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Yes	42%
No	35%
Can't say	23%

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The dynamic nature of the technology sector means that the hiring trends in this field too are constantly changing. And with a view to meet the varying demands of the employment market, where a postgraduate degree can help job seekers distinguish themselves, institutions too are now offering a range of programmes in IT and related disciplines, such as ME computer science and engineering, MTech IT and MSc IT. Experts throw light on the different propositions.

S SADAGOPAN
>> Director, IIT Bangalore

■ The IT industry is evolving rapidly. In the next five years, an undergraduate degree in computer science, IT or information systems will be increasingly commoditised. Against this backdrop, an MTech degree provides the much-needed differentiation. An analogy can help. How many of us will consult a doctor with an MBBS degree when we have the choice to visit one with an MD? The same will happen in IT in the next few years.

The question then arises: how should one pick a suitable programme? Different universities use different tags for the qualifications they offer. One should go beyond the tags and look into the course content. While according to some institutes, IT is inclusive – computer science, data science, software engineering, communication engineering, electronics and IT and society, others view IT only as computing and communications engineering infrastructure. The MSc IT programme, in many cases, is a post-BSc programme while the MTech IT is a post-BTech programme. A lot depends on the institute and the content of the programme, which in turn is decided by the quality of the faculty and research facilities. Starting salaries differ substantially.

V RAMACHANDRAN
>> Director, NIT Nagaland

■ IT witnesses new developments every day. A postgraduate degree in IT is essential, with proper objectives and outcomes. While a computer scientist's job is to bring out new core concepts in terms of hardware and software, an information technologist is supposed to develop various systems using the con-



WHAT LIES WITHIN?

Students can opt for a postgraduate course in information technology, keeping its contents, objectives and desired outcomes in mind, suggest experts

cepts. For example, a computer scientist would come up with innovations in virtualisation techniques and enhance associated algorithms. Creating different applications based on these innovations and proper use of these techniques are in the hands of information technologists. Browser engineering is a computer science subject, while developing browser-based client applications falls under IT. The idea of

A KANNAN
>> Professor and head, department of information science and technology, Anna University

■ A student learns fundamental concepts in an undergraduate degree. For example, in a database management system (DBMS) course, he learns about the use of databases and architecture, query languages, query processing, transaction processing and storage models for data storage. This knowledge is sufficient to use an existing DBMS. However, an MTech-level course includes the mathematical concepts involved in the design of query languages. This will enable the learner to carry out research in this area and develop a system. In addition, the student learns about advanced models which have recently been developed. In the undergraduate programme, the project work is one among the subjects and is not full-time whereas in the ME/MTech, its duration is one year. The student learns to analyse a problem and solve it independently. S/he publishes a research paper at the end of the ME/MTech project. At the postgraduate level, s/he is taught to apply the fundamentals and design networks, security systems and new algorithms. All these require maturity. Textbook-level knowledge is sufficient for BE/ BTech students. An ME/MTech programme, on the other hand, involves research-paper-level knowledge.

The ME computer science and engineering focuses on computing techniques, data structures and algorithms, design of operating systems, system software and compilers whereas the MTech IT requires computing fundamentals. The latter focuses more on communication, software engineering and web technology. Recently, the MTech IT curriculum has begun to stress on big data analytics, multimedia communications, multimedia databases and web application development.

The MSc IT is considered equivalent to BE/BTech-level undergraduate courses in computer science and engineering/ information technology. Consisting of fewer subjects and credits, it focuses on application development rather than system programming and deeper mathematical analysis.

The salaries of ME computer science and engineering and MTech IT candidates are equivalent but they are higher than those of MSc IT graduates.

Demand-supply dynamics

Pankaj Jalote, director, IIT-Delhi, on the shortfall of PhDs in IT and computer science

While the software industry continues to be a major employer of engineering graduates in the country, opportunities in R&D are also growing rapidly, presenting newer avenues for students who wish to study IT. Many multinationals have opened their R&D centres, in addition to their regular development centres. Major Indian companies, having joined the multi-billion-dollar-revenue league, have also started investing in research, as they realise that to go up the value chain, they must invest in innovation and research.

In the current scenario, the demand for PhDs, which form the research manpower, far outstrips the supply. Industry R&D centres have the capacity to consume 100 PhDs each year, as well as research universities like the IITs, NITs, IIITs, etc, and can easily take in another 100 per year. However, in addition to the industry, there is the huge demand for them from engineering colleges and universities.

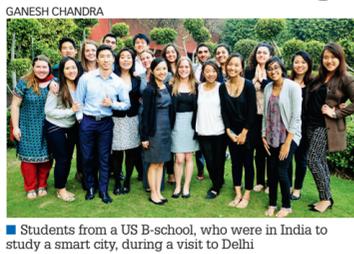
The survey by Association for Computing Machinery (ACM) India titled 'ACM survey on PhD production in Computer Science and Information Technology', indicates that just about 150 PhDs are produced in India. With some of them already engaged in teaching jobs, many whose PhD is of average quality are likely to follow the same route. Of the good quality PhDs, many opt for post-doctoral studies abroad, shrinking the available pool of worthy PhDs for R&D labs and research institutes.

With the mismatch in demand and supply, a compensation package for PhDs in multinationals is only poised to go northwards.

(The author led the ACM India study)

>> For the complete story, visit 'Expert Eye' at www.educationtimes.com

Building a smart city



Students from a US B-school, who were in India to study a smart city, during a visit to Delhi

Aaditi Isaac
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Eighteen undergraduates from Haas School of Business, University of California Berkeley, were in India to study the Gujarat International Finance Tec (GIIFT) City, which is being built as India's first smart city. The students are studying smart cities as part of a course on 'building smart cities, leveraging open innovation.'

As part of the visit, students were divided into four groups and asked to chalk out a framework to build a smart city in the US. They will engage with the city mayor's office

decisions, and improve the quality of life."

A key lesson for the participants was about the way resources are utilised. Isabelle Lee, a student visiting India for the first time, said that she knew nothing about the culture and people of the country. "After coming here, I am learning about open innovation, frugal innovation. This has broadened my view about innovations. I have learnt that not one size fits all in terms of defining what a smart city is. In India, where there is a struggle to access basic facilities, a smart city would have different meanings. The idea of 100 smart cities across India is inspiring," she explained.

"We chose Gujarat to learn about GIIFT City because it is the vision of India's Prime Minister to create 100 hi-tech cities across India," says Solomon N Darwin, executive director, Centre for Corporate Innovation, Haas School of Business, who was accompanying the students during their Delhi visit.

"Whatever he has done in Gujarat, we can learn from both the successes and failures."

>> For the complete story, click on 'US' under 'Study Abroad' at www.educationtimes.com

SUBJECT WISE

YOUNGACHIEVER

A SAFETY APP

Jyotsna Kalra, a third-year law student from Delhi, on her innovation that has won recognition

International India at the Telenor Youth Summit held in Oslo in December 2014 after winning the 'Internet for All' challenge. The challenge entailed presenting ideas for the betterment of society using the internet and digital technology, with the grand prize being an all-expenses paid trip to the summit in Oslo, Norway, which coincides with the Nobel Peace Prize ceremony. Over 600 applications were screened and after multiple rounds of elimination, seven were selected for the finale held in Delhi in October 2014.

The winners were chosen on the basis of the potential of the idea, ease of commercial viability to ensure self-sustainability and the prominence of participants' oratory and presentation skill in creatively articulating their ideas.

My presentation focussed on a mobile app addressing the issue of harassment and abuse – verbal and physical – of women in public places. The app is called 'Safecity – Stay Safe Mobile App.' It allows people to report cases of harassment, mark out potential hotspots prone to crime, send out alerts, give tips and receive interactive information. Ignoring harassment faced by women only emboldens the perpetrators. Moreover, less re-

AUTO CONTEST

Global automotive supplier Valeo is inviting students and young engineers worldwide to create the equipment that will make cars more intelligent and intuitive by 2030. Comprising teams of two to five people, engineering students can take part by presenting a relevant, innovative project in English. The winning team will receive a grant of 100,000 euros. Entries must be submitted by February 2, 2015. More at valeo.com

CHALLENGE

Students on graduate or postgraduate programmes (Master's level or higher) in any field of study can apply for the St. Gallen Symposium essay, video or multimedia presentation competition by February 1, 2015. They need to answer one of the three given questions from their perspective on the topic 'Proudly Small' to prove themselves as leaders of tomorrow. A hundred best entries qualify for expenses-covered participation in the symposium in Switzerland. Three winners are going to share 20,000 euros in prize money. For details, visit www.symposium.org



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Options abound

Here are a few short-term courses that students can pursue to make a career in IT

By Pratibha Jain

Each course may be pursued at the beginner's level and depending on students' interest and ability to grasp the concepts, they can progress to higher levels.

Here are a few courses students can consider.

COMPUTER LANGUAGES

Almost all computer training institutes offer courses in computer languages starting with C, C++, C sharp, Java and Oracle. Certificate programmes in Java and Oracle, following internationally recognised curricula, complete with online exams.

ANDROID APPS

The mobile apps programme is meant for those who understand Java programming. Android, backed by Google Inc, is a growing open source mobile device platform, which is powered by the Linux operating system. Students are trained to develop frameworks using C++/ Java and XML. The programme includes working with graphics, multimedia connectivity and location-based services. In addition, learners are taught to debug, deploy and test mobile applications.

ADVANCED IT TRAINING

This course blends skills that include core IT and cloud technology. Students learn about several aspects like business system infor-

mation management, infrastructure management system and software engineering that helps develop programming skills. The CDM programme in digital marketing covers topics like paid and unpaid use of social sites as marketing tools.

WINDOWS STORE APPS

With more users wanting to access their applications from a variety of devices, Microsoft introduced Windows 8, which allows developers to build Windows Store apps using C#, helping students learn to leverage a common platform to link all devices.

NETWORK SECURITY

CISCO offers internationally recognised certifications. There are many certificate

programmes, focusing on areas related to networking knowledge in technologies such as security, data centre or video. The Industrial Networking Specialist has modules dealing with setting up internal and external communicating systems. The cyber security certification is gaining importance with the rising number of hacking incidents.

DATA ANALYTICS

The SAP certification is one of the most valued specialisations since it has comprehensive programmes on IT applications for business.

(The author is an education consultant)

>> For the complete story, click on 'Short Term Courses' at www.educationtimes.com