

# COMPUTING BACHELORS AND MASTER'S DEGREE IN CENTRAL UNIVERSITIES OF INDIA: A STUDY

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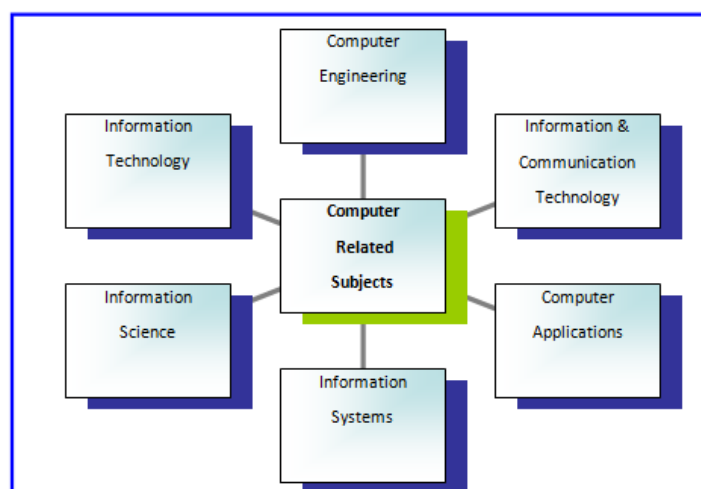
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## ABSTRACT

*Universities are the apex institute for teaching, learning and research activities; in each and every country so many universities are established by several ways and mean. Central Universities are those; which are normally established and managed by the concerned central Government. Central Universities are offered so many courses regardless of thinking of profitability and others. Responsibility to the society and faith are main reason for that. There are so many courses offered by the Central Universities; but this paper is talks about Computing and related programmes offering in Indian Central Universities. Paper is highlights the common and available programme including find out missing courses in Central Universities and requirement of Central Universities regarding computing and allied degrees in this age, briefly.*

**Keywords:** Computer, Computing, Information Science, Education, Degree Programme, Academics, Universities, Educational Programme, Information Technology, Academic Study

## INTRODUCTION



**Fig: 1.** Availability of Computer related programmes in India

Computing is treated as the most important subject for the last few decades. Computing Programmes are comes with so many nomenclature and responsible for modernizing entire electronic and digitalization process of modern world. Computer Science and Engineering is the most apex programme in computing mainly offered in the Engineering and Technological colleges in India. Computing programme fundamentally deals with algorithm, design and development of microprocessor, software systems, computer architecture and some other aspects; computing is available with so many nomenclatures such as computing, computer science, computer technology, software engineering, information technology, information science and so on [05, 06, 09]. Out of these subjects Indian Central Universities offers some of the programme with Bachelors and Masters Degree. Out of 42 central universities almost 90% Central Universities offers degrees related with computing programme any how.

## OBJECTIVE

The main aim and objective of this paper is includes; but not limited to as follows:-

- To know about advance computing and its basic facets;
- To know about the Computer Science and related areas and knowledge domain;
- To learn the basic differences between Computer Science and other related domain ;
- To learn about the university education systems in India, including types and establishment about central universities;
- To know about central Universities in India including nature and other higher educational institute and their types;
- To find out computing related courses availability in India emphasizing courses offered by central universities;
- To find out the main strengths, weaknesses, opportunities and threats of computer science education in India particularly in the central

## Fundamental Knowledge

Before reaching and discuss about advance and other core details of the paper, lets talk about some fundamentals:-

**Computing-** Computing is the Study as well as aspects of Computers and computing logic like Software Systems, Hardware Systems, tools, Technologies, algorithms, logic and mathematics.

**Universities-** Universities are the apex and highest educational and research institute conducts educational and research programmes and activities [10, 12];

**Central Universities-** Central Universities are established and managed by the central Government of the concerned Country. In India, Central Universities are established by the Ministry of Parliament by the Act. Central Universities, in India managed and funded by the Central Government and president is the main Chancellor of all Central Universities as per act;

**Bachelor and Masters Degree-** Almost all the universities around the world offers so many educational programme like Certificate, Diploma, Advance Diploma, Associateship, Bachelor, Masters Degree and treated as most advanced and credit based long term and skilled programme. Normally in India, Bachelor Degrees are comes with BA/BSc/BCom/BHMS/BCA/LLB and so many nomenclature and Masters Degree are also comes with MA/MSc/MCom and so on. Commonly in India, Bachelors Degrees are 3 Years' and Masters are deals with 2 Years' duration [02, 03, 18].

## **Computing, Computer Science, Information Technology, Computer Applications and other Domain**

In India, Computing nomenclature is not common in Central Universities; however **Computing** Programme are deals with both software and hardware; but rather than algorithm and process based work it deals with application related job and activities. **Computer Science** is the Science which is deals with Computer and Computer Logic, tools, technologies, algorithms, mathematics related domain for computing programming and hardware designing and development. **Computer Application** programmes are most common in Indian Universities, come with BCA/MCA nomenclature and mainly emphasizes on computing application and software utilization in various domain, field and sector. **Computer Science and Engineering [CSE]** Programmes are Engineering Programme and comes with BTech Degree with 4 Year's duration and MTech with 2 Year duration. This programme software application and programming along with hardware designing and development. **Information Technology** is the big domain and mainly combines with so many gradients such as Networking Technology, Communication Technology, Web Technology, Multimedia Technology, and Database Technology and so on for Information Processing and Management. **Computer and Information Science [CIS]** is another programme and practically combination of Information Science and Computer Science subject. **Information Science** is an interdisciplinary domain closely related with computing and IT; in India and only 6-7 institutes are offered this programme but not a single Central Universities for this programme[08, 15, 25].

## **Central Universities and Bachelor Degree**

Bachelor Degree is comes with so many nomenclature in Computing and related domain; such as Bachelor of Computer Application [BCA], BSc-IT, BSc-Computer Science, BTech-Computer Science, BTech-IT. However, as far as this study is concerned only some of the nomenclatures are offered in Central Universities. As far as this study is concerned, only 13 are offers Computing related Bachelor Degree programme and out of which a are offered BCA degree. Though, only one University i.e. AMU offers BSc-Computer Science programme. And another 8 Central Universities offers BTech Programmes of 4 Year's duration. Though out of these programme, only BTech and MTech need approval of AICTE, New Delhi. Other programme like- BCA and BSc are comes with 3 Years duration. No Central Universities offers any specialization of BTech Degree as far as this study is concerned. The following list would be helpful to know further about programme offering in Central Universities ; which are deals with Computing domain.

Sl.	Universities	Computer Science programmes
1.	Rajiv Gandhi University	BCA
2.	Assam University	BTech-IT
3.	Guru Ghasidas Vishwavidyalaya	BTech-ITE
4.	Jamia Millia Islamia	BTech – CSE
5.	Indira Gandhi National Open University	BCA
6.	The Indira Gandhi National Tribal University	BCA
7.	North Eastern Hill University	BTech-CSE/ BTech-IT
8.	Mizoram University	BTech- CSE,BTech-IT
9.	Nagaland University	BTech-IT/CSE
10.	Tripura University	BCA/
11	Aligarh Muslim University	BSc-CS/BTech-CSE
12	Banaras Hindu University	BTech -CSE
13.	Hemwati Nandan Bahuguna Garhwal University	BTech-CSE

### Central Universities and Masters Programmes

Most of the Master's Degree in Indian Universities are deals with Two Years duration. Common and popular Master's Degree in Indian Central Universities are includes MSc-Computer Science, MSc-Information Technology, MCA, MSc-Software Engineering, MSc-Computer Technology and in Engineering platform common Masters Degrees are MTech-Information Technology, MTech-Computer Science and Engineering. However, some Central Universities offered specialized computing programme such as, in University of Hyderabad offers MTech-Artificial Intelligence, In JNU, New Delhi Computing degree is comes with Systems Biology. Indian Central Universities, offered Computing Master's Degree in higher numbers than Bachelor's Degree. Total numbers of Central Universities offered Masters Programme in Computing are 28 out of 42 Central Universities [09]. The MCA programme comes with 3 Years duration; and as like MTech it also come under the preview of AICTE, New Delhi and total 13 Central Universities offer this programme with job possibilities and placement opportunities. While MSc-IT/CS no need come under AICTE and offered in 14 Institute. MTech- IT/CS is offers only in 9 Central Universities out of 42. It is important to note that, in the age of specialization only Two Central Universities offers specialized MTech Programme.

Sl.	Universities	Computer Science programmes
1.	University of Hyderabad	MCA/MTech-CSE/ MTech-AI
2.	Maulana Azad National Urdu University	MSc-IT,MCA,PGDIT
3.	Rajiv Gandhi University	MTech-CSE
4.	Assam University	MSc-CS,PhD-CS,MSc-integrated,MTech-IT
5.	Tezpur University	MCA/MS (By Research)/ MTech-IT
6.	Central University of Bihar	MSc-CS,MTech-CSE/MSc-Bio Info
7.	Guru Ghasidas Vishwavidyalaya	MSc-IT/MCA/MSc-integrated/M.Tech-CSE

8.	University of Delhi	MCA,MSc-CS
9.	Jawaharlal Nehru University	MCA,MTech-CSE,MTech Computing & System Biology
10.	Indira Gandhi National Open University	MCA
11.	Central University of Himachal Pradesh	MSc-IT
12.	Central University of Kashmir	MSc-IT
13.	Central University of Jammu	MSc-CS
14.	Central University of Karnataka	MCA/MSc-Geography(GIS)
15.	Central University of Kerala	MSc-CS
16.	Dr. Harisingh Gour Vishwavidyalaya	MCA
17.	Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya	MA/PhD-Computational Linguistics/MILE
18.	Manipur University	MCA
19.	Pondicherry University	MSc-CS, Integrated MSc-CS
20.	Central University of Punjab	MTech-CSE
21.	Central University of Rajasthan	MSc-CS/MTech-CS
22.	Sikkim University	MSc-CS
23.	Tripura University	BCA/MCA/MTech-CSE
24.	Banaras Hindu University	MTech-CSE
25.	University of Allahabad	MSc-CS
26.	Hemwati Nandan Bahuguna Garhwal University	MCA
27.	Visva Bharati University	MCA

## FINDINGS

- Total 7 Central Universities are offered BTech-IT/CS Degree and none of these comes with any specialization;
- Only 3 Central Universities have offered PG Diploma in Computing related programmes; these are University of Delhi; Delhi, IHNOU; Delhi, MANUU; Andhra Pradesh;

Universities/ Higher Educational Institutions	In Numbers	Location
Central Universities	44	Pan India with 28 States and UT
State Universities	304	Pan India with 28 States and UT
State Private Universities	165	Except some states and UT
Deemed Universities	130	Except some states and UT
Indian Institute of Technology [IITs]	16	Bhubaneswar, Chennai, Delhi, Gandhinagar, Guwahati, Hyderabad, Indore, Jodhpur, Kanpur, Kharagpur, Mandi, Mumbai, Patna, Ropar, Roorkee and Varanasi

Contd....

Universities/ Higher Educational Institutions	In Numbers	Location
<b>National Institute of Technology [NITs]</b>	<b>30</b>	Agartala, Allahabad, Arunachal Pradesh, Bhopal, Calicut, Delhi, Durgapur, Goa, Puducherry, Hamirpur, Jaipur, Manipur, Meghalaya, Mizoram, Nagaland, Jalandhar, Jamshedpur, Kurukshetra, Nagpur, Patna, Raipur, Rourkela, Sikkim, Silchar, Srinagar, Surat, Karnataka, Tiruchirappalli, Uttarakhand, Warangal
<b>Indian Institute of Management [IIMs]</b>	<b>13</b>	Calcutta, Ahmedabad, Bangalore, Lucknow, Kozhikode, Indore, Shillong, Rohtak, Ranchi, Raipur, Tiruchirappalli, Udaipur, Kashipur
<b>Indian Institute of Science Education and Research [IISERs]</b>	<b>05</b>	
<b>Other Central Funded Higher Educational Cum Research Institutes</b>	<b>Approximately 150+</b>	Pan India with 28 States and UT

**Fig: 4.** Showing Indian Higher Educational Institutes at a glance

- Some of the Central Universities offers Integrated MSc Programme on Computing; but the number is very minimum;
- Not a single Central Universities offered Information Science nomenclature; however UoH, Hyderabad offers one related programme i.e. Computer and Information Science at DCIS; However some state Universities offers' IS programme like WBUT, WB; BIT Mesra, Periyar University, TN and some others[12];
- Only one Central Universities offers MS By Research programme i.e. Tezpur University, Assam.

### SUGGESTION

- This is the age of specialization and thus today MNC's requires Qualified Professionals in the field of DBMS, Networking Technology, Multimedia Technology, Cloud Computing, Usability Engineering and so on; at only AI and Computational Intelligence, GIS are needed in Computing specialization in Central Universities;
- Government initiative, More MTech Degrees and number of MTech offering institute need to increase on this programme as still State and Engineering colleges bear large number of BTech/MTech programme comes under AICTE;

- Need much more industrial collaboration and affiliation with Professional and Industrial giant.

## Missing Programme

Though, people expect many things and programme from Central Universities due to their style and reputation; but as far as the study is concerned, some of the programmes we find available in Central Universities; but such programmes are available in some private universities and state universities; these are like:-

- MTech[ VLSI/ICT/Database/Multimedia/Soft Computing/ Geo Informatics/ Networking/ Cloud Computing/ Web Technology] and so on;
- BTech-CSE/IT with modern Technological and other domain focused programme such as Health Care IT/Informatics, Geographical IT and so on;
- Opportunity to avail Lateral Entry benefits in second year of MCA/MSc-IT/CS/ degrees with candidates of PGDIT/PGDCA or equivalent qualifications;
- Very minimum number of integrated programmes in the Central Universities.

## CONCLUSION

Research is one of the driving forces of the society; today we can see research programme in so many subjects and domain. As far as computing and IT degrees are concerned, it is unfortunately noticed that not a single Central Universities offers MPhil- Computing programme; however study find out handsome number of institute with PhD in Computing domain[06, 09, 14]. India is one of the largest educational institute's hub in the world with so many and versatile degrees in computing too. India is the super power for software related activities but still in Information Systems and Hardware field we stand backward than some other Western Countries; thus Indian Computing departments and academics need to initiate such programme for overall and complete development in all sectors [18, 19].

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