New Delhi: IIT Delhi, one of the most prestigious educational institutions in the country, has set a new record during the Covid times by making more than 50 lakh N95 masks made by indigenous technology. This is a record not only in the country, but across the globe.

IIT Delhi director Professor V. Ramgopal Rao told IANS:

"We have made a quality mask similar to the N95 based on indigenous technology. This N95 mask can be made available across the country for just Rs 40."

According to IIT Delhi, the mask made by the institution has left the N95 made in foreign countries behind in terms of quality. The mask made by IIT Delhi has been certified better in several world class tests.

IIT Delhi Mask Technology is now public

IIT Delhi is now sharing the technique with common man as well. Now, even a common man can use this technology for which training is also being given to some NGOs and society groups.
Professor Rao said"

"The textile department of IIT Delhi has come up with a new technology. The department has made masks under the brand name 'Kavach'. In last eight months, IIT Delhi has made five million masks, 40 per cent of which have been exported."

"Kavach"

According to IIT Delhi, 'Kavach' is not only helpful in protecting from Covid but also from other types of viruses. While testing this mask, it was found that it also helps in preventing harmful pollutants like PM2.5 and PM10.

This mask can be washed and reused.

The N95 mask made by IIT Delhi has been made available to lakhs of people, including all major hospitals along with more than 20 lakh foreigners. Professor Rao said that IIT Delhi is still producing these masks with the help of the industry.

According to Professor V. Ramgopal Rao, Professor Bipin Kumar of the Textile Department at IIT Delhi has made a special contribution in making this mask.

IIT Delhi mulling both JEE Advanced, UCEED for BDes admission


IIT Delhi director clarified to Careers360 that admission without JEE is being considered only for the BDes programme and not for any other.

The Bachelor in Design (BDes) programme that Indian Institute of Technology (IIT) Delhi will launch this year will likely have two modes of entry. One will be through the Joint Entrance Examination or JEE Advanced, the standard gateway exam into the IITs’ engineering programmes, and the other, through the Undergraduate Common Entrance Examination for Design, or UCEED.
The IIT Delhi director, V Ramgopal Rao, had reportedly said at the institution’s foundation day programme that it will admit students without JEE Advanced as well. Rao clarified to Careers360 that the IIT Delhi senate was considering this only for the BDes programme and not for any other. Admission to all other courses will be conducted on the existing process.

Once only technology institutes, the IITs have been expanding in other disciplines as well. It began with the start of business schools in the 1990’s and now, many of the IITs have thriving humanities and social sciences, law, public policy, design and other departments.

**IIT Delhi, JEE Advanced, UCEED**

“We have a very strong and very active humanities and social sciences department. We also have a brand-new School of Public Policy. We have also created a department of design. Next year, or this year, if everything goes well, we should be admitting undergraduate students from outside the JEE Advanced examination,” Rao was quoted as saying by Livemint.

Speaking to Careers360, Rao said that there is no such broad plan right now and that IIT Delhi is considering an additional entrance exam only for the design course. “The [admission] part is still under discussion and there is a proposal right now to have two sets of streams, having one set of students come through regular JEE Advanced and other through UCEED. But right now that decision is at the senate,” explained Rao.

The institute has been running masters in design (MDes) for nearly three decades. The BDes programme is offered by other IITs as well and admission to the course is done through UCEED.

**IIT-Delhi may drop JEE for its design course**


Students interested to study design may be able to join Indian Institute of Technology-Delhi (IIT-D) without having to appear for JEE Advanced from this year. The institute’s decision-making body will soon decide on the matter. IIT-D director V Ramgopal Rao told TOI, “For the bachelor’s programmes being run at the institute, all admissions are done through JEE Advanced. For the first time, we are considering taking students through an alternative route.”

The programme run by the department of design is related to creativity and does not require analytical skills, Rao pointed out. “Bachelors of Design is nothing to do with maths, physics, chemistry and such subjects. In our country, there is already an exam called AIEED (All-India Entrance Examination for Design) to test the creative ability of an aspirant,” he said. “It is currently being considered by our senate.”

For the masters programme, the institute conducts its own entrance exams. “The new centre for public policy is starting a master’s programme. In the 2020-21 academic session, we started masters in economics for which we conducted our own entrance. We have masters in cognitive sciences for which, too, we conduct our own entrances,” said Rao.

IIT-D, which is celebrating the diamond jubilee, has 11,000 students, out of which 60% are in the
masters programmes and over 3,000 are PhD scholars. In the past five years, the institute has added 2,500 seats.

Rao said IIT-D was moving towards becoming a fully research-oriented university. “The goal is to scale up the IIT system and become more comprehensive,” added Rao.

**Burning plastic major cause of haze, fog in Delhi: IIT study**

*January 28, 2021*  

While previous researchers also have observed high chloride in PM2.5, the potential source of such a high chloride and if it played any role in haze and fog formation was a scientific mystery.

![Fog in Rajpath in New Delhi. (File Photo | Shekhar Yadav, EPS)](image)

Burning of plastic waste is primarily responsible for haze and fog formation in northern India, including national capital Delhi, according to a study led by researchers from the Indian Institute of Technology Madras (IIT-M). The Study has been published in the international journal Nature Geoscience.
Many studies in the past have identified PM2.5 (particulate matter or aerosol particles with diameter less than 2.5 micrometre) as a major pollutant, responsible for haze and fog formation over Indo-Gangetic plain including Delhi. However, the role of PM2.5 and detailed chemistry of haze and fog formation over national capital was poorly understood.

The study explains that complex chemical reactions involving Hydrochloric Acid (HCl), which is directly emitted in the atmosphere from burning of plastic waste and from a few industrial processes, is primarily responsible for high PM2.5 chloride and subsequent haze and fog formation over Delhi during chilly winter nights.

While previous researchers also have observed high chloride in PM2.5, the potential source of such a high chloride and if it played any role in haze and fog formation was a scientific mystery. The study, led by IIT-M, was carried out in collaboration with researchers from Max Planck Institute for Chemistry, Germany; Harvard University, USA; Georgia Institute of Technology, USA; and Manchester University, UK.

The group of scientists and students deployed state-of-the-art instruments to measure the chemical composition and other important properties of PM2.5, along with relative humidity and temperature in Delhi. The data was collected round-the-clock for one month with extreme care and dedicated expertise. The observations were then used in complex chemical models.

**Exposure to PM 2.5 raises anaemia risk in kids under 5: IIT-Delhi study**

This is the first study to have been carried out in India, where an association between exposure to PM 2.5 and anaemia in children under the age of 5 years in India has been examined and established.

Exposure to PM 2.5 also associated with adverse cardiovascular, respiratory, and mortality outcomes. (File Photo)
A study conducted by IIT-Delhi has found that extended periods of exposure to PM 2.5 can lead to anaemia among children under the age of 5 years.

The study, titled ‘The Association Between Ambient PM 2.5 Exposure and Anaemia Outcomes Among Children Under Five Years of Age in India’, published in the journal Environmental Epidemiology, has found that for every 10 micrograms per meter cube increase in PM2.5 levels exposure, there is a decrease of 0.07 grams per dL in average haemoglobin levels.

This is the first study to have been carried out in India, where an association between exposure to PM 2.5 and anaemia in children under the age of 5 years in India has been examined and established, even as numerous other studies have looked at other detrimental health impacts of particulate matter.

“This is actually a huge increase if you see the difference between PM 2.5 levels in Himachal Pradesh as opposed to Delhi. The exposure of children under 5 years to PM 2.5 living in the capital will obviously be more. The study is important because so far anaemia has been looked at through the prism of nutrition deficiency, specifically that of iron. But even if government programmes like Poshan Abhiyan were strengthened, till air pollution is curtailed or exposure of children to PM 2.5 is brought down, anaemia is likely to continue to persist,” said Dr Sagnik Dey, lead author of the study.

**EXPLAINED**

**India carries largest burden of anaemia**

Anaemia, measured via low-blood haemoglobin concentration, is characterised by a decreased oxygen-carrying capacity of the blood. Globally, India carries the largest burden of anaemia, especially among women and children. There are numerous types of anaemia -- the most common kinds are dietary iron deficiency, followed by chronic systemic inflammation. Exposure to air pollution, especially PM 2.5, has been shown to induce systemic inflammation.

According to the India National Family and Health Survey 2015–2016 (NFHS-4), 53.1 per cent of women in India with 15–49 years of age and 58.5 per cent of children under five were anaemic. The introduction of the National Iron Plus Initiative in 2011 sought to expand the beneficiaries of the National Nutritional Anaemia Prophylaxis Program to children with 6–59 months of age and although anaemia decreased by about 11 per cent between 2006 and 2016, it remains a major issue.

The IIT study included 98,557 children in the individual analysis across 636 districts, based on the findings of NFHS 4. About 63 per cent of the included children were found to be anaemic. Children with anaemia were on average slightly younger compared with children without anaemia, tended to be from lower wealth index levels, and had higher percentages of maternal anaemia.

Studies linking anaemia to PM2.5 have been few and those that have been carried out have been mostly in the US, Europe and China.

Dr Dey pointed out that most of these studies have concentrated on adult anaemia. Only one other study has been carried out linking PM 2.5 exposure to increased anaemia among children under 5 – in Lima, Peru.
According to Dr Dey, the Indian findings are similar to the Peru findings.

“We are waiting for the full results of the NFHS 5 to be released and that will be interesting to look at to see if there is a correlation between a decrease in pollution and anaemia as well and what effects national nutrition programmes and the National Clean Air programme has had on anaemia and the health of children,” said Dr Dey, adding that IIT-Delhi will also be studying adult anaemia as a next step.

**IIT Delhi Researchers Propose Non-Leachable Antimicrobial Coating to Deal with Implant-Associated Infection**


Medical implants such as pacemakers, intra-ocular lens, heart valves, hip and knee implants medical catheters and other such implants come under the broad category of medical devices used for preventive, diagnostic or curative purposes in a medical condition. Implants are installed inside the body surgically and their prolonged usage often leads to infections that arise from the microbial biofilms that are formed on the implant’s surface causing fatalities worldwide and added hospitalization costs.

The most common strategy to counter the problem of Implant-associated infections (IAI) is the use of high dose antibiotics. But with the evolution of antibiotic resistant microbes, this has proved ineffective in infection management. In fact, the continuous releasing of antibiotics from the implants actually creates the conditions for the generation of such antibiotic resistant strains of microbes. Another disadvantage of this strategy is the exhaustion of the antibiotic dose over a period of time due to leaching out.
A study by the research group led by Prof. Sampa Saha, Department of Materials Science and Engineering, has proposed a non-leachable antimicrobial coating as a measure to deal with the danger of infections related to implants. The study was published in a highly reputed journal, ‘Materials Science and Engineering C’.

The research team created a biodegradable 3D printed polymeric implant, which is modified with anti-infective polymer brushes. The implant itself is fabricated from a blend of completely biodegradable polyesters, i.e., polyester of tartaric acid – a natural acid found in tomatoes, grapes and raw mangoes and polylactic acid originated from corn starch.

Using the polyester as a scaffold, infection resistant polymer brushes are chemically bonded to its surface. The surface tethered brushes, fabricated from poly[(2-methacyrloyloxyethyl) trimethyl ammonium chloride] (PMETA), are of nanometre dimensions, which possess antibacterial activity.

An evaluation of antibacterial activity and cytocompatibility revealed that the composition of the brush not only inhibits bacterial growth but also offers a stable, non-leaching, anti-infective, cytocompatible coating on the surface of the implant. Further, the brushes also offer a physical barrier to the microbial cells, discouraging their colonization on the surface of the medical implant for prolonged period of time.

The other research team members include Ms Shaifali, Department of Materials Science and Engineering, IIT Delhi; Prof Neetu Singh and Mr Akshay Joshi (Centre for Biomedical Engineering, IIT Delhi).

**IIT Delhi to start admitting students from outside JEE system: Director**


For admission in these new streams, students won’t have to go through the Joint Entrance Exam (JEE) system which has been the regular admission process for decades.

The Indian Institute of Technology Delhi (IIT-Delhi) has plans on turning the institute into a comprehensive university which will have multiple new streams of education. For admission in these new streams, students won’t have to go through the Joint Entrance Exam (JEE) system which has been the regular admission process for decades.

At the foundation day programme of the institution, IIT Delhi Director V Ramgopal Rao said, "Now, we have a very strong and very active Humanities and Social Sciences Department. We also have a brand-new School of Public Policy. And we have also created a Department of Design. And in fact, next year, or this year, if everything goes well, we should be admitting undergraduate students from outside the JEE Advanced examination."

"A lot of changes are taking place. The goal is to scale up the IoE (institute of eminence) system, and also become more comprehensive," the Mint quoted Rao as saying.
The Director further stated that IIT-Delhi has taken several steps to increase its global footprint with the aim of becoming more international. He said that the joint PhD program with the University of Queensland is getting a good response as 65 students have already joined it this year. He added that IIT-Delhi has around 3,300 PhD candidates and over 60 per cent of all students are studying at masters level. Rao explained that this means that over the years, the focus has gradually shifted towards becoming a multi-disciplinary, research-oriented institute.

"And we have also now significantly increased our interdisciplinary activities on the campus, whether it is between the departments and schools or with other institutions in Delhi. We have an active collaboration with the National Institute of Immunology (NII), with All India Institute of Medical Sciences (AIIMS), and various other institutions in Delhi, including the Indian Council for Agricultural Research (ICAR)," the director added.

He added that the upcoming satellite campus of IIT Delhi in Jajhjar will focus on life sciences and hence it will work closely with the biotech industry.

IIT-Delhi to come up with many big inventions soon: Director

Q: Which new innovations is IIT-D coming up with in the near future?
A: We are developing a new kit to quickly test coronavirus infection. This modern kit's reliability is more than the antijet kit available in the market. The great thing about this new kit is that its price is quite low. It will be available in the next few days. The IIT-D has also come up with an indigenous N95 mask. It will be made available across the country for just Rs 40 a piece.

Q: Is the IIT-D in a position to start new courses this year?
A: Yes, many new courses are going to start soon, related to Data Science, Artificial Intelligence and Management. We are also going to start 10 online courses this month. Students completing these programmes will be awarded certificates.

Q: Coronavirus pandemic affected the whole world. It has been the biggest pandemic reported in the last 100 years. What was its impact on the IIT?
A: We had to close our institution in March 2020 but kept the laboratories open for students who wanted to work in areas related to coronavirus pandemic -- be its treatment, diagnostics or research work related to prevention of the disease. We also got necessary fundings to work in these areas during this pandemic.

Q: What major academic research and practical research did the IIT undertake during this period?
A: Our Textile Department came up with a new technology. Here, during the coronavirus crisis, we made masks under the brand name ‘KAWACH’. We achieved tremendous success. So far, IIT-D has produced 5 million masks, 40 per cent of which have been exported.
We also prepared the world's most affordable Reverse Transcription Polymerase Chain Reaction (RT-PCR) kit for Rs 399. Earlier, RT-PCR tests for Covid-19 were done at various places in the country for
Rs 4,500 each. Today, due to the invention by IIT-Delhi, the RT-PCR test is available for Rs 600 to Rs 800.

**Q: How much funds did the IIT-D spend on academic research and practical research work during this pandemic?**

*A:* Nearly Rs 10 crore was spent by IIT-D on research related to Covid-19. We built an RT-PCR centre at the institution. We received a funding of Rs 7 to Rs 8 crore from different industries in making equipment to protect people against coronavirus. Not only did we make a cheap RT-PCR test kit but also came up with traditional Indian and allopathic drugs to fight coronavirus. IIT-D research found how 'Ashwagandha' is beneficial in fighting coronavirus. This is our biggest and most important find to fight the disease.

**Q: How was the IIT research work and studies impacted in 2020?**

*A:* As many as 1,500 different courses are taught online at IIT-D. It was very cumbersome task to do all this. We had to immediately switch the entire teaching process to the online mode in a hurry. In the first semester, nearly 20 per cent students did not have equipment like laptops and computers. We gave students the option to stay where they were. We would provide them Internet connection and laptops at the same place. Students who lived in places where Internet connectivity was not possible were asked to return to the campus and today nearly 1,200 students are staying in hostels.

**Q: Will it be possible to hold exams at the IIT?**

*A:* This time, no examinations are being held physically. All exams will be online. Despite online studies, we believe it is still a big challenge to conduct online exams.

**Q: What are you doing to help IIT-D get better international rankings?**

*A:* We have to become more comprehensive to make our overall ranking better. Take Stanford University, for example. There is a giant medical school there. If you compare Stanford University with IIT-D, there is a huge network of faculty there. There are courses ranging from medical studies to humanities.

At the same time, IIT-D is doing well in engineering and technology. Despite this, it can't be compared with such international educational institutions. We are among 50 best educational institutions in the world in engineering and technology. We are ranked 47th in the QS World Rankings.

Now, we have a School of Public Policy. We have also started the Department of Design. We are also starting a joint degree programme in collaboration with the All India Institute of Medical Sciences here.

**Q: What was the status of campus placements at IIT-D in 2021?**

*A:* Campus placements in IIT-D are good. The IIT did not face any problem in this area. All students have got campus placements. In fact, last year, IIT-D made a quantum jump in campus placements. Compared with previous years, campus placement was the most spectacular last year, although there is no further increase.
Air Quality Commission to set up AI-based system to improve Delhi’s air quality


The Commission for Air Quality Management (CAQM) in Delhi-NCR and adjoining areas has roped in India’s top technical institutions to set up a decision support system, which will use Artificial Intelligence to help improve the air quality over targeted sectors of the city.

The Commission for Air Quality Management has begun the process of setting up a Decision Support System (DSS) having a web, Geographical Information System and multi-modal based operational and planning decision support tool.

This tool will help in capturing the static and dynamic features of the emissions from various sources. It will have an integrated framework to handle both primary and secondary pollutants using chemical transport model.

The system will also be able to handle the “source specific interventions“ with the framework to estimate benefits of interventions and will focus on presenting the best results in a comprehensive user friendly and simple format for different users.

The Commission has entrusted the task to IMD Delhi, IITM Pune, IIT Delhi, National Environmental Engineering Research Institute (NEERI), The Energy and Resources Institute (TERI) and Centre for Development of Advanced Computing for framework development of Air Quality Management Decision Support System for Delhi.
The Air Quality Management Decision Support Tool (DST) integrates an emissions inventory development application and database; regional, local and source-receptor modelling; and Geographical Information System (GIS) based visualization tools in a software framework so as to build a robust system to formulate and implement source specific interventions to improve the air quality.

The sources covered will include industries, transport, power plants, residential, DG sets, road dust, agricultural burning, refuse burning, construction dust, ammonia, volatile organic compounds, landfill etc.

For instance, municipalities, industrial associations, industrial development authorities etc. would be the stakeholders for identifying interventions related to waste burning, industrial source pollution, respectively.

Upon identification of feasible interventions, the artificial intelligence based expert system which has a hierarchical data base of simulated scenarios, potentially assessing the impact of the identified feasible intervention which would be implemented by the regulatory organization such as CPCB and state PCBs.

The on-field implementation is monitored by credible citizen watch groups and professional NGOs independently. Finally, air quality data collected in the vicinity of the area where intervention is implemented will be analyzed to understand the real-world benefits of such intervention.

**IIT-Delhi, University of Queensland offer joint PhD to train 300 student in three years**


The UQIDAR students will spend time in both India and Australia. Students from India will typically spend three years at IIT-Delhi and one-year at UQ and students from Australia will spend three years at UQ and one year at IIT-Delhi.
Those interested in applying under this program may visit the website www.uqidar.org.

The Indian Institute of Technology (IIT) Delhi and University of Queensland (UQ) have today jointly established the UQ-IITD Academy of Research (UQIDAR). The UQIDAR will offer a joint PhD programme to support scholars across diverse discipline areas to deliver global impact.

The UQIDAR aims to train a large number of students under the joint PhD programme, supervised by professors at both UQ and IIT-Delhi.

The programme, which is now two years old, has already attracted over 65 top PhD scholars in various disciplines. The institutes aim to have approximately 300 students enrolled in the joint PhD programme in the next three years.

The UQIDAR students will spend time in both India and Australia. Students from India will typically spend three years at IIT-Delhi and one-year at UQ and students from Australia will spend three years at UQ and one year at IIT-Delhi.

The UQIDAR will focus on interdisciplinary themes. The five identified themes include — healthy ageing, feeding the world, resilient environment, technology for tomorrow, and transforming societies.

“The partnership between the two universities is focused on strengthening multi-disciplinary research collaboration as we seek to find solutions to these types of threats,” said Prof Deborah Terry AO, president and vice-chancellor, The University of Queensland, Australia.

**IIT Delhi to Research Electric Vehicle Donated By Hyundai Motor**


Innovation and Technology Transfer (FITT), IIT Delhi has signed a Memorandum of Understanding (MoU) with Hyundai Motor India Foundation to enable students to conduct research and training.
Innovation and Technology Transfer (FITT), IIT Delhi has signed a Memorandum of Understanding (MoU) with Hyundai Motor India Foundation to enable students to conduct research and training. Hyundai Motor India has donated a KONA Electric to IIT Delhi to help its students study alternative energy powered vehicles and emerging technologies to innovate new age-mobility solutions. The research work will be conducted by Centre for Automotive Research and Tribology (CART) at IIT Delhi.

The MoU was exchanged between Prof. V Ramgopal Rao, Director, IIT Delhi, Dr Anil Wali, MD, FITT, IIT Delhi and S S Kim, MD and CEO, Hyundai Motor India.

Prof. V Ramgopal Rao, Director, IIT Delhi explained the role of CART in the new association as he said, “I am happy to note that the Centre for Automotive Research and Tribology (CART) at IIT Delhi shall carry out various Research and Development projects with Hyundai in the broad area of e-mobility. IIT Delhi puts a lot of emphasis on engaging with industry in emerging technology areas. As per its mandate, FITT at IIT Delhi shall play a key role in deepening our collaboration with Hyundai.”

The Centre for Automotive Research and Tribology (CART) will conduct test on the battery in KONA Electric gadgets to understand the performance of electric vehicle during different driving conditions for the purpose of research.

CART at IIT Delhi has been testing different battery-operated gadgets and vehicles for different companies. It also researches on hybrid electric vehicles, storage and alternate energy sources, autonomous and connected vehicles.

Professor Verma said that the research group at SERL developed the second generation prototype so an environmental friendly viable product could be available to society.
The Indian Institute of Technology (IIT) Delhi has inaugurated an environment friendly and high durable Vanadium Redox Flow Battery (VRFB) based Charging Station for Electronic Devices in the campus on Monday. It can charge electronic devices like mobile phone, laptop, portable chargers, mobile banks, tablets and others.

The charging station was designed and installed by the Sustainable Environergy Research Lab (SERL) under the Department of Chemical Engineering which is actively working on VRFB technology. The team has designed it for charging operation of around 9 hours in a day. It can be used by the IIT Delhi community as well as the visitors.

VRFB utilises liquid electrolyte to store electrical energy. During charging, the electrical energy is stored in the liquid electrolyte and during discharging the stored energy is used for various applications. It can efficiently store and utilise renewable energy for a wide range of applications such as rural electrification, e-vehicle charging, domestic and commercial power back-up, etc. leading to zero carbon footprint.

It is non-polluting (no emissions), easily scalable, safe and environmentally friendly, and highly durable. One of the major differences between the flow and conventional battery is the independent scaling of power and energy capacity, said Professor Dr Anil Verma, chemical engineering department. He said the VRFB is suitable for long discharge time with low cost in contrast to the conventional battery. The technology is highly suitable wherever diesel generators are used. Professor Verma said that the research group at SERL developed the second generation prototype so an environmental friendly viable product could be available to society.

**IIT Delhi: Student-designed vehicle wins prizes in international contest**


IIT Delhi’s student-led automobile club conceptualised and designed the vehicle during the COVID-19 lockdown

A team of undergraduate students from Indian Institute of Technology (IIT) Delhi’s has won prizes in two student virtual competitions. The team from Axlr8r Formula Racing, the student-led automobile club of IIT Delhi has won prizes in both Formula SAE Australasia 2020 and Formula Bharat 2021.
The Axlr8r Formula Racing team secured fourth position in Formula SAE Australasia 2020. This is also the first and the only Indian electric vehicle team to win two prizes in a single competition. The team conceptualised, costed and designed the electric vehicle during the COVID-19 lockdown, when the IIT Delhi campus was closed to students and without access to the workshop.

“Usually such events happen on F1 tracks, but due to the pandemic, this is the first time it was a virtual event,” Sudhanshu Ranjan, a final year student pursuing a BTech in textile engineering at IIT Delhi told Careers360. “We had to work on the cost, manufacture and design and present our work virtually. So we were working on the static segments like the design event and the cost event and the business plan event. The preparation of the event starts from the designing of the car itself. It takes approximately a year to conceptualize the design and then fabricate it and test it and take it to the competition.” Ranjan is also the vice-captain of the IIT Delhi team.

Winning prizes

For the “cost event”, the team prepared a “cost report” based on the size of the vehicle, its components, and the necessary manufacturing steps.

For the “business event”, it had to present their business plan for the constructed prototype to a fictitious company represented by judges.

In Australasia, they competed against some of the best international teams and achieved the first position in the “cost event”, and the second position in the “business event”.

The team scored 106/150 in the “design event”. Overall, the Axlr8r Formula Racing team secured fourth position in Formula SAE Australasia 2020.

IIT Delhi automobile club

The team of 18 core members is now looking forward to participating in the world championship, formula students event in Germany scheduled for August 2021.

“During the...nation-wide lockdown, when staying inside...with no access to the workshop for more than 10 months, the whole Axlr8r Formula Racing team was working on advancements in the design of their electric and preparing for static events,” said Vivek Mahindrakar, team captain, Axlr8r Formula Racing and a final year student pursuing a BTech in mechanical engineering.

IIT Delhi Faculty Comes Up with Mathematical Model to Implement India’s Vision of Self-Reliant Economy


An IIT Delhi faculty from its Management Studies Department has come up with a mathematical model for implementing India’s vision of a self-reliant economy. Prof. Surya Prakash Singh and his research scholar Shubhangini Rajput in their research paper titled ‘Industry 4.0 Model for circular economy and cleaner production’, published in the Journal of
Cleaner Production, have highlighted how the traditional Indian industrial sector is lagging behind in implementing Industry 4.0 concept in their manufacturing processes and has offered a tangible solution for implementing it.

The proposed novel model by Prof Singh for Industry 4.0 set-up to achieve circular economy and cleaner production shows how the efficient use of high, medium and low precision machine variants in a non-conventional manufacturing environment can bring paradigm shift for Industry 4.0. The model presents the economical trade-off among various processing costs and energy consumption of the machines in an Industry 4.0 ecosystem relevant for an industrialist looking to migrate towards an Industry 4.0 environment for ethical business. The model is of its first kind, which shows the strategic implementation of Industry 4.0 philosophy mathematically to fulfil the dream of Make-in-India initiatives at low environmentally sustainable cost.

The model currently considers various industrial costs such as set up, energy consumption, sensor, maintenance, installation, calibration, and transmission cost. The model also takes care of industrial constraints such as production capacity, inventory and demand. The model paves the way to meet low cost production demand in Industry 4.0 environment. The model is capable to consider other relevant cost information as per the need of an Industry. Prof. Surya Prakash Singh, Dept. of Management Studies, said: “The model is tested computationally with large sets of data for multi-product in a multi-time period manufacturing environment and validates the implementation of the model for a traditional manufacturing industries”.

**Does bhasma heal neurodegenerative diseases? Can Yoga aid nervous system? IIT-D to find out**


IIT Delhi is collaborating with the All India Institute of Ayurveda on 7 projects that will focus on various Ayurvedic formulations and practices.

The Indian Institute of Technology (IIT) in Delhi will now conduct research on the impact that ashes of certain herbs (*bhasma*) will have on proteins implicated in neurodegenerative diseases and will also develop a *dhoopan-yantra* — a device that could aid in the healing of internal wounds.

All this is part of a collaboration between the premier institute and the All India Institute of Ayurveda on seven projects; IIT Delhi is expected to apply engineering science principles to the ancient alternative medicine system.

The seven collaborative projects, focusing on various Ayurvedic formulations and practices, include studying the effect of the six Ayurvedic rasas (tastes) on gastrointestinal secretions; developing herbal formulations that would reduce the harmful effects of reusing cooking oil; formulating a biodegradable, herbal wound dressing; studying the effects of the *Bhramari pranayama* (a yoga
position called the humming bee breath) on the nervous system apart from analysing the impact of bhasmas and the dhoopan-yantra.

While the projects are the outcome of an MoU signed between the two institutions in 2018, work is only beginning now. The projects are tenable for two years, at the end of which, investigators will submit their findings that will establish whether the studies should continue further.

The All India Institute of Ayurveda, established in 2015, is an autonomous organisation under the Ministry of AYUSH.

**IIT to provide scientific & technical solutions**

Dr Tanuja Manoj Nesari, the director of AIIA, told ThePrint that through the collaboration, the Ayurvedic institute hopes for scientific solutions and validation from IIT Delhi.

“The dhoopan-yantra is a device that releases smoke and is already in use at our institute. Special herbs are burnt and the fumes are then used to treat internal wounds like that in cervicitis,” she said. “The fumes from the device will be applied on the area to aid healing. As of now, we use an earthen pot but this study will help create a device that is more efficient.”

On the study on bhasma, she said, “Herbo-mineral drugs are converted into ashes through a specialised process (bhasma). This study will use these bhasma to determine their healing effects on neurodegenerative diseases like Parkinsons.”

The AIIA director also said that the Bhramari pranayama project is with the center of biomedical engineering in IIT Delhi.

“Bhramari pranayama has huge potential for improving memory functions among the elderly but it remains unclear how the humming bee sound (in the Bhramari pranayama) affects neural activities in the brain,” she said. “So the purpose of this study is to find the pre and post effect of Bhramari pranayama on the human brain. The researchers will be using different instruments like the EEG available with IIT Delhi. So technology will meet with tradition to develop evidence.”

Prof V. Ramgopal Rao, Director, IIT Delhi, in a statement on 4 January had said, “The amalgamation of traditional knowledge with technology is expected to benefit the society at large by offering better health care options. Validation of the traditional knowledge systems is the key, in order to make these forms of medicine more widely acceptable worldwide. IIT Delhi researchers will be focussing on the validation aspects by working closely with the AIIA faculty”.

**IIT Delhi placement drive: 925 students snag offers from over 200 companies in the first phase**
The second phase of the placement drive is also expected to see several companies coming in with placement opportunities for the students.

So far, at the institute, over 400 companies have registered to participate in the placement drive.

IIT Delhi placement drive: In the first phase of the virtual placements held by the esteemed Indian Institute of Technology, Delhi (IIT Delhi), more than 925 students secured job offers. The IIT informed that the students of the batch graduating in 2021-21 had been chosen by over 200 companies for more than 250 job profiles, including the pre-placement offers (PPOs), according to a report in IE. More than 20 students selected in the first phase have been chosen for international profiles, and they will be placed in countries like Japan, Taiwan, Singapore, the Middle East as well as South Korea.

Furthermore, in an official statement, the institute said that at present several students have been offered domestic roles by many multinational companies, and they could convert into international roles at a later stage based on their situation.

Most students of the institute opted for placements in their technical area, while students of management proceeded to opt for roles in the area of management. The report cited IIT Delhi office of career services head Anishya Madan as saying that about 90% of the students were able to grab offers in their preferred areas.

So far, at the institute, over 400 companies have registered to participate in the placement drive, and they are offering more than 675 job profiles. The second phase of the placement drive is also expected to see several companies coming in with placement opportunities for the students. Phase II would begin at the end of the month. The placement drive would culminate in May this year.

Among the recruiters on campus this year are big names like Microsoft, Oracle, Intel, EXL Services, Goldman Sachs, Tata Projects, ICICI Bank, Wells Fargo, IQVIA, as well as HCL, and these institutes topped this year in terms of the number of students selected.
The success further stands out due to the fact that the coronavirus pandemic made the placement drive shift to the virtual mode, with students having to prepare for innovative and new patterns of interviews which would be held digitally.

**Tech tonic for Ayurveda: IIT-Delhi to help develop tools to heal wounds**


If you prefer treatment through Ayurveda, you may soon be able to get your hands on a medicated smoke dispenser (dhoopan yantra) to treat chronic wounds and biodegradable dressing like plaster bands. Indian Institute of Technology Delhi is aiding All India Institute of Ayurveda (AIIA) to develop such tools for diagnosis and treatment.

Both institutes have signed a Memorandum of Understanding to work on seven projects. The timeline for these projects is two years. IIT-Delhi would be focusing on the validation aspects of Ayurveda principles. One of the projects involves making the dhoopan yantra, which would emit medicated condensed smoke to heal wounds inside the ears, vagina, etc in a user-friendly manner.

Rajagopala S from AIIA said, "In Ayurveda, we use medicated smoke for healing as it ensures quicker results. However, condensing it is a problem and we are currently doing it through pipes, funnels and earthen pots. But this takes a lot of space and is not user-friendly. IIT-D’s design department will assist us in the process."

The second project pertains to making a biodegradable wound dressing, for which assistance is being provided by IIT-D's polymer department.

AIIA, which has an integrated oncology department, is jointly working on another project for early detection and assessment of cancer and response of Ayurvedic drugs to breast cancer. "We will
provide IIT with the drugs and the biotechnology department will work on the lab-based project," said Rajagopala.

The other projects include studying the effects of the six Ayurvedic rasas (tastes) on gastrointestinal secretions, developing herbal formulations that would reduce the harmful effects of reused cooking oil, effects of Brahmari pranayama on the nervous system and analysing the impact of bhasmas (ashes) on proteins in neurodegenerative diseases.

"As some of the projects are start-ups, we will decide on further research or developing products commercially and taking patents for them depending on the results," said Rajagopala.

IIT-D director V Ramgopal Rao said, "The amalgamation of traditional knowledge with technology is expected to benefit the society at large by offering better healthcare options. Validation is the key to making these forms of medicine more widely acceptable worldwide. IIT-Delhi researchers will be focusing on the validation aspects by working closely with the AIIA faculty."

**IIT-Delhi readies for larger campus, focus on e-learning**

January 2, 2021  [https://indianexpress.com/article/cities/delhi/iit-delhi-additional-space-2021-7129281/](https://indianexpress.com/article/cities/delhi/iit-delhi-additional-space-2021-7129281/)

The new buildings includes engineering blocks, a research & innovation park, a boys’ hostel, a girls’ hostel and a sports complex. It also includes faculty housing, a married students’ hostel and pre-engineering blocks.

The Indian Institute of Technology Delhi will add roughly 1.8 million square foot of additional space to its campus in 2021, Director V Ramgopal Rao said in a mail to the IIT community, including teachers and students, ringing in the New Year.

He said that despite difficulties faced due to Covid-19, the institute filed 152 patents and closed 22 technology transfer deals with industries in 2020, which were “the highest numbers achieved in any calendar year since the inception of the institute”.

“In 2021 (between January to May 2021), we will be taking possession of all the fully completed buildings and spaces which are currently under construction. This should alleviate our infrastructure needs to a large extent. We will be roughly adding 1.8 million square foot of additional space to the institute activities in 2021,” he wrote.

This includes engineering blocks, a research & innovation park, a boys’ hostel, a girls’ hostel and a sports complex. It also includes faculty housing, a married students’ hostel and pre-engineering blocks.

Rao said the institute has “entered into contracts with five major service providers in the educational space (Arrina, Bennett Coleman, Erulearning, Hughes Global and Upgrad) for its online educational initiative eVIDYA”, which was launched by the Education Minister in November last year.
“You will see major online certificate programs from IIT Delhi in 2021. We also have some very unique initiatives planned in 2021 in our internationalisation and alumni connect efforts. There are also multiple new educational programmes that will be launched in 2021,” he wrote.

Rao said IIT had done well in the Covid fight too. “Whether it is prevention (supplying over 5 million high quality PPEs at affordable costs), detection (the world’s most affordable RT-PCR kit and other rapid diagnostic kits) or treatment (scientific studies on the effectiveness of various traditional medicines) of Covid, we have come out on top,” he wrote.

“Through voluntary contributions raised from campus community and alumni, we have been able to take care of every person who is dependent on the institute directly or indirectly for their livelihood. Whether it is supporting the dhobis, the security staff or the mess contract workers, we have been able to take care of them all,” he added.