. Aditya Kumar Anupam	-	₹ 47,200.00	Completed [Starting date: 12.08.21]	23.09.21
29	RK VATS **[Soil Report Vetting]**	Dr. Aditya Kumar Anupam	Dr. Bibhash Kumar	₹ 88,500.00	Completed [Starting date: 3.09.21]	06.04.22
30	Soigne Engineering Consultant **[Techincal Vetting/Appproval of Soil Investigation]**	Dr. Aditya Kumar Anupam	Dr. Bibhash Kumar	₹ 1,77,000.00	Under Process [Starting date: 30.09.21]	-
31	LNA Infraprojects Private Limited, Vidhya Nagar, Jaipur **[Quotation of Cement Test]**	Dr. Aditya Kumar Anupam	-	₹ 11,210.00	Under Process [Starting date: 30.09.21]	-
32	M/s Keslec Design **[for Vetting of Structural Design & Drawing]**	Dr. Shashi Narayan	Mr. Amardeep	₹ 9,38,100.00	Completed [Starting date: 06.10.21]	Completed
33	M/s RCC Developers limited, Meerut **[Third Party Visit for Medical College and Hopital project of Bulandshahr]**	Dr. Aditya Kumar Anupam	Dr. Shashi Narayan & Dr. Bibhash Kumar	₹ 1,41,600.00	Under Process [Starting date: 12.10.21]	-
34	M/s RCC Developers limited, Meerut	Dr. Aditya Kumar Anupam	-	₹ 1,41,600.00	Under Process [Starting date: 21.10.21]	-

35	M/s Keslec Design Solution **[Quotation for Vetting of Structural Design and Drawing of Barrack and Dining Block at Supremen Courst of India]**	Dr. Shashi Narayan		₹ 20,060.00	Completed [Starting date: 08.11.21]	30.03.22
36	M/s RCC Developers Limited **Third Party Visit (Cement, Aggregate, Concrete)**	Dr. Aditya Kumar Anupam	-	₹ 82,600.00	Under Process [Starting date: 17.11.21]	-
37	NKG Infrastructure, New Delhi **[Third Party Visit]**	Dr. Aditya Kumar Anupam	-	₹ 59,000.00	Under Process [Starting date: 17.11.21]	-
38	Road Constry Coy (GREF) **Job Mix Desin for WMM work (1.50 cm thick)**	Dr. Aditya Kumar Anupam	-	₹ 47,200.00	Under Process [Starting date: 03.12.21]	-
39	Rajshri Construction, Ghaziabad **[Test Report of Stone Boulder regarding Crushing Value, Impact Value & Water Absorption.]**	Dr. Aditya Kumar Anupam	-	₹ 23,600.00	Under Process [Starting date: 06.12.21]	-
40	Ministry of Environment, Forest and Climate Change, New Delhi **[Constructuion of Multipurpose Hall at FRI, Dehradun and Extension of**	Dr. Kranti Jain	-	₹ 1,65,200.00	Under Process [Starting date: 11.01.22]	-

	Examination hall and Academici Building]					
41	Third Party Inspection of Quality of Various works under Smart City Project Dehradun **[M/s Dehradun Smart City Limited]**	Dr. Shashank Bhatra	Dr. Smita Kaloni	₹ 90,00,000.00	Under Process [Starting date: 15.03.22]	-
42	Birla Corporation Ltd. Madav Nagar Sector-III Chanderia **[Consultancy Charges for vetting of Structureal design and Drawings at various sites]**	Mr. Amardeep	Dr Shashi Narayan	₹ 23,600.00	Under Process [Starting date: 15.03.22]	-
43	M/s Hindustan Steelworks Cosntruction Ltd. **[Concrete Design Mix M-25 and M-30]**	Mr. Amardeep	Dr Shashi Narayan	₹ 2,36,000.00	Under Process [Starting date: 30.03.22]	-

Research Journals Publications (2021-22)

Department of Civil Engineering

1. Kaloni, S., Singh, G., & Tiwari, P. (2021) Nonparametric damage detection and localization model of framed civil structure based on local gravitation clustering analysis. Journal of Building Engineering, 44, 103339.
2. Pandit V., Kaloni S., Sharma S., Singh G. (2022) Damage Identification in High-Rise Buildings Using Deep Learning Techniques. In Proceedings of Data Analytics and Management. Lecture Notes on Data Engineering and Communications Technologies, vol 90.
3. Khati T., Kaloni S., Narayan S., Chetana (2022) Seismic Response of Base Isolated Elevated Circular Water Tank. In:Proceedings in Energy. Springer, Singapore.
4. Kumar, B., & Sahoo, J. P. (2021). Lining pressure for circular tunnels in two layered clay with anisotropic undrained shear strength. *Geomechanics and Geoengineering*, 1-14.
5. Mayank, M., & Sharma, P. K. (2022). Numerical and experimental study on solute transport through physical aquifer model. *Water Supply*, *22*(1), 137-155.

6. Dhoke, A., Kumar A., & Ghosh, I. (2021). Hazard based Duration Approach on Pedestrian Crossing Behavior at signalized Intersection. Transportation Research Record: Journal of the Transportation Research Board, 03611981211003102.
7. Badweeti, K., Kumar A., & Badweeti, A. (2021). Analysis of Pedestrian Crossing Speed (PCS) for Single and Two-stage Crossings at Signalized Intersections under Mixed Traffic Conditions. In *1st International Online Conference on Sustainable Development in Civil and Electrical Engineering (SDCEE), National Institute of Technology Kurukshetra, India*, December 17-19, 2021.
8. Kumar, B., & Sahoo, J. P. (2021). Stability of unsupported circular tunnels in anisotropic normally and over consolidated saturated clay. *Computers and Geotechnics*, *135*, 104148.
9. Sahoo, J. P., & Kumar, B. (2021). Peripheral stability of circular tunnels in anisotropic undrained clay. *Tunnelling and Underground Space Technology*, *114*, 103898.
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137. Pankaj Singh Rana, Nitin Sharma, "The modeling and analysis of the COVID-19 pandemic with vaccination and treatment control: a case study of Maharashtra, Delhi, Uttarakhand, Sikkim, and Russia in the light of pharmaceutical and non-pharmaceutical approaches", The European Physical Journal Special Topics, (Accepted, SCI/SCIE, IF:2.7)

Department of Humanities and Social Sciences

138. Dr Ajay K. Chaubey. "Locating Death, Disease and Salvation in the Selected Hindu Scriptures: A Critical Examination" (co-authored with Mr Sarvesh K Pandey, ex-Research Scholar of the Institute) to the MEJO: the MELOW Journal of World Literature (ISSN: 2581-5768), March, 2022.
139. Dr Ajay K. Chaubey, "Transnational Spaces in Amitav Ghosh's The Circle of Reason" Rupkath Journal of Interdisciplinary Studies in Humanities 13.3 2021.1-10.
140. Dr Ajay K. Chaubey. "Understanding Digital Diaspora as Cognitive Social Media: Necessity of Big Data Analytics for Peace and Harmony." Big Data Analytics in Cognitive Social Media and Literary Texts: Theory and Praxis.Eds. Sanjiv Sharma et al., Springer. 2021

Seminar/Workshop/Conferences/STC Organized (2021-22)

Department of Civil Engineering

- Five days workshop on “Computational Modelling of Geotechnical Structures using FEM Based Softwares” from 28th February 2021 to 4th March, 2021

Department of Computer Science and Engineering

- International Conference on Robotics, Control and Computer Vision to be organized during Feb. 19-20, 2022 at NIT Uttarakhand.
- International Conference on Paradigms of Communication, Computing and Data Sciences organized during May 07-09, 2021 at NIT Kurukshetra.
- International Conference on Innovative Engineering Design - 2020 (ICOIED-2020) organized during Jan. 18-20, 2020 at IEI, Dehradun.
- International Conference on Advances in Computing Applications (ICACA) - 2018 organized during Feb. 26-27, 2018 at NIT Uttarakhand.
- Organized TEQIP-III Sponsored Five Day Online Workshop on, “How to Improve Employability of Engineering Students?” Organized by National Institute of Technology, Uttarakhand and Indian Institute of Technology Roorkee, Uttarakhand during 24-28 Feb, 2021
- Online Faculty Development Programme on Next Generation Computing and Networking, from 08th -12th March 2021.
- Online Faculty Development Program on "Research Trends in Security and Computing from 28th February - 04th March 2022.

Department of Electrical Engineering

- 5-Days STC on Microgrid Issues, Challenges and Solutions in Smart Grid conducted during 8th- 12th March 2021

Department of Electronics Engineering

- Two days International Conference on “Robotics, Control & Computer Vision” during 19th & 20th February, 2022
- Five days Workshop on “Frontier Area of Electronics and Communication Engineering: An Industry Academia Convergence” during 27th to 1st October, 2021.
- Two days Workshop on “Project Proposal Writing for Research Grants” during 11th to 12th January, 2021.

Department of Mechanical Engineering

- Department of Mechanical Engineering, NIT, Uttarakhand has organized one week workshop on Interview Skills during 24 - 29 Aug, 2021.
- Department of Mechanical Engineering, NIT, Uttarakhand has organized a five day online short term course on “Micromachining Technologies for Industrial Applications” during 09 - 13 May, 2022.

Department of Physics

- Smart Materials: Processing and Applications Jointly organized by Department of Physics, NIT Uttarakhand and Department of Physics, IIT Roorkee during November 15-19, 2021.
- 3rd National Conference on Recent Advances in Physical Sciences (NCRAPS) jointly organized by Department of Chemistry, Physics and Mathematics, during December 19-20, 2021.
- 2nd International Conference on Intelligent Computing Techniques for Smart Energy Systems-2021 (ICTSES-2021), Jointly organized by NIT Uttarakhand and Manipal University Jaipur.

Department of Chemistry

- 3rd National Conference on Recent Advancement in Physical Science (NCRAPS-2021), December 19-20, 2021 jointly organized by Department of Chemistry, Department of Physics and Department of Mathematics, National Institute of Technology Uttarakhand.
- International Conference on Biotechnology for Resource Efficiency, Energy, Environment, Chemicals and Health (BREEECH 2021) during 01-04 December, 2021 at CSIR-IIP, Dehradun.
- International conference International Conference on Biotechnology for Sustainable Agriculture, Environment and Health (BSAEH-2020) during 04-08 April, 2021 at MNIT Jaipur.
- Five-day virtual workshop on "Startup and Entrepreneurship Skills, Attitude and Behaviour Development" during February 16-20, 2022.
- Five-day virtual workshop on "Challenges & Opportunities towards Sustainable Energy & Environmental Technology in India" during February 21-25, 2022.
- Five days Virtual Workshop on "Design Thinking, Critical Thinking and Innovative Design" from 28 February- 04 March 2022.
- The "HERICANE", a hackathon for women entrepreneurs of India and abroad during February 11-13, 2022 in virtual mode in collaboration with Manipal University Jaipur
- National Science Day on 28th February 2022 by organising two expert lectures by Prof. T. Pradeep (Padma Shri) Institute Professor, Indian Institute of Technology Madras (Title: Affordable Clean Water using Advanced Materials) and Prof. Chandra Shakher, Honorary Professor Indian Institute of Technology Delhi (Title: Light and Light based Technologies).

Department of Mathematics

- Recent Development in Mathematical Modelling in Engineering Sciences" during 27-31 December, 2021

- National conference on Recent Advancement in Physical Sciences jointly organized department of Physics, Chemistry & Mathematics during December 19-20, 2021

Department of Humanities and Social Sciences

- National Conference on “Ecological Humanities: Recent Paradigms” organized by the department during 6-7 March 2021.

Expert Lectures Delivered by Faculty (2021-22)

Department of Civil Engineering

1. Dr. Abhinav Kumar delivered an expert talk on Road Traffic Safety: Major Challenges and Effective Practices at Dev Bhoomi Institute of Technology, Dehradun on 14 June 2021

Department of Computer Science and Engineering

1. Dr. Kamal Kumar Delivered an Expert Lecture on Drug Design using Artificial Intelligence in 5 Day FDP titled, “Contemporary and Futuristic Applications of Applied Artificial Intelligence, 21-25 Feb 2022, Chitkara University.
2. Dr Nitin Kumar Delivered Two extension lectures on "Soft Skills Transform an individual into a Professional" and "Importance of Personality Development for Placement" delivered at Government College, Aharwala (Bilaspur), Affiliated to Kurukshetra University, Kurukshetra on Jan. 22, 2022.
3. Dr Nitin Kumar Delivered Invited talk on Random Permutation Principal Component Analysis for Cancelabel Biometric Recognition at Department of Computer Science, University of Delhi, New Delhi on Sep. 22, 2021.
4. Dr Nitin Kumar Delivered Invited Lecture on Virtual Labs in AICTE-ISTE sponsored online refresher/induction program on the topic Use of ICT in Engineering Education organized by Department of ECE, Maharaja Surajmal Institute of Technology, New Delhi, Affiliated to GGSIPU, New Delhi, March 2021.
5. Dr Krishan Kumar Delivered talk on Multimedia Analysis using Deep Learning and its Applications in Online FDP on Computer Vision and Image Processing at SKIT, Jaipur, February 3, 2022.
6. Dr Krishan Kumar Delivered Expert Talk on Cloud Computing and its Current Trends in Online Webinar at VIT Bhopal, December 18, 2021.
7. Dr Krishan Kumar Delivered Expert Talk on How to publish your book with an academic publisher in One-Week FPD on Research Prospects in Nursing at Galgotia University, Greater Noida, September 2021.
8. Dr Krishan Kumar Delivered Expert Talk on Role of AI Techniques in Digital Era in Online Summit on AI and Multidisciplinary Research: Opportunities and Challenges at G L BITM, Greater Noida, July 2021.
9. Dr Krishan Kumar Delivered Keynote speech on Applications of Deep Learning in Digital Era in Online AICTE sponsored STTP on AI and Deep Learning at MIET, Jammu, July 2021.

10. Dr Krishan Kumar Delivered Keynote speech on Key Observations to Publish the Research work in Reputed Journals in One Week FDP on Research Manuscript Writing and Publication in Reputed Journals at SVIM, Indore, April 2021.
11. Dr Krishan Kumar Delivered Keynote speech on Role of Open Source tools in Teaching-Learning Process in ISTE sponsored Two Week STTP on Pedagogy for Effective Use of ICT in Engineering Education at P. R. PCEM, Amravati, April 2021.
12. Dr Krishan Kumar Delivered Hands-on session on Python and its applications in Computer Vision in Virtual International Workshop on Pandemic and Socio-Economic Determinants: The Uses, Mathematics and Computations behind the Modelling to inform Decision Makers at NIT Uttarakhand, February 2021.
13. Dr Krishan Kumar Delivered Keynote Speech on Role of Deep Learning in Multimedia in Online AICTE sponsored STTP on AI and Deep Learning at MIET, Jammu on February 2021.
14. Dr Krishan Kumar Delivered Keynote Speech on Role of Deep Learning in Multimedia in Online International Conference on Science & Technology (ICOST -2021), January 2021.

Department of Electrical Engineering

1. Dr. Prakash Dwivedi delivered an expert lecture on “Fundamentals of Control System” in Typhoon HIL five week internship program organized by Quarbz Info System, Kanpur and Typhoon HIL GmbH, Switzerland from June 28th-July 30th, 2021.
2. Dr. Sourav Bose delivered an expert lecture on “Design and Control of Power Electronics Converter for Renewable Energy Application” at Sikkim Manipal Institute of Technology on 03 Nov. 2021
3. Dr. Suryanarayana Gangolu delivered an expert lecture on "Protection Issues and Challenges in PV Connected Distribution System " AICTE ATAL FDP on "Design and Optimization of EV Charging Technology in Smart Grid Platform" during 3rd MAY 2021 to 7th May 2021 in online mode organized by Department of EEE Puducherry Technological University Formerly Pondicherry Engineering College. Talk delivered in FDP on Future Automation of Power System Protection in Indian Power Sector
4. Dr. Suryanarayana Gangolu delivered an expert lecture in AICTE sponsored Two Week Faculty Development Programme (FDP) on " Future Automation of Power System Protection in Indian Power Sector" organized by Department of Electrical and Electronics Engineering, BIT Campus, Anna University, Tiruchirappalli during 26.11.2021 to 09.12.2021.
5. Dr. Suryanarayana Gangolu delivered an expert lecture in in "Alumni Interactive Workshop on “Electric Power Engineering” 13th - 17th September 2021 organized by Department of Electrical & Electronics Engineering, NIT Trichy.
6. Dr. Tripurari Nath Gupta delivered an expert lecture on “Power Quality Improvement in Microgrid Systems” in a Five days Online Short Term Course on "Stability Issues, Challenges and Solutions in Renewable Integrated Power Systems", organized by Department of Electrical Engineering, NIT Uttarakhand from 28/02/2022 to 04/03/2022.

Department of Electronics Engineering

1. Dr. Pankaj Kumar Pal delivered an invited talk on “INNOVATIONS IN VLSI TESTING” conducted by Institute Innovation council, Siddharth Institute of Sciences and Technology, Puttur on Jan. 22, 2022.
2. Dr. Ghanapriya Singh gave a guest lecture in AICTE Training And Learning (ATAL) Academy Online Elementary FDP conducted by Institute of Technology, Gopeshwar on "IOT" from October 5, 2021 to October 9, 2021.
3. Dr. Ghanapriya Singh gave a guest lecture in AICTE Training And Learning (ATAL) Academy Online Elementary FDP conducted by Shri Shankaracharya Technical Campus Bhilai on "Technological Innovation of Artificial Intelligence in Medical Diagnostics" from December 6, 2021 to December 10, 2021.
4. Dr. Ghanapriya Singh gave a guest lecture in AICTE Training And Learning (ATAL) Academy Online Elementary FDP conducted by NIT Patna on "Application of Novel Methods in Biomedical" (ANMB-2021) from November 23- 27, 2021.
5. Mr. Nitanshu Chauhan is invited for the talk in *University of California Berkeley, USA on 01.04.2022.*
6. Mr. Nitanshu Chauhan is invited for the talk in IIITPDPM, Jabalpur in March-2022.

Department of Mechanical Engineering

1. Hitesh Expert talk on “Primary and Secondary Processing of PMCs” in AICTE Training and Learning (ATAL) Faculty Development Program on “Processing of Novel Materials” held at Indian Institute of Technology, BHU during November 22-26, 2021.
2. Hitesh, Expert talk on “Processing & Characterization of PMCs” in AICTE Training and Learning (ATAL) Faculty Development Program on “Processing of Novel Materials” held at Indian Institute of Technology, BHU during September 20-24, 2021.

Department of Chemistry

1. Dr. Rampal Pandey delivered an invited lecture on Refresher Course-Chemistry-biology & material sciences Interfaces, in the HRDC Centre Sagar Vishwavidyalaya on Nov. 13, 2021
2. Dr. Rampal Pandey delivered an invited lecture in Recent Advances in Chemical Science at 27th International Conference of International Academy of Physical Sciences (CONIAPS XXVII) jointly organized by BHU-JNU during Oct. 26-28, 2021.
3. Dr. Rampal Pandey delivered an invited lecture at Arts & Commerce College, Sagar during on 14th Oct., 2021.

4. Dr. Pankaj Kandwal delivered a talk on “Density Functional Theory” in the short-term course (STC) entitled “Analytical Techniques in the Realm of Molecules & Materials" (ATRMM-21) organized by SLIET Longowal during 26-31 July 2021.

Department of Mathematics

1. Dr. Dharemendra Tripathi delivered invited talk on “Study of Thermal Effects on Progression of SARS-COV-2 in Circulatory System: A Mathematical Model” in National Conference of Academy for Progress of Mathematics on “Recent advances in Mathematical Analysis and Applications” organized by DST-CIMS, Institute of Science, Banaras Hindu University during 7 - 8 May 2022
2. Dr. Dharemendra Tripathi delivered 02 lectures on “Role of Mathematics in Engineering Sciences” and “Mathematical Modelling of Biological Transport Phenomena” at Jawahar Lal Nehru Govt. Engineering College, Sundernagar, HP on 12th April 2022.
3. Dr. Dharemendra Tripathi delivered an invited lecture on “Impact of Mathematical Modelling during the Covid-19 Pandemic on the Youth” Youth Global Summit: An International Conference during March 15 - 17, 2022 organized by Rajiv Gandhi National Institute of Youth Development, Tamil Nadu, India.
4. Dr. Dharemendra Tripathi delivered a Keynote lecture on “Electroosmotic Flow Models: Applications to Biological Transport” and addressed as Chief Guest of Inaugural ceremony in 1st International Conference on EMMA-2021 (Engineering, Medicine, Management, Arts and Sciences), organized by Chendur Research Foundation Chennai (CRF) in association with Panipat Institute of Engineering & Technology (PIET), Haryana, India during December 24-26, 2021.
5. Dr. Dharemendra Tripathi delivered a Keynote lecture on “Mathematical Approach for SARS-Cov-2 Transport in Viscous Medium” in 16th India-Japan Bilateral Conference (BICON-2021) on “Recreating Higher Education in the Post-Pandemic World” organized by Biyani Group of Colleges (India) during December 14 -18, 2021.
6. Dr. Dharemendra Tripathi delivered a Keynote lecture on “Transmission of COVID-19 in Viscous Medium: Mathematical Modelling” in International Conference “Recent Advances in Material Science and Computational Techniques (RAMSACT-2021)” organizing by Manipal University Jaipur during November 24-26, 2021.
7. Dr. Dharemendra Tripathi delivered an expert lecture on “Mathematical Modelling of Physiological Transport Phenomenon” in Refresher course on "Advances in Mathematical and Physical Sciences" organized by Department of Physics, Dr. H.S. Gour University, Sagar, M.P. during November 16-30, 2021.
8. Dr. Dharemendra Tripathi delivered an expert lecture on “Fractional Calculus Approach in Viscoelastic Fluid Flow Models” International Workshop on "Fractional Derivatives: Theory & Computations with Applications (FDTCA-2021)” organized by Department of Mathematical Sciences, Indian Institute of Technology (BHU) Varanasi, November 12-14, 2021.

9. Dr. Dharemendra Tripathi delivered a Keynote lecture on “Virus Transport in Fluid Medium: Mathematical Modelling” in Indo-US Conference on “The Science of Mathematical Modeling, and Decision-Making: A Changing Trajectory into The Future, from Past to Post COVID-19 Pandemic” organized by Sri Sathya Sai Institute of Higher Learning, Vidyagiri, AP during October 28-30, 2021.
10. Dr. Dharemendra Tripathi delivered a Keynote lecture on “Biological Transport Process: Mathematical Modelling” in 27th International Conference of the International Academy of Physical Sciences (CONIAPS XXVII) on Mathematical Modelling in Biological Sciences (M2BS 2021) organized by Department of Mathematics, NIT Silchar during 26 -28, October 2021.
11. Dr. Dharemendra Tripathi delivered an Expert lecture on “Applications of Mathematics in Engineering” VIGYAN JYOTI (PHASE-II) organized by Jawahar Nayodaya Vidyalay Khaira Sain on Oct 12, 2021 under An Initiative to promote interest in Science & technology amongst girls’ students (Sponsored and funded by Department of Science & Technology, Govt. of India)
12. Dr. Dharemendra Tripathi delivered an Expert lecture on “Mathematical Models on Transport Phenomena” in the 2nd International online Workshop on Advanced Topics in Mathematics (IWATM-21)" from 08 - 12 October 2021 organized by The Center for Applied Mathematics (CAM), IIIT Naya Raipur
13. Dr. Dharemendra Tripathi delivered a Keynote lecture on “Mathematical Modelling in Science and its Technological Applications” in Interdisciplinary Online Refresher Course on Science and Technology during 28th Sept- 11th Oct 2021 organized by Mizoram University
14. Dr. Dharemendra Tripathi delivered an Expert lecture on “Applications of Mathematics in Biomedical Science and Engineering” in One-week Online Faculty Development (FDP) Program on “Mathematics and Its Application in Science & Engineering” during 27th September−01st October, 2021 organized by Shri Mata Vaishno Devi University, Jammu.
15. Dr. Dharemendra Tripathi delivered an Expert lecture on “Modelling and Simulation of Biological Flows in Single and Multilayered Regimes” in One-week Short Term Course on “Modelling of Multiphase Flows (MMF-2021)” September 27 – October 1, 2021 organized by Department of Applied Mechanics, MNNIT Allahabad, Prayagraj.
16. Dr. Dharemendra Tripathi delivered an Expert lecture on “Mathematical Approach for Physiological Systems” in Refresher Course on "Mathematical Tools for Physical and Computational Sciences" from Sept 24-Oct 08, 2021 organized by HRDC, Department of Mathematics, Dr. Harisingh Gour Vishwavidyalaya Sagar (M.P.)
17. Dr. Dharemendra Tripathi delivered an Expert lecture on “Role of Mathematics in Engineering Sciences” in Webinar organized by Department of Applied Sciences & Humanities, Rajkiya Engineering College, Azamgarh, India on August 04, 2021.
18. Dr. Dharemendra Tripathi delivered an Expert lecture on “Role of Mathematical Models in Engineering Sciences” Faculty Development Programme on “New Paradigms of Teaching Pedagogy & Research” organized by School of Agricultural Sciences, GD Goenka University, Gurugram during July 26-30, 2021.

19. Dr. Dharemendra Tripathi delivered an Expert lecture on "Applications of PDEs in Health Care" in the Workshop on "Differential Equations: Theory, Analysis and Applications with Matlab" organized by Department of Mathematics, DIT Dehradun during July 12-16, 2021.
20. Dr. Dharemendra Tripathi delivered an Keynote lecture on "Non-Newtonian fluids flow model with Rhythmic Membrane Contraction" in 2nd International Conference on Mathematical Techniques and Applications (e-ICMTA-2021) organized by Department of Mathematics held on 24th to 26th March 2021, SRMIST, Kattankulathur, Tamil Nadu, India.
21. Dr. Dharemendra Tripathi delivered an Expert lecture on "Role of Mathematical Models in Science and Engineering" on occasion of National Science Day Celebration organized by Department of Mathematics, SRMIST, Ramapuram Chennai on 26.02.2021.
22. Dr. Dharemendra Tripathi delivered an Invited lecture on "NEP-2020: Technical Evolution in Higher Education" in a Webinar on New National Education Policy (NEP) 2020: Reforming & Rejuvenating Teaching Learning in Higher Education Institutions for the 21st Century organized by Department of Mechanical Engineering, KNIT Sultanpur on 20th February 2021
23. Dr. Dharemendra Tripathi delivered an Invited lecture on "Technical Evolution in Higher Education under NEP-2020" in National Webinar on New Education Policy (A Reform in Higher Education) organized by Raj School of Management and Sciences, Varanasi on January 23, 2021.

Other Faculty Achievements

Department of Civil Engineering

- Dr. Muskan Mayank completed his PhD from IIT Roorkee (2021) on the topic "Experimental Study Of Solute Transport Through Three-Dimensional Porous Media.
- Dr. Abhinav Kumar completed his PhD from IIT Roorkee (2022) on the topic "Assessment of pedestrian safety at signalized intersections using traffic conflict technique."

Department of Computer Science and Engineering

- Dr. Nitin Kumar received Academic Professional Award in 2nd Universal Innovators Leadership Awards (UILA 2021) in 4th ICICC - 2021 organized by University of Delhi, India University of Valladolid, Spain and National Institute of Technology Patna, 2021
- Dr. Krishan Kumar appointed as Senior Editor at Artificial Intelligence Evolution, February 2022.

Department of Electronics Engineering

- Dr. Hariharan Muthusamy has been appointed as Associate Editor in International Journal of Biomedical and Clinical Engineering, IGI Global Publishing House.

- Dr. Hariharan Muthusamy was the General Chair, Asian Conference on "Intelligent Computing and Data Science (ACIDS-2020), 24 – 25 May, 2021, Malaysia.
- Dr. Tajinder Singh Arora received the recognition as Fellow Member from Indian Society for VLSI Education (ISVE) Ranchi.
- Dr. Tushar Goel reviewed 3 journal papers for Taylor and Fransis, and MOTL
- Dr. Pankaj Kumar Pal submitted a project proposal (as co-CI) with Dr. Ghanapriya Singh entitled as "IoT-based Multifunctional Scalable Real-Time Farm Monitoring System for Smart Agriculture" under Agriculture & Water Technology Development Hub (AWaDH) scheme, IIT Ropar which was principally accepted and presently modifying it as per the review's received.
- Mrs. Sarita Yadav submitted her Ph.D Thesis titled "FinFET Device Circuit Interaction in Low voltage domain" at IIT Roorkee on 15th Feb, 2022

Department of Mechanical Engineering

- Dr, Deepak Kumar got Best Paper Award in International Conference on Future Technologies in Manufacturing, Automation, Design and Energy (iCoFT, 2021) organized by NIT Puducherry.
- Best paper award in the session in the International Conference on Latest Trends in Civil, Mechanical and Electrical Engineering (LTCMEE- 2021), held online during April 12-13, 2021, jointly organized by the Department of Civil, Mechanical and Electrical Engineering, MANIT Bhopal for the paper titled "Additive fabrication of 3D physical maps with Braille legends for geographical education of visually challenged persons" by Dr Sanat Agrawal and Mr Vikas Khoj.

Department of Mathematics

- Dr. Dharmendra Tripathi has been listed in Year 2022 Edition of Research.com Ranking of Top 1000 Scientists in the field of Mechanical and Aerospace Engineering. Ranked #809 in the world and #11 in India
- Dr. Dharmendra Tripathi has been awarded 'Prof PR Sharma Memorial Award' for 2021 by the International Academy of Physical Sciences in the Inaugural session of the Conference on 4th December 2021.
- Dr. Dharmendra Tripathi has been listed in 100,000 top-scientists over the world (Indian Rank 404) as per August 2021 data-update for "Updated science-wide author databases of standardized citation indicators" based on c-score (with and without self-citations) or a percentile rank of 2% or above.

Other Student Achievements

- Mr Jamuna Prasad Bahuguna cleared Indian Engineering services and Joined MES as AGE (Contract), Chandigarh.
- Mr. Aditya Pathak joined IOCL, Kolkatta as Officer.

- Mr Sohail Akhtar has been awarded a prestigious DAAD scholarship.
- Mr. Sunil Kumar Maurya received POSOCO POWER SYSTEM AWARDS (PPSA) for the M.Tech. Dissertation entitled *Novel Protection Techniques for Highly PV Connected Distribution* under the supervision of Dr. Suryanarayan Gangolu.
- Sonalika Chaurvedi was selected to present paper in internationally acclaimed ACLA Conference in 2021.
- Satyanarayan Tiwari, PhD scholar in English published his handbook for UGC NET/JRF in English.
- Manvi Sharma and Dona Soman were selected to present paper in Internationally acclaimed ASLE Conference 2021
- Manvi Sharma has been selected for internationally acclaimed ACLALS Conference, Ontario Canada 2022

Invited Lectures Delivered by External Experts (2021-22)

Department of Civil Engineering

S. No.	Title of the Event	Duration and other details	Profession of the expert (from industry/academic institution/other)
1	"Biodiversity, Conservation & Sustainable Development"	02 hours via Google Meet Platform	Dr. Arun Jugran, Scientist, G. B. Pant, National Institute of Himalayan Environment, Garhwal Regional Centre, Srinagar (Garhwal), Jan 2021
2	"Landslide Hazard"	02 hours via Google Meet Platform	Dr. Tarun Kumar Raghuvanshi, Associate Professor, School of Earth Sciences, College of Natural and Computational Sciences, Addis Ababa University, Ethiopia, Feb 2021

Department of Electrical Engineering

S. No.	Title of the Event	Date	Profession of the expert (from industry/academic institution/other)
1	Smart Grid- A vision for today's era	16/02/2021	Dr. Premalata Jena, Associate Professor, IIT Roorkee
2	General overview of DFIG and active filtering in the DFIG-DC system	19/02/2021	Dr. Himanshu Misra, Assistant Professor, IIT Mandi

3	Shaping the future with Solar Photovoltaic	20/02/2021	Dr. Shelly Vadhera, Associate Professor, NIT Kurukshetra
4	Applications of AI techniques in Power System	26/02/2021	Dr. Dheeraj K. Khatod, Associate Professor, IIT Roorkee
5	Control Techniques for Grid Connected Wind Driven Generator	22/02/2021	Dr. P. Raja, Associate Professor, NIT Tiruchirappalli

Department of Electronics Engineering

S. No.	Title of the Event	Duration and other details	Profession of the expert (from industry/academic institution/other)
1.	On-chip Optoelectronics Devices for Optical Communication	1 Day (20 July 2022)	Dr. Mukesh Kumar, IIT Indor
2.	Antenna for 5G/IoT Application	1 Day (20 July 2022)	Dr. Gaurav Varshney, NIT Patna
3.	OFDM for underwater Communication	1 Day (21 July 2022)	Dr. Naresh Kumar, UIET, P.U. Chandigarh
4.	Free Space Optical Communication: Future and its Challenges	1 Day (21 July 2022)	Dr. Yogendra K. Prajapati, MNIT Allahabad
5.	Soft Computing Fundamentals	1 Day (22 July 2022)	Dr. A.P. Singh, Professor, SLIET Longowal
6.	Plasmonic Sensor	1 Day (23 July 2022)	Dr. Jitendra Bahadur Maurya, NIT Patna
7.	Silicon Photonic Device for Optical Interconnects	1 Day (24 July 2022)	Dr. Mukesh Kumar, IIT Indor
8.	Application of 2-D nanomaterial's in SPR Sensors	1 Day (24 July 2022)	Dr. Sarika Pal, NITUK

List of GATE 2022 qualified Students

S. No.	Roll No.	Name of Student	GATE Subject
1	BT16CIV026	Mr. Vivek Singh Negi	Civil Engineering
2	BT18CSE001	Himanshu	Computer Science and Information Technology
3	BT18EEE029	Ayush Dixit	Electrical Engineering
4	BT18EEE005	Adarsh bharti	
5	BT18EEE017	Shivangi Upadhyay	
6	BT18EEE016	Promise Bhati	
7	BT18EEE009	Siddharth Thakur	

8	BT18EEE025	Deepanshu Chittora	
9	BT18EEE029	Ayush Dixit	
10	BT18EEE025	Deepanshu Chittora	
11	BT18EEE018	Sushmit Chauhan	
12	BT19ECE002	Rahul Raikuni	Electronics and Communication Engineering
13	BT19ECE005	Nishant Kandpal	
14	BT18ECE031	Arihant Jain	
15	BT16MEC007	Navjyot Bijarniya	Mechanical Engineering

Student Activities

The Student Welfare Section is one of the most active and vibrant Section of the institute. The Dean of Student Welfare handles all the activities and issues related to student life like, hostel management in association with Chief Warden, Council of Student Activities (CSA) and Sports Section.

The Council of Students Activity consists of the following Six Clubs:

S. No	Name of the Club	Faculty Coordinators
1	Cultural and Fine Arts Club	Dr. Nitin Sharma
2	Technical Club	Dr. T. Sudhakar
3	Sports Club	Dr. Kuldeep Singh
4	Literary Club	Dr. Kusum Sharma
5	Film and Photography Club	Dr. Tushar Goel
6	Adventure Activities and Community Services Club	Dr. Kuldeep Singh

Students actively participate in each of these clubs as Executive Members and Associate Members. The students come up with various proposals through the respective coordinators for conducting various events.

NIT Uttarakhand offers some of the unique adventure sports such as rafting, hiking mountain cycling, visit to Kedarnath, Badrinath, Valley of Flowers under the adventure club. The sports section has some of the best facilities available.

AZADI KA AMRIT MAHOTSAV

2
1
Vinex
3

The photography club offers workshops on photography and videography. Literary club motivates students to develop their writing abilities and poetic skills. Students have the opportunity to listen and perform in front of renowned poets and writers. The technical club gives a platform for the students to compete with the best and showcase their technical skills.

Even during the pandemic the students showed their enthusiasm in participating and conducting various events. Some of the events organized by the Cultural and Fine Arts Club include

Online Singing Competition “Sizzling Symphony” Organized in August 2021

Logo Design Competition September 2021

Solo Dance Competition

Athletics and Volleyball competition for students and faculty from15th to 23rd Jan 2022 (Fit India Movement /Azadika Amrit Mahotsav)

Holi Milan Organized on 16th March 2022

Students Organized Eid Milan 0n 03/05/2022

Fortification

Library

Library & Information Centre is the central library of the National Institute of Technology Uttarakhand. The Library caters to the educational and research needs of the academic community and its resources are consulted by scholars from all over the country.

The library has open access system along with a reading room facility. The Library houses a total collection of more than 36,346 printed books (with more than 6300 titles) which includes Text books and Reference books in the field of Engineering and Technology, Sciences and Humanities, English Literature and Fiction. The library has a rich collection of E-books (i.e. 26,457 titles) procured from various renowned publishers and the library subscribes various online databases to increase and enhance the quality of academic and research work. The total procurement cost of print journals & e-journals is Rs. 1.30 Cr (approx.). It subscribes to online e-databases of various publishers i. e. ScienceDirect & IEEE. The library subscribes 55 magazines for the students as magazines plays an important role in an educational institution or organization and supply the variety of news on a regular basis (i.e. weekly, monthly etc.) and keep the users updated about the latest news and happenings taking place in our country as well as in the world at large. The library's has Online Public Access Catalogue to search all the bibliographic records available in the library through a web based search i.e. Libsys 10 WebOPAC.

Hostel

The Institute provides a homely environment for students. The Institute has adopted a principle of "Homes away from Home". Hostels have been provided for the students with all the necessary facilities. The Institute provides accommodation facilities for 314 students in the campus. There are five boys and two girls' hostels.

- All hostels have been kept under surveillance by security cameras
- Hostel security has been provided 24×7
- Matron/Nurse stays in girls hostel for 24 hours
- Clean and RO filtered water supply is ensured in the hostel premises.
- Cleanliness and hygienic environment is maintained in regular way
- Wi-Fi facility is provided in the hostel for Internet access
- Mess facility is provided to the students of the Institute

Hostel Details

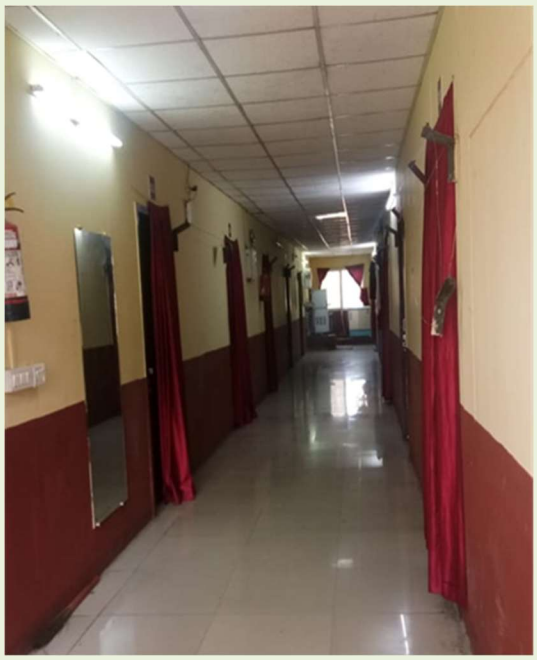
S. No.	Name of Hostel	Type	No. of Rooms	No. of Seats	Strength of the Hostel
1.	NITUK Hostel-1	Boys	15+7	1/2 seater	44
2.	NITUK Hostel-2	Boys	24	2 seater	48
3.	NITUK Hostel-3	Girls	24	2 seater	48
4.	NITUK Hostel-4	Boys	18	2 seater	36
5.	NITUK Hostel-5	Boys	36	2 seater	72
6.	NITUK Hostel-6	Girls	14	2 seater	28
7.	NITUK Hostel-7	Boys	19	2 seater	38
Total		-	157	-	314

INSTITUTE MESS

"Togetherness is Always a Pleasure"

Institute provides combined mess facility to students. Special care is taken to provide clean and hygienic surroundings in the Premises of the mess. Food quality and water purity is checked regularly by concerned authorities from time to time. Regular meetings are conducted with students' representative sat definite intervals to ensure students' satisfaction

NIT UTTARAKHAND
HOSTEL- 6



Important Contact Details in Hostel

S. No.	Name	Designation	Mobile Number and Email-ID
1.	Dr. I M Nagpure	Chief Warden	+91-8126139069 imnagpure@nituk.ac.in
2.	Dr. M.S. Khatri	Warden (Hostel -01 & 05)	+91-8755243382 mskhatri@nituk.ac.in
3.	Dr. Dheerendra Bahadur Singh	Warden (Hostel -04 & 07)	+91-9897507849 dbsingh@nituk.ac.in
4.	Dr. Vikas Kukshal	Warden (Hostel -02)	+91-9634706332 vikaskukshal@nituk.ac.in
5.	Dr. Kusum Sharma	Warden (Hostel -03)	+91-9413925701 kusum31sharma@nituk.ac.in
6.	Dr. Kusum Sharma	Warden (Hostel -06)	+91-9413925701 kusum31sharma@nituk.ac.in
7.	Dr. Dungali Sreehari	Assistant Registrar (Hostel)	+91-9557750894 sreehari@nituk.ac.in
8.	Mrs. Neha Raturi	I/c Superintendent (Hostel)	+91-8194024275 neharaturi@nituk.ac.in
9.	Dr. Laiju A R	Coordinator (Student Mess)	+91-9760000529 laijuar739@nituk.ac.in
10.	Mr. Himesh Kumar	Co-Coordinator (Student Mess)	+91-7895780437 himesh.kumar@nituk.ac.in

Our Pride Alumni Association

Our Alumni

Ms. Amrita Sharma

Hardware Development Engineer,
Rockwell Automation, USA

Batch 2010-2014, Electrical Engineering

Mr. Mohd. Azeem

Director of Engineering at Loyalty Juggernaut India Pvt. Ltd

Batch 2010-2014, Computer Science & Engineering

Ms. Priyanka Sharma

Component Design Engineer (Custom Layout) at
Intel Corporation Ltd.

Batch 2013-2017, Electrical & Communication Engineering

Mr. Piyush Kumar

Software Developer Engineer, Amazon India

Batch 2014-2018, Computer Science & Engineering

Mr. Diwakar Mishra

Intel Technology India Pvt, Ltd.

Batch 2017-2019, Electrical & Communication Engineering

Dr. Amita Giri

Post Doc at MIT, USA

Batch 2013-2017, Electronics & Communiation Engineering

Mr. Amit Kumar

Solar Energy Corporation of India Limited

Batch 2012-2016, Electrical Engineering

Mr. Rahul Goswami
Software Engineer, Google India, Bangalore

Batch 2014-2020, Computer Science & Engineering

Mr. Sunil Kumar Maurya

Pursuing Ph.D. at IIT, Kanpur

Batch 2018-2021, Electrical Engineering

Mr. Ajay Singh

IES, Assistant Executive Engineer Ministry of Defence

Batch 2012-2016 , Mechanical Engineering

Mr. Parth Khatri

Assistant Executive Engineer at Oil and Natural Gas Corporation Ltd

Batch 2015-2019 , Mechanical Engineering

Mr. Shubham Kashyap,

Scientist, Nuclear Power Corporation of India Ltd.

Batch 2015-2019, Mechanical Engineering

Mr. Rohitash Singh Chauhan,

Assistant Executive Engineer at Oil and Natural Gas Corporation Ltd

Batch- 2012-2016, Mechanical Engineering

Abhishek Singh

DE Shaw Corporation

Batch 2016-2020, Computer Science & Engineering

Satyam Kumar

Lowe's India

Batch 2017-2021, Computer Science & Engineering

Shivam Singla

Lowe's India

Batch 2017-2021, Computer Science & Engineering

Glimpse of Alumni Meet

Alumni Speaks

SUNIL KUMAR MAURYA, M. Tech (2018-2020), Electrical Engineering
PhD Scholar, IIT Kanpur

Getting into IIT Kanpur is my next step toward my dream, which might not be possible without the generous support of my professors at NIT Uttarakhand.

I am very grateful to professors, colleagues, and staff members who encouraged me throughout my M. Tech. They were very humble and looking forward to any support. The environment they collectively provided in NIT Uttarakhand was genuinely inspiring.

To my juniors, I would suggest you dream high and achieve high as If you can dream it, you can achieve it.

KIRTI GUPTA, M.Tech (2017-2020), Electrical Engineering
Ph.D. Scholar, Indian Institute of Technology, Delhi

I am immensely thankful to my supervisor, Dr. Saumendra Sarangi, Dr. Suryanarayana Gangolu and all faculty members for their patient guidance and encouragement.

I would like to express my gratitude to my friends Neha, Shipra, Zeeshan, Suraj and Rishabh for their continued support and making this beautiful journey even more better.

To the future researchers, I would say always believe in yourself, keep learning new things and always keep positive attitude towards any situation.

SOMRAJ, B.Tech. (2014-2018), Electrical Engineering

ESE Rank -7, Electrical Engineering

My college, NIT Uttarakhand, played a very big role to make me a man(professional) out of a boy (Student). I am very much grateful to every staff of the institute who helped me to be a Disciplined person. I am also thankful to all my friends & seniors who guided me and helped me during the tough time. I am also thankful to my juniors who helped to realize my leadership qualities. I believe that person who was born after me is smarter than me, So my sincere advice to all my juniors is that be Disciplined, be honest to yourself, maintain persistence and always be positive, with these we all can achieve whatever we want to achieve.

You Should Know

Board of Governors (BoG)

S. No.	Name	Designation
1	**Dr. R. K. Tyagi**	Chairman
2	**Prof. Lalit Kumar Awasthi,** Director, NIT Uttarakhand	Ex-Officio Member
3	**Additional Secretary/Joint Secretary**, Technical Education, Department of Higher Education Ministry of Education, Government of India	Member
4	**Financial Advisor**, Department of Higher Education Ministry of Education, Government of India Shastri Bhawan, New Delhi-110 001	Member
5	Representative, Nominated by the Govt. of Uttarakhand	Member
6	Representative, Nominated by the Govt. of Uttarakhand	Member
7	Nominated by the Council	Member
8	Nominated (Women) by the Council	Member
9	**Dr. Hariharan Muthusamy,** Associate Professor, NIT Uttarakhand	Member
10	**Dr. Sarika Pal,** Assistant Professor, NIT Uttarakhand	Member
11	**Director**, Indian Institute of Technology, Roorkee-247667	Member
12	**Dr. Prabhakar Mani Kala,** Registrar, NIT, Uttarakhand	Secretary

Special Cell (SC)

S. No.	Name	Designation
1	Dean Faculty Welfare	Ex-Officio Chairperson
2	Registrar	Ex-Officio Member Secretary
3	Dr. Sarika Pal, Assistant Professor (Gr-I), Electronics Engg.	Member
4	Liaison Officer (SC/ST/PWD)	Ex-Officio Member
5	Liaison Officer(OBC)	Ex-Officio Member
6	One External Member (Deputy Registrar/ Assistant Registrar preferably from IITs/NITs/IISERs/CUs and other CFTIs	
7	Deputy Registrar)Establishment)	Ex-Officio Member

Anti Ragging Committee (ARC)

S. No.	Name
1	Dean (SW)
2	Chief Warden & Proctor
3	Associate Dean (Creative Art, Cultural & Alumni Affairs)
4	Associate Dean (Sports)
5	All HODs
6	Associate Dean(Academic, UG)- Director's Nominee
7	Warden (First Year, Boys)
8	Warden (First Year, Girls)
9	AR(Hostel)
10	Vice President (CSA)
11	Representative (Girls, CSA)
12	Representative (Boy), First Year
13	Representative (Girl), First Year

Disciplinary Action Committee (DAC)

S. No.	Name	Designation
1	Chief Warden	Chairperson
2	HoD, Civil Engineering	Member
3	HoD, Computer Science and Engineering	Member
4	HoD, Electrical Engineering	Member
5	HoD, Electronics Engineering	Member
6	HoD, Mechanical Engineering	Member
7	HoD, Physics	Member
8	HoD, Chemistry	Member
9	HoD, Mathematics	Member
10	HoD, Humanities and Social Sciences	Member

Grievance Cell

S. No.	Name	Designation
1	Dean Faculty Welfare	Ex-Officio Chairperson
2	Registrar	Ex-Officio Member Secretary
3	Dr. Sanat Agrawal, Associate Professor, Mechanical Engg.	Member
4	Dr. Kusum Sharma, Assistant Professor(Gr-I), Mathematics	Member
5	Liaison Officer (SC/ST/PWD)	Ex-Officio Member
6	Liaison Officer(OBC)	Ex-Officio Member
7	Deputy Registrar (Estt.)	Ex-Officio Member
8	Mr. Gole Balaji Dhanraj, Technical Assistant, Electronics Engg.	Member
9	Mr. Manoj Kumar, Technician, Computer Science & Engg.	Member

Internal Complaints Committee

S. No.	Name	Designation
1	Dr. Jagrati Sahariya , Assistant Professor(Gr-I), Department of Physics	Ex-Officio Chairperson
2	Dr. Sarika Pal, Assistant Professor(Gr-I), Department of Electronics Engineering	Member
3	Dr. Vineeta Negi Panwar, Assistant Registrar	Member
4	From amongst NGO/associations committed to the cause of women or person familiar with the issue of Sexual Harassment	Member

Fee Structure

(i) Fees Structure of B.Tech. Programme for the Academic Year 2022-23

1. Institute Fees:

(I) For General/OBC category students whose annual family income is more than `5.00 Lacs.

Particulars	1st Sem. (`)	2nd Sem. (`)	3rd Sem. (`)	4th Sem. (`)	5th Sem. (`)	6th Sem. (`)	7th Sem. (`)	8th Sem. (`)
Tuition Fees	62,500/-	62,500/-	62,500/-	62,500/-	62,500/-	62,500/-	62,500/-	62,500/-
Student Related Activity Fees	2,500/-	2,500/-	2,500/-	2,500/-	2,500/-	2,500/-	2,500/-	2,500/-
Development Fees	2,000/-	2,000/-	2,000/-	2,000/-	2,000/-	2,000/-	2,000/-	2,000/-
Alumni Association Fees	500/-	0	0	0	0	0	0	0
Institute Security Deposit (Refundable)	3,000/-	0	0	0	0	0	0	0
Hostel Security Deposit (Refundable)	5,000/-	0	0	0	0	0	0	0
Book Bank Caution Money (Refundable)	500/-	0	0	0	0	0	0	0
Additional Security Deposit (Refundable)**	5,000/-	0	0	0	0	0	0	0
Security Services##	8,785/-	0	0	0	0	0	0	0
Other Hostel Charges***	3,400/-	0	0	0	0	0	0	0
Convocation Fees (Refundable if left without degree)	1000/-	0	0	0	0	0	0	0
Medical Insurance#	650/-	0	650/-	0	650/-	0	650/-	0
Computer/Internet	2000/-	2000/-	2000/-	2000/-	2000/-	2000/-	2000/-	2000/-
Examination	800/-	800/-	800/-	800/-	800/-	800/-	800/-	800/-
Identity Card Charges	100/-	0	0	0	0	0	0	0
Total	**97,735/-**	**69,800/-**	**70,450/-**	**69,800/-**	**70,450/-**	**69,800/-**	**70,450/-**	**69,800/-**

***Additional security deposit to be charged at the time of admission, irrespective of any fees paid earlier or later.*

**** This amount will be refunded to a student if he/she does not avail the hostel facility any time during the entire duration of the Academic Programme.*

 # It shall be charged as actual.

There shall be an annual increase of 10% in this amount.

(II) For General/OBC category students whose annual family income is between `1.00 Lac to `5.00 Lacs.

Particulars	1st Sem. (`)	2nd Sem. (`)	3rd Sem. (`)	4th Sem. (`)	5th Sem. (`)	6th Sem. (`)	7th Sem. (`)	8th Sem. (`)
Tuition Fees	20,834/-	20,833/-	20,834/-	20,833/-	20,834/-	20,833/-	20,834/-	20,833/-
Student Related Activity Fees	2,500/-	2,500/-	2,500/-	2,500/-	2,500/-	2,500/-	2,500/-	2,500/-
Development Fees	2,000/-	2,000/-	2,000/-	2,000/-	2,000/-	2,000/-	2,000/-	2,000/-
Alumni Association Fees	500/-	0	0	0	0	0	0	0
Institute Security Deposit (Refundable)	3,000/-	0	0	0	0	0	0	0
Hostel Security Deposit (Refundable)	5,000/-	0	0	0	0	0	0	0
Book Bank Caution Money (Refundable)	500/-	0	0	0	0	0	0	0
Additional Security Deposit (Refundable)**	5,000/-	0	0	0	0	0	0	0
Security Services##	8,785/-	0	0	0	0	0	0	0
Other Hostel Charges***	3,400/-	0	0	0	0	0	0	0
Convocation Fees (Refundable if left without degree)	1000/-	0	0	0	0	0	0	0
Medical Insurance#	650/-	0	650/-	0	650/-	0	650/-	0
Computer/Internet	2000/-	2000/-	2000/-	2000/-	2000/-	2000/-	2000/-	2000/-
Examination	800/-	800/-	800/-	800/-	800/-	800/-	800/-	800/-
Identity Card Charges	100/-	0	0	0	0	0	0	0
Total	**56,069/-**	**28,133/-**	**28,784/-**	**28,133/-**	**28,784/-**	**28,133/-**	**28,784/-**	**28,133/-**

Note: Student, who wants remission in Tuition Fee, needs to submit his/her annual family income certificate, issued by the Competent Authority, in the Institute at the time of admission/enrolment.

***Additional security deposit to be charged at the time of admission, irrespective of any fees paid earlier or later.*

**** This amount will be refunded to a student if he/she does not avail the hostel facility any time during the entire duration of the Academic Programme.*

 # It shall be charged as actual. ## There shall be an annual increase of 10% in this amount.

(III) For (a) SC/ST/PH category students.

(b) General/OBC category students whose annual family income is below Rs. 1.00 Lac.

Particulars	**1st Sem. (`)**	**2nd Sem. (`)**	**3rd Sem. (`)**	**4th Sem. (`)**	**5th Sem. (`)**	**6th Sem. (`)**	**7th Sem. (`)**	**8th Sem. (`)**
Tuition Fees	0	0	0	0	0	0	0	0
Student Related Activity Fees	2,500/-	2,500/-	2,500/-	2,500/-	2,500/-	2,500/-	2,500/-	2,500/-
Development Fees	2,000/-	2,000/-	2,000/-	2,000/-	2,000/-	2,000/-	2,000/-	2,000/-
Alumni Association Fees	500/-	0	0	0	0	0	0	0
Institute Security Deposit (Refundable)	3,000/-	0	0	0	0	0	0	0
Hostel Security Deposit (Refundable)	5,000/-	0	0	0	0	0	0	0
Book Bank Caution Money (Refundable)	500/-	0	0	0	0	0	0	0
Additional Security Deposit (Refundable)**	5,000/-	0	0	0	0	0	0	0
Security Services##	8,785/-	0	0	0	0	0	0	0
Other Hostel Charges***	3,400/-	0	0	0	0	0	0	0
Convocation Fees (Refundable if left without degree)	1000/-	0	0	0	0	0	0	0
Medical Insurance#	650/-	0	650/-	0	650/-	0	650/-	0
Computer/Internet	2000/-	2000/-	2000/-	2000/-	2000/-	2000/-	2000/-	2000/-
Examination	800/-	800/-	800/-	800/-	800/-	800/-	800/-	800/-
Identity Card Charges	100/-	0	0	0	0	0	0	0
Total	**35,235/-**	**7,300/-**	**7,950/-**	**7,300/-**	**7,950/-**	**7,300/-**	**7,950/-**	**7,300/-**

Note: Student, who wants remission in Tuition Fee, needs to submit his/her Caste Certificate/PH Certificate (in Central Government format) /annual family income certificate, issued by the Competent Authority, in the Institute at the time of admission/enrolment.

***Additional security deposit to be charged at the time of admission, irrespective of any fees paid earlier or later.*

**** This amount will be refunded to a student if he/she does not avail the hostel facility any time during the entire duration of the Academic Programme.*

 # It shall be charged as actual. ## There shall be an annual increase of 10% in this amount.

2. Hostel Fees:

Particulars	**1st Sem. (`)**	**2nd Sem. (`)**	**3rd Sem. (`)**	**4th Sem. (`)**	**5th Sem. (`)**	**6th Sem. (`)**	**7th Sem. (`)**	**8th Sem. (`)**
Seat Rent##	4,685/-	4,685/-	4,685/-	4,685/-	4,685/-	4,685/-	4,685/-	4,685/-
Electricity and Water Charges##	2,928/-	2,928/-	2,928/-	2,928/-	2,928/-	2,928/-	2,928/-	2,928/-
Hostel Maintenance Fee##	1,000/-	1,000/-	1,000/-	1,000/-	1,000/-	1,000/-	1,000/-	1,000/-
Mess Fees Advance*@	22,000/-	22,000/-	22,000/-	22,000/-	22,000/-	22,000/-	22,000/-	22,000/-
Total	**30,613/-**	**30,613/-**	**30,613/-**	**30,613/-**	**30,613/-**	**30,613/-**	**30,613/-**	**30,613/-**

**Mess Charge is taken as advance and after payment of actual amount remaining balance amount will be deposited in student's accounts. Students (except First Year) may opt out of Mess at the beginning of any month; however balance Mess Advance shall be refunded at the end of academic year and only after no dues certificate. Seat Rent, Mess fee Advance and Electricity & Water Charges and Hostel Maintenance Fee are to be paid separately and will not be adjusted against amount paid to CSAB. Once the hostel facility is availed, the Seat Rent and Electricity & Water Charges* and Hostel Maintenance Fee *will not be refunded after cancellation.*

There shall be an annual increase of 10% in this amount. @ There shall be an annual increase of 5% in this amount.

3. Library Fees:

Particular	**1st Sem. (`)**	**2nd Sem. (`)**	**3rd Sem. (`)**	**4th Sem. (`)**	**5th Sem. (`)**	**6th Sem. (`)**	**7th Sem. (`)**	**8th Sem. (`)**
Book Bank Fees	500/-	500/-	500/-	500/-	500/-	500/-	500/-	500/-

(ii) Fees Structure of B.Tech. Programme (1st Semester) for the students taking admission through DASA for Academic Year 2022-23

1. Institute Fees:

Particulars	For 1st Semester		
	For Non-SAARC Category	For SAARC Category	For CIWG Category
Tuition Fees	US$4000	US$2000	INR62,500/-
Student Related Activity Fees	INR2500/-	INR2500/-	INR2500/-
Development Fees	INR2000/-	INR2000/-	INR2000/-
Alumni Association Fees	INR500/-	INR500/-	INR500/-
Institute Security Deposit (Refundable)	INR3000/-	INR3000/-	INR3000/-
Hostel Security Deposit (Refundable)	INR5000/-	INR5000/-	INR5000/-
Book Bank Caution Money (Refundable)	INR500/-	INR500/-	INR500/-
Additional Security Deposit (Refundable)**	INR5000/-	INR5000/-	INR5000/-
Security Services##	INR8785/-	INR8785/-	INR8785/-
Other Hostel Charges***	INR3400/-	INR3400/-	INR3400/-
Convocation Fees (Refundable if left without degree)	INR1000/-	INR1000/-	INR1000/-
Medical Insurance#	INR650/-	INR650/-	INR650/-
Computer/Internet	INR 2000/-	INR 2000/-	INR2000/-
Examination	INR 800/-	INR 800/-	INR800/-
Identity Card Charges	INR100/-	INR100/-	INR100/-
Total	**US$4000+ INR35235/-**	**US$2000+ INR35235/-**	**INR97735/-**

***Additional security deposit to be charged at the time of admission, irrespective of any fees paid earlier or later.*

**** This amount will be refunded to a student if he/she does not avail the hostel facility any time during the entire duration of the Academic Programme.*

 # It shall be charged as actual. ## There shall be an annual increase of 10% in this amount.

2. Hostel Fees:

Particulars	1st Semester
Seat Rent##	INR4,685/-
Electricity and Water Charges ##	INR2,928/-
Hostel Maintenance Fee##	INR1,000/-
Mess Fees Advance*@	INR22,000/-
Total	**INR30,613/-**

**Mess Charge is taken as advance and after payment of actual amount remaining balance amount will be deposited in student's accounts. Students (except First Year) may opt out of Mess at the beginning of any month; however balance Mess Advance shall be refunded at the end of academic year and only after no dues certificate. Seat Rent, Mess fee Advance and Electricity & Water Charges and Hostel Maintenance Fee are to be paid separately and will not be adjusted against amount paid to DASA. Once the hostel facility is availed, the Seat Rent and Electricity & Water Charges* and Hostel Maintenance Fee *will not be refunded after cancellation.*

There shall be an annual increase of 10% in this amount.

@ There shall be an annual increase of 5% in this amount.

3. Library Fees:

Particular	1st Semester
Book Bank Fees	INR500/-

(iii) Fees Structure of UG & PG Programme (1st Year) for the students taking admission through SII for Academic Year 2022-23

1. Institute Fees:

Particulars	For 1st Year	
	For Non-SAARC Category	For SAARC Category
Tuition Fees	US$8000	US$4000
Student Related Activity Fees	INR5000/-	INR5000/-
Development Fees	INR4000/-	INR4000/-
Alumni Association Fees	INR500/-	INR500/-
Institute Security Deposit (Refundable)	INR3000/-	INR3000/-
Hostel Security Deposit (Refundable)	INR5000/-	INR5000/-
Book Bank Caution Money (Refundable)	INR500/-	INR500/-
Additional Security Deposit (Refundable)**	INR5000/-	INR5000/-
Security Services##	INR8785/-	INR8785/-
Other Hostel Charges***	INR3400/-	INR3400/-
Convocation Fees (Refundable if left without degree)	INR1000/-	INR1000/-
Medical Insurance#	INR650/-	INR650/-
Computer/Internet	INR4000/-	INR4000/-
Examination	INR1600/-	INR1600/-
Identity Card Charges	INR100/-	INR100/-
Total	**US$8000+ INR42535/-**	**US$4000+ INR42535/-**

***Additional security deposit to be charged at the time of admission, irrespective of any fees paid earlier or later.*

**** This amount will be refunded to a student if he/she does not avail the hostel facility any time during the entire duration of the Academic Programme.*

 # It shall be charged as actual.

There shall be an annual increase of 10% in this amount.

2. Hostel Fees:

Particulars	1st Year
Seat Rent##	INR9,370/-
Electricity and Water Charges ##	INR5,856/-
Hostel Maintenance Fee##	INR2,000/-
Mess Fees Advance*@	INR44,000/-
Total	**INR61,226/-**

**Mess Charge is taken as advance and after payment of actual amount remaining balance amount will be deposited in student's accounts. Students (except First Year) may opt out of Mess at the beginning of any month; however balance Mess Advance shall be refunded at the end of academic year and only after no dues certificate. Seat Rent, Mess fee Advance and Electricity & Water Charges and Hostel Maintenance Fee are to be paid separately and will not be adjusted against amount paid to SII Authority. Once the hostel facility is availed, the Seat Rent and Electricity & Water Charges* and Hostel Maintenance Fee *will not be refunded after cancellation.*

There shall be an annual increase of 10% in this amount.

@ There shall be an annual increase of 5% in this amount.

3. Library Fees:

Particular	1st Year
Book Bank Fees	INR1,000/-

(iv) Fees Structure of M.Tech. Programme for the Academic Year 2022-23

1. Institute Fees :

Particulars	1st Sem. (`)	2nd Sem. (`)	3rd Sem. (`)	4th Sem. (`)
Tuition Fees*	35,000/-	35,000/-	35,000/-	35,000/-
Student Related Activity Fees	2,500/-	2,500/-	2,500/-	2,500/-
Development Fees	2,000/-	2,000/-	2,000/-	2,000/-
Alumni Association Fees	500/-	0	0	0
Institute Security Deposit (Refundable)	3,000/-	0	0	0
Hostel Security Deposit (Refundable)	5,000/-	0	0	0
Book Bank Caution Money (Refundable)	500/-	0	0	0
Additional Security Deposit (Refundable)**	5,000/-	0	0	0
Security Services##	8,785/-	0	0	0
Other Hostel Charges***	3,400/-	0	0	0
Convocation Fees (Refundable if left without degree)	1000/-	0	0	0
Medical Insurance#	650/-	0	650/-	0
Computer/Internet	2000/-	2000/-	2000/-	2000/-
Examination	800/-	800/-	800/-	800/-
Identity Card Charges	100/-	0	0	0
Total	**70,235/-**	**42,300/-**	**42,950/-**	**42,300/-**

** SC & ST students are exempted to pay the tuition fee at the time of admission, however they have to deposit their tuition fee in the Institute before the end of the semester through scholarships /bank loan / any other means.*

***Additional security deposit to be charged at the time of admission, irrespective of any fees paid earlier or later.*

**** This amount will be refunded to a student if he/she does not avail the hostel facility any time during the entire duration of the Academic Programme.*

#It shall be charged as actual.

##There shall be an annual increase of 10% in this amount.

2. Hostel Fees :

Particulars	1st Sem. (`)	2nd Sem. (`)	3rd Sem. (`)	4th Sem. (`)
Seat Rent##	4,685/-	4,685/-	4,685/-	4,685/-
Electricity and Water Charges##	2,928/-	2,928/-	2,928/-	2,928/-
Hostel Maintenance Fee##	1000/-	1000/-	1000/-	1000/-
Mess Fees Advance*@	22,000/-	22,000/-	22,000/-	22,000/-
Total	**30,613/-**	**30,613/-**	**30,613/-**	**30,613/-**

**Mess Charge is taken as advance and after payment of actual amount remaining balance amount will be deposited in student's accounts. Students (except First Year) may opt out of Mess at the beginning of any month; however balance Mess Advance shall be refunded at the end of academic year and only after no dues certificate. Seat Rent, Mess fee Advance and Electricity & Water Charges and Hostel Maintenance Fee are to be paid separately and will not be adjusted against amount paid to CCMT. Once the hostel facility is availed, the Seat Rent and Electricity & Water Charges* and Hostel Maintenance Fee *will not be refunded after cancellation.*

There shall be an annual increase of 10% in this amount.

@ There shall be an annual increase of 5% in this amount.

3. Library Fees :

Particulars	1st Sem. (`)	2nd Sem. (`)	3rd Sem. (`)	4th Sem. (`)
Book Bank Fees	500/-	500/-	500/-	500/-

(v) Fees Structure of PhD Programme for the Academic Year 2022-23

a) Application fee for Ph.D. registration: Rs. 500/-

b) Other fees:

(I) Registration Rs. 5,000/- (one time)

Tution fee Rs. 15,000/- (Annual)

Caution money Rs. 3,000/- (refundable)

Library fee Rs. 2,000/- (one time)

Development fee Rs. 10,000/- (annual)

TOTAL Rs. 35,000/-

Rs. 35,000/- is to be paid before 31st January / 31st July.

(II) Subsequent years: Annual fees

Tution fee Rs. 15,000/-

Development fee Rs. 10,000/-

TOTAL Rs. 25,000/-

Rs. 25,000/- is to be paid before six monthly seminars of June / December.

(III) Examination fee:

The examination fee of Rs. 5000/- shall be paid by the candidate prior to the submission of the thesis.

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