Magazine Clips

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India's Top Professional Colleges
NIRF Rankings

Unofficially, a Broken Lens

ARINDAM MUKHERJEE

The first 'official' ranking of professional institutes is a mess of poor planning and worse execution

EVERY year, close to 15 lakh students appear for engineering entrance examinations in India. For most of these students, college rankings hold a special significance—they depend on them to make an informed choice. For over a decade, *Outlook* has been serving up rankings of professional colleges, which are considered top-of-the-class. Given the high stakes, everyone has welcomed the Modi government's decision to rank engineering colleges. After all, everyone would benefit from a better ranking process to judge the worth of a college in engineering, management or a few other areas.

But the government's efforts to bring out a comprehensive "official" ranking of colleges—the National Institutional Ranking Framework (NIRF) introduced by the HRD ministry—have been clearly disappointing. It has been questioned, criticised and attacked by almost all sections of academia and the education ecosystem.

The NIRF offering has inconsistencies and anomalies across all rankings. This even though, compared to media organisations like the India Today Group, *Hindustan Times*, Careers 360 and *Outlook*, which also do rankings, the government is in a much better position to source and demand data from colleges. The NIFR is a stellar example of bad planning and poor execution. The results are illogical and skewed in favour of government institutions, to say the least. Many deserving government institutions and private institutions do not even find place in the rankings.

Take the engineering rankings. The top five positions are unsurprisingly divided between the old IITs, but the survey looks a bit biased when one considers the position given to other government institutions. For example, the IITs at Ropar, Hyderabad and Patna, which are new and have much to prove, have been placed above IIT BHU, Varanasi, which is an established and accomplished organisation and deserves to be ranked higher. All the IITs, including the new ones, essentially make the top 25 list, which is not the case in other rankings.

More surprisingly, the new IITs have

UNVEILED HRD minister Smriti Irani releases NIRF 2016 rankings

been placed above the much accomplished National Institutes of Technology (NITs). Only the NITs at Trichi (Rank 12), Rourkela (19) and Surathkal (22) have made the cut. However, despite their presence in the ranking, their low ranks raise many questions as the colleges have always scored high in all surveys, including *Outlook*'s. NIT Surathkal, for instance, is ranked No. 9 in the 2016 *Outlook* rankings. In fact, not a single NIT features in the top 10 in the NIRF engineering ranking.

Among the private colleges, the biggest top-level omission is perhaps BITS Pilani, which does not figure in the top 25 list. The best private engineering college according to the NIRF survey is VIT Vellore, which, though a capable candidate, is not top of the list in most surveys.

The anomalies exist even in the NIRF business school rankings. While the top four positions are taken by the older IIMs, IIM Udaipur, a relatively new IIM and not on the top list of any survey, is seen at No. 5 and above IIM Kozikode, a more suitable candidate. Similarly, IIM Indore, much in the same class as IIM Kozikode, finds itself pushed down to No. 10, below both IIM Udaipur and IMI Delhi, neither of which deserves its exalted position.

Also, one of the better colleges, S.P. Jain Institute of Management, Mumbai, is pushed down to No. 16 while Thiagrajar School of Management, Madurai—which cannot compare with S.P. Jain—is at No. 15. Again, like in engineering, here too, there is an attempt to accommodate all the IIMs, even the mint fresh ones, in the top 25 list, while a good 10-15 good B-Schools, regulars in the top 25 list of all other surveys, do not figure in the government list at all. Among the notables missing are IMT Ghaziabad, FMS Delhi, NMIMS Mumbai, Symbiosis Pune, Jamnalal Bajaj Mumbai, XIM Bhubaneshwar and IRMA Anand.

These omissions in the engineering and management rankings are unacceptable not just because the government has manifold resources and power compared to the private surveys. The HRD ministry more or less follows the same methodology as others (including *Outlook*). Clearly, the stark differences in rankings are not logical. To put it bluntly, the results cannot be so far apart unless there are instructions from the government to show some colleges in good light. This raises questions about how data has been collected from the colleges and authenticated to show such results.

Yet, many hope the NIRF rankings would inspire colleges to pull up their socks and perform better. "If one college gets a good rank, others will get inspired to do better," says Dr A.N. Kowale, vice-dean, B.J. Medical College, Pune. "It will bring in competition among colleges. And by helping the government analyse the performance of those lagging behind, the efforts will be focused more on colleges that need help." The NIRF rankings this year did not include medical colleges, but it could happen next year.

Interestingly, before finalising the NIRF, the government had approached some international agencies for India-specific rankings so Indian colleges could be brought up on an international institutional ranking platform. "The government created the NIRF platform as international bodies refused to do something for Indian colleges," says A.R. Bhalerao, principal, Bharati Vidyapeeth College of Engineering, Pune. "The government had approached Times Higher Education (THE) and QS Rankings, which are known for their global college rankings, to include some India-specific parameters in their rankings but they refused. So the government started NIRF, which is a good measure to judge Indian colleges."

Many feel the NIRF rankings will help the government decide on funding colleges based on their performance. "It will help the government take a calibrated approach," says a senior IIT professor on the condition of anonymity. "A large number of government-funded colleges are repeatedly at the bottom of the charts. They pay little attention to factors like proper faculty or infrastructure, or upgrading their systems. These will come to light now. Once you link their funding to performance, they will have to improve their performance and that will reflect in their ranking."

There are, of course, many who feel a lot more needs to be done to properly streamline the NIRF rankings and make them logically consistent with the colleges' comparative performance. Experts point at several anomalies in the approach followed in the first year that need to be corrected. That process may have begun. The government has now set up a panel to look into the rankings exercise so it can be improved in next year's edition. But unless some balance is brought in and the rankings present a logical picture, it will be an exercise in futility. The HRD ministry must tread carefully and do the right thing. We all know who the ultimate sufferers will be.

MHRD'S NIRF RANKING VS OUTLOOK'S RANKING

Engineering Rankings

	Outlook 2016	HRD NIRF 2016
1	IIT Delhi	IIT Madras
2	IIT Bombay	IIT Bombay
3	IIT Kharagpur	IIT Kharagpur
4	IIT Madras	IIT Delhi
5	IIT Kanpur	IIT Kanpur
6	BITS Pilani	IIT Roorkee
7	IIT Guwahati	IIT Hyderabad
8	NIT Trichi	IIT Gandhinagar
9	NIT Surathkal	IIT Ropar
10	NIT, Warangal	IIT Patna
11	College of Engineering, Guindy	IIT Guwahati
12	NSIT Delhi	NIT Trichi
13	DTU Delhi	VIT Vellore
14	College of Engg Pune	IIT BHU Varanasi
15	IIIT Hyderabad	SVNIT Surat
16	PSG College Coimbatore	IIT Indore
17	IIIT Allahabad	BIT Ranchi
18	MIT Manipal	VNIT Nagpur
19	VIT University Vellore	NIT Rourkela
20	BIT Ranchi	IIT Mandi
21	ISMU Dhanbad	College of Engg Pune
22	Univ. Inst. Of Engg. Chandigarh	NIT Karnataka, Surathkal
23	Thapar University Patiala	MNNIT Allahabad
24	VNIT Nagpur	PSG Coimbatore
25	NIE Mysore	IIT Jodhpur

B-School Rankings

	Outlook 2015	HRD NIRF 2016
1	IIM Ahmedabad	IIM Bangalore
2	IIM Calcutta	IIM Ahmedabad
3	XLRI Jamshedpur	IIM Calcutta
4	FMS Delhi	IIM Lucknow
5	IIM Kozikode	IIM Udaipur
6	SP Jain Mumbai	IIM Kozikode
7	IIFT Delhi	IMI Delhi
8	Symbiosis IBM Pune	IIFM Bhopal
9	NITIE Mumbai	DMS IIT Kanpur
10	NMIMS Mumbai	IIM Indore
11	XIM Bhubaneshwar	MDI Gurgaon
12	MDI Gurgaon	IIM Kolkata
13	IMI Delhi	XLRI Jamshedpur
14	Symbiosis SMH Pune	IIM Trichy
15	IIM Shillong	Thiagarajar Madurai
16	TAPMI Manipal	S.P. Jain Mumbai
17	DMS IIT Delhi	VIT Vellore
18	BITS Pilani	IIM Raipur
19	IMT Ghaziabad	IIM Ranchi
20	DMS IIT Madras	IIG IIM Shillong
21	MANAGE Hyderabad	IIM Kashipur
22	Goa Inst of Mant Goa	IIT Gwalior
23	IRMA Anand	Fore School Delhi
24	Sydenham Mumbai	LBSIM Delhi
25	DMS NIT Trichy	BIT Ranchi

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India's Top Professional Colleges

Changing By Degrees

A common medical test looms large, engineering needs numbers. And in *Outlook*'s esteemed list, a raft of new names. See what is the buzz.

ARINDAM MUKHERJEE

HOW time flies, and some things remain the same. Last year, around this time, the limelight was squarely on the IITs in the middle of a furious run-in with the HRD ministry. This year, the spotlight is on medical colleges who are trying desperately to come to terms with the government's plans to unify the entrance examinations of all government and private medical colleges, aka NEET. This is sure to benefit students, as they will have to take just a single test to get an all-India rank, before they go for counselling. It will also weed out the corruption that typically goes on in many private colleges and the discretionary ways in which many state-run colleges function.

Though the government and courts have agreed to suspend NEET in 2016, it is scheduled to come back next year. According to reports, the government now proposes to do an encore for the engineering colleges by combining all the entrance examinations with the JEE. As they say, something's cooking here. As it is, medical and engineering colleges are finding it very difficult to get quality faculty. The other big problem faced by engineering colleges, in particular, is of vacant seats. According to estimates, roughly about 40 per cent of engineering seats have no takers across the country. This is more pronounced in Maharashtra, Tamil Nadu and Andhra Pradesh.

The primary reason for the vacancies is a gradual decline of interest towards engineering among students. Among non-IIT or NIT colleges, this disinterest stems from the difficulty in finding proper, well-paid jobs. According to experts, while many students are unable to find proper campus placement, a large number are getting low-paying jobs, in most cases with salaries equal or less than commerce graduates who spend less time, effort and money to get their degree.

Amidst such uncertainty, *Outlook*'s ranking of India's Best Professional Colleges (in partnership with Drshti Strategic Research Services Pvt Ltd) becomes important, especially for students who want to make an informed choice before they sign on the dotted line to get into a college. Like last year, our flagship engineering colleges ranking throws no surprise for the top ten, with the usual suspects, led by the IITs, occupying the top slots. What's encouraging this year is that a whole host of new colleges participated in the survey. As a result, the top 100 ranking features a lot of new names who have come up to challenge the supremacy of the older lot of colleges. Thanks to them, the process has become far more interesting than last year. A similar trend was visible in the medical college rankings, where top colleges like AIIMS, AFMC, CMC Vellore and St John's Bangalore occupy the top slot.

We also present Life's Lessons from the best experts in all the nine streams that we rank. They tell us what they have learnt from life. There is also an interesting story on social entrepreneurs, about people who have taken up social work for profit. There's much, much more—on how Kota is coping with suicides and change, on what online education has to offer, interviews with Metroman Mangu Singh and former bureaucrat T.S.R. Subramanian. We hope our package and ranking would give a complete picture of India's education sector and help prospective students (and their parents!) take proper decisions about their career. As always, choose wisely.

Encouragingly, a whole host of new colleges have taken part in our survey. Thus, the top 100 ranking features new names challenging the older lot.

NRS Medical College students strike a familiar chord


ACADEMY BUILDING
N.R.S.
EDICAL COLLEGE & HOSPITAL
KOLKATA - 700014

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UPFRONT T.S.R. SUBRAMANIAN

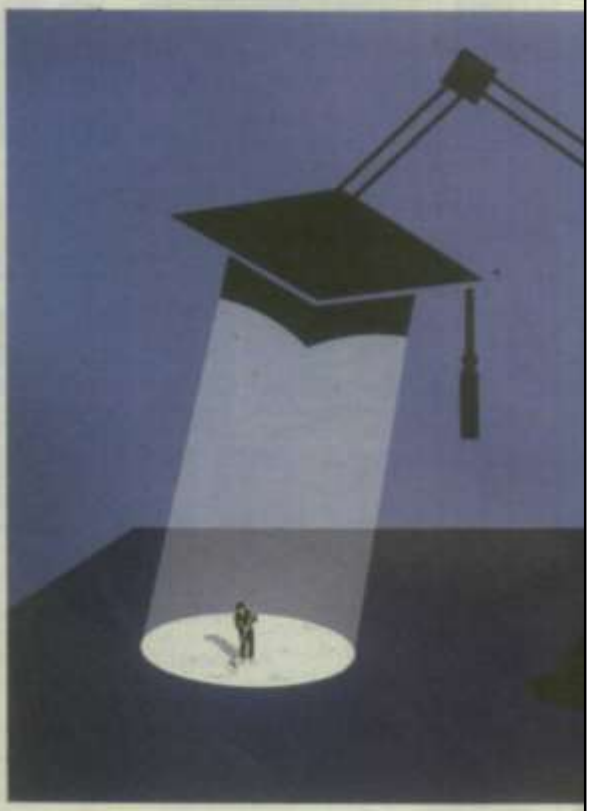
WHY INDIA NEEDS A NEW EDUCATION POLICY

The 1986 National Policy on Education, as reviewed in 1992, has been the guiding document of the central government on the education sector for over two decades now. This was preceded by the National Policy on Education, 1968, the first post-Independence articulation of a national education policy. Indeed, even during the British period, the Wardha Education Scheme (Nai Talim of Mahatma Gandhi) had in 1938 worked out a 'national policy' and had recommended it for adoption by provincial governments. The CABE Committee's 1944 Report on 'Post-war plan for educational development in India' (the Sargent Plan), sought to 'Indianise' education, universalise primary education and improve overall quality.

The 1986-'92 policy, though robust in concept and orientation, has not delivered acceptable outcomes in the education sector. Despite the stated priority and the launch of a plethora of programmes, the state of education in the country remains a weak spot in society. Most objectives and goals have not been realised, even partially, largely due to the absence of a workable roadmap and continuing operational guidance. More significantly, heavy politicisation at every level of operation from the village/block level, accompanied by ever-increasing corruption, permeating every aspect of educational administration, have been the prominent developments in the past three decades or so.

Education and public health are possibly the two most important development vectors in a democracy. The reality over the past decades is that these have not received a fraction of the importance and focus they deserve. The ground reality today, depressingly, is quite different from what was envisaged in the policy pronouncement. While gross enrolment in schools as also in higher education institutions has gone up sharply, these have been accompanied by many undesirable new factors. Even as infrastructure facilities in the school system have significantly improved, there has been little corresponding effect on the quality of instruction or learning. On the contrary, repeated studies have indicated a worrisome decline in school learning outcomes. The failure of government schools to provide education of minimal quality has triggered large-scale entry of private or 'aided' schools, even in rural areas, but even these have not produced significantly better outcomes. There has been a mushrooming of private colleges and universities, most of them of indifferent quality, and many valid questions have been raised about the quality of degrees generally obtained in the system. Despite significant gains in respect of enrolment and access, new gnawing worries about quality are increasingly being raised. The issue of an 'inclusive' educational system has also not been seriously addressed.

The National Council of Education Research and Training (NCERT), the NGO Pratham (ASER), as also a Gujarat state-sponsored programme, 'Gunotsav', have engaged in assessment of learning levels and efficacy of policies over the past 15 years or so. Their recent finds make depressing reading. For example, ASER 2014 found that 25 per cent in Class VIII could not read texts meant for the Class II level; the number



of children in rural schools in Class II who could not even recognise the alphabet is up from 13.4 per cent in 2010 to 32.5 per cent in 2014. Reading levels for children in government schools show a sharp decline from 2010 to 2012. Half of all children in Class V have not yet learned basic skills that they should have acquired in Class II. And close to 50 per cent of children will finish eight years of schooling without having learnt the basic skills of arithmetic. No further commentary is required to stress the point that our education system is in serious distress, and requires urgent reforms.

While the Right to Education (RTE) Act has led to significant increase in enrolment, as also emphasis on infrastructure, new issues in the implementation phase have now arisen, which need to be addressed. In particular, the 'No Detention Policy' needs to be revisited, to ensure that it is optimally and judiciously implemented.

There is no clearly laid out policy in respect of private participation in the education system, both at the school and higher education levels. While there is scope for differential treatment of this issue in different states, the respective roles to be played by private and public players is not defined. In theory, the system persists in reiterating the mantra that education is not a 'business', that the profit motive cannot be the guiding principle for an educational institution. But, as in so many other walks of our public life, the reality is quite different from these precepts. The exponential growth of higher education institutions in the past two decades has been fuelled by the 'capitation fee' phenomenon, which thrives on black money and shadowy financial transactions. It is also a fact that many of the so-called 'charitable educational trusts' have a strong, direct financial motive, in most cases in close association with or with the sponsorship of the political class. This phenomenon has made it extremely hard for serious reforms to be attempted, let alone implemented.

The quality of academic research, overall engagement and accomplishments in the field of research also leave much to be desired. Research and innovation are key to promoting a dynamic and vibrant academic scene. There is an imperative need to address this critical area, which can contribute so significantly to the economy.

In an aspirational society, parents naturally desire that their children get a 'good education'. However, formally linking the development of skills in vocational fields, and bringing in an academic equivalence to vocational accomplishments, has not been seriously attempted. This also means that the avenue for horizontal and vertical mobility has not been provided in adequate degree. Fostering dignity and social acceptability to quality vocational training are important tasks demanding urgent attention.

A major new dimension is the advent of information and communication technology. New technologies are now available for information dissemination, enhancement of skills and so many other end-uses, but they are not yet suitably adopted or adapted to the needs of the education sector. There is immense scope for harnessing technology to improve quality, teacher preparation, aid to teachers in classrooms, remedial coaching—possibilities that have not yet been seriously addressed. 'Big data' can be harnessed to track student-learning outcomes, link teacher-performance to student learning as aid to assessment of teacher quality, to track the progress of individual schools...the list is endless. Though technology has taken rapid strides in India, astonishingly little has been tried out or adopted in Indian conditions.

Fortunately, the Union ministry of HRD, in particular the HRD minister, has taken a major initiative to revamp the education sector, and intends to soon declare a new education policy. This is an extremely welcome move. It is hoped that the ministry's move will give a new direction to the education sector, halt the precipitous decline in standards, and pave the way for much better quality standards. Political will to raise educational standards, and eliminate or minimise political intervention at all levels, could lead India to global standards in just one generation. The stakes for the new policy are very high—India has the possibility to become the leading country of the world for two-thirds of this century.

The author, a former cabinet secretary, headed an expert panel on the New Education Policy. The panel has submitted its report

Illustration by ANIRBAN GHOSH

ASER 2014 FOUND THAT 25 PER CENT IN CLASS VIII COULD NOT READ TEXTS MEANT FOR THE CLASS II LEVEL; THE NUMBER OF CHILDREN IN RURAL SCHOOLS IN CLASS II WHO COULD NOT EVEN RECOGNISE THE ALPHABET WAS UP FROM 13.4 PER CENT IN 2010 TO 32.5 PER CENT IN 2014

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India's Top Professional Colleges
Outlook Round Table

Photographs: TRIBHUVAN TIWARI

TECH TALK (from left) Prof Ramgopal Rao, Director, IIT Delhi; Dilip Chenoy, former MD and CEO, NSDC; Outlook's Arindam Mukherjee, moderator; Jagdish Khattar, Chairman, Carnation; and Anil Razdan, former power secretary

"If IIT Delhi can't have full faculty, what of other colleges?"

Indian engineering education is clearly at a crossroads. On the one hand, there is a proliferation of engineering colleges, while on the other there is a sheer lack of quality teachers. Of late, there is also a waning interest in engineering education among students, with many students dropping out of even the high and mighty IITs. The employability of engineering graduates is another concern. If experts are to be believed, only 25 percent of the engineering graduates that India churns out every year are employable. What's worse is that the salaries commanded by fresh engineering graduates are at par or less than those of commerce graduates, who spend much less time, effort and money on their courses. Outlook *talks to experts from different fields on what currently ails Indian engineering education.*

Participants

Prof Ramgopal Rao, Director, IIT Delhi;
Jagdish Khattar, Chairman, Carnation and former Maruti Suzuki MD;
Anil Razdan, former power secretary; and
Dilip Chenoy, former MD and CEO

National Skill Development Corporation. Moderated by **Arindam Mukherjee.**

What are the challenges faced by engineering education in current times?

Prof Ramgopal Rao: If you talk about the IIT system, our challenge right now is to scale up IITs, which are pretty small when compared to universities abroad. Any university campus in the US has an average of about 40,000 students enrolled, whereas the number of students in IIT Delhi is only about 8,000. Whenever we mention this to the government, it talks about opening new IITs. But, that is not a solution. Many of these decisions are being taken for political reasons. One of the things we should do is scale up the existing IITs and aim for up to 30,000 students from the current 7,000-8,000.

Anil Razdan: There is a proliferation of engineering and medical institutions without any standardisation, this has been the basic issue. The massive churning out of people not fit for the job is another major issue. Some of these people are forced to apply for class II jobs after graduating, because they have hardly recieved any practical training. Most organisations of repute will not take them. Furthermore, most of the faculty in such colleges is not permanent, some of them are senior students who come and teach as ad hoc teachers. These 'deemed' universities can, at best, be called industries as their sole motive is profit-making.

Jagdish Khattar: In engineering colleges, the curriculum is content oriented rather than being practical. Maruti takes 4-5 years with an engineer before they are ready for the job. That is the cost they have to bear. The curriculum in most colleges is outdated. They have laboratories which are not in good shape. In engineering colleges, the focus is all on IT. When I was in Maruti, in the first 10 years, 70 per cent of all the engineers recruited were from IITs. Now, there are few as no one wants to work on the shop floor. All of them want a white collar job. The 40 per cent vacancy in engineering seats is because of commercialisation as no one wants to be a pure engineer anymore.

Dilip Chenoy: In the entire education system, we have fixed intake and outcomes. So, if 30 per cent of the people fail in the first year and only 70 per cent go to the second year, the college cannot admit people in the second year. Furthermore, we have an inverted structure. In other countries, more technicians are trained than engineering graduates whereas in India, it is the opposite.

Most new engineering colleges are in remote locations which lack good facilities. Consequently, professors don't want to go there. The government-run institutions lack scale, and no matter how much fee they charge, they cannot manage. They don't have labs, their classrooms are crowded and hostels are deteriorating. Also, the first year in most engineering colleges is actually spent to get everybody back up to speed. Therefore, you lose one semester because you don't know where people have come from, their background.

Shortage of faculty is a problem that is faced by IITs and smaller colleges alike. What is the reason for this and how are colleges working to solve it?

RR: This is a big issue. IIT Delhi has 400 faculty positions vacant today. IIT Bombay has 350. If these two top institutes can't get faculty, how will other institutions get them. We have not opened up our education as far as our faculty is concerned. This is because the IITs were started as undergraduate institutes. Only now has the government told us in very strict terms that we should produce more PhDs. Ten years ago, we had 200 PhD students, now we have 2000. This was not done earlier as there were no jobs for

> "There is a growth of engineering and medical colleges but the basic issue with them is that there has been no standardisation."
>
> Anil Razdan,
> Former Power Secretary

> "In other countries, more technicians are trained than engineers. But in India we have more engineers than technicians."
>
> Dilip Chenoy,
> Former MD NSDC

PhDs. Now Intels, IBMs and Motorolas, all are demanding PhDs and so, students are opting for them. But still we do not produce enough PhDs who can meet the demand of these companies and supply to the colleges as faculty.

DC: What has happened in the teaching space is that AICTE and UGC have recognised this and allowed institutions to hire adjunct faculty from industry. But there is a lot of rigidity in the system for faculty. It has to be more flexible and open. The way they have structured the reimbursement for adjunct faculty is not attractive. If you have to teach in a remote location, the structure is not conducive for attracting good talent. It is the same even in non-remote places.

Also, the way the curriculum is structured, the same thing is taught whether you want to join the industry or become a researcher or a faculty member. The time has come when in the last year of the course, there has to be a specialisation. Then you can actually get trained for it because people who become faculty members are not trained for the profile. The way the faculty are given time to do research and to go to industry in Malaysia or Philippines or China or the US, that whole structure is not available in India.

We have seen a proliferation of engineering colleges in many states but there is a serious question over their quality. Are we playing with the future of students?

RR: India produces 1.5 million engineers every year while the UK produces only 50,000. We are overdoing this.

DC: There is a challenge there. Andhra Pradesh accounts for the maximum number of engineering colleges in the country. It also accounts for a large percentage of unfilled seats. The largest number of students who go abroad for engineering are from the state. So there seems to be a system that doesn't fit. When you visit the Andhra colleges, in the APTU curriculum, the type of labs that they mandate seem to belong to the 18th or 19th century. So, when these people go to a particular industry without hands-on training, the industry has to invest in them.

JK: In a country like India, with our population and per capita income, it is a disaster to depend upon the private sector for education. The State is needed here. It can give Rs 30,000 crore to Air India but their budget for health is only Rs. 6,000 crore. Is this the way to run the country? You are getting private people and politicians into education. You are commercialising health and education, the bedrock of our future. Yes, the private sector has to come and set standards, but not of commercialisation. Before we allow someone in, we should have a system of background check.

A direct impact of that is on the employability of engineers these colleges bring out. According to experts, only 25 per cent of engineers who graduate every year are employable.

DC: This is so because what we teach in the class is not employable. Today, companies are tying up with educational institutions to produce specific courses which are in demand in the industry. Some of the deemed universities and private universities are doing this. The majority of government run institutions are unable to do this. Colleges have a rigorous way of the board of studies; they cannot amend their curriculum and introduce new courses. We need flexibility in the system as we go forward.

AR: In 1985, I was the director in the education ministry and the new education policy was coming up. One of the interesting things in the report was that India would have so many unemployables. Now, that is what bothers me. When there are educated unemployables, it is a cause of great frustration. Therefore, we have to check the quality of these colleges.

JK: When there are jobs, they will take even unqualified chaps and teach them. And when you do not have a vacancy, you won't even take the best. But, I think things are opening up. 'Make in India' will bring in some change but it will take five years. It cannot come overnight. You have to work more on the existing industries, start ups. But let us get the orientation towards manufacturing.

There is a large number of students who clear the entrance exams very well, thanks to places like Kota, but beyond that they find it difficult.

RR: In IITs and NITs there is actually no difference. Our students can solve a problem in 15 seconds. An NIT student can solve it in 25 seconds. When they go and take up a job, it makes no difference whether you solve it in 15 seconds or 25 seconds. But that's what the coaching institutes are basically doing.

In Indian education, it is all about finding a solution. There is never a correct solution. Whereas, in all our examinations, you have to find the correct solution. You are always looking for that correct answer. In engineering you keep on improving. Using whatever technologies you have, you optimize your technology.

DC: I think the issue is what we test and how we test. If you want to test memory and rote, then it's not going to work because you've got to actually teach different ways of how to solve problems. But solving problems is not taught in majority of the engineering colleges.

Two weeks ago, I went to the lab in the electrical department in a college. There were 15 experiments: Validate Faraday's

> **"If you put so many things in one exam, the pressure on a student is very high. One exam day will be a make-or-break day for him."**
> Ramgopal Rao,
> Director IIT Delhi

law. Verify Kirchhoff's law. When I said, what are you teaching? I was told this was mandated. Professors tell me their biggest challenge is the course. Students are running from one course to another to complete the syllabus.

There is a mismatch between what the industry wants and the kind of engineers we are producing. Now what does the industry want? And why are we not able to match that in our curriculum?

RR: It's difficult. In IIT Delhi, let's say TCS comes and says you teach this...we say we don't want that. We don't want to be focused on what one industry needs today. We want students to have an overview of things so that they can learn things. We want to make students 'learn able'. We want to give them a strong foundation. They can pick up the skills and they can identify and do things. We don't want to be focused on what a particular industry wants.

DC: Today, AICTE has an apprenticeship programme. They also have a national employability enhancement mission where you can get an engineering student to actually go out and do work, learn hands-on and include it in his result. But engineering colleges are not taking advantage of this. They are interested in four years, out, next batch in. It has become like a factory!

Competency involves three things: Attitude, knowledge and skill. Universities are only focussing on knowledge. So, you hear industries complaining about the lack of soft skills. You have to focus on all three aspects to make that student competent.

So do we need to take a very serious relook at the curriculum?

JK: Yes. The problem is that they are only going for theory. No practical issues are being taught. In the classes, no one takes notes since they can easily find the stuff online. They are just teaching what is known. You must teach what is not known.

> **"No one takes notes in class as you get everything online. They teach what is known. You must in fact teach what is not known."**
>
> Jagdish Khattar,
> Former MD Maruti Suzuki

The government has a proposal to combine engineering examinations like what they are trying to do for medical with NEET, how effective would this be and is this a solution to the problems.

RR: That might not solve things. If you put so many things in one exam, the pressure a student would go through is tremendous. That particular day will be a 'make or break' for his entire career. And a student would get just one option.

DC: The approach has to change. If you ask people are you willing to give the GMAT exam, nobody finds it a pressure test. Because one can give it whenever they are ready, they have to go to an authorized center and they need their GMAT marks before a certain date to apply to universities. We should try and create something similar for engineering. When you give the test, there is adaptive learning and those marks qualify. It could be a solution. Three hours determining your future on a given day is perhaps not an acceptable method of assessment.

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India's Top Professional Colleges
Rankings

TOP 100 ENGINEERING COLLEGES

2016 Rank	2015 Rank	Name of the Institute	P. Pvt & Govt	City	Selection process (337)	Academic excellence (294)	Personality devt & indl. interface (111)	Infrastructure (296)	Placement (188)	Overall score (1,000)
1	1	IIT	G	Delhi	212.0	196.1	163.0	193.7	174.0	938.8
2	2	IIT	G	Mumbai	210.0	188.3	160.0	199.6	161.7	919.5
3	3	IIT	G	Kharagpur	214.0	192.2	157.0	196.5	159.3	919.0
4	4	IIT, Madras	G	Chennai	208.0	193.1	156.0	196.6	159.0	912.8
5	5	IIT	G	Kanpur	208.0	196.4	154.0	191.0	161.5	910.9
6	7	BITS	P	Pilani	184.0	181.6	156.6	184.6	165.7	872.4
7	8	IIT*	G	Guwahati	179.1	185.8	145.4	181.2	147.2	838.7
8	9	NIT, Trichy*	G	Tiruchirappalli	182.1	171.5	148.2	180.3	142.0	804.1
9	10	NIT, Surathkal	G	Mangalore	176.9	169.7	134.7	176.2	146.1	803.5
10	11	NIT*	G	Warangal	185.0	158.4	134.5	158.1	128.2	764.2
11	Nq	College Of Engineering, Guindy	P	Chennai	202.8	162.5	132.0	131.9	126.6	760.8
12	14	NSIT*	G	Delhi	151.0	154.4	134.9	163.5	154.4	758.2
13	19	DTU	G	Delhi	145.0	163.6	132.0	140.4	153.0	733.9
14	15	College Of Engineering	G	Pune	164.9	150.3	130.4	148.5	139.4	733.6
15	13	IIIT	P	Hyderabad	149.0	153.8	129.8	155.3	143.8	731.6
16	16	PSG College of Technology	P	Coimbatore	143.9	147.9	133.4	164.4	125.3	715.0
17	12	IIIT	G	Allahabad	147.5	152.9	117.6	155.1	139.5	712.6
18	21	MIT	P	Manipal	163.0	158.5	126.3	148.9	115.0	711.7
19	32	VIT University	P	Vellore	137.0	143.8	147.0	152.0	131.0	710.8
20	20	BIT Mesra	P	Ranchi	165.0	151.8	116.2	154.8	116.8	704.6
21	Nq	ISM	G	Dhanbad	159.0	178.8	135.7	112.5	116.0	702.1
22	Nq	University Institute Of Engineering	P	Chandigarh	142.0	142.8	137.8	154.7	121.3	698.5
23	25	Thapar University	P	Patiala	142.0	148.4	130.7	147.5	118.9	687.5
24	27	VNIT	G	Nagpur	145.0	151.2	109.9	168.5	108.7	683.3
25	28	NIE	G	Mysore	142.4	144.9	125.0	147.9	107.6	667.7
26	26	IIJT Sindri	G	Dhanbad	169.0	136.6	105.3	142.7	107.4	666.0
27	24	NIT*	G	Durgapur	162.0	163.7	106.0	126.3	102.9	660.9
28	30	SGS Inst Of Tech.	G	Indore	145.9	136.5	104.4	157.5	112.6	656.8
29	29	Inst. Of Technology, Nirma Univ.	P	Ahmedabad	143.7	138.9	108.9	138.1	100.5	630.0
30	31	University College Of Engg	G	Hyderabad	112.0	129.6	113.5	152.5	120.7	628.4
31	33	Chaitanya Bharathi Inst Of Tech	P	Hyderabad	123.0	118.0	118.0	155.8	104.5	619.2
32	36	D. J.Sanghvi College Of Engg	P	Mumbai	115.0	125.7	105.6	123.3	127.2	596.8
33	Nq	SVKM's NMIMS	P	Mumbai	117.0	128.8	124.3	122.7	103.5	596.3
34	Nq	SRM Engg College	P	Chennai	117.0	118.8	121.1	121.4	111.6	595.9
35	34	Guru Nanak Dev Engg College	G	Ludhiana	130.0	113.8	121.2	138.8	91.0	594.9
36	41	Govt. Model Engg College	G	Kochi	124.3	116.7	121.8	125.1	106.7	594.6
37	42	Govt College Of Engg	G	Amravati	127.6	103.1	113.9	145.2	104.7	594.4
38	38	Thiagarajar College Of Engg	P	Madurai	131.6	119.3	112.1	122.9	102.7	593.6
39	37	MIT College Of Engg	P	Pune	117.1	116.0	104.7	134.7	113.5	586.0
40	40	Bannari Amman Inst. Of Tech	P	Erode	120.0	129.8	120.3	150.6	63.8	584.5
41	45	Bharati Vidyapeeth Univ College Of Engg	P	Pune	106.0	130.8	82.4	145.7	117.4	582.3
42	44	Rungta College Of Engg	P	Bhilai	122.0	129.2	100.4	133.5	91.1	576.1
43	45	RMS Inst. Of Technology	P	Bangalore	128.3	120.2	95.1	142.3	89.4	575.2
44	48	PES University	P	Bangalore	122.0	112.8	108.1	133.4	96.6	572.9
45	50	RMS College Of Engg	P	Bangalore	124.2	124.8	89.1	130.5	103.8	572.4
46	46	KLS Dr M.S Sheshgiri College Of Engg	P	Belgaum	121.7	116.7	86.0	153.8	89.2	567.4
47	52	JNNCE	P	Shimoga	127.1	122.0	81.8	148.7	81.8	566.4
48	Nq	Symbiosis Institute Of Tech.	P	Pune	120.3	131.2	90.1	127.5	97.3	566.2
49	Nq	School Of Engineering & Tech.	P	Noida	127.0	128.0	106.0	107.9	96.8	565.7
50	47	K L University	P	Guntur	116.0	129.4	105.5	140.8	73.3	564.9

1. Colleges that submitted complete objective data were ranked. Institutes such as NIT Guwahati, NIT Tiruchirapalli, NIT Warangal, NSIT Delhi and NIT Durgapur, which were interested in participating but could not submit their data are ranked on 2015 scores; 2. Govt-aided private institutions have been

2016 rank	2015 rank	Name of the Institute	P.Pvt G.Govt	City	Selection process (SEP)	Academic excellence (25%)	Personality devt & indl interface (15%)	Infrastructure (25%)	Placement (30%)	Overall score (1,000)
51	66	Faculty Of Engg, DIT University	P	Dehradun	117.0	119.7	92.3	135.0	100.9	564.8
52	52	Walchand College Of Engg.	P	Sangli	111.7	123.9	99.7	134.5	90.9	564.6
53	54	Galgotias College Of Engg.	P	Noida	126.2	110.6	97.5	133.2	96.1	563.4
54	53	Sri Sairam Engg College	P	Chennai	114.4	129.1	91.0	138.5	89.6	562.5
55	Ngp	Sri Jayachamarajendra College of Engg	G	Mysuru	102.0	123.9	99.0	134.9	102.2	561.9
56	Ngp	Sanjivani Rural Education Society's College Of Engg	P	Ahmednagar	116.0	124.3	107.1	136.1	77.8	561.4
57	69	Cummins College of Engg for Women	P	Pune	122.0	126.4	90.1	124.8	96.4	559.6
58	68	Shri Ramdeobaba Coll. Of Engg.	P	Nagpur	115.4	123.9	101.0	129.8	89.0	559.3
59	56	SDM College Of Engg.	P	Dharwad	129.0	128.7	106.7	110.6	83.8	558.7
60	60	Sir M Visvesvaraya Inst. of Tech.	P	Bangalore	123.5	104.6	103.6	125.8	101.1	558.5
61	67	M V J College Of Engg.	P	Bangalore	122.5	111.8	80.3	156.0	87.7	558.3
62	62	Army Inst. Of Tech.	P	Pune	107.0	111.6	98.3	140.7	100.5	557.8
63	Ngp	Rajagiri School Of Engg. & Tech.	P	Ernakulam	115.0	113.0	103.5	135.9	89.7	556.8
64	Ngp	The Northcap Univ.	P	Gurgaon	110.9	132.6	77.6	129.9	105.5	556.6
65	55	Muffakham Jah College Of Engg.	P	Hyderabad	111.9	121.1	96.9	128.3	92.1	556.4
66	64	National Inst. Of Science & Tech.	P	Berhampur	110.9	121.2	92.8	140.0	91.2	556.1
67	58	Indraprastha Inst. Of IT.	G	New Delhi	109.0	114.7	96.9	149.2	85.6	555.5
68	63	SCMS School Of Engg. & Tech.	P	Ernakulam	105.9	116.4	92.2	137.3	103.6	555.4
69	70	Lakshmi Narain College Of Tech.	P	Bhopal	104.0	148.9	91.0	140.2	70.5	554.6
70	81	Sikkim Manipal Inst. Of Tech.	P	Sikkim	112.9	107.4	94.7	138.7	100.9	554.6
71	75	JSS Academy Of Tech. Education	P	Bengaluru	122.0	117.4	95.0	128.4	91.2	553.9
72	76	Amity School Of Engg.	P	Noida	115.6	109.4	95.7	123.4	108.0	552.0
73	73	Maharashtra Inst. of Tech.	P	Aurangabad	120.0	103.5	98.6	131.0	94.9	551.8
74	72	D.Y.Patil College of Engg.	P	Pune	121.0	109.7	107.5	107.3	106.3	551.8
75	78	JMS Engg. College	P	Ghaziabad	110.0	111.6	102.8	125.2	101.5	551.0
76	Ngp	JIS College Of Engg.	P	West Bengal	126.1	126.4	79.7	100.5	115.8	548.4
77	78	SS College of Engg.	P	Bangalore	110.0	109.1	100.3	133.7	95.2	548.3
78	77	GL Bajaj Inst. Of Tech.	P	Noida	105.0	109.4	96.6	133.2	104.0	548.3
79	74	Jaipur Engg. College And Res. Center	P	Jaipur	105.5	107.7	112.0	119.1	102.7	547.8
80	Ngp	J.B. Inst. Of Tech.	P	Dehradun	115.6	118.6	79.0	145.6	97.2	547.0
81	79	P.E.S College Of Engg.	G	Mandya	111.8	104.7	105.7	146.1	78.7	546.9
82	Ngp	SSN College Of Engg.	P	Kalavakkam	99.0	100.9	99.4	132.8	112.8	545.0
83	Ngp	Kongu Engg. College	P	Erode	104.0	114.7	118.3	124.9	83.1	545.0
84	Ngp	Sona College Of Tech.	P	Salem	103.0	119.6	119.8	111.5	89.6	543.5
85	Ngp	R.M.K. Engg. College	P	Kavaraipettai	114.2	103.2	97.2	125.0	99.5	539.0
86	Ngp	S.A. Engg. College	P	Chennai	105.3	111.8	101.4	136.4	83.6	538.4
87	80	Asia Pacific Inst. of IT	P	Panipat	112.7	104.6	81.8	140.7	94.9	534.5
88	85	Univ. Inst. Of Engg & Tech.	P	Chandigarh	110.1	121.9	104.9	136.0	58.9	531.8
89	Ngp	Vethech High Tech Engg. College	P	Chennai	132.4	116.6	112.6	113.2	56.3	531.1
90	Ngp	CVR College Of Engg.	P	Hyderabad	110.1	121.6	84.7	132.4	80.4	529.3
91	87	Kuppam Engg. College	P	Kuppam	107.0	102.0	83.2	146.6	90.3	529.1
92	Ngp	KLS Gogte Inst. Of Tech.	P	Belagavi	85.0	119.2	84.6	130.8	95.1	514.7
93	94	Malla Reddy College of Engg. & Tech.	P	Secunderabad	108.7	101.2	111.7	122.3	70.7	514.7
94	88	BRACT'S Vishwakarma Inst. of IT.	P	Pune	119.0	103.8	86.8	111.6	95.1	514.2
95	90	IES College Of Tech.	P	Bhopal	100.0	116.7	87.2	134.3	75.6	513.8
96	92	Vishwakarma Inst. of Tech.	P	Pune	105.0	100.1	103.4	108.7	95.5	512.6
97	Ngp	Inst. of Engg. & Tech. J.K.Lakshmipat Univ.	P	Jaipur	80.0	122.1	112.1	146.1	56.8	512.0
98	99	Shri Shankaracharya Tech. Campus	P	Bhilai	97.5	109.8	86.0	126.0	92.7	511.9
99	84	Madhav Inst.of Tech.	G	Gwalior	110.3	100.9	107.0	116.9	56.6	511.6
100	93	Sathyabama Univ.	P	Chennai	99.8	106.1	119.0	126.7	58.1	509.8

marked as private; 3. It may be noted that the arithmetical total of the figures may not match with the total figure due to rounding-off. 5. NR: Not Ranked. NP: Did not participate

R.A. CHANDROO

TOP 10 RoI IN GOVT ENGINEERING COLLEGES

Rank	Name of the institute	City	Average salary (in Rs lakh)	Fee in ₹ lakh	RoI
1	B.I.T Sindri	Dhanbad	3.9	0.4	10.3
2	IIT	Kharagpur	12.0	2.0	6.0
3	Netaji Subhas Institute Of Technology	Delhi	10.0	1.7	5.8
4	IIT Bombay	Mumbai	11.0	2.0	5.5
5	IIT	Kanpur	10.0	2.0	5.0
6	NIT Trichy	Tiruchirappalli	6.6	1.4	4.7
7	VNIT	Nagpur	5.7	1.4	4.1
8	IIT	Guwahati	11.0	3.6	3.0
9	IIT Madras	Chennai	10.2	3.6	2.8
10	IIT	Delhi	10.0	3.6	2.8

RoI is calculated for those govt institutes which are in the top 100

TOP 10 RoI IN PVT ENGINEERING COLLEGES

Rank	Name of the institute	City	Average salary (in Rs lakh)	Fee in ₹ lakh	RoI
1	PSG College of Technology	Coimbatore	4.6	0.9	5.4
2	BMS College of Engg	Bangalore	4.5	0.9	4.9
3	Sir M Visvesvaraya Inst of Technology	Bangalore	5.5	1.3	4.2
4	BITS	Pilani	8.7	2.2	4.0
5	College of Engineering Guindy	Chennai	3.6	0.9	3.8
6	BVU College of Engineering	Pune	6.2	1.8	3.7
7	MIT College of Engineering	Pune	3.2	1.0	3.5
8	PES College of Engineering	Mandya	2.5	0.8	3.3
9	BMS Inst of Technology & Management	Bangalore	4.3	1.3	3.3
10	Army Institute of Technology	Pune	9.0	3.6	2.5

RoI has been calculated for those pvt institutes which are in the top 100

TOP 10 STUDENT/FACULTY RATIO

Rank	Name of the institute	City	Student-faculty ratio
1	Kuppam Engineering College	Kuppam	0.82
2	IIT	Kanpur	2.62
3	IIT Bombay	Mumbai	4.69
4	IIT Madras	Chennai	6.08
5	IIT	Delhi	7.21
6	SVKM's NMIMS	Mumbai	8.36
7	BIT Mesra	Ranchi	10.45
8	MIT College of Engineering	Pune	11.05
9	IIT	Hyderabad	11.38
10	College Of Engineering	Pune	12.09

TOP 10 IN ACADEMIC EXCELLENCE

Rank	Name of the institute	City	Score (250)	Infrastructure (100)
1	IIT	Kanpur	196.4	910.9
2	IIT	Delhi	196.1	938.8
3	IIT, Madras	Chennai	193.1	912.8
4	IIT	Kharagpur	192.2	919.9
5	IIT, Bombay	Mumbai	188.1	919.3
6	IIT*	Guwahati	185.8	838.7
7	BITS	Pilani	181.6	872.4
8	ISM	Dhanbad	178.8	884.0
9	NIT, Trichy*	Tiruchirappalli	171.5	702.1
10	NIT, Surathkal	Mangalore	169.7	804.1

The ratio has been calculated based on the data provided by the top 100 institutes. The total number of students in BTech/BE courses has been arrived at by multiplying the total intake capacity by four. The above table is based on data provided by institutes to the objective questionnaire.

TOP 10 IN SELECTION PROCESS

Rank	Name of the Institute	City	Score (371)	Total score (1,000)
1	IIT	Kharagpur	234.0	919.0
2	IIT	Delhi	232.0	958.8
3	IIT, Bombay	Mumbai	230.0	919.3
4	IIT, Madras	Chennai	208.0	912.8
5	IIT	Kanpur	208.0	910.9
6	College Of Engineering, Guindy	Chennai	207.8	732.0
7	NIT*	Warangal	185.0	764.2
8	BITS	Pilani	184.0	872.4
9	NIT, Trichy*	Tiruchirappalli	162.1	804.1
10	IIT*	Guwahati	179.1	838.7

TOP 10 IN PLACEMENT

Rank	Name of the Institute	City	Score (198)	Total score (1,000)
1	IIT	Delhi	174.0	958.8
2	BITS	Pilani	165.7	872.4
3	IIT, Bombay	Mumbai	161.7	919.3
4	IIT	Kanpur	161.5	910.9
5	IIT	Kharagpur	159.3	919.0
6	IIT, Madras	Chennai	159.0	912.8
7	NSIT*	Delhi	154.4	758.2
8	DTU	Delhi	153.0	717.7
9	IIT*	Guwahati	147.2	838.7
10	NIT, Surathkal	Mangalore	146.1	803.5

TOP 10 INDUSTRY INTERFACE

Rank	Name of the Institute	City	Score (175)	Total score (1,000)
1	IIT	Delhi	163.0	958.8
2	IIT, Bombay	Mumbai	160.0	919.3
3	IIT	Kharagpur	157.0	919.0
4	BITS	Pilani	156.6	872.4
5	IIT, Madras	Chennai	156.0	912.8
6	IIT	Kanpur	154.0	910.9
7	NIT, Trichy*	Tiruchirappalli	148.2	804.1
8	VIT University	Vellore	147.0	710.8
9	IIT*	Guwahati	145.4	838.7
10	University Institute Of Engineering	Chandigarh	132.8	698.5

TOP 10 IN INFRASTRUCTURE

Rank	Name of the Institute	City	Score (204)	Total score (1,000)
1	IIT, Bombay	Mumbai	199.6	919.3
2	IIT, Madras	Chennai	196.6	912.8
3	IIT	Kharagpur	196.5	919.0
4	IIT	Delhi	193.7	958.8
5	IIT	Kanpur	191.0	910.9
6	BITS	Pilani	184.6	872.4
7	IIT*	Guwahati	181.2	838.7
8	NIT, Surathkal	Mangalore	176.2	803.5
9	VNIT	Nagpur	168.5	686.3
10	PSG College of Technology	Coimbatore	164.4	715.0

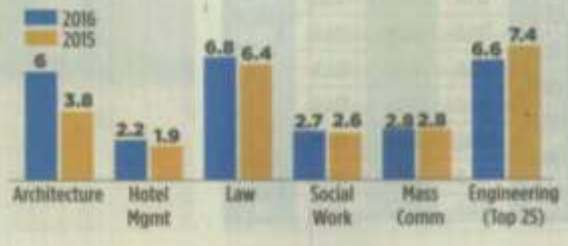
TOP 10 GOVT COLLEGES

Rank	Name of the Institute	City	Overall score
1	IIT	Delhi	958.8
2	IIT, Bombay	Mumbai	919.3
3	IIT	Kharagpur	919.0
4	IIT, Madras	Chennai	912.8
5	IIT	Kanpur	910.9
6	IIT*	Guwahati	838.7
7	NIT, Trichy*	Tiruchirappalli	804.1
8	NIT, Surathkal	Mangalore	803.5
9	NIT*	Warangal	764.2
10	NSIT*	Delhi	758.2

TOP 10 PVT COLLEGES

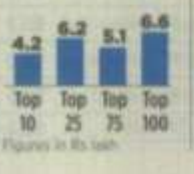
Rank	Name of the Institute	City	Overall score
1	BITS	Pilani	872.4
2	College Of Engineering, Guindy	Chennai	760.8
3	IIIT	Hyderabad	731.6
4	PSG College of Technology	Coimbatore	715.0
5	MIT	Manipal	711.7
6	VIT University	Vellore	710.8
7	BIT Mesra	Ranchi	704.6
8	University Institute Of Engineering	Chandigarh	698.5
9	Thapar University	Patiala	687.5
10	Institute Of Technology, Nirma University	Ahmedabad	650.0

Average salary (in Rs lakh per annum)



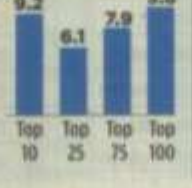
IMPORTANT FINDINGS: ENGINEERING

Average total tuition fee for entire duration of BE/BTech programme (excluding hostel)



Figures in Rs lakh

The average ratio of visiting to permanent faculty



Average student to faculty ratio