



NEWS CLIPS

December 29, 2018 - January 4, 2019

Highlights of the Week@IITD

Inter-IIT sports meet ends in city; hosts finish 7th, Delhi top

January 3, 2019 <https://timesofindia.indiatimes.com/city/guwahati/inter-iit-sports-meet-ends-in-city-hosts-finish-7th-delhi-top/articleshow/67361578.cms>

The 53rd inter-IIT sports meet concluded at IIT Guwahati, with finals of various sports events and a valedictory ceremony officially bringing down curtains on the sporting extravaganza here recently. IIT Delhi ranked first in the overall points tally for the championship with a whopping 106.8 points, while IIT Roorkee secured the second position with 80.4 points and was closely followed by IIT Kharagpur with 80 points. The hosts, IIT Guwahati finished at 7th position with 35.4 points.

Cricket witnessed some breathtaking matches where IIT Delhi won the gold medal, defeating IIT Kanpur in the final, while IIT Bombay had to settle for bronze by defeating IIT Madras.

In a nail-biting football final match between IIT Roorkee and IIT Delhi, the latter clinched gold with a 1-0 victory. The hosts bagged the bronze after defeating IIT Kanpur.

IIT Bombay won gold in table tennis, while IIT Roorkee had to settle for bronze. In the women's category of the event, IIT Guwahati defeated IIT Delhi by 2-0 in the final and grabbed gold, while IIT Roorkee had to settle for bronze against IIT Madras.

In volleyball, IIT Delhi defeated IIT Roorkee by 3-0 in the heated final match and clinched the gold medal, whereas the bronze medal in the event was bagged by IIT Bombay. On the other hand, in the women's category of the event, IIT Roorkee defeated IIT Madras in the final and grabbed gold while IIT Bombay had to settle for bronze against IIT Kharagpur.

Tennis player Aman Deo of IIT Guwahati was awarded the title of best player in the final between IIT Guwahati and IIT Madras, the hosts defeated the latter and grabbed gold.

Made In India: IIT Delhi Develops Waterless Body Bath, Indian Soldiers in Siachen Likely To Avail It

January 3, 2019 <https://www.republicworld.com/india-news/general-news/made-in-india-iit-delhi-develops-waterless-body-bath-indian-soldiers-in-siachen-likely-to-avail-it>

HACK

- Researchers at IIT Delhi have developed a gel-based waterless bath and shampoo
- The product is likely to be used by Indian Army soldiers at Siachen.

Researchers at IIT Delhi have come up with an excellent solution for those who cannot use water for bathing and hygiene reasons. They have developed a gel-based waterless bath and shampoo. The researchers partnered with Clensta for developing the product.

The product can also be used at extreme weather conditions including in under 60 degree celsius.

The product is likely to be used by Indian Army soldiers at Siachen. As per reports the product has been tested and ordered by a Kolkata-based Eastern Command that keeps a check on India's disputed border with China. The product has been availed by soldiers at the Line of Actual Control with China in the Northeast and found it useful.

Among several geographical and climate-based challenges, one of the issues the soldiers at Siachen face is water scarcity. Due to this, they have to live without bathing for about three months.

There are at least 3000 soldiers at Siachen many of whom are posted at checkpoints on the glacier are above 16,000 feet above sea level. At times they are posted at checkpoints as high as 27,000 feet.

The soldiers have to trek for almost 28 days covering a stretch of 128 km to reach some of the farthest pickets on the glacier.

The makers of the product have said that it was developed particularly for defence personnel to avail them of products for maintaining personal body hygiene.

"The concept has delineated a new approach to bathing as it takes away the rinsing element from water while not compromising on the hygiene. The products are primarily targeted to address the needs of the personnel in armed forces deployed in water scarce areas like operational forces, Submarines, Special Forces, patients being treated in hospital, long distance travelers and those interested in trekking & camping and many others."

The Army Design Bureau (ADB) has facilitated the availability of waterless body wash.

An officer in the army has told a media publication the product is a great move from the point of view of personal hygiene.

Biosensor, App developed by IIT Researchers can help anyone Detect, Quantify Bacteria

January 2, 2019 <https://www.firstpost.com/tech/science/biosensor-app-developed-by-iit-researchers-can-help-anyone-detect-quantify-bacteria-5823731.html>

It could tell apart bacteria live & dead in 6 hours, unlike the 16-24 hours that current methods need.

Smartphones are increasingly finding their way into the health sector. Researchers at Indian Institute of Technology Delhi have developed a biosensor and a mobile app, which together can be used for bacterial detection.

One can fit the biosensor in front of mobile camera and images captured by camera are sent to the mobile app called “colorimetric detector” developed by the team, for analysis. As live bacterial presence causes the biosensor surface colour to change into black, mobile app measures the relative change in surface colour. Once it reaches a set point, the mobile phone vibrates and gives a red signal. This makes detection easy, portable and perhaps cost effective.

Researchers have tested the biosensor with four bacterial strains – Escherichia coli, Pseudomonas aeruginosa, Bacillus subtilis and Staphylococcus aureus. They also prepared a separate ampicillin antibiotic resistant culture of Escherichia coli for testing. In order to verify results, they used existing methods like fluorescence microscopy and ‘colony forming unit’ counting.

The biosensor relies on hydrogen sulfide gas produced by microorganisms. It is a gaseous signaling molecule that transmits biological signals in living system. In the heart of the biosensor are silver nanorod sensors that react with hydrogen sulfide to form black coloured silver sulfide. The colour and water wetting properties of silver nanorods change when exposed to microbes, while dead ones do not do any such thing.



“Observing visible change in colour and water wetting on the sensor array, one can easily distinguish live and dead as well as antibiotic-resistant and normal bacteria,” said Prof J P Singh, who led the research team, while speaking to India Science Wire. The device can be used by anyone and can be helpful in preventing spread of infectious diseases, he added.

Conventional techniques like standard plate count (SPC) are time-consuming and need trained people. “There are other techniques like UV spectroscopy and flow cytometry, which are relatively easy but need sophisticated instruments and skilled workers. To overcome these issues, a facile technique is critical to prevent antimicrobial resistance infections and diseases,” added Professor Singh.

The results showed that the mobile-app based biosensor could distinguish live and dead bacteria within six hours as compared to conventional methods, which take about 16 to 24 hours. This, researchers say, holds potential application in hospitals and clinics for diagnosis of infections and diseases caused by antibiotic-resistant and non-resistant pathogens.

The research team included Prof J P Singh, Shashank Gahlaut, Dr C Sharan, Prof Prashant Mishra and Dr Neeti Kalyani from Indian Institute of Technology Delhi. The research results have been published in journal Biosensors and Bioelectronics.

Kilns for baking clay griddles set for upgrade in Rajasthan

January 3, 2019 <https://www.thehindu.com/news/national/other-states/kilns-for-baking-clay-griddles-set-for-upgrade-in-rajasthan/article25903008.ece>



Women preparing clay griddles in Bharatpur.

Heavy demand for the earthenware in U.P. and Haryana

The nondescript PUNCHARI village in Rajasthan's Bharatpur district, which is generating an annual turnover of ₹70 lakh with the production of clay griddles, expects to scale up its work with the technical upgradation of kilns in which the earthenwares are baked before they are supplied to big towns. These griddles are in a heavy demand in the neighbouring Haryana and Uttar Pradesh as well.

IIT Delhi's Rural Technology Action Group (RuTAG) will join hands with a Bharatpur-based foundation to provide technical assistance to the members of the Kumhar community, comprising traditional potters, for upgrading their kilns to bake more griddles with lesser quantity of mustard stubble used as fuel.

About 35 households of Kumhars in PUNCHARI produce 300 to 350 griddles of black clay each everyday in all seasons of the year, except during rains and the intense cold wave creating a frost. The earthy scent of black soil, procured mostly from the village's pond, is maintained in the griddles even after they are baked.

PRAHLAD PRAJAPAT, 30, a leading griddle maker in PUNCHARI, said the demand for clay griddles had soared among the "health-conscious" people residing in cities, who believed that the chapati's nutrients were protected when cooked on an earthen plate. The clay griddles are supplied as far as Agra and Mathura in Uttar Pradesh and Faridabad and Gurugram in Haryana.

Modified design

Mr. Prajapat said the clay pottery was taken up in the village both as a traditional occupation and the only livelihood option before the community. "Over a period of two decades, we have understood the demand in the market. We have modified the design and thickness of griddles to suit the requirement of gas stove and heater in the cities," he said.

About 25% of the clay griddles break during baking in furnaces. Bharatpur-based Lupin Foundation is working with RuTAG to find solution to the issue.

January 4

IIT Kharagpur to run course on Outsourcing Practices in India

<https://www.timesnownews.com/education/article/iit-kgp-to-run-course-on-outsourcing-practices-in-india/341486>

The initiative will witness resource cooperation from the Ministry of Labour and Employment, Ministry of Rural Development, IBM, pollution control boards and other regulatory bodies, the release said.

IIT Kharagpur will conduct a multidisciplinary short course on Outsourcing Practices in India to sensitise both the public and private sectors and show the way for best practices, the premier institute said in a release on Thursday. This is the first of its kind course being introduced in India on the advice of the Central government.

The multidisciplinary short course, to be run by the department of mining engineering at the institute, would include deliberations on how outsourcing of work can be made ethically and legally justified, and how best practices can be encouraged in the labour market.

The initiative will witness resource cooperation from the Ministry of Labour and Employment, Ministry of Rural Development, IBM, pollution control boards and other regulatory bodies, the release said.

"The companies are thinking in the short term. They are creating work practices that are not sustainable. If there is a PIL against them, they would be in trouble. Moreover, reducing margins are not drawing large and established contractors of the country to take up contracting jobs, especially for the government and public sector.

"It is time to caution them and create a situation sticking to the best practices of the world, where efficiency is assured and it is win-win for both parties," said Professor Jayanta Bhattacharya of the Department of Mining Engineering, and School of Environmental Sciences and Engineering.

The first batch undertaking the course will be drawn predominantly from the power and coal sectors. "In these industries, funding or technology is not the problem, but employing people in legal and ethical terms is. The people who draw up notice inviting tenders or NITs, often from accounts or engineering background, have no understanding of the law or even, actual engineering practice," said Bhattacharya.

The course will also involve the faculty of Mining Engineering, Intellectual Property Law and the Vinod Gupta School of Management who have a long experience in dealing with regulation related to industry such as environmental clearance, land acquisition, outsourcing standards and other burning issues.

The course will focus on buyer and contractor relationship, legal and procedural safeguards, creating provisions in contract for healthy competitiveness, goodwill and employee protection, contract preparation among other aspects.

We are on an aggressive faculty recruitment drive, focus on upcoming areas of research: IIT Kanpur Director

<http://news.careers360.com/we-are-aggressive-faculty-recruitment-drive-focus-upcoming-areas-research-iit-kanpur-director>



Within a few months of assuming the office of IIT Kanpur Director, Prof. Abhay Karandikar has big plans for the institute. He plans to focus on quality research and aggressive faculty recruitment drive. Speaking to Careers360 shares his vision for the institute and new areas of research and collaboration with leading international universities the institute plans to explore...

Q. Having taken up the responsibility of IIT Kanpur a couple of months ago, what are your plans for the institution?

A. Our focus is on growth, growth in terms of faculty numbers, infrastructure, number of PhD students. We have to increase both, quantity and quality of research. Increasing the quality of an academic institution depends upon good quality of faculty supported by post doctoral scholars and PhD scholars to support the faculty.

The next emphasis will be on innovation, incubation and commercialisation of technology, creating a robust science and technology park.

The third thing would be to engage with the alumni to take their help in accelerating the growth of the institute. We will also be focusing on doing research which will have societal and national impact.

Q. The MHRD appointed an expert committee which recommended several institutions for the IoE status. IIT Kanpur is not in the list, what is your take on it?

A. We will continue to do our good work. We will continue to do good quality research, exploit good things about IIT Kanpur. I think the ideal goal should be that every institution in the country should achieve excellence, at least the ones that have the potential should become ideal. There is no doubt that IISc and IIT Bombay are doing quite well, but IIT Madras, IIT Kanpur also have huge potential. I feel all the older IITs have huge potential.

Q. A few months back a data presented by the MHRD stated that IITs earned revenue through patents, consultancy and other methods. The report also mentioned that revenue generated by IIT

Kanpur is in the tune of Rs. 17 Cr, which is lowest among the older IITs. Do you think the location of IIT Kanpur makes it lag behind other IITs?

A. There is a lot of scope for commercialisation of technology, it is true that our institute does not get enough visibility as compared to the IITs located in metro cities. Now, we are working in this area and soon things would change. Perception changes slowly as its a slow process, but we will involve our alumni who are our biggest ambassadors.

Q. A common critical problem faced by the all the IITs is faculty shortage. What steps do you plan to take to tackle it?

A. Now, we are aggressively working towards tackling the issue. We intend to do aggressive faculty hiring. A foreseeable challenge is for institutions located in the remote and non-metro areas, but we are working to attract good people. We are also working to hire international faculty, adjunct faculty, visiting faculty and therefore, we exploring all the possible avenues.

Q. Which all new areas of research you are planning to explore?

A. We are focusing on Bio-Engineering and BioSciences, Aerospace, Computer Science, Chemical Engineering as well as many other emerging areas. We have also taken up projects like National Blockchain. Cybersecurity is another such upcoming area. We are also going to be involved in projects on vertical take-off and landing. Now, with the help of the state government, we are going to work in the area of sustainable development especially the solid waste management, air pollution, water pollution, etc. We are expecting technological interventions soon.

Q. Kindly tell us about areas of collaborations IIT Kanpur is looking for with leading foreign institutions?

A. We already have collaborations with more than 30 international universities. We have a very strong collaboration with New York University and we are planning to collaborate and work in the area of 5G communication as well as starting a joint PhD programme.

Q. Two years ago, the Government of India launched the IMPRINT Scheme in which IIT Kanpur was the leading institute for its implementation, how far that programme has reached?

A. The IMPRINT 1 was quite successful and now we have IMPRINT 2. As far as IIT Kanpur is concerned, we have done very successful projects in the first phase and are working on several projects now as well. The idea was to adopt engineering and technology as the vehicle to address the societal needs and achieve national prosperity, all the participating institutes have done tremendous work.

‘UGC working to reduce gap between private, public varsities’

<https://indianexpress.com/article/education/ugc-working-to-reduce-gap-between-private-public-varsities-5522672/>

Prof Bhushan Patwardhan, Vice-Chairman, UGC said: “The UGC is concerned with the quality and affordability of education in India and is working to reduce the gap between public and private universities.”

Prof Anil Sahasrabudhe, emphasised the role, function and future of regulatory bodies, accreditation agencies and ranking agencies to shape the future of education in India. AICTE regulates technical education and University Grant Commission (UGC) regulates general education in India. (Representational Image)

Affordable education, lack of private institutes in the field of agriculture and overlapping of jurisdiction of different regulatory bodies were the major issues which the eminent educationists underlined during the session 'Plenary of Academic Regulatory Bodies' at the 106th Indian Science Congress on Thursday.

Prof Bhushan Patwardhan, Vice-Chairman, UGC, pointed out that India was lacking in private institutes in the field of agriculture and the country's growth was not possible with STEM (science, technology, engineering, and mathematics) alone as it needed STEAM (science, technology, engineering, agriculture, and mathematics). He said that the wall between agriculture, medical and mainstream sciences must be broken.

Apart from this, he said: "The UGC is concerned with the quality and affordability of education in India and is working to reduce the gap between public and private universities."

While speaking about the overlapping jurisdiction of different regulatory bodies, the chairman of All India Council for Technical Education (AICTE), Prof Anil Sahasrabudhe, emphasised the role, function and future of regulatory bodies, accreditation agencies and ranking agencies to shape the future of education in India. AICTE regulates technical education and University Grant Commission (UGC) regulates general education in India.

"Like the Pharmacy Council of India (PCI) and AICTE, both regulate pharmacy education. There is continuous improvement in law and policies along with the support of government to rectify this overlap," he said. Regulatory bodies should act as facilitators instead of regulators, he added.

He said that to strengthen the student-teacher relationship it has been suggested the first three weeks should be non-teaching in any semester. This three-week induction programme will be started in near future. He also spoke about the need for examination reforms.

January 3

PM Modi urges for an action plan to boost research in colleges

<https://www.dnaindia.com/india/report-pm-modi-urges-for-an-action-plan-to-boost-research-in-colleges-2703823>



PM Modi in Indian Science Congress

Prime Minister Narendra Modi Thursday added 'Jai Anusandhan' to former prime minister Lal Bahadur Shastri's slogan 'Jai Jawan, Jai Kisan' and Atal Bihari Vajpayee's 'Jai Vigyan' as he called for formulating an action plan to boost research in colleges and state varsities.

Addressing the 106th Indian Science Congress here, Modi said the country's strengths in research and development are built on the backbone of its national laboratories, central universities, IIT, Indian Institute of Sciences, Tata Institute of Fundamental Research & Indian Institute of Science Education and Research.

However, over 95 per cent of the country's students go to state universities and colleges, he said.

A strong research ecosystem must be developed in these universities and colleges, he asserted.

"I call upon the Prime Minister's Science, Technology and Innovation Council to discuss these issues in detail and formulate an action plan in consultation with the Ministry of Human Resource Development to boost research in our colleges and state universities," he said.

Modi added that his science and technology council will also help formulate appropriate interventions, catalyse collaborations across stakeholder ministries and implement multi-stakeholder policy initiatives. He said it was important to focus on innovation and start-ups. More technology business incubators have been established in the last four years than in the forty years before that, he added. "Today's new slogan is Jai Jawan, Jai Kisan, Jai Vigyan and Jai Anusandhan. I would like to add Jai Anusandhan to it," he said.

Modi said India's ancient knowledge has been based only on research and Indians have enlightened the world through their contribution in mathematics, science, culture, arts. "Time has come for India to regain the same place in the world. This is possible when three biggest economies work as one and give direction to the world through our research and innovation," he said.

The prime minister said big data analysis, artificial intelligence, block-chain technology should be utilised in the agricultural sector, especially to help the farmers with relatively small farm-holdings. He also urged the scientists to work towards ease of living for the people.

The prime minister also emphasised on the need for research, which is a fusion of arts and humanities, social science, science and technology. Noting that the future is about convergence and connected technologies, Modi emphasised on the need for strong pathways to commercialisation that can leverage on country's research and development achievements, through industrial products.

The prime minister said 2018 was a good year for Indian science as he highlighted its achievements which included production of aviation grade biofuel, Divya Nayan -- a machine for visually impaired, inexpensive devices for diagnosis of cervical cancer, TB, dengue and a real-time landslide warning system.

GATE 2019 ADMIT CARD RELEASING ON 4 JANUARY; CHECK EXAM SCHEDULE AND IMPORTANT DOCUMENTS HERE

[HTTPS://NEWS.AGLASEM.COM/GATE-2019-ADMIT-CARD-RELEASING-ON-4-JANUARY/](https://news.aglasem.com/gate-2019-admit-card-releasing-on-4-january/)

GATE 2019 Admit Card will be available at GOAPS, appsgate.iitm.ac.in. Keep login credentials ready to download the same



IIT Madras is releasing the GATE 2019 Admit Card / Hall Ticket on January 04, 2019, tomorrow. GATE 2019 exam is being conducted on February 02, 03, 2019 and on February 09, 10, 2019. The admit card will be available at GATE Online Application Processing System (GOAPS) Portal, appsgate.iitm.ac.in. To access the admit card candidates have to use their Enrollment ID / Email Address and password.

The admit card of GATE 2019 will have the allotted exam center details from where the candidates will be appearing for the GATE 2019 online exam. Apart from the exam center details the admit card will also important exam instructions, GATE paper name, name, registration number, date, time and candidate's photo, and signature.

Centre of excellence in energy sector planned at IIT-Bombay

https://www.domain-b.com/industry/oil_gas/20190103_planned.html

Public sector oil companies, Engineers India Ltd and IIT Bombay are coming together for setting up a Centre of Excellence in oil, gas and energy. The announcement was announced at a function attended by union minister of petroleum and natural gas and skill development and entrepreneurship Dharmendra Pradhan and petroleum secretary M M Kutty.

The Centre of excellence is expected to provide a competitive advantage to India's oil and gas industry. It is aimed at collaborative research and capability building in the areas of oil, gas and energy. It will work towards developing sustainable solutions and explore new frontiers in technology for future energy needs.

The Centre of Excellence will leverage the expertise available with IIT Bombay and the oil and gas industry. It will also provide an institutionalised platform for industry-academia interactions. The Centre of Excellence is expected to help in fostering innovations and help in developing a future ready energy industry in the country, according to the petroleum ministry.

Speaking on the occasion, Dharmendra Pradhan said the MoU will meet the need of the Mission Green, as it will encourage research and development in the sector and also do the capacity building.

He said while energy is the prime requirement for all activities in the modern world, he said, Indian appetite for energy is increasing day by day, and we have to provide for clean, affordable and accessible energy sources.

He said that there is need for mass production through domestic sources, and distribution through decentralization, Pradhan said adding that the technological and industrial changes are happening very fast, and the coming together of the academic and industrial organisations will give best results.

He said that there is a need to put academic research in the entrepreneurial mode, so that results are effective. The minister said the MoU should be outcome based and must have roadmap for deliverables, and it should set examples for others.

“India is a large energy market, and effort should be made to develop our own petroleum standards. We should strive to be leaders in biomass conversion and hydrogen-based energy. IIT Bombay, being the premier institute, should provide the missing link and help in evolving new strategies in the sector,” he said.

Gene that helps tomato fight viral infection, heat stress identified

<https://www.downtoearth.org.in/news/food/gene-that-helps-tomato-fight-viral-infection-heat-stress-identified-62644>

Scientists at New Delhi-based National Institute of Plant Genome Research (NIPGR) have deciphered critical role of a single gene—SIDEAD35—in tomato plants



While trying to understand genetics of stress to make tomatoes and other crops more productive, Indian researchers have identified a gene that helps tomato plant tackle pathogens as well as heat stress.

Scientists at New Delhi-based National Institute of Plant Genome Research (NIPGR) have deciphered critical role of a single gene—SIDEAD35—in tomato plant whose expression controls its response to both heat stress and viral infection.

It has been known that RNA helicases, one of the largest gene families that function in almost all aspects of RNA metabolism, play a role in growth, development and stress response of a species. They are present in most of the organisms ranging from bacteria to humans, as well as plants.

However, its role in tomato plant's response towards environmental stresses was not known. The NIPGR team observed that two genes (SIDEAD23 and SIDEAD35) help plants withstand biotic and abiotic stresses.

"We had looked into the transcriptome dynamics of a tomato variety tolerant to Tomato leaf Curl New Delhi Virus infection. Comparative transcriptome analysis of virus infected as well as uninfected plants showed a significant upregulation of one DEAD-box RNA helicase gene which prompted us to go for its characterisation," says Dr Manoj Prasad, who led the research team.

"We find that SIDEAD35 gene plays crucial role against virus as well as heat stress, which might provide the framework for improved yield and tolerance against combined stress in tomato," he adds.

Developing systems for tolerance or resistance against combined stresses is important for future crop production. "We have found a candidate gene which might provide the framework to understand the science behind plants' response against combined stresses. We can introduce the gene through molecular breeding to develop varieties for the combined stress tolerance in tomato," says the lead author, Saurabh Pandey.

January 2

IT professor awarded for contribution towards development of geo-spatial science

<https://timesofindia.indiatimes.com/home/education/news/iit-professor-awarded-for-contribution-towards-development-of-geo-spatial-science/articleshowprint/67344536.cms>



The Indian Society for Remote Sensing Tuesday conferred the National Geospatial Award for Excellence to IIT professor Jayanta Kumar Ghosh for his contribution towards the development of geospatial science and applications.

Ghosh, a professor at the civil engineering department of the Indian Institute of Technology (IIT) in Roorkee, was felicitated on December 5, a release issued by the institute said.

He was conferred the National Geospatial Award for Excellence-2017 (Life Time Achievement Award) at the Space Application Centre in Ahmedabad. The award comprised a citation, a medal and Rs 1 lakh, it said.

The Indian Society for Remote Sensing is an organisation known in the area of space science, remote sensing and geo-spatial technology, the release said.

Ghosh said the award was an acknowledgement of the scientific contributions.

"I am glad that the members of the award committee have liked and acknowledged my work towards development of geo-spatial systems and applications," he said.

January 1

Not even 3 per cent of IIT faculty are Dalits, tribals

<http://www.newindianexpress.com/nation/2019/jan/01/not-even-3-of-iit-faculty-are-dalits-tribals-1918911.html>

Less than 3 per cent of the faculty at India's top engineering institutions — the Indian Institutes of Technology (IITs) — are from reserved categories.

Less than 3 per cent of the faculty at India's top engineering institutions — the Indian Institutes of Technology (IITs) — are from reserved categories. Of the 6,043 faculty in 23 IITs, just 170 — 149 Scheduled Caste and 21 Scheduled Tribe — are from the reserved categories, Union Human Resources Development Minister Prakash Javadekar informed the Lok Sabha on Monday, in response to a starred question. This means just about 2.8 per cent of those who teach at IITs join through "quota".

There are 8,856 faculty positions at the premier engineering institutes, and reservations are only available for the entry-level posts of assistant professors and lecturers, the House was informed. IIT Dhanbad has 35 faculty from reserved categories — the most among all the premier institutes — while IIT Mandi has none. IIT Bombay, IIT Delhi, IIT Kanpur, IIT Madras and IIT Kharagpur have 5, 12, 3, 15 and 8 faculty from these categories respectively.

"IITs follow flexible cadre system. Therefore, the sanctioned strength at different grades such as professor, associate professor and assistant professor is not fixed," the government's reply said.

All due to flexi cadre system?

An HRD official said the poor number of SC/ST faculty could be due to the flexible cadre system, under which IITs can recruit any grade of cadre, depending upon their requirement, as long as the overall strength does not exceed the faculty-teacher ratio of 1:10

December 31

No plans to open satellite campus of JNU, IIT or IIM, says HRD ministry

<https://www.hindustantimes.com/education/no-plans-to-open-satellite-campus-of-jnu-iit-or-iim-says-hrd-ministry/story-wVnaBCYrjUZabAFSJ4bo5N.html>

The HRD Ministry on Monday said it had no plan to open a satellite campus of the JNU, IIT or IIMs. Union Minister of State for HRD Satyapal Singh informed this to the Lok Sabha on Monday.

JNU Vice Chancellor Jagadesh Kumar had in October announced that the university was planning to set up a satellite campus outside the national capital region (NCR) with an aim to make the university accessible to more students.(Satish Bate/HT file)

The HRD Ministry on Monday said it had no plan to open a satellite campus of the JNU, IIT or IIMs. Union Minister of State for HRD Satyapal Singh informed this to the Lok Sabha in response to a written question.

“There is no plan for opening of a satellite campus or branches by JNU, IITs or IIMs. As a policy, the government does not encourage establishment of satellite campuses of such educational institutions,” Singh said.

JNU Vice Chancellor Jagadesh Kumar had in October announced that the university was planning to set up a satellite campus outside the national capital region (NCR) with an aim to make the university accessible to more students.

The university had also set up an expert committee to conduct a feasibility study.

IIT Madras Tech-Fest Shaastra, one of the largest in South India, begins on 3rd January 2019

<http://indiaeducationdiary.in/iit-madras-tech-fest-shaastra-one-largest-south-india-begins-3rd-january-2019/>

IIT Madras’ Shaastra, one of the largest technical festivals in South India, will begin on 3rd January 2019. The four-day event is set to host a wide range of events across the spectrum

Shaastra welcomes many influential personalities to deliver lectures in areas as diverse as science, technology, policy and sports through its Spotlight Lecture Series. Shaastra 2019 will see five-time world Chess Champion Viswanathan Anand, Nobel Laureate Dr. Venkatraman Ramakrishnan and renowned computer scientist and pioneer of artificial intelligence Dr. Jürgen Schmidhuber, among others.

Addressing a Press Conference today (31st Dec 2018) on salient features of Shaastra 2019, Prof. Bhaskar Ramamurthi, Director, IIT Madras, said, “Shaastra 2019 will be an eyeopener to school students on what are the possible opportunities that await them. This event is an experiential learning one for school students. Shaastra is going on for 20 years now and features many interesting events. Besides technical events, it has workshops on ‘hot topics’ such as Artificial Intelligence and Blockchain. Further, this year we are also taking participants and school students to IIT Madras Research Park and giving them an exposure on how a startup is set up.”

Every year, Shaastra rolls out unique, impactful and lasting social campaigns, aimed at bettering the life of common people. This year’s initiative – ReACH – converted discarded cardboard boxes into desks for school students studying in government schools. ‘ReACH’ is aimed at improving the conditions of rural schools in an eco-friendly manner. Puducherry Lt. Governor Kiran Bedi, former Indian cricketer Anil Kumble, first Indian to travel in space Rakesh Sharma and others were impressed by the idea and extended their support to the campaign.

Every edition of Shaastra features a wide variety of events encompassing the entire spectrum of innovation which keeps getting better.

Speaking later, Prof. S.M. Sivakumar, Dean (Students), IIT Madras, said, "Shaastra has grown to be one of the largest national student run festivals that is also ISO certified. What is exciting is that the Shaastra team has concocted a recipe that combines fun, entertainment and technology to cater to not just the geeks but to everyone who wishes to come taste the feel. With so much happening in the Insti research and outreach, open house is sure to trigger inspiration and interest in many who visit this year, the Diamond Jubilee Year of IIT Madras."

Shaastra 2019 will feature never-seen-before Flagship Events like Artificial Intelligence Confluence and Blockchain Summit that is sure to leave your tech-savvy brains hungry for more. Shaastra Launchpad is yet another Shaastra Flagship that has two events under its wing – Tech and Innovation Fair (TIF) & Power2idea. Tech and Innovation Fair (TIF) is the premier event which takes in your hardcore tech project or prototype and convert it into a minimum viable product (MVP) through rigorous business mentoring by experts in industry. Power2idea is a Business Plan competition envisioned as a platform to prove your business idea, meet and network with experts and analyze how it will survive in the market.

Speaking during the Press Conference, Prof. Dr. Shaikh Faruque Ali, Advisor (Co-Curricular), IIT Madras, said, "IITM has come a long way since its establishment in 1959. As we enter our Diamond Jubilee year, we are confident that we will accelerate even further and scale new heights in research, teaching, and innovation. The Institute Open House is one event through which we wish to showcase our advancements. Along with this, we will also host participants for the first time at the IITM Research Park."

Shaastra 2019 covers as diverse fields of impact as technology can endure. Technology has brought about several transformations in the field of Sports. Consequently, Shaastra presents the SportsTech Summit 2019, a four-day conference on Sports Technology, from 3rd to 6th January. The Summit will host many experts such as Ramky (Former Performance Analyst Indian Cricket Team), Ramji Srinivasan (Former S&C Coach of the Indian Cricket team), and J Krishnan (ex-CEO, Deccan Chargers), demos, workshops and also competitions such as a Mock IPL Auction. Yet another attraction this time, is the LawTech Conference on 4th January. Growing out of the increasing intersection between Law and Tech, the LawTech Conference will serve as a platform to enlighten those interested in the emerging field. The Conference will bring out how technological advancements are influencing the field of law and also topics such as governance where laws affect new technologies. These events are ideal for students, professionals, inventors and entrepreneurs.

Highlighting the goals behind the event, Mr. Vamsi Krishna Mula, Secretary (Co-Curricular), IIT Madras, said, "Shaastra was born with one goal in mind: to create and sustain a society of inquisitive minds by promoting the 'Spirit of Engineering' among youngsters. Every year Shaastra rolls out unique and innovative ways to create a long-lasting impact on society. This year, we strive to achieve this through ReACH, our social campaign for underprivileged students, Relaunch, a unique women-centric career returnship platform and finally, Shaastra for Schools, titled Ignite."

For the first time ever, Shaastra under the banner of Shaastra Relaunch, aspires to venture out into a realm yet to be touched by any other tech fest in India. Shaastra Relaunch is a career returnship conference for women in tech and managerial field, on 5th and 6th January 2019. Women professionals, after a break, with their now outdated skill sets and knowledge, encounter some difficulties in the fast-changing job market. Shaastra Relaunch envisages a knowledge filled 2-day event consisting of inspiring key notes by noteworthy speakers, intriguing workshops, mentorship and professional level networking with delegates from world class companies.

Shaastra 2019 is also organizing the 'Institute Open House', on 3rd and 4th of January 2019 during which participants will be given a tour of several laboratories in IIT Madras, that are the melting pots of cutting-edge technology and research. The participants also get to visit the IIT Madras Research Park, which is a haven for start-ups.

IIT Madras has always been a pioneer in advanced science and research and has always taken the initiative in promoting it. Exhibitions at Shaastra serve as a one stop destination for people to come and experience the happenings in the technology space over the world. Shaastra for the first time ever, presents International Exhibitions, in association with the US Consulate General of Chennai. The International Exhibits will be on three broad perspectives – Academics, Research and Business.

Shaastra has always been known for its mesmerising world-class professional shows – Shaastra Nights. Even better, a one of its kind interactive Giant Bubble Show and Mirage, a breath-taking laser show, are set to be the main events of this Shaastra. Moreover, world-renowned artists like Vilas Nayak and Vivek Patil are also set to be performing. Envisage, India's first and only student organized techno-entertainment show, is also back this year with new tricks up its sleeve, prepared to leave the spectators in absolute awe. A total in-house IIT Madras production tapping into the entertainment factor of technology, Envisage is one grand success-story where "Technology meets Entertainment".

The theme this year for Shaastra is 'Breakthrough' which aims at celebrating and appreciating the numerous path-breaking discoveries and inventions that humanity has come across ever since it set foot on the planet. Shaastra 2019 seeks to inculcate in today's youth, the curiosity, zeal and knowledge to transform the world for good.

Founded in 1959, IIT Madras enters its Diamond Jubilee Year this New Year kickstarting the celebrations with a festival as splendid and exhilarating as Shaastra. This time, the four exquisite days of Shaastra 2019 unfolds itself from 3rd January to 6th January 2019, making it one special package.

Shaastra, IIT Madras, holds the unique distinction of being the first ISO 9001:2015 certified, wholly student-run technical festival in the nation. Fueled by the seamless passion – "The Spirit of Engineering" – Shaastra easily stands out from the rest in being the largest and one of the most unique tech festivals ever celebrated in India and the world. Shaastra, ever since its inception in the year 2000, has been an integral part of the technical experience at IIT Madras. The ideology of this grand fest revolves around one prime goal: to create and sustain a society of inquisitive minds, who learn and innovate by interacting with each other and industries.

IIT-M start-ups focus on electric vehicle market

<http://www.newindianexpress.com/cities/chennai/2018/dec/31/iit-m-start-ups-focus-on-electric-vehicle-market-1918648.html>

The electric vehicle (EV) market is set to grow in a big way owing to the ambitious plans of the automakers and the initiatives of the Central government.

The electric vehicle (EV) market is set to grow in a big way owing to the ambitious plans of the automakers and the initiatives of the Central government. Major automobile companies have ventured into building electric vehicles and the start-ups at IIT Madras's Incubation Cell (IITMIC) are leaving no stone unturned to cash in on the opportunity.

There is a growing legion of innovative start-ups that are working on various aspects to make the electric vehicle sector grow in the country and the start-ups at IITMIC are not lagging behind.

At least six start-ups in IITMIC through their technological innovations have geared up to boost the electric vehicle revolution in the country. The six start-ups are working on different aspects such as battery, mobility solutions, data analytics and much more to provide a much necessary support to the country's electric vehicle sector.

One such start-up working in the sector is Grinntech Motors & Services Pvt Ltd. The start-up founded by Puneet Jain and Nikhlesh Mishra is mainly working on building battery management systems for lithium battery packs and doing electro-mechanical packaging of lithium battery packs. The start-up has attracted interest of major companies. "Our aim is to provide low-cost and efficient battery solutions to the EV makers in our country," said Puneet.

Another start-up working in the sector is Pi Beam Labs Private Limited. The company is into manufacturing variants of electric and solar run three-wheelers, which will be used to move goods and passengers for private and public work space applications. "Our target is to provide an eco-friendly vehicle for the e-commerce industry through which they can do their product delivery work efficiently," said Visakh Sasikumar, one of the founders of the company.

Even IIT Madras's Incubation Cell is also encouraging start-ups to work in the sector by providing them all kinds of necessary support.

December 30

It's raining jobs at IIT Hyderabad

<https://telanganatoday.com/raining-jobs-iit-hyderabad>

Eight international offers were made the last academic year and this number has gone up to 22 by the end of the phase-1 placement.



The Isro recruited two students during 2018-19 placement drive.

It's raining jobs for students of the Indian Institute of Technology-Hyderabad (IIT-H) at the end of the first phase placement drive. The students received 213 offers from 80 companies in the campus recruitment for the academic year 2018-19. Eight international offers were made the last academic year and this number has gone up to 22 by the end of the phase-1 placement.

As many as 418 students registered for first phase placements. Some students have already accepted 17 pre-placement offers (PPOs) from companies such as Amazon, Microsoft, Schlumberger, Qualcomm, Goldmansachs, Swiggy, Electronic Arts and De Shaw. The Indian Space Research Organisation (ISRO) also recruited two students during 2018-19.

Prominent first-time recruiters that conducted placement drive included Softbank, Mercari, Toyota Research, Toshiba INC. TSMC (Taiwan semiconductors), Yokogawa Electric Corporation, Annotation Inc. Denso, Barclays and Oppo while traditional recruiters were Flipkart, Amazon, Samsung, Xilinx, Qualcomm, Maruti, GE and TCS.

The international offers were made by Taiwan Semiconductors – 5, Mercari-4, Yokogawa – 3, Softbank-3 and Toyota Research Institute Advanced Development (TRI-AD) – 3 offers. Abhijeet Sanjay Bhure, a BTech-CSE student who was offered job by Mercari Japan said, "This year has seen a huge increase in students getting placed in international, especially Japanese companies. It is a good change that IIT-H has seen."

Another student Nehal Mamgain of MTech CSE who bagged a job at TRI-AD said "I am happy to receive a job offer from a reputable company which is at the forefront of the research and engineering ventures. I consider myself fortunate that I will be able to apply the knowledge learned for my thesis work and pursue that as a vocation."

The TCS gave away 15 offers, highest among all the recruiters, while Mathworks and L & T Constructions made 12 and nine offers respectively.

Speaking about the first phase placements, Dr. Amit Acharyya, Acting Faculty-in-charge of Placements, IIT-H, said, "The demand for IIT-H students of all levels be it UG, PG or PhDs, are at its peak. Several students including the PhDs are getting offers from companies within the country as

well as abroad. Many Japanese companies have shown their interest in our students and more than 10 Japanese companies visited the campus this year.”

December 29

Delhi researchers develop an algorithm to detect rare cells

<https://www.thehindu.com/sci-tech/science/delhi-researchers-develop-an-algorithm-to-detect-rare-cells/article25858359.ece>



The FiRE algorithm makes searching for rare cells in large-scale single cell messenger RNA datasets tractable, says Jayadeva (second from left).

Rare cell populations such as circulating tumour cells can shed light on process of cancer metastasis

Much like finding a needle in a haystack, identifying rare cells from a dataset comprising millions of cells can be hugely daunting. Now, a new algorithm developed by Delhi-based researchers makes it easy — it can find rare cells from a very large pool of cells in a matter of seconds.

The algorithm — Finder of Rare Entities (FiRE) — assigns a rareness score to each cell that is computed based on the gene expression profile of about twenty thousand genes. Cells having scores above a certain threshold are reported as rare cells. Besides being fast, initial studies show that the new algorithm has superior sensitivity and specificity compared with existing methods.

Circulating tumour cells, cancer stem cells, antigen-specific T cells, circulating endothelial cells are a few examples of rare cells. Rare cell populations such as circulating tumour cells can shed light on the process of cancer metastasis (spreading of cancer to other parts of the body) thus providing invaluable information for early detection and clinical management of the disease.

New cell type

While testing the efficacy of the algorithm using mouse brain cells taken from a specific region, the four-member team led by Prof. Jayadeva from Indian Institute of Technology (IIT) Delhi and Prof. Debarka Sengupta from Indraprastha Institute of Information Technology (IIIT-Delhi), Delhi discovered a new sub-type of pars tuberalis cell lineage. The authors have linked this newly found cell type to the development of the pituitary gland. The results are published in the journal Nature Communications.

Existing algorithms use clustering or other statistical techniques that involve rigorous parameter estimations, thus incurring a significant computational cost. “FiRE uses sketching, which is a variant

of locality-sensitive hashing, to assign rarity to each cell. The hashing technique tends to put cells with similar properties together,” says Prashant Gupta from IIT Delhi and one of the first authors of the paper.

Tractable search

“Spotting an odd cell using existing tools becomes extremely difficult and complex when the number of cells becomes large. The FiRE algorithm makes searching for rare cells in large-scale single cell messenger RNA datasets tractable” says Prof. Jayadeva, who works in machine learning. “We used the gene expression of each cell to find the rare cells. The drop-seq, a state-of-the-art technique, allowed us to read out the gene expression profiles of thousands of cells in a fairly short time and then compared the profiles to find the rare cells.”

The researchers used five data sets to test the algorithm. In the case of peripheral blood containing 0.3% megakaryocytes, the gene expression of about 68,000 different cells was compared, and rare cell populations with different grades of rarity showed up. The cluster with the rarest cells comprised of only megakaryocytes, thus validating the algorithm.

In a simulation experiment to evaluate the performance of FiRE algorithm, the gene expression profiles of two types of cells were mixed in vitro. And by increasing the percentage (from 0.5 to 5%) of one cell type, the team tested the precision and sensitivity of FiRE and other existing algorithms to correctly identify the rare cells. The sensitivity of the FiRE algorithm was higher than the rest even when rare cells comprised 0.5% of the population. “When they constituted 2.5%, FiRE could identify rare cells with 85% accuracy, far higher than the other algorithms,” says Aashi Jindal from IIT Delhi and the other first author of the paper.

“We are now validating the new cell type [pars tubercularis] discovered using FiRE. Most malignant cancers shed circulating tumour cells. So we are also trying to use FiRE for early cancer detection by identifying the circulating tumour cells, which are rare in peripheral blood,” says Prof. Sengupta, whose lab pioneered single-cell genomics research in India.

IIT Bombay proposes innovative spintronics device that borrows from optics

<https://www.thehindu.com/sci-tech/science/iit-bombay-innovative-spintronics-device-that-borrows-from-optics-proposed/article25858394.ece>



The device promises to deliver non-volatility, high speed and low power dissipation, says Bhaskaran Muralidharan (centre).

The device can drastically improve standards of computing hardware, electronics

A high-performance magnetic tunnel junction that makes use of wavelike properties that are known and exploited in optics has been proposed by researchers from Indian Institute of Technology (IIT) Bombay. They developed a quantum transport computational platform to predict the performance of such a device. If realised, the device can drastically improve existing standards of computing hardware and electronics. The results are published in the journal Applied Physics Letters.

A magnetic tunnel junction has two layers of ferromagnetic material separated by an insulating barrier. The ferromagnetic layers have the capacity to be magnetised along a particular direction. The spins in the ferromagnet contribute to its overall magnetisation. The magnetisation of the lower layer is fixed and that of the upper layer is free to align itself along any direction. The electrical resistance of the structure changes depending on the relative orientation of the magnetisation of the two layers. The device shows low resistance to current flow when the magnetisation of the two layers are aligned parallel and shows high resistance when the two are not parallel (pointing in opposite directions). Thus, if it can be made to switch from low resistance to high resistance, it can be made to function like a switch. The efficacy of the device is larger if the change in resistance is higher, also if it takes a smaller current to effect the change.

Similar to light

Electrons being quantum mechanical, can exhibit interference effects just as light can. Making use of this “wavelike nature” of electrons, the researchers propose a device which they name the band pass Fabry-Perot magnetic tunnel junction. They combine two phenomena seen in optics – anti-reflection and Fabry-Perot resonance – to design a spintronic device. “We achieve a very high spin filtering which results in high TMR (tens of thousand percent) and a large spin transfer torque in comparison with the typical MTJ device,” says Abhishek Sharma, PhD student at IIT Bombay and the first author of the paper, in an email to The Hindu.

Among potential applications is the magnetic RAM (MRAM) device that uses spin transfer torque. “MRAM is an emerging technology based on the electron spin, which is a fundamental property of the electron that should be distinguished from its charge,” says Bhaskaran Muralidharan, from the Electrical Engineering department of IIT Bombay, in whose lab the research was carried out. “It promises to deliver non-volatility [memory retention after it is switched off], high speed and low power dissipation, apart from offering the possibility of going beyond von Neumann computation architecture,” Dr. Muralidharan adds. Von Neumann computation architecture is a standard architecture for computer hardware, in which the memory and RAM are separated.

A computer which uses the MRAM device would combine its memory and RAM functions, thereby greatly reducing the time taken to process instructions. This can revolutionise the computer hardware industry. The magnetic tunnel junction is a suitable candidate for the MRAM. It could also be used in fabricating spin transfer torque-based nano oscillators to achieve further miniaturization of wireless communication devices and brain-inspired neuromorphic computing systems.

This IIT-B Professor Is Making Remote Villages in India Energy Self-Sufficient & Creating Livelihood for Rural Women

<https://edtimes.in/this-iit-b-professor-is-making-remote-villages-in-india-energy-self-sufficient-creating-livelihood-for-rural-women/>

Chetan Solanki, a professor from IIT-Bombay has started on a journey to promote self-sufficiency in energy for sustainability. What started as vision ended up as a multi-country project for the IIT- B professor.

The Gandhi Global Solar Yatra:

Chetan Solanki who belongs from the department of energy, science, and engineering, began his 'Gandhi Global Solar Yatra' (GGSY) also dubbed as "energy swaraj" from the Sabarmati Ashram on Wednesday.

He will travel over 30-40 countries for a period of six to eight months and his journey will end on Gandhi Jayanti next year, at a global event marking the 150th birth anniversary of Mahatma Gandhi.

The GGSY was planned by Prof. Solanki to promote self-sufficiency in energy for sustainability for all those who lack the access to a self-sufficient energy source.

He stated that it was now possible to provide cost-effective and sustainable solar energy without causing any harm to the environment and at the same time creating livelihood and empowering the locals.



Prof Solanki further added, "Every time we use fossil fuel, we emit harmful gases into the environment. I want to raise awareness that technology should be decentralized and that solar energy provided the best solutions."

His first stop will be the South-Eastern Asian countries which include Indonesia, Malaysia, and Myanmar where he will have meetings with various universities, policymakers, and even government officials who can help in taking this initiative ahead at the local level.

Always Promoted Solar Energy:

Chetan Solanki has always been associated with solar energy and doing something big about it. This year, again on Gandhi Jayanti, 5700 students lit solar lamp together at IIT Bombay to set a new Guinness World record.

The feat was achieved under IIT-Bombay's flagship Solar Urja Lamp (SoUL) founded by none other than Chetan Solanki.

Under SoUL, Chetan Solanki has already made remote villages in Rajasthan self-sufficient and has empowered women by teaching them how to assemble solar lamps which they sell for a living.



We are already facing the brunt of climate change, the severity of which will be felt by the next generation.

It is time for us to follow in the footsteps of men like Chetan Solanki to bring about a change so that the next generation won't have to face consequences for someone else's actions.

Kerala govt. considers IIT-M building tech to rebuild houses

<https://www.thehindu.com/news/national/kerala/kerala-govt-considers-iit-m-building-tech-to-rebuild-houses/article25861163.ece>



A house being built with Glass Fibre Reinforced Gypsum panels on the IIT, Madras campus, in this file photo.

Reinforced Gypsum panels used in low-cost, green constructions

Building technology developed by IIT Madras over the last decade is now being considered by the Kerala government for the housing needs of those whose homes were ravaged by the floods in August this year.

The technology recycles gypsum — a major waste product of the fertilizer industry and coal fired power plants — to produce low-cost, environment-friendly housing which is also resistant to earthquake damage.

The first house using these prefabricated panels was built in 2013. It stands within the campus and is now occupied by IIT Madras faculty. Currently, more than a thousand houses across the country have been constructed using this Glass Fibre Reinforced Gypsum building technology.

One reward for the researchers is to have the Kerala government adopt the technology as a key option to help rebuild houses ravaged by the recent cyclone.

“The Kerala government has identified the affected people who really need houses... [and] has actually planned an amount of ₹4 lakh per house. The prospective house owner has the choice of taking this money and building the house on his or her own, or asking the government to do it. And the majority seems to be asking the government to do it,” says Professor Devdas Menon, from the Structural Engineering Division of the Civil Engineering Department of IIT Madras.

A breakthrough

Originally developed in Australia by Rapidwall Building Systems, the concept was enriched and enhanced by the IIT team of researchers who made a breakthrough in developing floors out of this material.

“We arrived at a good design basis that would make it earthquake resistant, as you need to do in regular buildings. Secondly, we innovated and said the same panel can be used not only as a wall but as a floor or a staircase. In fact the entire house can be built with this panel if the cavities are appropriately filled. That’s a breakthrough and the Australians have also adopted it,” explains Professor Menon.

He adds smilingly that the company has now changed its name to Rapid Building Systems.

With six PhDs emerging from this work, the technology has been added to greatly since the initial stages more than a decade ago. S.R. Gouri, a research scholar is now working on how to add car-parking facility to the houses.