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P-10

IIT-K LAUNCHES UAV PROJECT FOR EYE IN AIR

Vanita Shrivastava

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NEW DELHI: In an endeavour to improve country's surveillance system, the Indian Institute of Technology (IIT) Kanpur has launched a major initiative for designing and building unmanned air vehicles (UAVs).

The three types of UAVs planned are flapping wing, fixed wing and quadrotor. The applications envisaged are surveillance, aerial photography and disaster management.

One of the projects aims at developing a small sized fixed-wing Unmanned Aerial System (UAS) that could, in the future, be upgraded to a solar powered system. "This will be a fixed wing platform which will be designed in such a way that future modifications can be easily incorporated. It will be easily modifiable in future to a renewable energy based system, specifically solar powered," said Dr AK Ghosh who is leading the fixed wing project.

Additionally, flapping wing micro/mini air vehicle research is an ongoing sponsored activity of the Unsteady Aerodynamics Laboratory of the institute, supported by several agencies.

"IIT Kanpur is supporting this activity towards building an autonomous 1.5m flying bird which will carry a small camera as payload and will be able to take pictures for surveillance," said Dr Debopam Das, project leader.

Deccan Herald, ND 16/02/2014 P-6

Delay in setting up IIT infra doubles cost

HRD Ministry bats for Rs 1,500 cr as grant

Prakash Kumar

NEW DELHI, DHNS: Delay in building permanent infrastructure for the eight new Indian Institutes of Technology (IITs), a plan approved in 2008, has resulted in an whopping escalation of cost and the Centre now has to spend nearly double the estimated amount.

The Human Resource Development (HRD) Ministry has sent a proposal to the Expenditure Finance Committee (EFC) to increase the allocations for the establishment of these IITs from Rs 760 crore each to over Rs 1,500 crore, according to official sources.

On July 17, 2008 the Union Cabinet approved the setting up of eight new IITs in Bihar, Andhra Pradesh, Rajasthan, Orissa, Gujarat, Punjab, Himachal Pradesh and Indore in Madhya Pradesh at a total cost of Rs. 6,080 crores (Rs. 760 crores per institute).

Out of the eight new IITs, six commenced their academic session in Bhubaneswar, Gandhinagar, Hyderabad, Patna, Jodhpur and Ropar in 2008-09 while the remaining two started operating in Indore and Mandi in 2009-10. All of

them began functioning from temporary campuses.

The plan was to shift them to permanent campuses within a period of six years as the Central funds earmarked for this purpose was worked out on the cost estimation done for this period only.

"It was the states concerned which first contributed to the delay in the implementation of the plan. Some of them took a lot of time in allocation and transfer of land to IITs for establishment of permanent campuses of the institutes," HRD Ministry sources said.

Functioning from their temporary campuses, IITs in Gujarat, Madhya Pradesh, Himachal Pradesh and Rajasthan had to wait for over two years for allocation and transfer of land, even as the HRD Ministry kept on requesting them to speed up the process.

Delay in finalisation of master plans for construction of permanent campuses was another reason. "Even after the land was allocated, some of the IITs were yet to finalise the master plans for construction of their permanent campuses.

"All these factors consequently delayed the entire plan of shifting, leading to escalation of cost," sources added.

Mumbai University's Rs100 crore nanoscience & nanotechnology centre ready to kick-off

Sunday, February 16, 2014 - 06:00 IST | Agency: DNA

The centre will focus on low cost medicines for blood cancer, on making smartphones and laptops work longer and low cost solar cells.



- Work has commenced at the centre which is yet to be inaugurated. *Puneet Chandhok DNA*

Mumbai University's most ambitious and state-of-the-art project - the National Centre for Nanoscience and Nanotechnology- which was commissioned three years ago through a Rs100 crore grant of University Grants Commission (UGC), is finally ready to be kicked off.

The ground plus two-floor centrally air-conditioned premises of the centre houses half a dozen specialized laboratories with highly advanced machines including those which work on a single atom. A dozen MPhil students along with four professors have already started their work in the centre which is yet to be inaugurated formally.

UGC allotted this centre to Mumbai University in the year 2007. The grants to the tune of Rs50 crore were given to the university in the first phase. The release of the remaining Rs50 crore has got a green signal after the "positive appraisal" report given by UGC review team which visited the centre between January 30-31.

Prof Sundar Manoharan, director of the centre has confirmed the development. "I am happy all the hard work we have put in has been appreciated by the UGC experts. They have decided to give us additional Rs15 crore for the recurring expenses. We will now focus on filling teachers and scientists posts."

"The centre which is located near the Exam House in Kalina campus has already installed laser Molecular Beam Epitaxy System, Pulse Laser Depositor, Glove-box, Scanning & Transmission electron microscopes -- all worth between Rs2-7 crore," says Prof HMuthurajan, who left his job at Singapore's Nanyang Institute of Technology a year ago in order to be associated with this centre.

The major thrust area of the lab would be the stem cell research mainly on bone marrow so as to develop low cost medicines for blood cancer, semiconductor base fabrication to develop efficient low cost solar cells and to develop highly efficient organic light emitting diode (OLED) so that mobile and laptops can work longer once charged and preparing laser based lithography system, which would be the first in Asia and would revolutionise the chip technology.

DRDO and Nanyang Institute of Technology Singapore have already given two big projects to the centre.

STUDENTSPEAK

Research results

Rohit Satija, a biochemical and biotechnology student at IIT Delhi, who will be participating in a biology competition later this year, speaks about the research his team is working on for the competition

Our team is working on building a bacterial pH sensor (a sensor to measure the acidity/basicity of any water sample) that can display different colours for different pH, much like a pH strip or a litmus test. The idea is to use this as a basis for a variety of applications that involve pH sensing, especially in the biochemical industry and for solving environmental problems.

For this, we designed a gene circuit (a collection of genes working in tandem with each other). The result was a bacteria that displayed a gradient of



Rohit Satija

colours (basically fluorescence) from red to blue to vary the pH of the medium from acidic to basic. The gene circuit was designed to be flexible in structure and function, so as to accommodate different output modules based on the requirement.

The team has worked extensively in a laboratory to make bacteria that can sense pH. This basically involved using standardised

6 A bacterial pH sensor has widespread applications in the biochemical industry. The device could sense the pH of drinking water and can also be used to kill termites

gene cutting and pasting techniques, commonly used in molecular biology labs around the world, to integrate different genes that carry out different functions in different organisms, all into one cell. We also constructed a mathematical model of the circuit behaviour and simulated its functioning using computer software. While most of the work involved working in the lab, we did go out and speak

to people about synthetic biology and the ethical issues related to our project. We also briefed the incoming batch of freshers about our project and how they could get involved. With regards to the funding, we raised funds by pitching the project to various biotech companies and firms.

A bacterial pH sensor has widespread applications in the biochemical industry. For example, pH sensing and correction in bioreactors can be simplified using our idea to al-

low the micro-organism to adjust its pH automatically, eliminating the need for pH regulation. We can also use this to kill termites, which have the ability to degrade wood structures by secreting certain enzymes in the termite gut (the gut being alkaline in nature). Another application might be, to make a small device that can sense pH of drinking water in rural areas, solving several digestive problems caused due to acidic or basic water in rivers/lakes. However, many of these are concepts and it will take several years before the technology reaches the market.

There are many technical roadblocks to the project, which may be difficult to completely eliminate and we are working on them. Last year, the team participated in the International Genetically Engineered Machine (iGEM) contest and won the bronze medal at the Asian Regional Championship, held in CUHK (Hong Kong) in 2013. We will now be participating in iGEM's Giant World Championship, which will be held in Boston in October this year.

- As told to Aaditi Isaac



IIT develops therapeutic food for malnourished kids

Press Trust of India

Food engineers at the IIT Kharagpur have developed a cheap ready-to-eat paste for malnourished children.

A four-member team of IIT researchers prepared the formulation in their food chemistry and technology lab which could be used as part of medical nutrition therapy for management of severe acute malnutrition children.

"This is ready to eat and can be sold in pouches as food paste. We have prepared five food formulations based on peanut, potato and Bengal gram (chana) to suit different tastes and nutrient needs of malnourished children. It is also easily digestible," IIT professor Dr HN Mishra, who led the

research, said.

"It has all the vitamins, minerals, nutrients and protein which a malnourished child needs," he said.

"Such children need special attention as they lack calories and energy. Their digestion capacity is affected and their whole system has grown weak. Therefore, they need such therapeutic food and diet-care approach," Prof Mishra said.

Two PhD students and an assistant worked with him for more than a year on the project.

Since the product targeted the underprivileged section of the society, the cost of production was low and could be sold by the industry profitably at ₹50-60 a kg, Mishra said.



■ The formulation can be used for management of severe acute malnutrition children FILE

Financial Express, ND 17/02/2014 P-12

INTERVIEW: NIMISH SONI & MURALIDHRAN NADARAJAH

'We'll see disruptive innovations improve the way education is delivered'

According to IDC, from the \$40 billion IT spend that India has witnessed, 5% has been in the education sector, which will go up to 12% by 2017 as a result of the government promoting technology adoption in education. While physical infrastructure in the form of cabling, mobile internet are open challenges, the adoption of cloud model can provide flexibility. "This can open up opportunities for players like Xchanging," say Nimish Soni (executive director for Enterprise Sector, BPS & APAC, Xchanging) and Muralidhran Nadarajah (CEO, Xchanging Malaysia). In an interaction with FE's Vikram Chaudhary, they add that Xchanging, a provider of business processing, technology and procurement services, runs the largest education account in the world for the Malaysian ministry of education. Excerpts:

According to technology market researcher IDC, about 5% of the \$40 billion IT market in India is in the education sector. This is expected to grow to 12% by 2017. How will education as a sector benefit?

The Indian education system is undergoing massive transformation and adoption of new technologies is one of the forces dominating this change. According to the Planning Commission, India has the largest primary school education system in the world with 135 million students. With 120 million students pursuing higher education and millions being added each year, it is imperative for educational institutes to look for ways to improve operational efficiency and academic performance. This is a much-needed move, considering logistical and manpower shortcomings often hinder the quality of education. With IT spends in the

sector conclusively heading up, we will see a number of disruptive innovations improve the way in which education is delivered. At Xchanging, the key enabler of this technology adoption is the high mobile penetration in India—especially the growing 3G and 4G networks.

This will facilitate investments in the right technology like multi-modal teaching, which can give access to larger curriculum and add impetus to research and collaboration that was not possible before. Personalised learning will also take a leap as students will be able to create their own curriculum, and get responses to their queries in a quicker turnaround time. Technology will facilitate higher enrolments in distance education.

There is a greater focus in India on delivering quality education that is student-centred, interactive and



less memory-based. What steps is Xchanging taking?

Xchanging is at the forefront of this shift. We have the capability to deliver end-to-end Managed Services Networks and complete Education Platforms globally from our delivery centres in Malaysia, India and the UK.

In the UK, we've worked with top 10 universities to whom we've provided Managed Services Network through Data Integration, the network and system inte-



grator company owned by Xchanging. We also run the largest education account in the world for the Malaysian ministry of education, providing cloud computing-based Virtual Learning Environment that currently involves 10,000 schools, 5.9 million students, 4.5 million parents and over 500,000 teachers. We offer fully independent functional modules which help increase the efficiency of the departments, and empower the manage-

ment, staff and students with useful information online.

What is your take on the government promoting technology adoption in its education programmes?

The Indian government is substantially promoting technology adoption in its education programmes and has made a provision for districts to spend ₹50 lakh on computer-aided learning as part of Sarva Shiksha Abhiyan. This is in addition to the ₹25,000 crore allotted for this campaign in 2013, representing a 21.7% increase from the previous year.

We believe hastening this technology adoption will not only serve to reach more students but more importantly drive continuous enhancement in curriculums.

How can cloud power 'smart' classrooms?

At the moment there are two major challenges in the

education sector—access to quality education and reach of educational services in remote areas of India. With low-cost commitment to IT infrastructure, cloud platform-based solutions can significantly improve the quality of educational content and delivery. It can also empower educational institutes with software tools for smoother operations and improve quality of educational content. The other important application of cloud is its ability to facilitate provision of education to far-flung areas that have limited or no access to schools. Through the cloud, with relatively less investments, virtual classrooms in remote areas can be created which connect students to physical classrooms in real-time for learning.

adding around 1,000 schools a month to its network. Can such an initiative be replicated in India?

Our centralised cloud delivery model allows us to take a completely different approach compared to a traditional roll-out. Our 'School in the Cloud' solution is centrally hosted and accessible from any school. This eliminates the need for physically installing server hardware and software at each school. As part of that roll-out, we created a national index and SAML-based single-sign of 10 million students, teachers and parents covering almost half the 28 million population of Malaysia.

Please share your experience with the Malaysian government on the Smart School Project that is

Tackling education initiatives at the national or state level as done by Malaysia will allow Indian schools to realise goals faster and also help eliminate the gaps in the rural-urban divide.

IISc profs' virtual liver product gets patent in US

Anshul Dhamija | TNN

Bangalore: Strand Life Sciences, founded by professors at the Indian Institute of Science (IISc), Bangalore, was awarded a patent in the US last week for its two-year-old virtual liver product, used by pharmaceutical companies across the world to test new drug toxicity in the liver.

The virtual liver — a ready-to-use software simulation — mimics normal liver functions and generates likely outcomes of new drugs before the drug is tested on animals and humans.

Industry estimates suggest that nearly 50% of new drugs fail to pass through the clinical trial stage as they have side effects, in particu-

lar, toxicity issues. Of that, 60% of the cases relate to liver injuries, given that the liver is responsible for flushing out toxins from the body.

“The software will also be awarded patent rights in the European region shortly,” said Kalyanasundaram Subramanian, chief scientific officer of Strand Life Sciences. Founded in 2000 by a clutch of computer science and mathematics professors, Strand has captured a 30% share of the global genomic market through its core business of selling software that allows research labs, academics, and pharmaceutical companies to do biological data mining and interpretation.

The company generates over 90% of its business from

global markets, and has revenues of about Rs 45 crore, with scientific software sales accounting for 50% of the revenues.

In 2007, Strand began work on the virtual liver, which falls under the consulting business vertical, and applied for patent rights in 2011. The virtual liver allows the pharmaceutical industry to reduce the number, time, and expenditure associated with animal and human trials and yet be able to understand the side effects of drugs on the liver.

“We wanted to combine simulation along with experimental methods to predict toxicity. The simulation is made on a rat model and a human model,” said Subramanian.

Name game: India has 234 engg degree, 399 diploma courses

AICTE Gave Nod To Different Names For Basic Courses: Panel

Hemali Chhappia | TNN

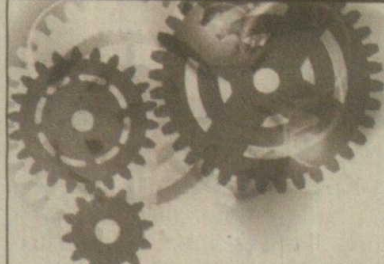
Mumbai: How different is a course in digital communication from one in digital communications? Or a diploma in travel & tourism from a diploma in travel and tourism? Yet, these are listed as separate courses in the All India Council for Technical Education's manual guiding engineering studies.

A damning report against the council (AICTE) by a state-level expert committee says, "It is abundantly clear that there are too many sub-standard institutes with countless programmes and considerable examples of deceptive nomenclatures."

India has 234 degree and 399 diploma engineering courses. "It is unfortunate that the AICTE has approved different nomenclatures for basic engineering courses and increased the number of undergraduate engineering programmes, which is suggestive of the downfall of engineering education," the report says.

Listed as separate courses in the AICTE manual are: electrical engineering, electrical and electronics engineering, electrical and power engineering, electrical engineer-

RECOMMENDATIONS OF EXPERT PANEL



- > Don't permit new technical institutes or increase student intake in existing colleges
- > Intake must be commensurate with job opportunities
- > Only courses approved by National Board of Accreditation should be allowed
- > Reduce intake in colleges offering PGDM (post graduate diploma in management) or close them down
- > Reduce intake in MBA/MMS (masters in management studies), hotel management and catering technology courses
- > Merge engineering courses with fancy nomenclatures
- > Strengthen hostel facilities
- > Provide quarters at all colleges for at least 50% of staff
- > Don't add new PGDBM (post-graduate diploma in business management) programmes

A state-level committee, headed by the vice-chancellor of Institute of Chemical Technology, Matunga, analysed vacancies in professional courses and suggested remedies

Programme	A	B	Vacancies
2013-2014			
Engg	365	186	52,400
MBA*	516	241	17,740
2012-2013			
Engg	364	100	41,603
MBA*	514	227	12,800

A: Number of institutes
 B: Institutes with vacancy above 35%
 * MBA, MMS and PGDBM

“The AICTE's policy of granting second shifts in existing institutions without proper survey is detrimental to quality of education

The AICTE's policy of expanding access to technical education has failed, since there is no control over quality, and its scope is ambiguous. State governments, by and large, do not interfere with the delivery of higher education. Affiliating universities do not provide inputs on standards

PANEL'S REPORT

ing (electrical and power), electrical engineering (electronics and power), electri-

cal and electronics (power system). The committee has recommended that these

courses be offered as one programme: electrical engineering.

Experts say that the fact that there are 42 degree programmes in electrical engineering and electronics, all with "outlandish nomenclature", indicates that these have been created for the convenience of private institutes.

"A new college has to start with a minimum student intake of 300, distributed equally among five branches. Different nomenclatures benefit profit-minded institutes that want only popular disciplines," said a member of the committee. Experts wonder if there are industries that recruit the products of all the courses.

"In India, more diploma holders are permitted to pursue degree programmes to fill vacancies and more management institutes are created to provide a channel to the increasing number of unemployable engineering graduates... Since there are no corresponding opportunities in the manufacturing sector, the higher education system creates pools of ill-trained, unemployable professionals going for poorly paid jobs," report said.

IIM-B Grads See Spurt in Overseas Offer, 15-20% Pay Hike

OUR BUREAUS
KOLKATA | MUMBAI

IIM Bangalore's final placement process has seen a spurt in hiring by overseas firms and a 15-20% increase in average salary offer.

The 2014 batch of post-graduate programme students received 80-90 overseas offers for cities such as London, New York and Hong Kong from employers including Goldman Sachs, Bank of America, Deutsche Bank and Citi Bank. The placement process had started on February 10.

In all, some 125 companies offered 400 jobs compared with last year's 415 offers from 150 companies. The average salary, too, rose this time by 15%-20% to ₹19 lakh.

About a quarter of the batch received salary offers in the \$70,000-100,000 range—a jump from last year when 21 students had received international offers in the same salary range.

"It was a recession-proof process. We got all the companies back on campus and more," said Sankarshan Basu, chairperson, career development services at IIM-B. "Everybody got the job they wanted and it has been one of the fastest closures. The roles offered are also better and people with experience have got some good profiles."

He, however, added, "We should not draw a picture of the process based on the overseas offers as these might not be the best ones in terms of purchasing power parity, but a domestic offer (that pays ₹30 lakh, for example) might be."

Basu provided an estimate that in terms of purchasing power parity, a \$100,000 salary in London, New York and Tokyo would be less than ₹30 lakh in India, while if you draw the same amount in Singapore it would come to about ₹30 lakh.

In the consulting space, Accenture topped the list with 14 job offers, followed by McKinsey and the Boston Consulting Group with 10-12 offers each. BCG has increased its hiring from the IIMs, picking up 44 candidates this year compared with last year's 42. Eleven of these candidates were from IIM-B.

"The IIMs are a very important source of top talent for our business in India. We continue to recruit in large numbers from these institutes to fuel our growth," said Suresh Subudhi, partner & director, BCG India. "We made 44 offers across IIM A, B, C and L and are happy to note that we continue to be the top preference for most students wishing to pursue a career in a global consulting firm."

In the telecom sector, Vodafone was one of the biggest recruiters with 10-12 offers.

Meanwhile at IIM Ahmedabad, the second cluster of the final placement process saw participation of companies from six sectors: consumer goods, consumer services, global technology firms, general management and leadership, strategy and niche consulting and banking and financial services.

Till Saturday evening, Amazon, EXL and Reliance Industries had made eight offers each, including pre-placement offers, according to a statement issued by the institute.

Create safe atmosphere on campuses, says UGC

WHAT'S REQUIRED Need to change mindsets and make gender sensitisation talks an integral part of public discourse

HT Correspondent

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LUCKNOW: The University Grants Commission (UGC) has reiterated that there is an imperative need to create a safe and secure atmosphere on campuses. And to achieve this, there is a need to change the mindsets of people - apply it in word and follow it in deed, it has emphasised.

Besides, gender sensitisation discussions should be made an integral part of public discourse on campuses to create awareness about the issue.

These are the recommendations of 'Saksham', a report of the UGC task force set up to 'review measures for ensuring women's safety on campuses and programmes for gender sensitisation'. The report has come up with several fundamental recommendations, which are in consonance with the Justice Verma Committee Report guidelines.

In the aftermath of the Delhi gang rape incident of December 16, 2012, an alarmed UGC had issued an advisory instructing all higher education institutions including universities to make campuses safe for women. The copy of this report will soon be made available to all universities and degree colleges across the country, sources said.

'SAKSHAM' SUGGESTIONS

'Saksham', a report of the UGC task force set up to 'review measures for ensuring women's safety on campuses, has come up with several fundamental recommendations, which are in consonance with the Justice Verma Committee Report guidelines.

It also mandates for the institutions to seriously review security arrangements for girls and



women on the campuses and ensure a safe working environment for women employees.

Girija Vyas, former chairperson of the National Commission for Women, suggested a five-point programme to ensure safety for women and gender sensitisation on campuses, which includes enactment of strict laws and strict implementation of the same.

Meenakshi Gopinath of the UGC was the chairperson of the task force constituted to review the remedial measures to address concerns of all girls and women studying in diverse university campuses of the country.

The report also mandates for the institutions to seriously review security arrangements for girls and women on the campuses and ensure a safe working environment for women employees. The UGC had recommended setting up of a task force to ensure

women's security by all institutions and asked the officials concerned to keep it informed of the action taken.

The report also says there is a need to have gender sensitisation modules in the curricular areas of higher education. Periodic discourse on such concerns amongst faculty and students, in which girls and women could be an integral part, could probably lay the foundation for the creation of healthy mindsets.

Urging serious review of security arrangements for girls on campuses, the report says that these arrangements may be further strengthened both in and around the girls' hostels. "These measures are necessary to ensure that girls have a safe learning environment," the report adds.

IISc invokes Rs 200 fine on trespassers in campus

By Sridhar Vivan, Bangalore Mirror Bureau | Feb 17, 2014, 01:00 AM IST



Indian Institute of Science is spread over 400 acres in the heart of Bangalore

After recent attacks on students, the premier science institute revives a provision in its rule book to impose fines. But students want all visitors to produce ID proof

The next time you visit the IISc campus without a reason, you may have to shell out Rs 200 fine for trespass. With two students attacked in the last couple of days, IISc, the country's premier science institute, is rethinking the security steps in the campus.

The institute has woken up after Bangalore Mirror featured two reports on how a student was attacked with a broken bottle by drunken outsiders on the campus (IISc student assaulted for questioning outsiders who were drinking in campus, Feb 12), and how a girl was groped and molested by a man (Fear over IISc campus: Bike-borne intruder molests female student, Feb 15). The institute hopes that the threat of a trespass fine will keep intruders out.

The campus houses more than 40 departments. It is fully residential and spreads over 400 acres of land situated in the heart of the city.

The campus features six canteens (cafeterias), a gymkhana (gymnasium and sports complex), a football and a cricket ground, four dining messes (halls), one multicuisine family restaurant, nine men's and five women's hostels (dormitories). It has a number of entry and exits which lead to different localities and hence it is one of the shortcuts used by locals.

However, IISc officials believe that the reason for these incidents is too many trespassers on campus. An official said, "The underpass at CNR Rao Circle was right opposite the campus main gate. As a result, motorists who could not use the stretch were taking shortcuts inside the campus. For example, there is a shortcut from where one can sneak into the IISc campus next to Maramma temple, Malleswaram 18th cross and exit towards Mathikere. So, it had been a difficult task for the security staff to control the trespassers. Though we were allowing forest department staff and others to enter through campus, the others were coming up with reasons like they wanted to go to staff quarters. As we had no mechanism to check with every individual in the staff quarters, we had to let go these people at times."

There are 900 quarters in the IISc campus that include 350 faculty quarters and 450 support staff quarters. So now, the authorities are requesting for more security at the gates so that each outsider can be quizzed before being let in. "We have a provision to levy Rs 200 fine on trespassers. As we cannot compromise with the security of students, we would like to collect fine from trespassers if they are passing through the campus without any valid reason. The fine amount collected from trespassers would be registered and utilised by the institute," said M R Chandrashekar, security chief at IISc.

A student said the security should be tightened in such a way that no trespasser could bypass the watchful eyes of the security. He said, "If a person enters the campus, he has to show the required documentation proving why he is inside the campus. Maybe we have to have more intercom facilities wherein it can be verified."

A girl student said, "I have been to a lot of other institutes with tight security. For example, if a friend visits me in the campus, I have to go to the gate to bring him or her in. Such a thing is not happening now. Faculty members are provided with stickers. However, no such facility is provided to relatives of faculty members as they come on holidays or Sundays. So, they also need to be given documentation and a letter."

Special Centre for Nanoscience to start a new PhD programme

Aaditi Isaac,TNN | Feb 17, 2014, 06.06 AM IST

Jawaharlal Nehru University's (JNU) [Special Centre for Nanoscience](#) (SCNS) will be starting a [new PhD programme](#) for students who have cleared CSIR-UGC NET/JRF examination from the coming academic session. The University Grants Commission (UGC) has given the approval to start this programme. Informs Himadri Bohidar, chairperson, Centre for Nanoscience, JNU, "There is a need to train manpower in the synthesis of nanostructures and exploit their industrial applications in areas such as pharmaceuticals, environment, semiconductors, biology, etc. The programme is specialised in nature and will give students a solid foundation in the fundamentals and complexities of nanoscience."

The programme is divided into a year of classroom lectures, followed by four-and-a-half to five years of intensive research work. After the completion of this, students will be awarded a PhD in nanoscience. They will study topics such as synthesis, characterisation and applications of nanomaterial extensively along with gaining hands-on training. They will read about the basic science related to formalisms of small systems as well.

Emphasising that nanoscience is a specialised area, which draws on interdisciplinary inputs, Bohidar says, "Faculty members who will be teaching have different specialisations within nanoscience including biology, semi-conductors, polymers, biophysics and material science. We will also be inviting scientists for special lectures, discussions and seminars from within and outside [JNU](#) so that students can keep a track on the latest developments in this area."

While the application of nanoscience is at a nascent stage in India, the field has grown tremendously across the world over the last few years. Thus, the job opportunities for trained students seem promising in the future. "There is a dire need for professionals with background in nanoscience in industries dealing with medical and pharmaceutical products, coating and printing materials, agricultural and personal care products, energy storage and harvesting devices, developing smart and compact sensors to check chemical and microbial impurities in water and food, etc, to make the quality of life better. The possibilities that exist are endless," says Bohidar.

He adds that quality faculty would be needed at universities in the next decade as most institutes will have a department of nanoscience. "The beauty of this field is that the bio-friendly nano-based products that you get are not expensive ; furthermore, you don't need any specialised protocol or infrastructure to make these," he concludes.

As of now, there are only five seats available in this programme but the number will eventually increase. The admission process is already on and will go on till March 26 (online applications) and April 2 (offline mode). Students who have completed their [MSc](#) in physical /biological/material sciences can apply for admission. www.jnu.ac.in