



# स्वास्थ्य

A Newsletter from Gangwal School of Medical Sciences and Technology, IIT Kanpur



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## About School

IIT Kanpur has established the Gangwal School of Medical Sciences and Technology with an objective to pursue research at the intersection of technology and medicine. The school will have world-class patient care facilities that will work closely with various academic and research units. The research will be pursued through various centers of excellence that will bring together the faculty from medical school and faculty members from engineering and sciences disciplines at IIT Kanpur. The patient care facilities include a 450-bed Yadupati Singhania Super Speciality Hospital and a 50-bed cancer care facility.

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# Foundation Stone Laying Ceremony

The Union Minister of Education and Skill Development & Entrepreneurship, Shri Dharmendra Pradhan laid the foundation stone of the Gangwal School of Medical Sciences and Technology and Yadupati Singhania Super Speciality Hospital at the IIT Kanpur campus on 16th July 2022 by unveiling the plaques. The ceremony was presided over by Dr K Radhakrishnan, Chairman, Board of Governors, IIT Kanpur. The medical school individual donors Shri Rakesh Gangwal, Co-Founder, Indigo Airlines; Mr Muktesh Pant, Founder, Micky and Vinita Pant Charitable Foundation; Mr Hemant Jalan, Founder, Indigo Paints Ltd; corporate donors JK Cement Ltd represented by Nidhipati Singhania; and IBM India Pvt. Ltd represented by Gaurav Sharma, VP, India Software Labs, graced the occasion.



## Unveiling of 3D Model of the School

On the occasion of the Foundation Stone laying ceremony, Shri Dharmendra Pradhan, Minister of Education, Government of India, unveiled the 3D model of the Gangwal School.



*“Gangwal School will strengthen the healthcare ecosystem in the country and establish Kanpur as an epicenter of affordable and futuristic solutions for emerging economies”*

**Shri Dharmendra Pradhan**  
Union Minister of Education and Skill Development & Entrepreneurship



## National Workshop on Telemedicine & AI for Healthcare

The Indian Institute of Technology Kanpur and the Gangwal School of Medical Sciences and Technology hosted a one-day national workshop on Telemedicine and Artificial Intelligence on July 2, 2022, at the IIT Kanpur Outreach Centre in Noida. The event was held in a hybrid mode and hosted several digital health policymakers from the government, telemedicine practitioners from both public and corporate hospitals, and academics from technological institutions across the country and overseas. The workshop was inaugurated by Dr. R S Sharma, CEO, National Health Authority, Government of India.

## Jalan Distinguished Lecture Series in MedTech Innovation



Dr. Shriya Srinivasan, MIT, USA delivered a talk on “Neural Interfacing for Sensory Feedback and Neuroprosthetic Control” [2<sup>nd</sup> August 2022]



Prof. Ambarish Ghosh, IISc Bangalore delivered a talk on “Magnetic nanoswimmers” [23<sup>rd</sup> August 2022]



Dr. Jayender Jagadeesan, Harvard Medical School, USA delivered a talk on “Image-guided Surgery” [23<sup>rd</sup> September 2022]

## Lecture by Members



Prof. S. K. Mishra presented three lectures on Telemedicine and Tele-surgery:

- Telehealth Opportunities & Challenges in India
- Digital health systems available in the world: Learnings for ABDM
- Digital Technologies in Current Surgical Practice & Potential in Future

## Talk by Postdoc



Dr. Bibhas Kumar Bhunia, IIT Guwahati, delivered a talk on “Development of Biomimetic Artificial Spinal Discs using Natural polymers” [26<sup>th</sup> September 2022]

## Participation in Indian Mobile Congress

A team of three faculty members from IIT Kanpur namely Prof. S K Mishra, Dr. Soumya Ranjan Sahoo and Dr. Priyanka Bagade, CoE Telemedicine & Healthcare Robotics participated in Indian Mobile Congress 2022 held on 1-4 October at Pragati Maidan, New Delhi on the invitation of Tata Communications Tech. Ltd.

Detailed discussion was held with Tata Telecommunication representatives working on the e-Ambulance network which was matching one of the proposed activities. On the same visit on 1st October, the team had a meeting with two start-ups namely Just Learn and Cloudatomy involved in E-learning and VR / AR-based medical e-learning to understand their product and operational model.



## Symposium on Digital Surgery

The symposium on Digital Surgery at Kochi, India on 10th November 2022 was attended by the following members:

Dr. Priyanka Bagade, Asst. Professor, Computer Science & Engineering, IIT Kanpur: Artificial Intelligence and Machine Learning: Implications in Surgery

Prof. S. K. Mishra, Distinguished Visiting Professor, Gangwal School of Medical Science & Technology, IIT Kanpur: Digital Technologies in Surgery: A disruptive force in the healthcare ecosystem



## *Visit of Tata Telecommunication Team*

A two-member delegation from Tata Telecommunications, Mr. Sanjeev Srivastava & Mr. Sujoy Jain, Tata Telecommunications Ltd., visited CoE in Telemedicine and Robotics team members at IIT Kanpur on 7th November 2022, as a follow-up action after the India Mobile Congress visit and had two rounds of meeting over videoconference.

Prof. Bishakh Bhattacharya and Prof. S K Mishra from the CoE Telemedicine & Medical Robotics, Gangwal School of Medical Science & Technology, IIT Kanpur travelled to New Delhi on 9th August 2022 on the invitation of Ms. Atsuko Okuda, Regional Director, ITU-AP to explore the possibility of technical co-operation with IIT Kanpur in the field of Telemedicine with the ITU-AP Area Office as and when it is established in New Delhi.

## *Pant Workshop Series on Medical Sciences and Technology*

Gangwal School of Medical Sciences & Technology organized an event as a part of the Pant Workshop Series on Medical Sciences and Technology with the joint participation of IITK – Swansea University (United Kingdom) on Cardiovascular & Pulmonary Flows on December 12, 2022.

A team led by Dr. Nithiarasu, Dr. Sanjay Pant, Dr. Hari Arora, and Dr. Gibin Powathil presented their findings. Discussions on mutual interests for future collaborations with CoE in Cardiovascular and Pulmonary Disease Research team were held.





## Closed-door Workshop for Hridayantra Program

The Gangwal School of Medical Sciences and Technology, IIT Kanpur, organized a closed-door workshop for the Hridayantra program dedicated to the development of the Left Ventricular Assist Device (LVAD). The workshop was organized at IIT Kanpur's Extension Centre in Noida. The session's objective was to showcase the recent progress and development of the LVAD prototype. In the workshop, the fellows gave a detailed presentation, highlighting the current progress of the indigenous development of the Left Ventricular Assist device (LVAD).

The hybrid-mode workshop was attended by eminent cardiac surgeons of the country – Dr. Naresh Trehan, Dr. Devi Shetty, Dr. Shiv Chaudhuri, Dr. Milind Hote, Dr. Sandeep Attawar, Dr. Ramakanta Panda, Dr. Ajay Kaul, Dr. Paul Ramesh, Dr. Julius Punnen, Dr. Aditi Singhvi, Dr. Shashi Raj, etc. as well as by more than 30 eminent alumni of IIT Kanpur.

## Desi Dil, Global Lifesaver!!

Hridayantra is one of the most promising and ambitious medical device innovation projects of Gangwal School at IIT Kanpur launched with a vision to make Atmanirbhar Bharat.

Dr. Devi Prasad Shetty, Chairman and Founder, Narayana Health, who is also a mentor for the Hridayantra project, appreciated the efforts of LVAD team and his opinion on the project is published in the [Times of India](#).

**Desi Dil, Global Lifesaver**  
*The artificial heart being built by IIT Kanpur is the next big thing in world healthcare*

**Devi Shetty**  
 As many as 20% of Indian adults are prone to cardiovascular disease, making it the commonest cause of death. Replacing the diseased heart with an artificial one (Left Ventricular Assist Device, LVAD) is the logical solution. But when a solution is not affordable, it's not exactly a solution. When an artificial heart costs nearly a crore rupees in India and over a million dollars in America, it's not a solution. That's why only 20,000-25,000 patients have had an artificial heart implanted globally - even though for a person waiting for months to heart failure an artificial heart implantation is a life-changing experience. We have had patients with an artificial heart leading a very active life for over 12 years. Many other Indian hospitals have similar experience. That's why the artificial heart which was initially meant only to be a "bridge to heart transplant", a temporary support for some months until a suitable donor heart becomes available, has now become "destination therapy".

**How did this moonshot project get off the ground?** Building an artificial heart is a mammoth project but I am convinced that IIT Kanpur will create an artificial heart for clinical trial within the next few years. My confidence is based on the way IIT Kanpur conceptualized its project and went about building a winning team to create it.

- Of course, IIT Kanpur is blessed with an amazing faculty of engineers who had the guts to get on building what one of the most complex machines I build.
- Some of the IIT Kanpur alumni have already with a real knowledge of building machines to replace failing heart because part of the mentor group.
- Next they chose right young engineers with advanced knowledge, electrical, electronics, materials and bioengineering capabilities.
- They were chosen out of over 30 candidates.

**What do other India startups need to learn from IIT Kanpur?** Most India startups build software products, very few create real machines. It's extremely hard for a young startup to assemble a team of

**Traditional startups cannot execute moonshot projects. The model developed by IIT Kanpur is a game-changer. If all the IITs and government-funded research institutes embrace similar**

**How is this more broadly about what the world needs from India?** Compared to many developed countries India is still a young country of 75 years. It is still difficult for us to dream big. We need to greatly underinvestigate our capabilities. We are content making 30,000 and 60,000 machines when the world is waiting for us to launch revolutionary products - from building an artificial heart that can save some millions of lives to combat diseases that are proving small countries. The indigenously developed artificial heart will undoubtedly attract global attention. Indeed, with increasing life expectancy more millions of people who "older" will still have a beating heart that will need to be artificial left before they are considered "old".

**IIT Kanpur is now planning to build the "world's cheapest artificial heart" for the "world's most advanced artificial heart", which will be affordable across the entire development and is paid through grants and donations.**

- India has made phenomenal progress in space and digital technologies.
- Some of the vital components of artificial heart to see like the one used in our machines.

**Dharmendra Pradhan** @dpradhanbjp

The artificial heart being built by @IITKanpur is the next big thing in world healthcare, opines Dr. Devi Shetty.

Guided by 'Jai Anusandhan' our institutes are in the continuous pursuit of innovation for a Vikas Bharat and for the benefit of humanity.  
[bit.ly/3DJ11cp](https://bit.ly/3DJ11cp)

## *Mentors' Visit to the Gangwal School*

Dr. Devi Prasad Shetty, Chairman and Founder, Narayana Health, who is also a mentor for the Hridayantra project visited the LVAD team and also the Gangwal School site. Dr. Shetty is associated with the School from the beginning as an advisory board member. He appreciated the progress made so far and discussed several such problem points in the healthcare system which can be solved via technological expertise from the IITK.

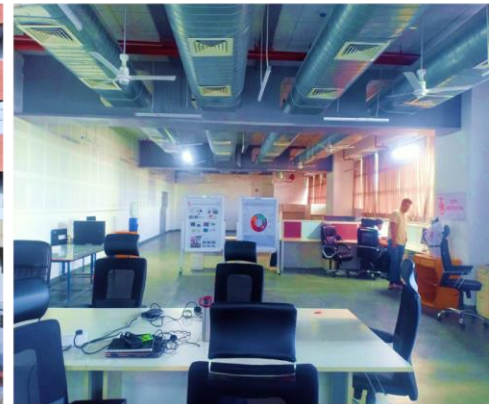
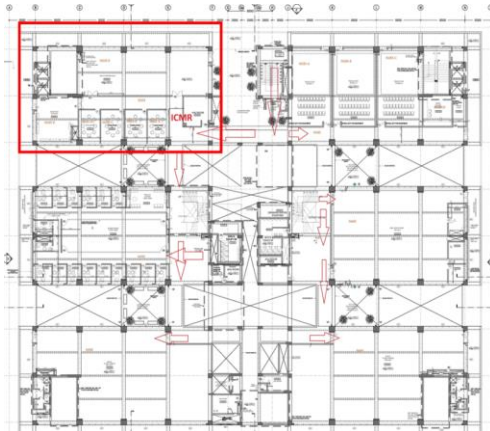


Mr. Yashdeep Kumar, Global Director, Stryker Technology Center at Stryker Corporation, USA, who is also an Adjunct Professor at Gangwal School of Medical Sciences and Technology visited LVAD team. Mr. Yashdeep is associated with the School as an R&D subcommittee member. He is closely associated with the Hridayantra project from the beginning and mentors the fellows in the project.



# Dedicated Space for Centers of Excellence of Gangwal School

Research activities in several centers of excellence (CoE) of the Gangwal School have been initiated and laboratory space has been allocated for the CoE in the Diamond Jubilee Complex building at IIT Kanpur. Separate spaces for laboratories and faculty rooms are created where all the CoE members (faculty, postdocs, research associates and technicians) work together.



## Work in Progress at the Gangwal School Campus

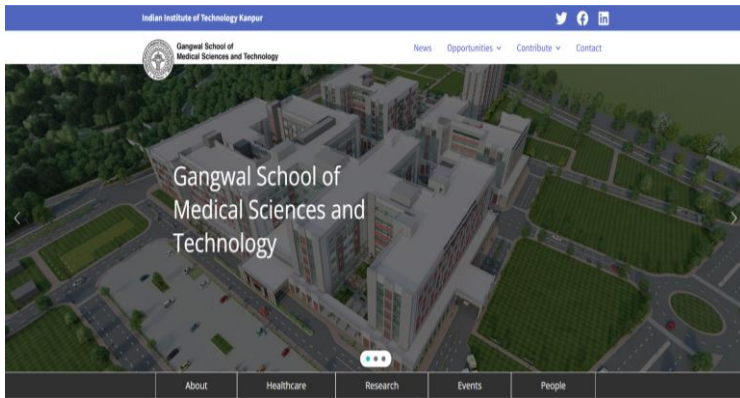
Construction of studio apartments for Resident doctors and Campus development of the School Complex with funding support from REC Foundation and IBM India Pvt Ltd has been initiated in the allocated site for Gangwal School at IITK Campus.



# Gangwal School Website

“<https://gsmst.iitk.ac.in/>”

Gangwal School Website is live now and you can access the same using the above link



## Postdoctoral Fellows



Dr. Bibhas Kumar Bhunia, IIT Guwahati, appointed as post-doctoral fellow



Dr. Pradeep Chakravarthy Tagavula, University of Hyderabad, appointed as post-doctoral fellow

## Contributions

Mr. Deepak Narula (BT/EE/1985), Founder and Managing Partner of Metacapital Management, generously contributed to the Gangwal School project. He is the first Co-Founder of the School.



Mr. Narayana Murthy (MT/EE/1969), Founder of Infosys, generously supported the Center of Excellence in Cardiovascular and Pulmonary Disease Research.



Ms. Sudha Murty, former Chairperson, Infosys Foundation, generously contributed to our flagship project “Hridayantra.”



Batch of 1976 has generously contributed to our flagship project “Hridayantra.”



## Faculty



Dr. Vikram Mathews, Professor & Director, Christian Medical College & Hospital, Vellore, appointed as Distinguished Visiting Professor



Mr. Yashdeep Kumar, Global Director, Stryker Technology Center at Stryker Corporations, USA, appointed as Adjunct Professor



Dr. Saurav K. Bhunia, Principal R&D Engineer, Cardiovascular Systems, Inc, USA, appointed as Adjunct Professor



Prof. Saroj Kanta Mishra, Former Professor, Department of Endocrine Surgery, SGPIMS, Lucknow appointed as Distinguished Visiting Professor



Dr. Nazneen Aziz, Former President and CEO, Variant Genomics, Inc, USA appointed as Visiting Professor



Prof. Krishnan Ganapathy, Director, Apollo Telemedicine Networking Foundation & Apollo Tele Health Services, Chennai appointed as Distinguished Visiting Professor



Gangwal School wishes all its well-wishers a very

**Happy New Year 2023!!**