Learn, think, create

India Today Aspire speak to three IIT heads to understand what engineering students should possess to be job ready and the specialisations that are in demand.

India Today Aspire New Delhi July 18, 2019

ISSUE DATE: July 29, 2019 UPDATED: July 18, 2019 17:58 IST

Learn, think, create (Illustration by Siddhant Jumde)

Engineering graduates are more employable than MBAs according to the India Skill Report 2019. To scale the tough competition for JEE Main (Joint Entrance Examination) demands unwavering focus and dedication from engineering aspirants, and to be employable after graduating requires tenacity and smart skills. In our cover story, we speak to three IIT heads to understand what engineering students should possess to be job ready and the specialisations that are in demand. We also speak to JEE Advanced 2019 toppers to understand how to crack the exam and get an expert to talk about the key technological advancements students need to adapt themselves to if they want to stay relevant globally.

Our placement is very strong

Ratnam V Rajakumar, Director, IIT Bhubaneswar

The Indian Institute Of Technology (IIT) Bhubaneswar has created a strong environment that gives students several opportunities to excel

The National Institutional Ranking Framework (NIRF) 2019 has ranked IIT Bhubaneswar 17 among all engineering institutes in India.

What makes it unique?

In an endeavour to take the institute to the top 100 of the global class, we have been working towards creating an outstanding college where international education methods are adopted, and a strong student centric system that fosters independent thinking and academic culture.

What initiatives have been taken by you in the last two years?

There is no shortcut to success. Any institute aspiring to be amongst the elite engineering institutes of the world needs to recruit the best of faculty and adopt global standards. We at IIT Bhubaneswar have recruited international faculty so that students get to learn from the experts and also are get exposed to global practices. In the last three years, we have recruited five such faculty members for a period of more than six months.

Are new age courses offered at IIT Bhubaneswar?

Yes. The M Tech programme in computer science that started two years back is unique to IIT Bhubaneswar and offers cyber security and forensics studies. Final year B Tech students can also register for the individual courses that are part of this M Tech programme. These are in the form of electives and they can sub-specialise in cyber security and forensic science, artificial and machine intelligence, data science, and software engineering.

Is there a shift in the nature of companies registering for campus recruitment?

The eagerness to join core jobs among the students has gone up over time. At IIT Bhubaneswar, the percentage of students taking up such job profiles stands between 75 per cent and 80 per cent. The last placement session recorded a significant rise in placement percentage, highest and average salaries, and in the number of companies visiting the campus. The average salary package has been `11.44 lakh per annum and the percentage for undergraduate placements has been more than 90 per cent. A total of 55 companies visited the campus for recruitment this year. Companies such as Microsoft, Goldman Sachs, Amazon, Airbus, Mahindra, GE, TCS, Wipro, Honeywell, Tata Steel and public sector units such as ISRO, IOCL and NCCBM have participated this year.

By Harshita Das

"There is constant learning happening at IIT Kharagpur"

Partha Pratim Chakrabarti, Former Director, IIT Kharagpur

Being the first Indian Institute Of Technology (IIT) to be set up in the country is not the only factor that sets IIT Kharagpur apart. Mentorship, inculcating future skills and nurturing talent gives it an edge.

What makes IIT Kharagpur, the first IIT to be established, unique?

Academics at IIT Kharagpur conform to the system followed by all other IITs, but students earn a vantage point here. It is the availability of micro-specialisation and micro-credit courses that helps them to pursue multidisciplinary studies. So, students who join the department of chemistry can opt for courses in the department of computer science and engineering and earn a microspecialisation along with the regular B Tech degree. This helps them to pursue further studies in streams that are in demand such as artificial intelligence, Internet of Things (IoT), intelligent systems in transportation, and manufacturing. Similarly, students can opt for microcredit courses to expand their domain expertise.

What measures have been taken by you in the field of research?

To encourage and nurture the spirit of research and innovation among undergraduate students early on, we are set to launch the first-of-its-kind undergraduate research programme (UGRP) from the upcoming autumn semester of 2019-20. We have also set up the Centre for Artificial

Intelligence and Centre for Re-water Research on campus. Does IIT Kharagpur offer special courses, which are not at other IITs?

IIT Kharagpur has a few unique departments such as architecture (which is only at IIT Roorkee), agricultural and food engineering, and mining engineering (which are available in one or two other IITs). In terms of courses, we have unique offerings such as financial engineering, business analytics, artificial intelligence and machine learning, entrepreneurship engineering, energy engineering, environmental engineering, quality and reliability, science of happiness and intellectual property law.

Are there plans for expansion in the pipeline ?

We at IIT Kharagpur have been setting up several centres of excellence to promote advanced research and product development to meet India's developmental needs both in short-term and long-term. The 400-bed super speciality hospital is underway and the MBBS programme will be launched soon.

By Harshita Das

"Learn without worrying about its applicability"

Bhaskar Ramamurthi Director, IIT Madras

Engineering might be the most coveted degree, but it requires a lot of hard work, readiness to learn and a desire to innovate.

Engineering has the biggest job market with the information technology sector being the biggest employer. There are specialisations in engineering, the circuit branches, such as computer science (CS), electronics and communications engineering (ECE), electrical engineering (EE), and mechanical engineering (ME), which are always in demand.

Do IITs often look at changing their curriculum?
Yes. The IITs revise the curricula regularly to keep pace with the changing times. Apart from major decadal revamps, new courses are introduced every semester as new areas emerge. Two recent examples are artificial intelligence and additive manufacturing.

What's most in demand at IIT Madras?
As with all IITs, computer science and electrical engineering are the most popular courses at IIT Madras. It is primarily because of the perception that the highest-paying jobs and the most exciting developments are happening in these fields.

Do soft skills make good engineers?
Soft skills are needed by all and not only those training to be engineers. In the past, one learnt these in their extended home and social environment. How to deal with people, how to work as a team, how to get the best out of everyone, how to express oneself so as to be clearly understood. and in particular, not be misunderstood, are the skills that make a huge difference.

What are the top trends in the space of engineering studies?
As automation increases, routine jobs will begin to disappear in all fields, including engineering. Those who can use their knowledge and experience to address new situations, problems, and challenges will be highly sought. Knowledge of fundamentals and how to apply them to address a problem will be much more important than mere knowledge of information. Artificial intelligence techniques will be an important aid in this process.

Is research and development key while studying for engineering?
While studying for a degree, courses taught by the faculty who also carry out research and development, are generally superior to those taught by teachers who are not doing this. Students can also explore whether they are cut out for research by taking up small projects under the supervision of such faculty. At IIT Madras, the faculty is engaged in serious research, and it is safe to assume that state-of-the-art research is being carried out in all topics taught.

Can you give some advice to those aspiring to be engineers?
This tip is not unique to engineering but for every other stream. The years from 18 to 25 are the best learning years. Throw yourself wholeheartedly into whatever you are learning without worrying about its applicability. The most important learning will be the ability to learn during one's entire lifetime.

By Shelly Anand