Newspaper Clips
April 18, 2014

Hindustan ND 18/04/2014 P-1

आईआईटी कराएगा शॉर्ट टर्म कोर्स

नई दिल्ली | रोहित पंवार

आईआईटी दिल्ली अब 12वीं पास छात्रों को बिना जेईई परीक्षा लिए शॉर्ट टर्म कोर्स करवाएगी। हालांकि छह माह के इन कोर्सों के लिए आईआईटी एक प्रवेश परीक्षा लेगी, इंटरव्यू के बाद पास हुए छात्रों को दाखिला मिलेगा। इसके तहत बीटेक के नौ विषयों के फाउंडेशन कोर्स करवाए जाएंगे। छात्रों को संबंधित कोर्स के सर्टिफिकेट भी दिए जाएंगे।

दाखिला कमेटी के अधिकारियों के अनुसार ऐसी परीक्षा देने वाले छात्रों के 12वीं में 75 फीसदी अंक होना जरूरी है। इन कोर्स की शुरुआत नए सत्र से की जाएगी। जेईई मेन और एडवांस की परीक्षा की तुलना में दाखिले के लिए यह परीक्षा बेहद अलग और सामान्य होगी। परीक्षा के लिए 75% अंक और इंटरव्यू के लिए 25 फीसदी अंक मिलेंगे। सभी कोर्सों में 60-60 सीटें होंगी। जेईई परीक्षा पास न करने वाले छात्र भी यह कोर्स कर सकते हैं।

9 विषयों के फाउंडेशन कोर्स

बीटेक के कुल नौ कोर्स हैं। इनमें बीटेक केमिकल, सिविल, कंप्यूटर साइंस, इलेक्ट्रिकल, इलेक्ट्रिकल पावर, इंजीनियरिंग फिजिक्स, मेकेनिकल, प्रोडक्शन एंड इंडस्ट्रीयल इंजीनियरिंग और टेक्सटाइल टेक्नोलॉजी हैं।

हिंदी-अंग्रेजी साहित्य भी

आईआईटी अब छात्रों को हिंदी-अंग्रेजी साहित्य और सामाजिक विज्ञान जैसे कुल 12 विषय पढ़ाने की तैयारी में है। ये एड ऑन कोर्स हैं। इन्हें स्नातक के सभी कोर्स में शामिल किया जाएगा। ये कोर्स वैकल्पिक होंगे।

IIT-Delhi to throw open its doors on Saturday

Vijetha S. N.

The Hindu A volunteer displays the True Hb Hemometer at IIT-Delhi's 'Open House'. Photo: Meeta Ahlawat

Special attention to design, socially relevant, commercially viable projects this year

Ever wondered what the insides of a laboratory at the Indian Institute of Technology-Delhi looks like? How about wanting to see a robotics show or perhaps witness a mini quadcopter take to the skies? You're in luck, for IIT-Delhi's traditional "Open House", where it throws open its doors to the good citizens of the city, is happening this Saturday.

"Almost all our laboratories, departments and research will be open to the public on this day. Along with over 500 projects that showcase innovations in engineering and technology, science and humanities, design and management," said Prof. Joby Joseph, who is the "Open House" chairperson this year.

"This time, we have given special attention to design, and socially relevant and commercially viable projects," he added.

"A lot of students have already confirmed their presence as we have some talks lined up along with the actual exhibition. Schoolchildren never fail to astound us with their questions," said Dean of Research and Development Prof. Suneet Tuli, while revealing that their research funding had reached around Rs.106 crore this year.

A few of innovations that are socially relevant include the True Hb Hemometer that allows you to test your haemoglobin levels with just one drop of blood and gives you the results within seconds. And the best part? It's very cheap and small, and can withstand higher temperatures.

"The current practice is to send your collected blood sample to a pathology lab and wait for results overnight. Devices available in the market need temperatures below 20 degrees Celsius and cost about Rs.20,000 compared to ours, which costs about Rs.7,000," said Ambar Srivastava, a student of Dr. Veena Koul, who has invented this device.

Another quick and easy medical testing device is the "Lipoprotien Analysis", which can check your "cholesterol levels at the cost of a burger".

Prof. A.S. Rathore explained that 73 per cent of Indians are overweight, with the average person becoming obese at the age of 38. What is worse is that the majority belong to the middle-class or poor households and are forced to shell out Rs.5,000 for a cholesterol analysis. "Our machine can do a test for Rs.120, the exact cost of a burger with a slice of cheese," he said.

Ways in which information technology can be used for better implementation of government schemes, toys that can be made from trash and making plastic from potato starch are some of the other exhibits on display.

Girl found with serious injury marks under IIT-D flyover

OUR CORRESPONDENT

NEW DELHI: An auto-rickshaw driver, on Wednesday night, discovered a 19-year-old girl sitting near IIT-Delhi flyover under mysterious circumstances. He informed the police, who then admitted her to the AIIMS trauma center.

'The driver told the police that while he was driving back home, he saw a girl sitting in a dark place. She seemed unwell and in an act of deep concern, he stopped his auto-rickshaw near her and asked whether she wanted help from him. Without answering him, she sat in the auto and told him that she was not feeling well,' a police official said, quoting the driver's statement.

Her clothes were bit torn and her body parts bore injury marks as well. Smelling a rat, the auto-driver whose identity was not disclosed, made a call to the police control room. A team reached the spot and the driver handed over the unidentified girl to the police. She was immediately rushed to AIIMS Trauma Center, as her condition was poor.

Meanwhile after recording the driver's statement, he was released. 'The victim was provided with medical aide and on Thursday morning her condition was said to be stable. When a team approached the victim to ascertain what had happened to her and how she managed to reach such an isolated place, she was unable to explain the exact sequence of event', a police official said.

However, despite injury marks on her body, Delhi police has ruled out any possibility of rape, with medical reports confirming the same

She told police that she hails from a village in Gujarat and a team has been sent there to contact the family. On Thursday morning, she allegedly told police that she was kidnapped and brought by unidentified men in a train. However, in the afternoon she changed her statement and narrated another story. However, despite injury marks on her body, Delhi police has ruled out any possibility of rape.

Future wars would be non contact wars: DRDO chief

PBD BUREAU/PTI

CHENNAI, APRIL 17

AS future combats are predicted to be 'non contact wars', India was focussing on developing robotics, underwater vehicles and unmanned systems, a top defence official said here today.

"Tomorrow's wars are going to be non contact wars.. We are focussing on unmanned systems and robotics. Autonomy levels have to change.

Avinash Chander

After having achieved some skills in Earth's surface, we are focussing on underwater vehicles," DRDO Director General Avinash Chander said.

DRDO had done sufficiently in radars segment that 80 per cent of radar equipment required for the armed forces was provided by the organisation, he said in a speech at the 55th Institute Day of IIT Madras here.

Scientific and academic institutions must focus on innovation and not on repeating experiments and reproduce products, said Chander, who is also the Scientific Advisor to the Defence Minister and Defence Secretary (R&D).

"We have been excellent survivors. India has been surviving in technology. From catching up with technology, India should be a leader in technology," he said.

BUZZING WITH IDEAS

Widely regarded as deliverers of deadly weapons or as snooping aids, unmanned aerial vehicles are finding applications in sectors as varied as agriculture, realty and film-making, discover Krithika Krishnamurthy and Malavika Murali

Around the World...

UK
A new drone called Snoopy was unveiled in March. It steals data without the knowledge of the user by scouting for a wireless signal in a smartphone.

CHINA
Deployed drones to spy on polluting industries in March 2014

BRAZIL
To patrol the skies and perform surveillance above the football stadiums during the course of FIFA World Cup, Brazil has bought two drones from Israel

AUSTRALIA
Zookal, an Australian textbook rental start-up had decided to use drones to deliver textbooks, late last year, marking this as the first commercial application of the unmanned aerial vehicle worldwide.

DUBAI
The UAE govt said it plans to utilize drones, equipped with eye-recognition and fingerprint hardware, to deliver govt materials, official documents in 2014

Cool Indian Startps

AIRPIX
Does not sell drones, but does aerial photography. Gives 'recommendations' to industries and businesses by carrying out data analytics on aerial data collected by the drones for its customers including Kalpataru, APM Terminals, K Raheja Corp, Reliance Energy.

GARUDA ROBOTICS
Sells software and services for the UAV industry

EDALL SYSTEMS
Helps enthusiasts build UAV. Develops parts of the machine for DRDO, NAL.

IDEAFORGE
Has developed Nethra UAV in collaboration with DRDO. Police forces of atleast three states along with Central Reserve Police Force (CRPF), and the Uttar Pradesh Special Task Force are its customers

AURORA INTEGRATED SYSTEMS
One of the early entrants in the field, the Bangalore-based company counts DRDO and the Indian Army as its clients.

Applications

Package delivery, surveillance to track sand and mining mafia, garbage collection, air and water pollution monitoring, wildlife protection, 3D mapping, for movie shooting, sports, meteorology, traffic management

Types of UAV

MICRO UAVS - Weighs up to 1 kg, and can fly for up to 60 minutes.

SMALL UAVS - Weighs up to to 15 kg and can fly for more than 2 hours

MEDIUM UAVS - They fly up to 4,000 ft for upto 5-10 hours with payload of 5-100 kg

LARGE UAVS - General Atomics' MQ-1 Predator can fly up to 50,000 ft, for up to 14 hours with 1,080 kg of weapons

If KM Ramesh has his way, the price of tomatoes in Indian markets will not swing as dramatically as they do. The 45-year-old seeks to accomplish this not by way of policy regulation, but with a little help from technology.

At the Indian Institute of Science in Bangalore, Ramesh along with a team of researchers has built a miniature remote-controlled vehicle that can hover above farmland and gather data that helps monitor the growth of crops, detect diseases and estimate crop yield months ahead of the harvest.

The unmanned aerial vehicle, or drone as it is popularly known, was used to collect data at tomato farms in Karnataka's Kolar district for three months at the end of 2013.

"The farmers were enthused by our technology," said Ramesh, who quit his job as a senior manager at Infosys to pursue a masters in electronics and communication. "In the future we want to distribute information about who is growing what and where so that prices don't crash when produce arrives at the market in bulk," said Ramesh who stumbled upon the project at a yoga lesson where he met IISc professor SN Omkar.

"Ten years ago, it was difficult to find people who could even operate these vehicles. Now, we see lots of them who design and fly the vehicles themselves," said Omkar, chief research scientist at the Department of Aerospace Engineering, who is overseeing Ramesh's work.

The data collected by the drone, which cost ₹20,000 and about two months to build, is now being analysed by the team to estimate this season's yield. From being machines that were believed to be useful only for surveillance and point and shoot operations, drones are now widely regarded as handy tools for commercial use.

In the past year, at least half a dozen start-ups that offer drone technology have been set up. These ventures, including Mumbai-based Airpix, Asteria Aerospace and Om UAV Systems, are building consumer-friendly applications. These have caught the attention of corporations like Reliance Industries and Raheja Corp that have used drones for aerial photography.

"Initially, we had to drop off aerial shots. Helicopters were too expensive and cranes were not nimble," said Gautam Vaze, co-founder of Line Production India, a Mumbai-based firm that has used drones to shoot advertisements for clients like TVS Motors.

In India the market size for small UAVs, which weigh not more than 15 kg, is expected to reach $33.53 million by 2019, according to research firm Marketsandmarkets. The global small UAV market is expected to register CAGR of 21.70%, said the firm.

Airpix uses its fleet of drones to create aerial panoramic pictures, virtual tours and three dimensional models of real life structures. It provides 'recommendations' to industries and businesses by carrying out data analytics on aerial data collected by the drones for its customers such as realty firm K Raheja Corp and Reliance Energy.

"You can call it 'Big Data' for the industrial sector," said Rajesh Mane, founder of Airpix who set up the company last March. In six months the venture had earned revenue of ₹12 lakh. Experts said drones can be put to work across multiple sectors in India, ranging from surveillance and garbage collection to monitoring air and water pollution.

"Instead of telecom towers, a UAV could do the job; just think of the time and energy saved," said Debajit Sarkar, defence expert at research firm Market Info Group.

Asteria Aerospace, which launched its UAV, last November, is in talks with several wind-farm owners, both in India and overseas, to survey wind mills spread over large swathes of land. Set up in 2012, by two former graduates of Purdue University in the United States, the company's UAV, Cygnus, will fly several feet above the ground and detect frayed wirings of the wind blades. "We hope to have an agreement with the wind farms by the end of this year," said 31-year-old Nihar Varthak, cofounder of the company and a former Boeing employee, who is yet to make his first sale. Small UAVs can be hand-launched when they have a fixed wing like that of an aircraft. They can also take off and land vertically when they are designed to have a body like a spider, with rotor-fitted power blades. And Indian startups make both kinds. What a UAV can do is dependent on what it carries. Payloads of small UAVs that weigh less than 4 kg usually carry cameras.

> Ten years ago, it was difficult to find people who could even operate them. Now, we see lots of them who design and fly the vehicles themselves
>
> **SN Omkar**, Professor - Aerospace Dept, IISc

"Making the hardware is easy. It's like assembling a toy. But the software is tricky," said Nandan Sinha, a professor at IIT, Madras. "Many countries have taken a lead. India has not graduated to that level."

Singapore-based Garuda Robotics, set up by 20-year-old Indian Pulkit Jaiswal does exactly that. "We have created the equivalent of an operating system for drones," said the young student-turned-entrepreneur, who discontinued his studies at Nanyang Technological University in Singapore to start his company last September.

Although Garuda can manufacture UAVs, it wants to focus on selling its software licences to customers. It already has two customers. But India is nowhere close to being self-sufficient when it comes to making its own drones. Most Indian companies are unwilling to invest in technology, because of lack of clarity on finding customers, who are mostly in the defence sector.

"Several companies I spoke to have said they cannot invest in the technology in-house unless they know they can get orders," said Sarkar of Market Info.

Slow procurement of UAVs by the Ministry of Defence and a preference to allocate tenders to public sector units have impeded research, he said. And startups such as Bangalore-based Edall Systems are struggling to find the right investors to back them. To overcome the fund crunch, the company has been making do with conducting training classes for UAVs for interested students, building parts for National Aerospace Labs and the Defence Research & Development Organisation.

"In India there are no private players such as Honeywell, Northrop Grumman willing to partner with us to fund our research," said chief executive and cofounder Pritam Sahu, 28, a graduate of Anna University, who built his first UAV, Nayan, as a final year project with NAL.

The six-year-old company has trained over 270 students over the last two years, and had a top line of ₹50 lakh last fiscal. "We are hoping these activities will support our research," said Sahu. Given the increasing activity in the space, Unmanned Systems Association of India was set up last year to lobby for regulations in the space, a need clearly felt by those within the industry.

But entrepreneurs are not deterred. As Vaze of Mumbai-based production services company Line Production India said, "It's cheap, can swivel the camera around, and easily move along with the object I want to film. This is great equipment."

krithika.k@timesgroup.com

Magnetic nanovoyagers in human blood

http://www.nanowerk.com/spotlight/spotid=35255.php

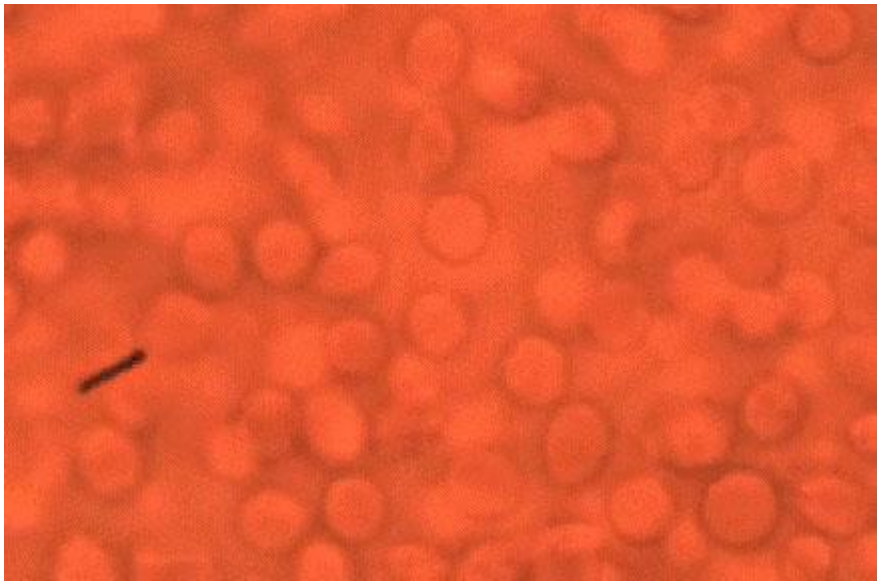
(*Nanowerk Spotlight*) The use of nanomotors to power nanomachines and nanofactories is one of the most exciting challenges facing nanotechnology. The highly successful design shop of Mother Nature has created efficient biomotors through millions of years of evolution and uses them in numerous biological processes and cellular activities.

While nanotechnology researchers have made great progress over the past few years in developing self-propelled nano objects, these tiny devices still fall far short of what their natural counterparts' performance. Today, artificial nanomotors lack the sophisticated functionality of biomotors and are limited to a very narrow range of environments and fuels.

In another step towards realizing Richard Feynman's vision of tiny vessels roaming around in human blood vessels working as surgical nanorobots, researchers at the Indian Institute of Science (IISc) in Bangalore have now demonstrated, for the first time, externally driven nanomotors that move in undiluted human blood.

"Most externally – magnetically or acoustically – driven nanomotors realized to date have been actuated in de-ionized water and, in a few cases, in media of biological relevance such as serum," Pooyath Lekshmy Venugopalan a PhD student at IISc Bangalore's Centre for Nano Science and Engineering, tells Nanowerk. "The only reported attempt to maneuver a nano-voyager in human blood has been with catalytic microjets, which were moved in human blood diluted 10 times with (toxic) hydrogen peroxide."

In their paper in a recent edition of *Nano Letters* ("Conformal Cytocompatible Ferrite Coatings Facilitate the Realization of a Nanovoyager in Human Blood"), first-authored by Lekshmy, the IISc team describes a system of cytocompatible nanopropellers that can be maneuvered in various biological fluids with a small and homogeneous rotating magnetic field. The method of actuation is noninvasive, does not require any chemical fuel, and is therefore ideally suited for *in vivo* applications.



Ferrite coated iron propeller in 1.8X diluted blood. (Image: Pooyath Lekshmy Venugopalan, IISc)

"For artificial nanomotors to be successfully maneuvered in undiluted human blood, two important experimental challenges need to be met," explains Lekshmy: "1) The thrust generated by the propeller needs to be large enough to overcome the large drag due to the presence of blood cells; and 2) since the large concentration of ions – chlorides, phosphates, etc. – in blood can etch most magnetic materials easily, this necessitates a conformal protective coating around the nanomotor, many of which, including the chemically and acoustically powered ones, contain a magnetic material which can be used for controlling their direction of motion."

The researchers overcame these experimental hurdles by using a conformal ferrite coating in conjunction with helical propulsion powered by magnetic fields.

The developed system was also found to be biocompatible, thereby opening up new possibilities in the *in vivo* applicability of artificial nanomotors, which was the team's main goal when they started this project.

Having controlled motion in important biological environments automatically suggests a general platform towards diagnostic and therapeutic applications. Since it is possible to functionalize the nanomotors with appropriate biomolecules, such a system could be used to detect and treat diseases.

Nanopropeller can be seen traveling through blood cells in a 1.8x diluted blood sample.

"One could also envision bringing the nanomotors in close proximity to a cancerous tissue," notes Lekshmy. "This could have tremendous therapeutic implications, as ferrites – which coat our nanomotors – are commonly used for magnetic hyperthermia. Alternately, by loading the nanomotors with cancer specific drugs, one could localize the treatment

significantly."

The team's further research in this area will be directed towards adding functionality to their ferrite-coated nanopropellers, such as using them as sensors for detecting various disease conditions in blood, and to attempt therapeutic applications under *in vivo* conditions.

"For *in vivo* experiments, it may be necessary to image these small objects from a distance," Lekshmy points out. "This is not a trivial task and may require novel imaging methods."

By Michael Berger. Copyright © Nanowerk

Read more: Magnetic nanovoyagers in human blood
http://www.nanowerk.com/spotlight/spotid=35255.php#ixzz2zEPls9fT
Follow us: @nanowerk on Twitter