



SDG 4: QUALITY EDUCATION

ENSURE INCLUSIVE AND EQUITABLE QUALITY EDUCATION AND PROMOTE LIFELONG LEARNING OPPORTUNITIES FOR ALL

The mission of the institute states “IIT Gandhinagar, as an institution for higher learning in science, technology, and related fields, aspires to develop top-notch scientists, engineers, leaders and entrepreneurs to meet the needs of the society now and in the future. Furthermore, in this land of Gandhiji, with his spirit of high work ethic and service to the society, IIT Gandhinagar seeks to undertake groundbreaking research, and develop breakthrough products that will improve the everyday lives of our communities.”

IIT Gandhinagar’s core features as an institute include being relevant and responsive to the changing needs of our students and society. It appreciates academic autonomy and flexibility that has been provided to the institute by the Central Government. The research ambience and the nature of faculty and students are exceptional, as a result of liberal funding to the laboratory facilities and, a higher standard faculty recruiting norms than most of the other academic institutes in India and inducting students strictly on a merit basis.

IIT Gandhinagar is thus committed to a holistic approach to education in engineering disciplines and beyond; cutting-edge research addressing global challenges; and giving back. The institute offers a unique undergraduate and graduate education experience in India with

unmatched innovations in the curriculum. We take pride in our student-centric philosophy resulting in a safe, nurturing, and empowering environment for students. The institute promotes critical thinking and an appreciation of the interdisciplinary character of knowledge, with an emphasis on the liberal arts, project-oriented learning, compulsory courses in design and the life sciences, diversity, and globalisation.

Research

The Indian Institute of Technology, Gandhinagar (IITGN) encourages interdisciplinarity in its research activities. We have interdisciplinary centres where people from all disciplines work together to produce research and solve real-world problems that have a high impact on society. Our centre for biomedical engineering, for instance, is developing Automated Rehabilitation and Prosthetic Techniques where individuals from the field of robotics, medical, and electronics are working together. Another research project titled “Curiosity to aid learning and motivation in Schools” is supported by the Indian Council of Social Science Research (ICSSR). One of the research groups in the Humanities and Social Sciences discipline conceptualised community-level women’s education (a proxy for the value placed on women’s wellbeing) as exerting contextual influence on adolescent haemoglobin level and body mass index (BMI).

Our researchers include faculty members, visiting scholars, post-doctoral fellows, graduate, and undergraduate students. They collaborate with colleagues across the institute, affiliated institutions, and other research institutions. We aim to bring IITGN as an institution for higher learning in science, technology, and Humanities that aspires to develop top-notch scientists, engineers, leaders, and entrepreneurs to meet the needs of society.

Considering the significance of effective research communication skills among the Master’s and Doctoral students, IITGN started a certification programme in scientific writing. The programme intends to gauge students’ skills and knowledge in scientific writing and to promote skill development. The ‘Certification in Scientific Writing’ would encourage research scholars to work on scientific writing from an early stage in their tenure, serve as a milestone for measuring student progress, facilitate the emergence of tutors in scientific writing, contribute to skill-building of IITGN students, and enable students to use scientific writing competencies during their life-long learning process. The certification process is conducted twice every year in two phases, and the doctoral students are eligible to apply.

A total of 144 students from various prestigious institutes across the country were selected for the Summer Research Internship Programme (SRIP) to spend eight weeks



carrying out their research at IITGN. The programme offers opportunities to students from India and abroad to carry out research projects under the mentorship of IITGN faculty members. This year, 44 faculty members of the institute guided the participating students on a wide range of research projects.

Operations

Students First approach

IITGN empowers students with the most unique initiatives like Foundation Programme, Invent@IITGN, and Explorers Fellowship; extremely liberal branch change policies, flexibility in the curriculum, leadership, self-governance, cutting-edge research, and diverse career opportunities including robust support for placements, and an active incubation centre.

Academic Advisory Council

The institute has constituted an Academic Advisory Council, which meets regularly to discuss issues of academic priority to IITGN. The council comprises eminent academicians from India and abroad as well as faculty members of IITGN. The council members deliberate and provide strategic inputs on several issues, including the possibility of lateral entry into the BTech programme, ways to support students who are academically lagging, faculty recruitment, and curriculum review.

The Ninth Academic Advisory Council (AAC) meeting of the institute was held on 3 January, 2020, at IITGN. Eminent and illustrious external academicians from India and overseas as well as IITGN faculty members attended the same. The day-long deliberations started with participants

from Duke University, USA; University of Colorado, USA; University Institute of Lisbon, (ISCTE-IUL), Portugal; Yale University, USA; IIT Delhi; IIT Bombay; Tata Institute of Fundamental Research, Bangalore; among others, who provided their valuable and strategic inputs. The need to adopt a General Education component in the curriculum, on the lines of US universities, was also considered which includes subjects like culture, ethics, civics, history, society, data analysis, writing, etc. The council members discussed various perspectives of the current education scenario where students work in a more networked society and are using multiple external platforms for learning.

Research facilities

Research at IITGN covers a wide spectrum and is inspired by both real-world challenges and issues of fundamental importance. Further, our interdisciplinary centres of excellence, cross-institutional agreements, and vibrant visiting faculty program enrich our research and allow us to address ambitious issues that require inherently interdisciplinary approaches. The institute has state-of-the-art laboratories and research facilities with the latest equipment and infrastructure.

Residential campus

All students, except a few day scholars, reside in hostels, where food and accommodation are provided at a minimum possible rate. The on-campus accommodation facility leads to closer academic and social interaction between students and faculty, develops stronger community spirit, and provides the opportunity to learn from each other, creating sustained academic ambience resulting in higher creativity from everyone.



Interdisciplinary courses

Undergraduate students are expected to complete two distinct but compatible parts called Institute level curriculum and Discipline level curriculum. The former is required to be taken by all the students irrespective of their chosen branch of specialisation. It consists of a package of compulsory courses in the Humanities and Social Sciences, Physics, Chemistry, Mathematics, Life Sciences, Computing, etc. This helps the students to get acquainted with the different disciplines at the institute and gain a basic knowledge of the important subjects that might be required at a later stage in their respective specialisation courses.

Innovative curriculum and active learning

The institute boasts of an award-winning curriculum, project-based learning, creativity, entrepreneurship, and encourages an emphasis on design, humanities, and life sciences to promote out-of-the-box and non-linear thinking. About 40% of UG and 75% of PhD students receive international exposure. The institute puts an emphasis on learning-by-doing and active learning, by introducing Tinkerer's Lab for fearless experimentation, programmes such as Invent@IITGN to promote innovations and inventions, and establishing Maker Bhavan. It enjoys the freedom, flexibility, autonomy, and support to try out new pedagogical approaches. Apart from the mentioned programmes, a Dual Major BTech Programme, a BTech- MTech Dual Degree, and a BTech-MSc dual degree are also offered.

Library facilities

Being an integral part of academic and research work on the campus, IITGN Library provides information services to support the teaching, learning, research, and outreach activities of the institute by creating state-of-the-art facilities and offering innovative services. Keeping users at the centre of its activities, Library has been actively engaged in designing and delivering need-based information services.

The library has a fast-growing collection of books, journals, magazines both in print and digital format covering most disciplines taught and researched at the institute. Within a short span of its existence, the library has developed collections in every possible area of interest to the campus community. To support the research activities, the library subscribes to core collection (over 70+) e-journals, e-databases, e-books, and others. The library has created an excellent infrastructural facility with all required software tools and technologies. Library services have been fully automated and are accessible on and off-campus.

IITGN Library continues to provide access to library resources and offer services to support teaching, learning, and research both physically and virtually in this challenging time. The library continues to keep connected with the user community and assist in using the resources virtually. Currently, due to the pandemic scare, users have limited access to the physical facilities of the library. Users are allowed to have access to the book stack area and use the library reading hall. However, the number of users at a given point of time is restricted to not more than 25. Other facilities will be reopened as and when the overall

situation improves and look into the safety and security of everyone concerned.

The Library has taken an initiative to document the IITGN community's (faculty, students, staff, residents, security personnel, mess workers, construction workers, housemaids, and others directly or indirectly associated with IITGN) personal and professional experiences, reactions, and responses to the changes in the community and the surrounding environment due to the pandemic. For more information, please refer to https://iitgn.ac.in/research/library/covid19_experience

The university as a body provides public access to the library. There are no charges for using the library and on-site. However, there are nominal charges for lending books and delivering articles to external (Academic Institutions & Individual - Researchers & Academicians) members. Please refer to the 'Library Memberships' section on the website of the IITGN library.

All institute ID cards have been enabled to use the RFID system. Tasks such as the issuance and return of library books, tracking books, detecting non-issued books being taken out, inventory control, etc will now be easier and faster. Users would now be able to perform self-checkout and check-in of library books by using a dedicated kiosk.

Leadership Development Initiative

IITGN firmly believes in educating and moulding students in a way that they can excel in the art of finding the leader within themselves, be it in any field or profession. With the idea to promote leadership skills among its students, IITGN kick-started the Indira Foundation Leadership Development Initiative in August 2019. Since its initiation, the LDI has conducted a sequence of workshops, modules, tutoring sessions, and lectures around leadership. Starting from undertaking a comprehensive study on the leadership needs, potential, and challenges of IITGN students, all the way to developing emotional and collaborative intelligence, conflict resolution, and negotiation, this initiative encourages students to advance different aspects of their leadership potential and skills.

Innovation labs

IIT Gandhinagar has unique centres and facilities that promote innovation in research and practice. A few examples include Design and Innovation Centre, Centre for Creative Learning, Tinkerer's lab, etc.

The Design and Innovation Centre (DIC) at IITGN promotes collaborative research and educational initiatives on design and innovation. The discipline of design encourages students to develop innovative products and services through curricular and extra-curricular projects. The focus of the Centre is to develop innovations that have a strong impact both locally and globally. The Centre fosters a

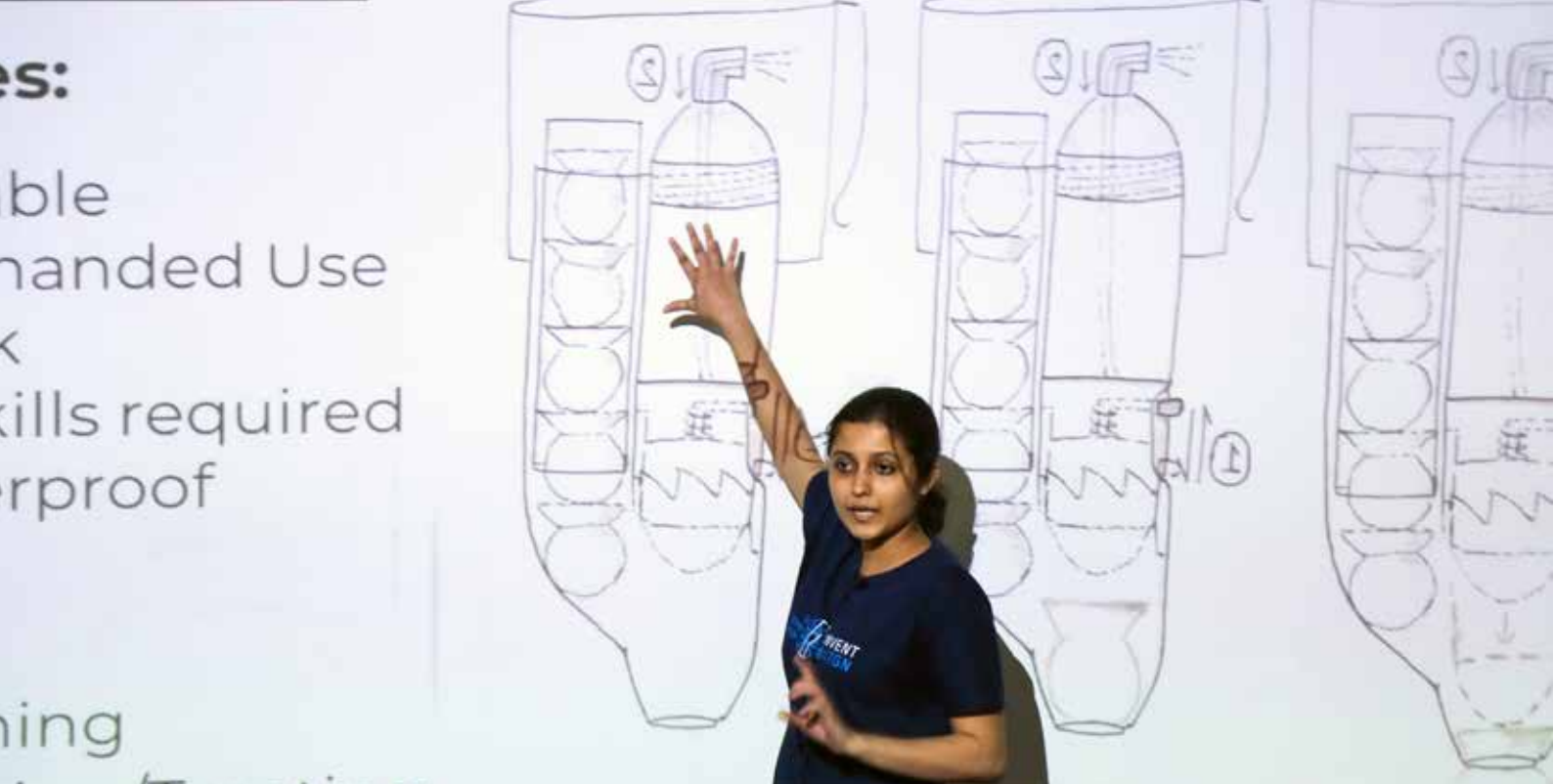
multidisciplinary approach and supports projects of an innovative nature and collaborates with globally acclaimed institutions. The projects at the DIC have a strong industry and social focus and follow a human-centric design philosophy. DIC projects range from social innovations, ecological design, to frugal engineering, among others.

The Centre for Creative Learning came into being in April 2017, as a space that nurtures a scientific temper and the inherent creativity in students and teachers alike. The idea was, and remains, to immerse oneself in a subject in order to learn it, to do rather than read. We need to make our classes engaging, provide experiential learning, foster creativity and innovation with a sole focus on concepts. The Centre boasts of 1000+ unique STEM models and activities, including 100+ STEM and hands-on learning workshops for over 10,000 teachers and engineering college professors, and interaction with 100,000 students from all across the country.

Tinkerers' Lab (TL) is a 24 X 7 facility open for the entire IITGN community and is completely managed by students. TL provides a workspace for students to work on various course-related or independent projects, giving them the opportunity to do hands-on work. The lab is equipped with the latest electrical and mechanical tools like laser cutters and engraving machines, 3D printers, fabrication facilities, etc. During this year, the lab acquired a PCB milling machine and a vinyl cutter. TL organised workshops and competitions for the community to learn new skills and encourage them to work in the lab. Tinkerers' Lab aims to set up a culture where students are not afraid to get their hands dirty, where students gain self-dependency, self-sufficiency, and efficiency in experimentation, a culture where they can approach problems theoretically as well as practically and use the knowledge and experience gained in the process, to come up with something exceptional that could change the course of our future.

Foundation Programme

The institute places great emphasis on not only educating successful engineers of the future, but also creating well-rounded personalities, who contribute to society, are respectful of and can adapt to their surroundings, and prove themselves to be great thinkers and problem solvers in all avenues of life. The institute conducts a 5 to 7-week Foundation Programme for the first-year students joining the institute. The Foundation Programme is targeted at the holistic development of students by immersing them in various activities designed around 5 major themes: (1) values and ethics, (2) creativity, (3) teamwork, (4) social awareness, and (5) physical fitness. 209 undergraduate students of the 2019-23 batch immersed in various activities designed to build their self-confidence and explore their creative passions.



The idea behind the programme is to introduce a student, who has been committed to JEE preparation for the past 3-4 years, to a variety of issues and activities. These would range from issues of national and international significance, ethics, sports and physical exercises, community service, sketching, artwork, and many more. The programme is designed keeping in mind the following objectives: enabling interactions, engagement, enhancing awareness, and connecting emotionally. The Programme was recognised with the World Education Award 2013 by the World Education Summit for innovations in engineering education.

Training for teachers

Centre for Creative Learning (CCL), IITGN, in collaboration with the Directorate of Employment and Training (DET), Government of Gujarat conducted five two-day residential, hands-on experiential workshops for ITI Instructors of the state. The centre also conducted workshops at all 19 District Institute of Education and Training (DIET) centres of Gujarat and introduced BED students to new pedagogy. The Government of India has sought the involvement of CCL in improving the country's performance and ranking in the 2021 Programme for International Student Assessment (PISA) exam. The team of CCL has already trained around 200 KVS teachers, 70 teachers of NCR CBSE schools. CCL has offered four months internship to ten students from various ITIs of Gujarat under the initiative- 'Makers and Communicators'. These ten students were also felicitated by the Hon'ble Chief Minister of Gujarat, Shri Vijay Rupani, on 19 September, 2019.

Invent@IITGN

Invent@IITGN is a six-week annual summer programme in inventing, based on a similar programme in the United States (where it is called Invention Factory™). It was

adopted by IITGN during the summer of 2018. During the summer of 2019, the students developed working prototypes addressing societal and consumer needs during the annual programme organised by IITGN.

This summer students from nine IITs gathered at IITGN to ideate, prototype, and write provisional patent applications for inventions they generated during six weeks of intense work. These inventions addressed real societal or consumer needs and were designed to be feasible and practical in terms of safety, size, weight, and cost.

A total of 28 students were selected from nine IITs across the country including IIT Bombay, IIT Dhanbad, IIT Dharwad, IIT Gandhinagar, IIT Goa, IIT Guwahati, IIT Kharagpur, IIT Madras, and IIT Palakkad. The students were divided into 14 teams of two members each. In these six-weeks, students conceived an invention, created a prototype, pitched the invention, and wrote a provisional patent application which they filed in India and subsequently, a U.S. provisional patent application. All the fourteen teams were allocated a budget of INR 50,000 for materials, free access to on-campus equipment like laser cutters, 3D printers, machine shops and machinists, to support their inventions.

The inventions included numerous innovative techniques such as a mechanical method to rotate rooftop solar panels to follow the sun; greatly increasing their efficiency without the need for motors or battery systems, a leak-proof eco-friendly container for takeaway food, vacuum storage device for farmer's carts to increase the shelf life of vegetables and fruits, without the use of refrigeration, voice-controlled system to feed people without the use of their arms, etc.

Distinguished Visiting Chair

Smt. Amba & Sri V S Sastry Distinguished Visiting Chair was established at the institute in August 2019 to promote institutional excellence. Under this Chair, every year, an active distinguished academic of international stature from the field of science, engineering, or humanities will be invited to spend at least a month at IITGN for lectures, interactions, and research collaborations. With the creation of this new Chair, IITGN will be able to further strengthen its Scholar-in-Residence programme to bring distinguished visitors from India and abroad to add significant value to the institute.

Non degree programmes

A student who is registered for a degree in a recognized institute or university in India or abroad, and who is officially sponsored by that institute or university to complete part of their academic requirements at IITGN, can apply for admission to IITGN as a non degree student. Such a student may carry out research, or take courses for credit or otherwise, or may use other academic facilities.

Clay Studio

Clay Studio was inaugurated in the student hostel area in March 2020. The studio is full-fledged with modern facilities and equipment and will enable anyone from the institute to unleash their creativity using potter wheels, kiln, glazing materials, clay carving tools, and other raw materials.

Times Higher Education World University Rankings

The institute ranked among the top 600 educational institutes worldwide and 7th in India in the 2020 Times Higher Education World University Rankings. The rankings assess the performance of research-driven universities on 13 different performance indicators, including teaching, research, knowledge transfer, and international outlook. IITGN, a 13-year-old institution, entered the global rankings for the first time this year in the 501-600 band worldwide. 56 Indian institutes made the World University Rankings this year, up from 49 last year.

Innovative courses by global faculty

The online format no longer limits teaching to an institute's on-campus faculty. IITGN is one of India's most globalised campuses. Almost 10 to 15 per cent of IITGN faculty at any given time are visiting faculty from India and abroad. Nearly 40 per cent of undergraduate students and 80 per cent of PhD students receive study abroad or other overseas opportunities during their tenure at IITGN. With international travel ground to a virtual halt, the global experience of our students screeched to an abrupt halt. Since the institute could no longer send its students out to

the world, it decided instead to bring world experience to them by expanding its course offerings from faculty all over the globe.

The institute offered 22 courses during the past year by faculty from Australia, Brazil, France, Germany, Japan, Mexico, Portugal, Singapore, Switzerland, Turkey, the United Kingdom, and the United States. IITGN students were exposed by global faculty colleagues to courses ranging from Citizenship and Human Rights, Engineering of Theatre Making, Ultrafast Optics, Abnormal Psychology, and Computational Approaches to Animal Intelligence, to Nanostructured Thin Films, Quantum Technologies, etc., widely expanding the diversity of their learning experience. The institute plans to introduce this practice as an integral component of its academic programmes and additionally open these courses to students of other institutions in future years.

Covid-19

During the initial time of the Covid-19 pandemic, IITGN postponed all academic activities and enforced strict social distancing inside the campus. But, at the same time, various innovative educational programmes using online platforms were planned. As a part of these programmes, an online seminar series by IIT Gandhinagar faculty members was organised on diverse topics, non-technical and designed for a general audience. Some of the topics of the webinars include Languages and Scripts of India, nanotechnology, how we read literature, the shape of things and others.

As a 13-year-old and relatively small institution, IITGN lacked the institutional infrastructure of continuing education programmes and online instruction, which aided many established universities as they were forced to switch to digital delivery during the pandemic. By contrast, IITGN had to ramp from zero to 100 per cent online delivery virtually overnight. Like institutions across the globe, over the past several months IITGN has developed online platforms and offered support and training to its faculty to switch to online instruction to keep academic programmes for its students on track. IITGN has worked diligently in the academic adjustments it was compelled to make to adapt to the rapidly changing ground circumstances to minimise the disruptions to the academic pursuits of its students, while also striving to strengthen itself institutionally for the long term. Outlined below are some of the novel, innovative, and distinctive educational programmes introduced at the Institution in response to the pandemic.

Blended learning

The move from the physical to the digital classroom is no doubt a major challenge for academic institutions, but it is equally an opportunity. It has introduced students and

faculty worldwide to new tools for classroom management and learning. IITGN created or adopted platforms for online learning, but to realise the full potential of online and blended learning requires a major shift in mindset. The shift dovetails with contemporary pedagogical approaches on active learning and learning to learn.

Over the past year, IITGN faculty have reworked and reoriented their courses for online and blended learning. Some courses, such as computer programming, for instance, are especially amenable for online instruction, so the focus of the in-person experience can be around in-class discussions, project-oriented and group learning, etc.

Online courses by MOOC

Given the uncertainty over when normal instruction could resume, in April 2020, the IITGN Academic Senate authorised credit options for online courses by MOOCs, such as Coursera, edX, and NPTEL. The Academic Senate identified and approved 180 MOOC courses, which were made eligible for regular credit at IITGN and students were also given the option to petition to have other MOOC courses accredited. Nearly one-third of UG students and 18 per cent of master's students received credits for MOOC courses during the summer of 2020. The option enabled hundreds of students to learn from established online platforms while the institute built up its internal online teaching capacity. The institute has decided to retain this option in future years so students can benefit from great online courses and teachers from around the world.

Workshops for faculty

When the second semester of the 2019-20 academic year was disrupted by the first nationwide lockdown, the institute decided to advance the 2020 summer vacation instead of resuming the disrupted semester immediately in online mode. This gave all faculty members time to prepare themselves to teach online. Few selected faculty members taught courses online in the summer and the entire faculty body benefited from their collective experiences. These faculty members tried different techniques, used different platforms and learnt their inherent features and limitations. The institute then organised workshops on online teaching in which these faculty members shared their experiences. All the necessary support and equipment were provided and this enabled the faculty members to adapt quickly and teach online effectively.

Curricular revision: New grading system

IITGN commenced online classes from 8 June, 2020, to complete the courses of the second semester for the academic year 2019-20. The institute has also introduced a new grading system for the disrupted academic term, under which no letter grades will be awarded this semester

for any course. Instead, two new grades are being introduced - 'P(E)' (Pass Emergency) and 'I/F' (Incomplete/Fail) for all courses this semester. All students who get an 'I/F' grade will have one more opportunity to complete the course requirement and improve their performance to earn a 'P(E)' grade. This revised grading policy is designed to reflect continuous learning, ensure fairness and reflect the disruptive impact of the pandemic on the educational system.

New academic plan for First-Year BTech students

Due to the pandemic, the joining of the new batch of BTech students has been delayed to mid-November. Hence, IITGN has reconfigured the first-year curriculum for this particular batch and split the year into three terms of 6 weeks, 15 weeks, and 8 weeks, respectively. The first term of six weeks consists of a course on Computing (3 credits), a course on Writing (2 credits), a pass-fail course "Learning to learn" (1 credit), and a pass-fail Foundation Programme (1 credit). The intent is to iron out in the first six weeks any challenges that the new students may have due to online teaching and to synchronise the academic schedule of all the students starting January 2021 semester.

Introduction of Post Graduate Diploma Programme (PGDIIT)

In June 2020 concerns arose that the placement season for graduating students was severely compromised; many students were unable to find employment and even the offers of many of those that did were deferred by companies. Travel restrictions also disrupted higher studies and career plans of scores of graduates. IITGN has taken up several initiatives to help its graduating students whose future plans may be interrupted by the Covid-19 pandemic. The institute has launched a One-Year Postgraduate Diploma Programme (PGDIIT) in several streams for the upcoming Academic Year (2020-21) for students of the current graduating class. This Postgraduate Diploma will also help the graduating students who are interested in exploring but are not fully committed to a Master's Programme. At the conclusion of the diploma, they could transfer course credits to masters or PhD programmes at IITGN or other universities. The scheme enabled graduating students undecided on committing to higher studies to explore the option with the one-year creditable diploma.

A candidate who completes the PGDIIT can subsequently apply to enrol for the MTech degree. In addition, IITGN is also offering two Fellowships - 'IIT Gandhinagar Junior Fellowship in Leadership' and 'Sabarmati Bridge Fellowship' to enable graduating students to make use of this time to develop career-enhancing leadership skills or embark on cutting-edge research. These were especially



PROJECT ISAAC SHOWCASE

The Project Isaac Showcase celebrates and showcases the best and most creative work products generated by students during the COVID-19 pandemic.

valuable for students whose overseas education plans were thwarted by the pandemic. Finally, the institute also launched On-Campus Employment Opportunities and UG Teaching Assistantships to enable students to hone their job skills and leadership potential while studying. The institute also introduced a Work and Study MTech programme.

Project ISAAC

IITGN launched 'Project Isaac' to engage its students in creative projects to enhance their critical skills while they were confined to their rooms or homes during the Covid-19 crisis. The project is inspired by Sir Isaac Newton, who faced a similar situation during the Great Plague of London in 1665. Under this project, IITGN has introduced several exciting contests around leadership, coding, programming, research, innovation, creative expression, and writing, with prizes and rewards for its students as well as alumni, faculty, and staff. The project strives to motivate IITGN students to dream ambitiously to achieve wondrous and ambitious things. They are also encouraged to cultivate new skills in writing, painting, coding, music, creative expression, and so on, which are increasingly critical skills for professional success. Nearly 60 per cent of IITGN students participated in the various voluntary activities under Project Isaac, which culminated in the "Project Isaac Showcase" on 29 January, 2021, to recognise and celebrate their resilience and creative endeavours, ranging from poetry, short stories, sketches, and paintings to multimedia audio-visuallys, etc.

Faculty and postdoctoral recruitment

The online format offers a novel opportunity for academic institutions to reimagine their faculty and postdoctoral recruitment campaigns and take them global. IITGN redoubled its faculty recruitment effort with digital promotions and turned to online tools to interview and vet candidates, have them deliver classroom lectures, research seminars, etc. As a result, this year was the most successful ever faculty recruitment season at IITGN, with new hires growing 83 per cent over the previous year.

The Early Career Fellowship of the institute for the

postdoctoral candidates pays almost twice the regular postdoctoral fellowship to motivate the country's best researchers to pursue an academic path. It enables them to be mentored by IITGN faculty to build their teaching and research profile. Another scheme supports IITGN faculty to attract exceptional postdoctoral researchers by providing matching financial support. With this mentoring and research experience, many of these stellar early career and postdoctoral research fellows will hopefully emerge as valuable future faculty colleagues at IITGN and other institutions throughout India and the world.

Education

The institute introduced the Guided Progress Scheme (GPS) in 2014 to help academically weak undergraduate students develop and follow a plan for graduation from the institute. The GPS primarily involves the restriction of the number of credits a student can register during a semester, and the mapping of students to an advisor, who advises them on the academic trajectory that should be followed.

Peer Assisted Learning (PAL) programme is another academic support scheme for undergraduate students launched by IITGN in October 2012. This programme is designed on the philosophy that peer groups of students play an extremely influential role in determining their learning behaviour. Students are known to actively seek advice from their peer group as they share the same generational perspective. The PAL programme at IITGN was initiated with a specific aim to assist those first-year students who face difficulties in adapting to English as the medium of instruction in their coursework. These students are identified by counsellors during one-on-one interaction sessions that are held with the incoming batch of students during their first month on campus. The senior students who serve as peer educators are selected by a faculty in charge of the PAL programme by inviting applications and conducting personal interviews in August every year. In a model PAL session, a senior student (second or third-year) assists two first-year students by sharing their knowledge and experience that helps them adapt to the new learning environment. The first-year students and their peer

educators meet for four hours every week for PAL sessions, usually in the evenings. The peer educators are compensated for their service through the Earn While You Learn (EWYL) scheme at IITGN.

The institute is planning to soon introduce a Minor in Sustainable Development that would focus on various sustainability-related opportunities and challenges. It will be an interdisciplinary study programme, including subjects from various fields such as water, climate change, pollution, energy, and natural resources.

IITGN climbed 16 positions to be ranked at number 35 in the overall category and retained its number 24 rank in the engineering category in the India Rankings 2020 published by the National Institutional Ranking Framework (NIRF). IITGN is the only higher education institute from Gujarat to be ranked among the top 50 educational institutions in the country in both categories. The institute's strength in the overall category, in which it rose from 51st rank in 2019 to 35th this year, is a reflection of its focus on interdisciplinarity, liberal arts, design, and creativity, which are at the core of its academic programmes. IITGN's NIRF score has also increased in both categories.

The widespread outbreak of the coronavirus has created a state of emergency for most of 2020 and through 2021, forcing most establishments to move to remote modes of work with exceptions being made only for essential services, which in turn created a situation where most students across the country had to pack up and leave campuses. At IITGN, where students have a longstanding tradition of taking ownership of issues that affect them directly, the institute has been able to craft a response that has been relatively nuanced. In particular, students had the flexibility to choose to stay on campus or leave for home just before the nationwide lockdown came into effect. The decision was taken by the higher administration considering many factors that included but was not limited to, travel restrictions and associated difficulties, comfort and convenience of the students, and sincerity and commitment of students to follow the norms set up by the institute crisis committee, among several others.

The students started operating the 24x7 Control Room from IITGN's hostel premises starting from 17 March, 2020. This initiative aimed to facilitate smooth communication between the student body and institute authorities regarding all matters that are concerned with this crisis. The institute successfully introduced and executed infrastructure provisions required for business continuity during unforeseen situations such as Covid-19. IITGN has been able to continue the teaching and learning experience to a great extent through its internet and connectivity framework, e-learning options, video conferencing, etc.

The Humanities and Social Sciences discipline of the institute offers several courses for learning languages such as French, Sanskrit, Chinese, Urdu, Japanese, and Gujarati. IITGN students are encouraged to take these courses. Moreover, the institute has established four endowed chairs in Sanskrit, Urdu, Classical Indian Music and Indian Performing Arts to promote Indian cultural traditions in its curriculum.

Invited lectures as follows:

- Smart Network of Universities: Deploying Technology 4.0 for SDGs by Mr Rajendra M Shende, TERRE Policy Centre Pune, on 20 February, 2020
- A Vision for Green and Sustainable Education at the University of Pittsburgh at Johnstown by Dr Manisha Nigam, University of Pittsburgh, Johnstown, on 21 February, 2020
- Promoting and Disseminating Science and Engineering to Society by Dr Vasco Matos Trigo, IITGN, on 7 August, 2019
- The New Education Policy 2019: Possibilities and Challenges by Prof Jaison Manjaly, IITGN, on 25 September, 2019

Community outreach

IIT Gandhinagar believes in being an involved member of the community and a good neighbour. It believes in engaging with the community of which it is a part. Our presence should have a positive impact not only on those who are formally part of the institute, but also on those who surround us, and whose lives are affected by the presence of the institute. As educators, we pursue means to bridge the knowledge and communication gaps that exist between the privileged and the underprivileged. IITGN is constantly engaged with and actively contributing to the local community, through formal and informal initiatives, outreach activities, and educational engagement. Our initiatives include NYASA (supporting and providing educational opportunities to the children of migrant construction workers) and NEEV (empowering grassroots communities through workforce development, with a focus on entrepreneurship and skills training).

Centre for Creative Learning

The Centre for Creative Learning (CCL) came into being in April 2017, as a space that nurtures a scientific temper and the inherent creativity in students and teachers alike. The idea was, and remains, to immerse oneself in a subject in order to learn it, to do rather than read. We need to make our classes engaging, provide experiential learning, foster creativity and innovation with a sole focus on concepts. The Centre boasts of 1000+ unique STEM models and activities, including 100+ STEM and hands-on learning workshops for over 10,000 teachers and engineering college professors, and interaction with 100,000 students



from all across the country. One of the goals of the institute is “to enrich local schools and communities through value added interactions” and CCL is a good example demonstrating the same.

Centre for Creative Learning (CCL) conducted two 12-day online in-service courses for teachers of Kendriya Vidyalaya Sangathan (KVS). The objective was to train them about ways to engage students online. The online course was conducted from 26 May to 6 June, 2020, and 29 June to 10 July, 2020, for Mathematics and Science teachers respectively.

With support from Science International Forum (Kuwait), CCL-IITGN conducted an online five-day workshop for more than 250 CBSE school students in Kuwait from 21-25 June, 2020. The objective of this course was to let students from grades 8 to 12 explore the beauty of Mathematics.

Education for nearby communities

NYASA, started in 2011, primarily aims to support and educate the children of migrant construction workers in and around the campus. The NYASA provides the student/staff/faculty community with a platform to engage with marginalised communities and empower them through education, health, and skill development. NYASA has achieved a tremendous outreach through various outreach programs that directly contributed to about six hundred families around the IITGN campus in improving their livelihood. Some of the major activities in the NYASA involve open-air school, Sanjeevani, computer classes, festival celebrations, weekend fun sessions, women’s health awareness, entrepreneurship workshop, and summer camp, which helped develop a sense of belonging and facilitating the individual’s potential.

Our collective strength 'education' is used as a platform to

bring the children from dusty environs to an open-air school, provide them mid-day meals, fruits for good health and provide basic education on our campus. Various things like clothes, uniforms, books, stationery, bags, footwear, etc. are distributed from time to time. The focus is the overall development of the children while keeping them away from the construction sites, and hence, many activities like Introduction to the world of Computers, Origami sessions, regular sports sessions, cultural events, medical camps, etc. are organised from time to time. The main aim of NYASA from the beginning was the education of poor children, especially children of construction workers in and around the campus. A major step towards this goal involved setting up an open-air school in IIT Gandhinagar’s new campus. Here, children from construction worker colonies and slums attend the school 5 days a week. We have a permanent teacher for all these children, as it is important that the children are familiar with the teacher too. They are taught the basic skills of hygiene and sanitation, but more importantly, are educated just like any other school, but of course without a fee. Initiatives by NYASA include NYASA school, Sanjeevani and donation drives. Sanjeevani is the annual medical camp for people of all age groups from villages around our campus. The nearby communities are also provided computer and technical training courses.

Unnat Bharat Abhiyan

The institute is involved in the 'Unnat Bharat Abhiyan' (UBA) programme and is a Regional Coordinating Institute(RCI) for 32 participating institutes under UBA II. UBA focuses on village development including economic development, infrastructure development, and other aspects of human development i.e., education, health, drinking water supply, etc.



UTYAEI

IITGN, with the National Institute of Educational Planning and Administration (NIEPA), New Delhi, organised an international conference on Urban Transformations, Youth Aspirations and Education in India (UTYAEI) on 20-21 February, 2020, co-organised by Prof Mona Mehta, IITGN and Prof Manisha Priyam, NIEPA.

Online inservice courses for KVS teachers

Initiated by the Organisation for Economic Co-operation and Development (OECD) in the year 2000, the Programme for International Student Assessment (PISA) essentially gauges whether the education of a country is helpful for its students in their daily lives or not. India is going to participate in this exam in 2021 and in an attempt to improve its performance and ranking globally, the Government of India has given the responsibility to the Centre for Creative Learning for making necessary preparations. The Centre began the work for capacity building of teachers in the summer itself, with the first batch of 100 KVS teachers (24 - 28 June, 2019), followed by another batch of 100 KVS teachers (26 - 30 August, 2019). The aim of this initiative was to inculcate a sense of active and applied learning which serves as the backbone for practical application of classroom concepts in real life. Centre for Creative Learning (CCL) also conducted two 12-day online in-service courses for teachers of Kendriya Vidyalaya Sangathan (KVS). The objective was to train them about ways to engage students online. The online course was conducted from 26 May to 6 June, 2020, and 29 June to 10 July, 2020, for Mathematics and Science teachers respectively.

Experiential learning workshops across Gujarat and Madhya Pradesh

CCL, in collaboration with the Directorate of Employment and Training (DET), Government of Gujarat, conducted five 2-day residential, hands-on experiential workshops for ITI Instructors across the state. CCL team also visited all 19 DETs across Gujarat and 3 DETs in Madhya Pradesh, introducing BEd students to new pedagogy.

Workshop in Sri Lanka

In the month of December 2019, CCL conducted two-day workshops on experiential learning for science and mathematics teachers and a two-day foundation programme for 200 students at the University of Jaffna, Sri Lanka. The idea was to develop a conceptual understanding of experiential learning and enable teachers to design experiential activities to make classrooms engaging and joyful.

Inviting non-IITGN students to the institute

A unique initiative by IITGN aims at providing an interesting in-campus educational experience to non-IIT students, beyond their courses of study. IITGN hosted 40 meritorious engineering undergraduates of various engineering disciplines, constituting 28 boys and 12 girls, from Mehsana's Gujarat Power Engineering and Research Institute (GPERI). The aim of this unique, five-day residential training initiative is to provide non-IIT students with exposure beyond their technical subjects, which may be transformational.

The residential training workshop was conducted during 16-20 December, 2019. It was planned in such a way that it introduced and immersed these students with ideas and activities other than their usual subjects of study. This

includes Origami, a practical way of learning science subjects through interactive sessions with the Centre for Creative Learning and Design & Innovation Centre, a session with Writing Studio on developing the right communication skills and their importance, an insightful session on LGBTQ awareness, effective note-making, an interesting astronomy tour, and a meaningful session on mental health. Projects designed by these students were also put on display on the IITGN campus.

STEM Box

CCL has created a STEM box of 200+ unique activities. During the year 2019, the team has sent this box to 54 science communicators centres and recently to 100 schools in Gujarat. The box contains about 75 science-based, 75 math-based, and 50 High Order Thinking Skills (HOTS) hands-on activities and projects that allow students to tinker around and grasp seemingly difficult basics with absolute ease and develop out-of-the-box thinking capabilities.

TEQIP-III

TEQIP-III project at IITGN entered its third phase in December 2017 and started to work with the local engineering colleges. This Technical Education Quality Improvement Programme (TEQIP) has conducted various short courses and workshops for faculty, students, and administrative staff as well. During this year 2019-20, nine such programmes were held at IITGN. More than 300 faculty members/students/staff from different engineering colleges across the country participated in the programmes to learn about Advanced Pedagogy, Digital Tools of Learning, and other important subjects. The topics of discussions included Technology-enhanced Learnings like Applied Digital Signal Processing, Electrical Machines & Power Electronics, Thermodynamics, Hands-on training on Special Electrical Machines and Drives, and Data Science & Analytics. Faculty members of IITGN interacted with the participants of these activities while introducing new concepts and pedagogy for effective learning. A programme for staff of TEQIP colleges was conducted focusing on Leadership, RTI, Office Procedures, and Purchase Procedures. It was very useful for them to understand the recent working procedures in an efficient manner.

Visitor's conference at Rashtrapati Bhavan

Prof Sudhir K Jain participated in the Visitor's Conference with IITs, NITs, and IEST organised by the Ministry of Human Resource Development at Rashtrapati Bhavan, New Delhi, on 19 November, 2019. The conference was focused on best practices and challenges of Higher Education Institutions as per broad parameters of NIRF rankings.

Panel session

Prof Sudhir K Jain, Director, IITGN, was invited as a Chair of the panel session on 'Expectations and Role of Governments in India-Canada Collaborative Opportunities'. The session was held on Day 1 of the Vice Chancellors' & Presidents' Summit - 'Dynamics of Higher Education in India and Canada: Envisaging Greater Collaborations and Opportunities to Network', organised by the Shastri Indo-Canadian Institute (SICI) at New Delhi on 25-26 November, 2019.

Chemistry camp

A three-day residential Chemistry Camp for 9th standard students was conducted by the Royal Society of Chemistry (RSC), India, and Salters' Institute, UK in association with IITGN, between 10-12 December, 2019. It hosted 66 students of several state government schools of Gandhinagar and Ahmedabad. IITGN faculty members Prof Bhaskar Datta and Prof Sivapriya Kirubakaran gave two lectures and Prof Sriram Kanvah conducted a demo of chemistry experiments.

Educational outreach

Pan IIT Alumni USA invited Prof Sudhir K Jain, Director, IITGN as a keynote speaker in the inaugural virtual conference series for discussing the impact of Covid-19 on education ("The New Education Norm: Post Covid-19") held on 25 June, 2020. The other speaker was Prof Pradeep Khosla, Chancellor of the University of California, San Diego. Prof Prabhat Hajela, Provost of Rensselaer Polytechnic Institute, New York, was the moderator. Prof Sudhir K Jain, Director, IITGN chaired a session on "Crisis as an Opportunity: Leading in the Pandemic", in a virtual conference "The Republic of Letters: Groundbreak 2020", during 24-26 June, 2020. The conference was organised by Ashoka University and Harappa Education to reimagine a new world of learning in India. IIT Alumni Centre Bangalore invited Prof Sudhir K Jain as a speaker to discuss 'Educational Innovation for a Post COVID-19 World', in a webinar held on 4 July, 2020. Prof P D Jose (IIM Bangalore) and Dr Susheela Venkataraman (Asian Development Bank) moderated the e-seminar.

Daycare learning centre

The IITGN Day Care Centre was started in March 2014 as a community initiative to provide a safe, secure and nurturing environment to the children from IITGN families. Our centre caters to children between the ages of 6 months to 10 years, and operates from Monday to Friday from 9 am to 6 pm. Our centre has adopted an open admission policy with a fee structure that is accessible to all sections of the IITGN community.

One unique feature of the daycare at IITGN is that we take

pride in meeting the needs of our children in-house. Passionate community members who have had some prior experience in child care help with designing the curriculum and facilitating the day-to-day operations. The everyday routine in the daycare incorporates music and movement activities, art and craft sessions, basics of yoga and gymnastics, storytime, classroom teaching through play and exploration, and also sand and water play sessions. Together these activities hone the children's concentration, imagination, problem-solving, and motor skills. In summary, our unique curriculum focuses on holistic development to bring out the best in the little children and thereby promote their progress. Our activities

thus function as vital tools for developing key physical, social and intellectual skills in our children.

Covid-19

Several events and competitions related to Covid-19 were held online during the pandemic, the examples of which include, but are not limited to the following:

- Announced the Covid-19 Innovation Awards to develop rapidly deployable, creative, and innovative solutions to address urgent technical, social, health, or financial challenges caused by the Covid-19 crisis.
- Established the Covid-19 Research Awards for research by IITGN faculty and students on any aspect of the pandemic

