



## **AICTE to approve new institutes only if they offer emerging tech courses**

Government body will approve setting up of new institutes only if they offer courses in AI, IoT, Block-chain, Robotics, Quantum Computing, Data Sciences

From the academic session 2020-2021, AICTE will give approval to start new technical institutes only in nine emerging technologies including artificial intelligence (AI), Internet of Things (IoT), block-chain, robotics, quantum computing, data sciences, cyber-security, 3D printing and design, AR/VR .

Rajive Kumar, the adviser, P&AP, AICTE, confirmed to Education Times, that the decision has been taken to introduce emerging technologies in the Engineering curriculum at technical institutes.

"In order to meet the changing industry demands, we need to train students in advanced technologies. AICTE will approve newly established technical institutes, accredited by National Board of Accreditation (NBA) or the National Assessment and Accreditation Council (NAAC), only if nine technological subjects are introduced at the undergraduate level," said Kumar.

"No new institute will get permission from AICTE to introduce bachelor degree courses in traditional engineering disciplines such as Mechanical, Electrical, Civil and Electronics engineering with the obsolete syllabus," he adds. The decision says Kumar has been taken to control the mushrooming of a number of institutes in every state, offering traditional courses that have no use in the industries.

To make faculty member technologically sound, AICTE has been conducting various workshops at National Institute of Technology (NITs) and Indian Institute of Technology (IITs) since January. "We have organised five workshops under which roughly 500-600 teachers have been trained and given hands-on exposure through quality improvement programs (QIP) in AI, ML, Robotics, 3D Printing, etc. These trained faculty members can mentor teachers and professors at their university," says Kumar.

AICTE will start accepting the applications from new technical colleges for introducing the courses in emerging technologies from November 2019. However, if the existing technical institutes want to upgrade their curriculum structure, they can submit the query to AICTE before the commencement of the new session in July 2019.

As per the AICTE's new policy, technical institutes are also advised to introduce multi-disciplinary engineering courses, especially in computational biology, biotechnology, biomedical, mechatronics, space, aerospace, agriculture, and environmental engineering, by reducing the seats in conventional disciplines and converting some of the existing seats into these areas.

## Outcome Based Education is Inevitable

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Industry estimates suggests that 80% of current engineering graduates are not employable. It is not our engineers who have fallen short, it may be that our engineering education has not evolved with time. How have we reached a point where the smartest, most committed young students get into college after a rigorous selection process, spend four years studying and graduate ill-equipped and irrelevant to the industry outside?

India got off to a great start in the 1960s and 70s when the government created world-class institutions like the IITs, but then we took our eyes off the ball. Private engineering colleges sprung up in the 1990s and 2000s and fed the software services boom. However, many engineering colleges have failed to keep pace with the evolving needs of students and industry.

One could argue that we just need to change the curriculum and add courses -- in Artificial Intelligence, Machine Learning, Internet of Things and Robotics among others -- and our graduates will be ready to take on the emerging new world. This may be a short-sighted approach to addressing a problem which is begging for a fundamental reset.

The key to creating a new paradigm for careers in engineering for the next generation of talented minds lies in re-imagining high-quality, higher education in engineering and the sciences along the following lines.

### Changing the playbook

The approach to engineering and scientific education needs to be increasingly interdisciplinary with computer science at the core. The curriculum should dismantle the walls between engineering and scientific disciplines and enable students to connect the dots. This is a huge shift from the current format which focuses on producing engineers who specialize in a specific area, such as mechanical engineering, computer science engineering or civil engineering.

### Nurturing innovators

Unlike traditional engineering education, where the pedagogy is focussed on credits and grades, the new way has to motivate the spirit of constant experimentation. The new pedagogy should encourage students to undertake actual experiments or projects where outcomes are not known or are not merely validation of what they have learnt in theory.

Students will build the innovation muscle if they can become comfortable with trying, failing and trying again to uncover new insights. This can be facilitated through experiential learning. Students should be given real-world, complex problems to solve so that they learn to deal with uncertainty.

The engineers of tomorrow need an entrepreneurial mindset even if they go on to choose to work for large firms. In order to thrive and build a high-impact career in engineering, they need to be prepared to take risks, come up with and execute new ideas. The learning environment has to create intellectually safe spaces for students to nurture this mindset.

### Problem-solving

Engineers have to be able to solve big problems that afflict the real world. Water, environment, poverty, agriculture, health, traffic, urban mobility are just some examples of real-world problems to solve. To do so, they need to go beyond technology and understand and appreciate people, society and policy issues. This can happen with a curriculum which also exposes engineers to the liberal arts, design thinking and also emphasizes on self-development and personal leadership with focus on 21st century skills like critical thinking, collaboration, creativity and communication.

### Leadership

At the end of the day, a high-quality engineering institute should be able to go beyond engineering. While they produce engineers, who have a clear understanding of their technology area, they also need to create thoughtful leaders who fully appreciate that technology is merely a tool and not the end, who have an understanding of how appropriate technology has to be chosen for a task, and how that technology can be appropriately used to create an imaginative solution in the context of the problem being solved.

As the problems they solve will have far more technical and human complexity than has been the case in the past, gone are the days when students just had to learn concepts in their college and apply it in their job. Today, they have to work with interdisciplinary teams on interdisciplinary problems and balance conflicting priorities. They need to have a vast portfolio of inter-personal and leadership skills.

### **Collaboration with industry**

Lastly, collaboration with industry and government is something that is missing today. There is a need for academia to engage with government and industry.

This flow of knowledge from industry and government to academia and vice versa is important if we want Indian universities to become more real-world research-oriented than they have been till now.

The engineering education system should create not narrow technical personnel but technology change-makers and entrepreneurs who can not only transform existing companies but also create new ventures and solve the grand challenges facing the country today.

Link:<https://www.deccanherald.com/opinion/in-perspective/a-good-omen-for-startups-735387.html>

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## **Innovation by Indians growing! India marks highest growth in filing for international patents**

Interestingly, the patents list is mostly dominated by Indian pharmaceutical companies such as Dr Reddys, Sun Pharma, Cipla and Lupin, among others.

Good news! India has filed more than two thousand international patent applications, thereby marking the highest growth among the top 15 nations. 'Innovation' is a word that has increasingly evoked more sighs than exclamations across India Inc. Perhaps now this pall of gloom is set to change. Building a robust innovation ecosystem may soon become the norm rather than an unusual occurrence. According to the data from the global intellectual property (IP) services of the World Intellectual Property Organisation, 2018 has been rocking for innovators from Asia, and they have filed over 50% of international patents. More importantly, the silver lining is this: India has every reason to strengthen innovation ecosystems across diverse sectors.

While India marked a significant growth of 27%, it is important to note that China is ranked second with a 21% share. A comparison between the two nations also shows that these are the only middle-income countries to be ranked among the top 15 countries.

A closer look at Indian patents show that most of these have been filed by TVS Motor Company ranking first, the Council of Scientific and Industrial Research and the Indian Institute of Technology ranking second and Reliance Industries at a close third.

For example, the TVS -ATT is an innovation that enhanced fuel efficiency by 20% when compared to the conventional technology that is currently in use today, even as it offered additional advantages like the lowest carbon dioxide emission in motorcycles and scooters, has a low floorboard and more space to keep luggage.

Another striking innovation was the RTR engine (Racing Throttle Response) by TVS Motors, which won several prestigious awards. What the RTR engine did is that it provided instant acceleration combined with aerodynamic, roto petal disc brakes that are completely from the track and digital speedometers,

Interestingly, the patents list is mostly dominated by Indian pharmaceutical companies such as Dr Reddys, Sun Pharma, Cipla and Lupin, among others. Several factors such as manufacturing excellence, cost competitiveness, trained human capital and robust infrastructure are known to

have created Indian pharma's success story. To accelerate growth, more innovations have to come through as well.

With Asia taking the crown as the majority filer of patent applications internationally, India can look towards building next-gen capabilities that will give 'Brand India' a distinct and innovative edge as well as sustain the cost advantage while supporting and nurturing an innovation-oriented ecosystem.

Link:<https://www.financialexpress.com/lifestyle/science/innovation-by-indians-growing-india-marks-highest-growth-in-filing-for-international-patents/1530507/>

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### **IonIdea**

38-40, EPIP Zone, Whitefield, Bengaluru, Karnataka 560066

Office Phone: +91 (80)-665-81500 (extn. 1052, 1064)

Email : [edu@ionidea.com](mailto:edu@ionidea.com) | Website : <http://www.ion-education.com/>

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