



SDG 3: Good Health and Well-being

ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES

IITGN for this particular goal attempts through various measures. Be it the health care facility, or counselling service, through adequate facilities, by providing a clean and hygienic environment, providing all means of physical and mental fitness and an enriching atmosphere. The institute has been considerably successful in managing the Covid-19 infection on campus. IITGN has proper infrastructure for medical care, sports etc. The facilities are for all sections of the community, be it a child, women or senior citizens.

Research

A wide range of projects related to various aspects of health, viz. Disease, treatment technique, detection, medicine etc. The research projects, along with the names of the funding agencies, are as follows:

- Antibacterial polymers to combat drug-resistant bacteria.-MHRD.
- Catalysing the National Nutrition Mission through innovative young minds: A formative study to capture key learnings-The India Nutrition Initiative, New Delhi.
- Consultancy for Healthcare Devices and Solutions-RIL.
- Design of hearables with psychoacoustic integration-SERB.
- Development of a reusable plasmonic platform for specific detection of covid-'19 RNA at ultralow concentrations.-BRNS.
- From Single Molecules to Live Cells: In situ, Multiplexed, High-throughput Imaging with DNA-Nanotechnology -GUJCOST.
- Gold Nano heater mediated Targeting of Powering in Cancer for next Generation chemo Photo Thermal Therapy-GUJCOST.
- Multi-omic analysis to identify biomarkers to demarcate oral cancer and healthy tissue for margin clearance-GSBTM.
- Screening of natural flavonoids as the potential autophagy modulators in the regulation of diabetes-associated-SERB
- Small Molecule-Mediated Targeting of Powerhouse in Cancer for Next-Generation Chemo-Photo-Therapy-SERB.
- SmartWalk: Intelligent Sensor-fitted Shoes for Gait Monitoring and Rehabilitation in

Neurological Disorders-BIRAC

- SmartWear for Monitoring and Treatment of Gait Disorders in Parkinsonism-DST.
- Studying polymorphism in drug intermediates and their applications-DRDO.
- Targeting Mitochondrial Central Dogma by Chimeric Nanoparticle in Cancer- DST.
- Technology-assisted Pelvic Motion Characterization and Gait Rehabilitation for the Elderly-DST-SEED.
- To study the effects of autophagy modulators in alleviation of breast cancer metastasis- DBT-RA.
- Ultrasound-responsive multi-layered microbubbles using electrohydrodynamic focusing device for oral cancer drug delivery-UGC-UKIERI.
- Utilising Molecular Dynamics Simulations to Study Graphene Nanopores as Functional Materials for DNA Sequencing-DST.
- Weekly Surveillance of Wastewater for SARS-CoV-2 Gene Detection in Ahmedabad for Pandemic Curve Monitoring-UNICEF.

Along with these, about 107 articles and review works have been published in reputed Journals, involving nearly 120 researchers of IITGN contributing as authors.

Education

BE 303: Bionanotechnology - Principles and Applications- Applications of DNA Nanotechnology: Cell Engineering; Theranostics Diagnostics (Biosensing) and therapeutic applications; Biomedical Applications.

BE 304: Introduction to Biomedical Engineering-Acquiring and analysing biosignals, electrocardiogram (ECG), electroencephalography (EEG), electromyogram (EMG), thermography, blood flow analysis. Overview of Optical microscopy, X-Rays, and nuclear medicine. Addressing unmet clinical needs, interfacing with clinicians, research, and development.Challenges in organ transplantation, cell culture, regulation of healing processes, replacement of diseased tissues, tissue engineering in control of drug delivery, artificial organs

BE 608: Molecular Basis Of Neurodegenerative Diseases- Overview of neurodegenerative diseases (NDs) including Alzheimer's Disease (AD), Parkinson's Disease (PD), Huntington's Disease (HD), Progressive supranuclear palsy (PSP) and prion disease; Pathological events in human neurodegeneration; Genetic variation in inherited and sporadic disease; Other prevalent disease mechanism hypotheses: Development of therapeutic approaches including genome editing methods: latest trends and future perspective.

CH 616: Applied Chemical Biology- Conjugation of biological molecules with micro- and nanomaterials, diagnostics & therapeutics inspired by biomacromolecules.

CH 629: Medicinal Chemistry for Life- This course would include Pharmacology, Molecular Pharmacology, Microbiology, Biochemistry, Physiology, Medicine and Pharmacy. Classification of Drugs, Mechanism of drug action at enzymes, Principles of drug discovery, Synthesis of important (historical) drugs and their biological applications.

ES 655: Medical Imaging Systems-The goal of this course is to provide an overview of standard clinical imaging modalities from the signals and systems perspective. Ultrasound, X-ray, Computer Tomography (CT), and Magnetic Resonance Imaging (MRI) will be covered.

PE 101: Physical Education- The course lets students spend some time on outdoor sports or activities which helps them to maintain their health and well-being.

Some other courses dealing with some aspects of the SDG are as follows:

BE 101: Introduction to Life Sciences: Fundamentals of Life

BE 607: Molecular and Cellular Biotechnology

BE 610: Molecular Oncology

BE 613: Biochemistry

BE 614: Biostatistics

BE 691-II: Special Topics in Biological Engineering: Human Physiology

CG 503: Fundamentals of Cognitive Psychology

CG 505: Fundamental Neuroscience

CG 513: Behavioural Economics

CH 521: Advanced Chemistry Laboratory

Following were the invited lectures organised by the institute related to SDG 3:

- Wearable Robotics for Sustainable Welfare by Prof Nicola Vitiello, BioRobotics Institute, SSSA, Pisa, Italy, March 24, 2021.

- Harmony Exoskeleton: A Journey from RoboticsLab to Stroke Patients by Prof Ashish D Deshpande, University of Texas at Austin, USA, January 29, 2021.

- Robotics to Characterise and Restore Human Movements by Prof Sunil Agrawal, Columbia University, USA, January 11, 2021.

Other talks/discussions/workshops/webinars conducted-

- The Centre for Cognitive and Brain Sciences celebrated Brain Awareness Week from March 15 to 21, 2021. The virtual event included a variety of talks, panel discussions, workshops, and competitions by scholars and practitioners of cognitive and brain sciences from India and abroad.
- First DNA nanotechnology India virtual Symposium: A virtual Symposium on DNA Nanotechnology India, co-organised by IITGN and IISc Bangalore, was held on September 4-5, 2020. More than 3,000 participants virtually attended the two-day Programme.
- Webinar series on translational research in neuro-engineering in Neurorehabilitation - In association with the University at Buffalo (SUNY) USA, IITGN is organising a webinar series on Translational Research in Neuroengineering and Neurorehabilitation. During this quarter, the series has hosted ten webinars delivered by eminent speakers from USA, UK, France and India.

The webinar series concentrates on emerging applications of Neuroengineering with focus on rehabilitation.

- Webinar on national sports day- On the occasion of National Sports Day, the IITGN Sports Council organised a webinar by Mr Ashok Dhyanchand, former Indian professional field hockey player and son of well-known Indian hockey player Dhyan Chand. The session focused on the importance of sports and physical activities in our daily life. More than 100 participants joined the webinar, including faculty members, staff, and students.

Community Outreach

The Institute possesses state-of-the-art sports facilities, which include various indoor and outdoor sports, including olympic size swimming pools. The Institute has a provision of offering sports facilities through membership to the community. In addition, the facilities are rented out to outside agencies/ organisations based on request and its availability.

- Padosi gram Sahyog Samiti: The Padosi Gram Sahyog Samiti (constituted in the year 2020), under the leadership of Prof Prasanna B, continued to engage with the two neighbouring villages, Palaj and Basan. Numerous activities were conducted through the Samiti during the year. The Samiti has enabled the creation of a volunteer force of enterprising villagers, which is working towards enhancing awareness regarding vaccination and management of COVID symptoms by checking vital medical conditions (temperature and oxygen saturation) through house-to-house visits. A number of medical camps have been organised in the villages through the Institute OPD. Additionally, many needy families that required support due to low incomes or livelihood loss due to the pandemic in Palaj were identified, and the Samiti organised a drive to distribute food kits containing high-nutrition essential food items such as oil, flour and pulses. Col Vineet Agrawal also shouldered key responsibilities and guided the Samiti in coordinating various welfare activities in Palaj and Basan since March 2021.

Numbers	Activity
1512	Families provided with masks, sanitiser and pamphlets in Palaj and Basan Policemen and Gram Rakshak Dal
160	Personnel provided with hand sanitiser and masks

- Shramik Kalyan Samiti-
Distribution of Masks 5300 Masks
Distribution of Mosquito Repellent Coils 233 Packets
Distribution of Sanitary Pads 4000 Packets
Distribution of Condoms 180 Packets
- The Institute’s medical centre provided free medical support and consultation to IITGN’s construction workers as well. Free screening tests for workers were performed in the workers

housing colony. Ambulance services were also made available to workers needing medical examination or treatment. Several workers and their family members utilised the service during the lockdown and subsequently.

- Medical camps in labour colonies: In yet another initiative towards community outreach, IITGN has started Medical Camps at the construction workers' colonies, which are held on a weekly and rotational basis in one of the labour colonies.
- Excellence in social work and leadership: Parth Shinde and Deepika Soni were awarded the scholarship for excellence in Social Work & Leadership for the academic year 2020-21.
- IITGN continued to extend a helping hand to its neighbouring villages during the second wave of COVID-19. In April 2021, the Institute took the initiative to form a team of volunteers comprising young villagers and IITGN community members to spread awareness about the pandemic and provide initial medical care.
- To complement the preventive measures against the global pandemic, the Institute organised a COVID-19 testing drive for its entire campus community in the second week of October 2020 with support from medical teams of the Government of Gujarat. About 1800 community members, including faculty, staff, residents, outsourced support staff, and students residing on campus, underwent Rapid Antigen Tests.
- IITGN has created an Empathy Fund with strong support from the IITGN Foundation in the United States. This Fund is being utilised to provide financial support for online learning and subsistence to students undergoing difficulties due to their current family circumstances; to extend livelihood support for essential service staff, housekeeping personnel, daycare personnel, dining hall workers, and construction workers from challenging socioeconomic backgrounds; The IITGN Foundation exceeded its own target of raising US \$1,50,000 for the Empathy Fund.

Operations

Medical centre

The Medical Centre's team of doctors, nurses, and staff were on the frontline in the fight against the COVID-19 pandemic throughout the year. The centre served the community's healthcare needs with a team of four consulting doctors, a gynaecologist, a paediatrician, and two trained male nurses and an assistant nurse on a full-time basis. Institute medical staff and ambulance services are available 24x7.

Facilities for Covid care

- The medical centre at IITGN was already equipped with an ECG machine, pulse oximeter, oxygen concentrator, nebuliser, glucometer, otoscope, suction machine, and eye check-up facility for routine medical check-ups and a 24-hour ambulance for any emergency.
- With the onset of the global pandemic, the Institute arranged additional facilities in the medical centre for COVID patients, including quarantine and isolation rooms, O2 concentration machines, O2 cylinders, monitors, pulse oximeters, thermal guns and thermometers, in-house laboratory collection centre for pathology tests, etc.
- Trained nurses, assistant nurses and housekeeping staff for COVID patients were also appointed.
- The in-house pharmacy of the Institute stocked the most essential medicines for common illnesses as well as for COVID treatment.

- To provide timely and specialised medical care in case of any emergency during the first wave of the pandemic, the Institute entered into an MOU with Ahmedabad Municipal Corporation for the hospitalisation of staff, students and faculty in COVID-designated Hospitals.
- IITGN converted its newly constructed guest house into a 190-bed isolation cum Covid Care Facility to treat COVID-positive patients from the community with mild to moderate symptoms. More than 240 Covid patients were served at the facility between April 1 through May 15, 2021, including a peak of 95 in mid-April. The facility provided them basic medical services, such as regular temperature and oxygen monitoring, advice from doctors and nurses of the Institute, medicines, blood and RT-PCR tests, hard-to-access health services, such as oxygen concentrators and tanks, and nutritious meals four times daily. The facility also helped patients find beds in local hospitals if needed.
- Counselling services offered psychological support to patients, medical staff, and their families.
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Food quality on Campus

All quality controls from food grade in a mess to certificates and food licences of all outlets.

Student's extracurricular activities

These activities engage the communities' mind in different things and let them relax or evolve more-

- **Kala samanvay by Spic Maccay**
The Cultural Council at IITGN and the SPIC MACAY IITGN chapter organised Kala Samanvay, a series of live online cultural events from September 12 to 14, 2020. Renowned artists and PadmaShri recipients Geeta Chandran performed Bharatanatyam, and Prahlad Tipaniya presented Kabeer Sangeet, on September 12 and 13, respectively.
- **IITGN RISE**
With an objective to motivate students to participate in various activities and to provide a platform for interaction across various years and disciplines. Meant to be an overarching structure that would cover almost all the major events and competitions organised by various clubs this semester, the entire student body (around 1600 students) were divided into four groups based on their disciplines.
- **INCREDIBLE 2.0**
The Cultural Council organised IncrEdible 2.0, the second edition of the culinary competition at IITGN, on October 31, 2020. Teams showcased their culinary skills and prepared a variety of mouthwatering dishes with proper hygiene and precautionary measures.

- Your home your design
The Welfare Council, IITGN organised two editions of 'Your Home Your Design' competition in September 2020 and January 2021 which invited the students to design and do a makeover of their hostels. Which makes them feel at home and gives a comfy space.
- AMALTHEA 2020-21
Amalthea, the annual student-driven technical summit of IITGN, was conducted virtually on the central theme of 'Connect. Collaborate. Create.' The 11th edition of Amalthea included five webinars with renowned personalities and industry experts, a half-day virtual symposium, and many exciting online events over a period of four months, from October 2020 to January 2021.

Initiatives for improving fitness

- Sports facility
Outdoor facilities: During the period, we have a proper and well-maintained football and cricket field. There are three volleyball and two basketball courts as well. Football field, volleyball and basketball courts have halogens to play in the evening, and most of the friendly matches are played during nighttime.
Indoor facilities: For the assessment period, we have a dedicated indoor space for Table Tennis and Carrom, and Chess are housed inside the student lounge. We also have Snooker, a Foosball table, and an Air Hockey table inside the lounge for recreational purposes. For Badminton, there are four courts in different hostels for students to play . New Badminton Court at Ijokha and Jurqia hostel for hostel residents, three weighing machines were procured and submitted to hostel securities for everyone at any time.

Gym: There is a well-equipped gym in the academic block where a trainer is present for guiding in the morning and evening sessions. It is open to all the students, staff, and faculty of IIT Gandhinagar. The gym consists of equipment suitable for cardio as well as strength training. We have a good selection of free weights and machines, for a full-body workout.

Sports complex: One of the best, in terms of quality, is the sports complex which was under progress at IIT Gandhinagar during. Construction has been delayed due to the pandemic.

Yoga: Under the Guidance of Ms. Tuljha Pujhari sports council started Yoga sessions daily from 7 a.m to 8 a.m. Several students and community members became part of this class and appreciated this program.

Meditation: The physical education section introduced meditation classes just before the mid-semester exams to release the stress of the students, to make them feel positive, calm, composed, and more concentrated.
- Fitness boot camp
A one-month fitness boot camp was started for the campus community in September 2020 that included several types of exercises, including running, stretching, cross-fitness training, squats,

crunches, jumping jacks, sit-ups, push-ups, and so on. Throughout the month, the Physical Fitness team used to conduct one-hour sessions for the community every morning and evening.

- Online fitness challenge

With the start of an overall competition among various branches with 'IITGN-RISE', the Sports Council brought in the first online challenge of RISE, featuring exercises like push-ups, squats, leg raises, and mountain climbing, among others.

- Weekly cycle rides

With an aim to inculcate the habit of fitness, IITGN's Sports Council is organising cycle rides for the community members every Sunday. So far, two rides of about 15 and 25 km have been organised, and around 15 people have joined in each trip.

- Appreciation for sports

Vala Vedangraj Rajendrasinh, Mulastham Amitha Rani, Boddu Sai Gowri Jhansi, Deependra Kumar, Sakshi Yogesh Kabra, and Shah Dhruval Suresh were awarded the scholarship for excellence in Sports & Games for the academic year 2020-21.

- Online aerobics classes

With the goal of improving the overall fitness of the community members, the PE section started online aerobics classes and meditation classes by Ms Payal Vaniya, an online weight loss programme by Mr Harsh Mehtab, an online core exercise programme by Mr Rahul Gupta.

- Open Gym

The PE section restarted open gym sessions for the student community while following all the precautionary measures against COVID-19.