

# **COMPENDIUM ON JOB SEEKERS GUIDE**

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# **THE COST & MANAGEMENT ACCOUNTANT**

## **THE PROFESSION**

Cost and Management accounting is primarily a product of recent time. Scientific management has recognized it as one of the most essential management services. In the present era of cut-throat competition, where our industries have to compete with corporate giants, and when the world is gradually turning into a global village, profitability has to be maintained through decreased costs. Efficiency at all levels is required, hence the importance of costing and Management accountancy. The Success or failure of business decisions, especially in context of globalized and liberalized economy, depends on the quality of information provided to its management and analysis of vital points. The role of cost and management accountant being a trained professional in this field is of paramount importance in achieving the organization's objective and ensuring that the right managerial decisions are taken from the right cost prescriptions.

## **NATURE OF WORK**

The Scope of Cost and Works Accountant's work includes budgeting, pricing policy, forward planning, monitoring the company's performance and efficiency and guiding Managerial decisions by making financial forecasts. The job involves advice on product pricing, production planning and inventory control, product wise return on capital employed, investment proposals and preparing profit and loss reports. The services of the CWA are to facilitate sound and profitable business operations. Apart from these functions, the job involves internal audits and investigations in case the CWA's employed in large nationalized industry and business organisation. Other than above, the major part of an accountant's time is spent at the desk preparing accounts, planning, budgets etc., relating especially to the management of scarce resources like funds, land and, thereby, to apply the strategic decisions.

## **TRAITS REQUIRED**

- Cost Accountants should have academic ability
- Imagination
- Willingness to take decisions
- Numerical Ability
- Power of logical reasoning and Analytical mind
- Good judgment capacity
- Tact in dealing with clients and employers
- The ability to write and speak concisely

Dear student, do you have majority of above mentioned traits? if so, you may go ahead to prepare yourself as a Cost and Management Accountant.

### **HOW DOES ONE BECOME A COST AND MANAGEMENT ACCOUNTANT**

- To be a qualified Cost and Management Accountant you have to pass the examinations conducted by the Institute of Costs and Works Accountants of India ( I.C.W.A.I).
- The institute is located at Kolkata (ICWAI,12,Sudden Street, Kolkata-16) and conducts Preliminary, Intermediate, and Final Cost Accountancy and Management Accountancy examinations.
- Time of Examination – ICWAI conducts foundation course examination twice a year i.e June and December.

<b>Centres of Examination:</b>	<p style="text-align: center;"><b>The examinations are held at following Centres:</b></p> <p><b>Agartala, Ahmedabad, Allahabad, Asansol, Aurangabad, Bangalore, Baroda, Bilai, Bhopal, Bhokaro, Chandigarh, Chennai, Coimbatore, Cuttack, Dehradun, Delhi, Dhanbad, Durgapur, Erankulam, Guwahati, Hyderabad, Indore, Jaipur, Jamshedpur, Jodhpur, Kanpur, Kolkata, Kota, Lucknow, Madurai, Mumbai, Mysore, Nagpur, Nasik, Neyveli, Panaji, Patna, Pune, Ranchi, Rourkela, Salem, Srinagar, Thrivananthpuram, Tiruchirapalli, Udaipur, Vijayawada &amp; Waitair.</b></p>
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### **ELIGIBILITY FOR ENROLMENT AS A STUDENT OF THE INSTITUTE.**

1. If you have passed 10+2 examination, then you have to pass a Foundation Course Examination before entry as a student for Intermediate examination.
2. Otherwise if you are above 17 years of age and completed Graduation in any Discipline, then you are eligible for direct registration for Intermediate examination.

## **FOUNDATION COURSE**

### **PROVISIONAL ADMISSION**

- If you are waiting for the result of 10+2 examination or equivalent examination then you may apply for appearing in the Foundation Course Examination.
- You should submit the pass result with in a period of three months from the date of application so that the result of Foundation

Course Examination could be released in time.

- Failure to submit the pass result within the prescribed time tantamount to (a) Cancellation of Foundation Examination result of the effected candidates and (b) Forfeiture examination fee paid.

**EXEMPTION:** All Graduates and Post- graduates and those passed in the Final examination of the Institute of Chartered Accountant of India (ICAI), Institute of Company Secretary of India ( ICSI) are exempted from passing the Foundation Examination.

**MEDIUM OF EXAMINATION:** Candidates of Foundation, Intermediate and Final Examinations are allowed to exercise option for answering questions in Hindi. Others have to use English for this purpose.

**NOTE :** Pass Percentage for Foundation Course is 40% in individual subject and 50% aggregate of four subjects.

**ESSENTIAL REQUIREMENTS:**

- (i) Coaching –Are you desirous of appearing in the foundation course examination? Well, then enroll yourself for coaching either (i) postal or (ii) oral.
- (ii) Fees – For foundation course Postal coaching: Rs 800/-  
Oral coaching : Rs 1000/- (Inclusive of cost of 4 Study note to be supplied by Headquarter)

(iii) Period for Enrolment	The candidates enrolled for undergoing postal or oral tuition for the Foundation Course Examination at least 6 months prior to the month in which such examination commences i.e. if an examination commences in December (after 15 <sup>th</sup> of Calendar year) the candidate enrolled for undergoing postal or oral coaching upto and including June 15 of that Calendar year shall be eligible.
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**SYLLABUS :** The Curriculum of the Institute is so designed that it is possible for you to learn while earning, and after passing its examinations, you are equipped with all modern tools of Management Accounting.

**SUBJECTS**

<b><i>I)Foundation course(Papers)</i></b>	<b><i>II) Intermediate Course (Papers)</i></b>	<b><i>III) Final examination (Papers)</i></b>
1. Organisation and Management Foundation 2. Financial Accounting Fundamentals	5. Cost and Management Accounting 6. Information Systems and Technology 7. Business Laws and Communication	13. Operations and Project Management and Control

3. Economics and Business Fundamentals 4. Business Mathematics and Statistics	Skills 8. Business Taxation 9. Management Accounting- Performance Management 10. Advanced Financial Accounting 11. Auditing 12. Quantitative Methods	14. Advanced Financial Management and International Finance 15. Strategic Management and Marketing 16. Strategic Tax Management 17. Management Accounting –Decision making 18. Management Accounting-Financial Strategy and Reporting. 19. Cost Audit and Management Audit 20. Valuations Management and Case Study
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### Exemption from ICWAI Foundation Course

Qualification prescribed for granting Exemption	Exemption paper
1) MBA's having specialization in finance, MCA's and persons passed DOEACC''B'' Level examination of any institution recognized By the institute.	Paper No. -6
2) MBA's, Company Secretaries and persons Having LLB qualification with 50% marks	Paper No. -7
Company Secretaries	Paper No. - 8 Paper No. -10
MBA's	Paper No. -13
MBA's with specialization in Finance	Paper No. -14
MBA's having specialization in Marketing	Paper No. -15

**PRACTICAL TRAINING:** The Cost and Works Accountants regulations prescribe a requirement of experience of 3 years in the fields of Cost and Management Accounting as a necessary condition for the admission membership after passing the final examination. Well, you can obtain training while on job.

## TRAINING WITH PRACTICING COST ACCOUNTANTS

### Objectives:

- To provide the Cost and Management accountancy function as a powerful tool of management control in all spheres of economic activities.
- To promote and develop the adoption of scientific methods in Cost and Accountancy
- To offer an opportunity to students passing the Senior Secondary examination, the stage at which they decide their career to have wider options towards their career building.
- To attract talented students to the profession at the right age having requisite aptitude to plan their future at the right age. Members in practice can give practical training. The practicing Cost and Management accountants wishing to provide training must register with the institute in the prescribed proforma.

<b><i>REGIONAL OFFICES OF THE INSTITUTE</i></b>			
<b><i>1. Western India</i></b>  Regional Council Rohit Chambers, 4 <sup>th</sup> Floor, Janmabhoomi Marg, Fort Mumbai	<b><i>2. Southern India</i></b>  Regional council 65, Montieth Lane, Egmore, Chennai 600 008.	<b><i>3. Eastern India</i></b>  Regional Council 84, Harish Mukherjee Road, ICWAI Bhawan, Kolkatta- 700025.	<b><i>4. Northern India</i></b>  Regional council 3, Institutional Area, Lodhi Road, New Delhi-110003.

## JOB PROSPECTS

- By virtue of the personal professional knowledge and experience the ICWA, also known as a 'Management Consultant', becomes a driving force in the management team when in employment and a key consultant while in self-employment.

- The field is open to professionally trained males and females.
- There is a sustained demand for qualified, trained and experienced cost accountants.
- Soon after successfully completing the course. You can apply for jobs in the field of accounts, finance, taxation, audit and costing.
- Since the Government of India has made it compulsory for as many as thirty eight class of companies to have a cost audit, this itself is, therefore, an indication of the growing importance of cost accountants. Well, dear students, the scope in this sector is hence enormous.
- A Cost and Works Accountant has numerous career options as follows:

### **A. Salaried Jobs**

- To work in Industry
- To work in reputed Public Sector Companies

### **B. Self-Employment**

- To Practice as a Cost Accountant privately

## **RELATED CAREERS**

- 1. Banking**
  - 2. Insurance**
  - 3. Management Consultancy**
  - 4. Chartered Accountancy**
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# FASHION DESIGN

## INTRODUCTION

Well, very few of you can deny the pleasure of watching a T.V. which has now-a-days become an essential part of the common/drawing or bed room of a household. Then you might have many a times had a glimpse of Fashion Shows on T.V. Programmes and got attracted towards this new attractive and glamorous area of earning your livelihood. If so, then the information made available in this pamphlet will definitely prove a guide-line for you.

Fashion has always been a centre of attraction for users as well as producers and is, therefore, now a big business. Fashion shows, the style of young people's wear, and the clothes of celebrities are all given wide coverage in print & electronic media. The fashion industry is enormous consisting of a network of designers, manufacturers, wholesale and retailers who make fashionable cloths available to consumers. This can also be seen by watching T.V. shows and especially a special channel devoted only for this attractive subject. Fashion designers learn how to design garments and are aware of all the processes that go into the assembling of a garment. They have to visualize the design and style of a garment keeping in mind the material to be used, the occasion when it will be worn, the technique of it's construction and the scale in which it is to be produced.

Fashion design may be grouped in to three categories on the basis of the material used (1) Textile or fabrics (and also fibers such as thread and wool), (2) Leather, (3) Precious (also not so precious) metals and gems and stones.

**The textile design:** Here textile is being used as main medium for designers and has, therefore, always been promoted by the Textile industry for manufacturing fashionable clothes-prints woven in to or printed on textiles. Dyeing and designing of textiles, although a part of textile technology, have a bearing on fashion design.

**The Leather design:** Leather being used as main material for many products, like garments, foot wear and accessories (e.g. leather belts, hand bags, gloves, port folios, suitcases etc), are the result of the hard work of designers. Like the textile technology, leather technology, which deals with processing & finishing of raw sides, has also a bearing on leather design.

**The Jewellery design:** The precious metal, gems, stones are being used as the base for expression by designers. Main activities of Jewellery design are Cutting, polishing and finishing of diamonds and other gems.

Apart from design, fashion education also deals with the management dimensions of fashion designs (marketing & merchandising of fashion products) and production technology.

If you are interested in this field of fashion design then before deciding to go for it you may see the availability of the following within you:-

### **TRAITS REQUIRED:**

- Designers are required to display both a high level of creative ability and technical understanding of production methods
- Fashion awareness, colour and shape sense are important
- Problem solving skills, time management and a lot of self discipline go in to the making of a fashion design.
- The ability to communicate ideas both visually and verbally
- Openness to new ideas and influences
- Interest in how cloths are made, fascination with change and development;
- Team work skills and physical stamina are essential as hours of work are fairly long and demanding and you have to work in a team against tight deadlines.

Well if now you have decided to opt for the field then following are the training institutes you may decide to groom yourself to get trained:

### **TRAINING FACILITIES:**

***NATIONAL INSTITUTE OF FASHION TECHNOLOGY (NIFT)*** Offers the following programmes at its existing seven Centres:

1) Under Graduation: 4 years duration; 2) Post Graduation: 2 years duration

- The curriculum will incorporate large doses of Management and Technology
- For the first time, students enrolling for the under-graduate course, will have to take up a common foundation programme in the first year.
- The objective is to provide an over view and orientation to the fashion industry.
- In the new curriculum, there will be two under graduate programmes in design and technology.
- In Design, students will have the option to choose from any of the four disciplines: Fashion and Apparel, Fashion and Textile, Fashion and Life Style Accessories, Fashion and Communication.
- U.G. Programme in technology has been structured to teach students the best practices in apparel manufacturing and Information Technology.

### **LIST OF STUDY CENTRES AND COURSES.**

<i>PROGRAMME</i>	<i>DISCIPLINE</i>	<i>SPECIALISATION</i>	<i>STUDY CENTRES</i>	<i>ELIGIBILITY</i>
1) Under-Graduate Programme in Design	Fashion and textile	Textile design	New Delhi, Hyderabad, Kolkata	10+2 from a recognized board of education
		Knitwear Design	New Delhi, Chennai, Kolkata, Mumbai	
	Fashion & Apparel	Fashion design	All NIFT Centres	
	Fashion and Life style accessories	Leather design <u>Accessory design</u> Personal products & interior accessories footwear & leather <u>Products</u> Jewellery & precious products. Interior products Handicraft mix media & glass	New Delhi, Kolkata New Delhi, Bangalore, Chennai, Gandhi Nagar, Hyderabad	
2) Under-Graduate Programme in Technology	Fashion & Communications Technology		New Delhi	10+2 with Physics, Chemistry, Maths from a recognized board of education
	Management		Gandhi Nagar, Chennai, Hyderabad Kolkata, Mumbai, Bangalore New Delhi, Bangalore, Hyderabad	
1) Post-Graduate programme in Management				Graduate from a recognized university OR Diploma in Accessory/Fashion design/ FIT from NIFT
2) Post-Graduate Programme in	Technology		New Delhi	BE/BTech(Textile/Apparel/Mechanical/Industrial Engg/ Production Engg/Computer/I.T I.T)

## Technology

Written test will be conducted by NIFT for entry in to the above mentioned programmes. There will be five kinds of tests in the written examination

- 1) GAT (General Aptitude Test) is an objective type paper that examines the candidates basic intelligence and Aptitude for logical thinking
- 2) CAT (The Creative Ability Test) evaluates the candidates design innovations and skills.
- 3) MAT is an objective test to asses the problem solving aptitude and environmental sensitivity of the candidate.
- 4) Situation test: That assesses a students hands-on ability with material provided to them
- 5) TAT (Thematic Apperception Test) examines a candidate's reaction to a series of images.

## RESERVATION

The seats reserved for SC/ST/PH candidates exist as per Govt of India rules.

5% of total seats in each program is supernumerary for NRI/NRI sponsored/Foreign nationals/ SAARC subject to their meeting the prescribed eligibility conditions and qualifying the entrance examination.

## WRITTEN TEST CENTRES

Bangalore, Bhubaneswar, Chandigarh, Chennai, Delhi, Gandhiagar, Guwahati, Hyderabad, Indore, Jaipur, J & K, Lucknow, Mumbai, Patna, Raipur, Ranchi, and Thiruvananthapurm

## ONE YEAR CONTINUING EDUCATION PROGRAMMES

( Part-time certificate programmes) across NIFT Centres.

All programmes are industry focused and offer a range of excellent career options in Textile/Garment/Fashion Industry.

- Fashion and Clothing Technology(FCT)
- Visual Merchandising (VM)
- Certificate in Knitwear Design (CKD)
- Certificate in Knitwear Production (CKP)

- Certificate in Textiles for Apparel & Home Fashions
- Fashion Retail Management (FRM)
- Garment Export merchandise Management (GEMM)
- Clothing Production Technology (CPT)
- Computer Application in Fashion Industry (CAFI)

## **ADDRESSES OF NIFT CENTRES**

<b>New Delhi</b>	:	NIFT Campus, Hauz Khas, Near Gulmohar Park, New Delhi-110016.
<b>Mumbai</b>	:	NIFT Campus, Plot No:15, Sector 4, Kharghar, Navi Mumbai-410210.
<b>Kolkata</b>	:	NIFT Campus, LA Block, near 16 No. water tank, sector 3, Salt Lake City, Kolkata-700098.
<b>Hyderabad</b>	:	NIFT Campus, Opp-Hightech City, Madhapur, Hyderabad-500081.
<b>Chennai</b>	:	NIFT Campus, Old Mahabalipuram Road, Taramani, Chennai-600113.
<b>Gandhi Nagar</b>	:	NIFT Campus, E/4, GIDC Electronic Estate, Sector-25, Gandhi Nagar – 382044.
<b>Bangalore</b>	:	NIFT Campus, C.A Site No 21, Sector 1, 27 <sup>th</sup> Main Road, GSR Layout, Bangalore -560034.

## OTHER INSTITUTIONS

- 1) NIFT has collaborative arrangement with the Organisation viz. NIFT-TEA Knitwear Fashion Institute (Coimbatore) established in collaboration with Tirpur Exporters Association.
- 2) NIFT-TEA Knitwear Fashion Institute, 163, TEKIG, Tea Nagar, Tirpur – 641606.
- 3) Northern India Institute of Fashion Technology (Mohali, Punjab) in collaboration with Govt. of Punjab.

### I) Apparel Design

- 4) The Apparel Training & Design Centre, D/8/2, Okhla Industrial Area, Phase-I, New Delhi-110 020

The Centre is sponsored by the Apparel Export Promotion Council, Ministry of Textiles. It has six Centres.

- i) NO18-23, Readymade Garment Complex, Thiru Vika Industrial Estate, Guindy, Chennai-600032.
- ii) D-8/2, Okhla Industrial Area, Phase-1, New Delhi-110 020.
- iii) NO.5-10-191 Hill Fort Road, Saifabad, Hyderabad-4
- iv) Plot No. 555,Gali No.6, Raja park, Jaipur-302004.
- v) 78, Temple Sheet, 11<sup>th</sup> Class, Maleshwaram, Bangalor-560003.
- vi) P-77, Kalandi Housing Estate, Kolkata -700089.

- 5) Many Women Polytechnics also conduct courses of 3 years duration in this area leading to award of Diploma.

**II) Footwear Design:** At present, there are some institutions sponsored by the Government of India which offer footwear design and technology programme:

1. Footwear Design & Development Institute, A-10, Sector 24, NOIDA-201301, U.P. – sponsored by the Ministry of Commerce, (GOI).
2. Central Footwear Training Institute, Adayar, Chennai, Tamil Nadu – 600020.
3. Central Footwear Training Institute C-41/42, Site-C, Industrial Area, Sikandra, Agra, U.P - 282007.
4. Central Leather Research Institute (CLRI), 65/1, GSI Road, Guindy, Chennai-Tamil Nadu - 600032  
Vikas Sheel Bharat Compound, Transport Nagar, Agra. U.P - 282002.
5. Indian Institute of Leather Products, 102, Mangalpuram, SIDCO, Industrial Estate, Behind NEPC, Ambathur, Chennai- Tamil Nadu - 600098.

**III) Gems/Jewellery Design:** The Gemological Institute of India at Mumbai offers a number of courses in gems and Jewellery.

## **EMPLOYMENT PROSPECTS**

The more skills you gain through work experience and structured professional courses, the more likely you are to get the job you are looking for -

1. **Teaching/Training :** Professional training in fashion design can be utilized to further a career in teaching and training in professional institutes or as hobby courses.
2. **Journalism:** Fashion writing is also an area of employment which is looking up as the fashion industry throws up specialist journals/magazines. Established magazines today devote special section to fashion trends, fashion portfolios of up-coming and established designers, covering of fashion events.
3. **Coordination Anchoring:** Established designers find lots of opportunities in fashion coordinating, anchoring fashion shows on TV, fashion show choreography etc.
4. **Export:** India with its strong raw material base and skilled man power in leather footwear industry should emerge as a major exporter. The entries of foreign brands have created design consciousness in the domestic market which has, therefore, emphasized the need of trained personnel in footwear design and related areas.

**Supportive Occupations:** Choreographer, Make-up man, Hair Styler, Cameraman, Light man, Stage-Managers, etc.

# CAREERS IN FISHERIES & AQUACULTURE

## INTRODUCTION

India is blessed with vast varied fisheries resources and regarded as one of the richest in the World both in marine and inland Sector. Indian River, tributaries which constitute as one of the major inland fisheries resources of the country. The natural and manmade reservoirs created for irrigation power generation and flood control are well suited for the capture and culture Practices. Huge fisheries resources both in the form of capture and culture which not only fulfills the domestic demand in the form of different kinds of freshwater and marine water fishes and shell fishes but also contributes considerably in the foreign earning of the country. Therefore, the fisheries has emerged as an industry with a rapid commercial growth in last two decades. The country has huge fisheries potential both from marine as well as inland sector. Rich aquatic resources provide employment and livelihood for the poor people in the entire coastal area of the country besides earning foreign exchange. There are many ancillary activities such as net mending boat building , marketing of fishing accessories, aqua feed preparation, antibiotic and aqua drug supplying and many other industries are associated with the fisheries sector.

For the conservation, management and sustainable utilization of these huge resources, a large number of technical manpower is required.

There are many departments in the fishing Industry that call for professionals or trained professions:

- At the outset, streams and lakes where fishing takes place need to be studied to determine the quantity of fish that is available.
- To study where or not steps in infections prevention are necessary and to study the extent of water pollution fisheries biologists are responsible for this.
- Prevention, freezing and canning.
- Fishing experts are also called upon to handle domestic and export marketing research and preserve marine life.
- Work on fish breeding farm or fish research Centre.
- Study of fresh water ecosystem (specially in lakes and ponds) including its chemical, physical and biological aspects.

## TRAITS REQUIRED FOR FISHERIES AND AQUACULTURE PROFESSION:

- Those interested in Aquaculture and Fisheries Science require a look for the out doors if they want to handle live projects or manage their own fish farms.
- Ability to work for long hours on one's own, a keen, analytical mind and intense concentrating ability.
- Good power of observation.
- Close to nature & devices various ways to keep a balance between nature and the benefits.

In recent years, the field of fisheries and aquaculture has gained global importance. In India, with the emphasis on integrated rural development programmes, heavy financial investments are being made in the fisheries and aquaculture sector, both by the public and private agencies. Therefore, to have appropriate rewards from these investments, there is our acute need for fisheries and aquaculture personnel, who possess the right scientific, technical and managerial skills. Further more, with the commitment from all States in the Indian Union to intensify the development of their fisheries and aqua-culture resources, the demand for trained personnel will increase every year. In the Indian fisheries sector, the demand is about 10 million tones annually which the supply is only about 5 million tones, the gap between production and demand is huge. If all India resources are exploited judiciously, a substantial amount of foreign exchange can be earned. Private entrepreneurs thus have a big scope in this sector.

## ADMISSION TO GRADUATE/POST-GRADUATE COURSES.

<i>SRL NO</i>	<i>COURSE</i>	<i>ENTRANCE EXAMINATION CONDUCTED BY</i>	<i>EXAMINATION MONTH</i>	<i>ELIGIBILITY</i>
1)	B.F.Sc	Indian Council for Agricultural Research, New Delhi conduct All Indian Entrance Examination for filling 15% of total seats in State Agricultural University, Central Agricultural University, Imphal, Banaras Hindu University, Varanasi. The Council will also Award National Talent Scholarship on merit based on the examination provided students Joint University 55% in State other than his/her State of Domicile.	May	10+2 with PCB /PCM with a minimum of 60% marks for general candidates and 55% for SC/ST candidates.
2)	M.F.Sc.,	The Indian Council of Agricultural Research conducts a combined Examination to till 100% of the seats in Master's degree programme at the Central Institute of Fisheries Education (CIFE) & 25% seats in the State Agricultural Universities and JRF (25) will also be awarded in different disciplines based on merit in this Examination.	June	B F Sc., with a Minimum of 60% for general candidates and 55% for SC/ST candidates.

## COLLEGES & COURSES

<i><b>SOUTHERN REGION</b></i>		
<i><b>STATE</b></i>	<i><b>UNIVERSITY</b></i>	<i><b>COURSE</b></i>
Andhra Pradesh	1.Osmania University, Hyderabad, Andhra Pradesh, Waltair	B.Sc. Fishery Science B. Sc. Fisheries & Horticulture as one subject M.Sc. Culture & Capture Fisheries M/Sc./ Marine Science & Biology
	2. College of Fishery Science, Muthukur, Nellore	B.F.Sc.
	3. Kakatiya university, Vidyaranapani, Warangal	B.Sc. Fishery Sc. as one subject
	4. Nagarjuna University, Gunter	B.Sc. Fishery Sc. as one subject.
Tamil Nadu	Tamil Nadu Veterinary & Animal Science University, Fisheries Research Institute, Tuticorin	B.F.Sc. – M.F.Sc. – Ph.D.
Karnataka	1. Fisheries College, Mangalore	B.F.Sc. – M.F. Sc. – Ph.D.
	2. Karnataka university, Dharwad, Karnataka	B.Sc. (F.S. )M. Sc. Marine Biology
Kerala	1. Central Institute of Fisheries Technology (ICAR), Wellington Island, Kochi	M.Sc. (F.S.)
	2. Kerala Agricultural University (College of Fisheries), Ernakulam	B.F.Sc. (4 years) & M.F.Sc. (2 years)
	3. University of Kerala, Thiruvananthapuram	M.Sc. (Aquatic Biology & Fishery Science)

	4. University of Cochin, Kochi	M.Sc./ in Mariculture Training & Industrial
	5. Fisheries College, Panangad, Kochi	B.F.Sc./M.F.Sc.
<b><i>EASTERN REGION</i></b>		
Assam	1. College of Fishery Science, Raha, Assam	B.F.Sc.
	2. Central Institute of Fisheries	M. Sc. Fisheries Management
Tripura	1. Central Agricultural University, Tripura	B.F.Sc.
	2. College of Fisheries, Agartala	Ph.D.
Manipur	Manipur University, Canchipuram, Imphal	B.Sc. (Fishery Sc. as one subject)
West Bengal	1. West Bengal University, College of Fishery Science, Kolkata	B.F.Sc. & M.F.Sc.
	2. College of Fisheries Science, Mohanpur, West Bengal (Under West Bengal University of Animal and Fishery Science)	B.F.Sc., M.F. Sc.
Bihar	1. College of Fishery Science, Dholi, Muzaffarpur	B.F. Sc.
	2. College of Fisheries, Dholi (Under Rajindra Agriculture University, Pusa, Samistipur, Bihar)	B.F. Sc.
Orissa	1. Utkal University, Bhubaneswar	B.Sc. (F.Sc. as one subject)
	2. College of Fishery Science, Bhubaneswar	B.F.Sc.
	3. College of Fisheries, Berhampur (Under University of Orissa)	B.F. Sc.

<b><i>NORTHERN REGION</i></b>		
Uttaranchal	G.B. Pant University of Agriculture, Pant Nagar, Nainital	B.Sc. Fisheries and M.Sc. Fisheries Sc.
Madhya Pradesh	Barkatullah University, Bhopal	M.Sc. Fish Genetic ( 3 years)
<b><i>WESTERN REGION</i></b>		
Gujarat	1. Gujarat Agricultural University, College of Fisheries, Krushinagar	B.Sc. (F.S. ) 4 years
	2. South Gujarat University, Surat	B.Sc. (Hons.)
	3. College of Fisheries, Veraval(Under Gujarat Agricultural University) Gujarat	B.F.Sc.
<b><i>MAHARASHTRA</i></b>		
Goa	Goa University, Goa	M.Sc. Marine Sc. and M.Sc. (Marine Biotech.)
Maharashtra	1. Central Institute of Fisheries Education, Versova, Mumbai	M.Sc. Fisheries Management ( 2 years P.G. Diploma)
	2. Konkarni Krishi Vidyapeeth, Dhapoli, Ratnagiri	B.Sc. Fishery Sc. and M.Sc. Fishery Sc.
	3. Dr. B.R. Ambedkar University, Aurangabad	B.Sc. ( F.Sc.) as one of the subject

## CAREER OPPORTUNITIES

<i>Sl. No.</i>	<i>Sector</i>	<i>Posts</i>	<i>Department</i>	<i>Remarks</i>
1.	Government Sector	1) Assistant Fisheries Development Officer (AFDO) 2) Fisheries Extension Officer (FEO) 3) District Fisheries Development Officer (DFDO)	1) State Fisheries Development Officer 2) Marine Product Export Development Authority 3) Fisheries Survey of India	-
2.	Private Sector	-	Fish Processing Companies Aqua Culture Farms Hatcheries Aqua Feed Plants Fishing gear Industries Pharmaceutical Companies	-
3.	Self-Entrepreneurship	-	-	The main areas in which Fisheries enterprises can be developed are: i) Ornamental Fish Culture ii) Aquaculture iii) Hatchery and Seed Production iv) Commercial Pearl Production v) Fish Disease Diagnostic Centre vi) Consultancy services vii) Establishment of Agri. Clinics.

4.	Training and Research Related	-	-	Candidates with P.G. Qualification can apply in the State Agricultural Universities against the Advertisement for the post of Assistant Professor in the Faculty of Fisheries. For the Recruitment of Scientists in various Agricultural and Fisheries Institutions and ICAR, Agricultural Scientists Recruitment Board conducts an All India Competitive Examinations
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# THE VETERINARIAN

Dear students do you love animals and birds? Do you enjoy their company?

If your answer is yes then do you know that they, like any other human beings, are also prone to accidents and diseases of many kinds? Well, then do you want them to regain health. If you again say 'Yes', then do you desire to become a professional person to help them directly to become healthy? If yes then why not to know about such professional - the Veterinarian - further by reading the following?

## WHO IS A VETERINARIAN?

Veterinarian in the events of accidents and sickness treats animals, livestock, pets, sporting and laboratory animals. Since animals and birds come in contact with human beings the veterinarian, therefore, help to protect humans from the diseases carried out by animals. For this purpose the Veterinarians contribute towards human health by engaging in research, food safety inspection. They may help prevent the outbreak of animal diseases such as rabies which can be transmitted to humans. Many humans eat animals and/or their eggs milk like products. Veterinarians, therefore, also help to control diseases transmitted through such food animals and deal with problems of residues from herbicides, Pesticides and antibiotics in animal used for food. Veterinary Science is the study of animal disease and their cure which involves both the medical and surgical form of treatment. It also includes the breeding and scientific rearing of livestock. The demand for trained veterinarians is growing fast.

## BEFORE BECOMING A VETERINARIAN LOOK WITHIN YOU TO FIND OUT THE TRAITS REQUIRED FOR VETERINARIANS

- Basic love and scientific interest in animals, their behavior and development
- When handling animals, self-reliance, adaptability and indifference to occasionally physically disagreeable conditions of work
- Veterinarians need good manual dexterity.
- Ability to infuse confidence in animals and their owners
- Ability work as a team in some work settings.
- Above average intelligence and affinity for biological sciences.
- Ability to inspire confidence in animals.

## HOW TO BECOME A VETERINARIAN?

Veterinary Science, like medicine, can be pursued after 10+2 having the basic subjects of physics, chemistry and biology at 10+2 level. The theoretical aspect of the course covers all subjects needed for the understanding of animal health disease and treatment. First degree award is either Bachelor in Veterinary Science (BV Sc) or Bachelors in Veterinary Science and Animal Husbandry (B.V. Sc & AH). At the Master's and Doctoral Degree levels a large number of specializations are offered by most of the colleges.

## WHERE TO STUDY?

The number of universities offering courses in animal husbandry at present is twenty seven.. Of them two universities are exclusively devoted to Animal Science Viz.Tamilnadu Veterinary and Animal Science & Animal Husbandry University (Chennai) and West Bengal University of Animal and Fisheries Science (Calcutta). Most of the Animal Science Colleges offer, besides first degree programme, Master's as well as Doctoral programmes. Master's Degree programme is of 2 years duration. The Indian Veterinary Research Institute (IVRI) (Izatnagar, UP) offers only Post-Graduate and Doctoral courses).

## A.BACHELOR'S DEGREE PROGRAMME

<i>ALL INDIA</i>	<i>STATE WISE</i>
<b>COURSE :</b> B.V.Sc & A.H	<b>COURSE :</b> B.V. Sc & A.H
<b>SELECTION:</b> Through All India competitive examination	<b>SELECTION:</b> Through competitive examination
<b>EXAM CONDUCTED BY:</b> Veterinary council of India, The regulatory authority of Veterinary education.	<b>EXAM CONDUCTED BY:</b> Entrance examination of the state universities are conducted by the respective Board/University of the states. Some states hold joint entrance examination along with medical, engineering and other professional courses.
<b>NO/% OF SEATS:</b> 15% of the total number of seats in each Veterinary college.	<b>NO/% OF SEATS:</b> 85% of the total number of seats in each Veterinary college.
<b>Duration of the course:</b> Five academic years including compulsory internship of six months.	<b>Duration of the course:</b> Five academic years including compulsory internship of six months.
<b>Qualification:</b> 10+2 examination obtaining not less than 50%(SC/ST-40%) of the aggregate marks in English, Physics, Chemistry & Biology.	<b>Qualification:</b> 10+2 examination obtaining not less than 50% (SC/ST-40%) of the aggregate marks in English, Physics, Chemistry & Biology.

## **B. MASTER'S DEGREE PROGRAMME**

### **COMBINED EXAMINATION FOR ADMISSION TO MASTER'S DEGREE PROGRAMMES**

- The Indian Council of Agricultural Research (ICAR) conducts an all India test to fill 100% of the seats in Masters degree programmes at the Indian Veterinary Research Institute (IVRI)
- And 25% seats in the State Agricultural Universities (SAU) & Central Agriculture University (CAU)
- Students who opt to join universities or institutions other than those from where they have obtained their bachelor's degree are awarded Junior Research Fellowships.
- The value of each Fellowship at present is Rs.5000/- per month for graduates in Veterinary Science. In addition a contingent grant of Rs.6000/- per annum is also given.

### **ELIGIBILITY REQUIREMENTS**

- Candidates must have completed B.V. Sc. & A.H. with internship before the date of registration in the Universities.

### **RESERVATION**

- Fifteen (15%) per cent of total seats are reserved for Schedules Caste.
- Seven & Half (7 ½%) per cent for Scheduled Tribe candidates.

### **ADMISSION TO THE REMAINING 75% OF SEATS.**

- For the rest of 75% of admissions in Veterinary Colleges will be taken up by corresponding universities

**C. INDIAN VETERINARY RESEARCH INSTITUTE,  
IZATNAGAR – 243 122, U.P.**

Indian Veterinary Research Institute (Deemed University) conducts a competitive written examination on all India basis for admission to the Ph.D programme.

**EXAMINATION CENTERS:** (1) Izatnagar (U.P) (2) Bangalore (Karnataka) (3) Kolkata (W.B)

**ELIGIBILITY:** 1) At least 60% marks in aggregate or OGPA 7.00/10.00 or equivalent, in case of S.C/S.T 55% marks or OGPA 6.45/10.00 or equivalent in the degree of Master of Veterinary Science in concerned discipline.

The candidates who have appeared at the Master's degree final examination are also eligible to apply provisionally for admission but they will have to submit documentary evidence of their eligibility at the time of interview.

2) A good knowledge of English language.

**AGE:** Minimum age limit 21 years as on 31<sup>st</sup> of the August of the year of admission.

**RESERVATION:** Fifteen percent (15%) and seven and half percent (7 ½%) seats are reserved for S.C/S.T candidates respectively.

**SCHOLARSHIP:** There is a provision of payment of IVRI Scholarship to the selected candidates for Ph.D. degree programme @ Rs 4,400/- P.M for three years which is extendable for a period of six months more.

**VETERINARIANS CAN ALSO GO FOR THE FOLLOWING COURSES**

1) **Course:** M.Sc Biotechnology/M.Sc Veterinary Biotechnology/M.V. Sc Biotechnology.

- **Name of the institute Offers this course :** Combined entrance test conducted by Jawaharlal Nehru University, New Delhi on behalf of 26 participating universities
- **Eligibility :** Bachelor's degree under 10+2+3 pattern of education in veterinary with at least 55% marks.
- **Reservation :** 15%, 7½% and 3% of seats shall be reserved for SC,ST and physically Handicapped candidates respectively

M.Sc Veterinary Biotechnology is being offered at Birsa Agricultural University Ranchi.

M.V. Sc Biotechnology programme is being offered at G.B. Pant University of Agriculture & Technology, Pantnagar.

**2) Course:** Post-Graduate programme in Agricultural Business Management

**Name of the institute Offers this course:** National Institute of Agricultural Extension Management,  
(An Organisation of Ministry of Agriculture, Govt. of India)  
Rajindra Nagar, Hyderabad -500 030, Andhra Pradesh, India.

- **Eligibility:** Graduates in Agriculture & allied disciplines & veterinary science with at least 2<sup>nd</sup> class marks. Candidates appearing for the final year examinations also can apply.
- **Reservation:** The reservation of SC/ST/Physically Handicapped/Disabled candidates is applicable as per the Govt. of India rules.

**3) Course:** Master of Veterinary Public Health (MVPH)

**Name of the institute Offers this course :** All India Institute of Hygiene & Public Health,  
110, Chittaranjan Avenues, Kolkata -700 073

- **Eligibility:** B.V. Sc. & A.H. Degree of the University of Calcutta or any University recognized by the University of Calcutta. Preference will be given to those candidates who are (i) deputed by Central/State Govt. of other recognized bodies or having at least one year experience in the field of veterinary science.

**4) Course:** Post-Graduate Programme in Agriculture- Business Management

- **Name of the institute Offers this course:** National Institute of Agricultural Marketing  
(An organisation of Ministry of Agriculture, Govt. of India)  
Near Sanganer, Kota road, Jaipur.
- **Eligibility:** You are eligible to apply if you are a graduate in Agricultural & allied disciplines and veterinary sciences from an Agricultural University institute recognized by ICAR/UGC with at least second class Marks. You can apply even if you are appearing for final year examinations provided you meet the eligibility criteria.

- **Reservation:** The reservation for SC/ST/Physically Handicapped/Disabled candidates is applicable as per the Govt. of India rules.

#### 5) **Course:** M.B.A. (Agriculture Business)

- **Name of the institute Offers this course:** Institute of Agriculture Business Management, Rajasthan Agricultural University, Bikaner
- **Eligibility:** Indian nationals, below 30 years of age, having Bachelor's and/or Master's degree in Agriculture or allied disciplines (Veterinary Science, Agriculture Engineering, Dairy Science, Dairy Technology, Fisheries, Food Science, etc.) from any Agricultural University or Institution recognized by ICAR with a minimum of 60% marks (55% for SC/ST) are eligible to apply.

## **CAREER OPPORTUNITIES**

### **MAIN AREAS OF WORK**

- 1) Veterinary Hospitals/Primary Veterinary Centers.
- 2) Organized State farms for managing livestock farms.
- 3) Semen Banks/Sperm Stations-where quality bulls are kept.
- 4) Poultry Farms—for managing egg farms, hatcheries, chick rearing units.
- 5) Meat/Milk processing plants—for supervising of hygienic collection & distribution of milk
- 6) Polyclinics— where specialized service like surgery, special diagnostics, specialized treatment etc. is given.
- 7) Disease investigation centers—survey disease profile and investigate any occurrence of a major disease.
- 8) Biological products or vaccine institutions—prepare quality control & distribute vaccines & biological.
- 9) Disease eradication schemes/check posts/vaccination camps.
- 10) Public health labs-investigation of disease transmissible from animals to man and vice versa.
- 11) Army (Remount Veterinary Corps) – to train and look after Horses, dogs camel etc. in the forces.
- 12) BSF/ Police - to look after Horses, dogs, camels etc. in the forces.
- 13) I.C.A.R. – co-ordination and funding of animal based research
- 14) Department of Animal Husbandry & Dairying, Ministry of Agriculture – for administrative Management and coordination of Veterinary Service.
- 15) Quarantine units – these are internal check posts preventing entry of exotic disease like mad cow disease or fowl influenza.
- 16) Central Farms – same as state farms & sperm stations; they also conduct training.
- 17) Slaughter houses/cattle Pounds/Public health Laboratories.
- 18) Zoos & wildlife centers
- 19) Animal resource development under Panchayatiraj.

- 20) Banking Sector
- 21) Pharmaceutical Companies
- 22) Academic & Research
- 23) Insurance
- 24) Wild Life & Environment
- 25) Poultry Farms
- 26) Dairy Sector
- 27) Animal Husbandry
- 28) Self-Employment

Now, dear students, if you are really interested to help the animals, birds and also the human beings coming in their contact directly or indirectly, to gain sound health then go ahead to become a Veterinarian.

### **FOR FURTHER DETAILS:**

- I. Read our career literature “Careers in Veterinary Science”
- II. Contact Vocational Guidance Officer available at Employment Exchange.
- III. Get in touch with a Career Counsellor
- IV. May also read other books on the subject.
- V. May also visit a Veterinarian College.

# **BIO-TECHNOLOGIST**

## **DEAR SCIENCE STUDENTS,**

Are you looking for a new horizon for choosing a Career? Well, then here given below is something interesting for you to think, understand, realize and plan.

Apart from medicine and engineering now, you must know that, there are several lucrative options for Science Students today. Bio-technology in particular has recently emerged as one of them which have several affiliated branches such as biogenetics, bioinformatics, microbiology, genetic engineering, etc. In fact at present it consists of at least twenty five areas having different set of technologies.

## **WHAT IS BIO-TECHNOLOGY?**

Bio-Technology essentially means modification of living beings through application of technology (i.e. organisms, biological systems or biological processes) to produce a better breed of plants, animals and human beings. The ultimate aim of Bio-Technology is to improve the breed of humans, to make them immune to all disease. In future Bio-Technology will have a major impact on health, pharmaceuticals, agricultural, food and environment. The development of new drugs, human and animal vaccines, diagnostics, transgenic crops and a range of new processes to clean up and manage the environment must surely bring substantial improvement in the living standards of most people.

Bio-technology, a multi disciplinary subject covering Biomedical, Research, Microbiology, Physics, Chemistry, Mathematics and Engineering, has been developed to meet the growing demand for training manpower for any meaningful Bio-technology activity in the country. The programmes are designed to expose the students to recent exciting developments in the area of genetic engineering and bio-technology and their exploitation in the industry, agriculture and medicine.

## **IMPORTANCE OF BIO-TECHNOLOGY**

Bio-Technology has rapidly emerged as an area of activity having a potential impact on virtually all domains of human welfare ranging from food processing, boosting agricultural production, protection of environment, to production of newer and effective drugs. As a result it plays a very important role in employment, production and productivity, trade economics and economics, human health and the quality of human life throughout the world.

The total volume of trade in Bio-Technology products is increasing sharply every years and it is expected to soon become the major contributes to world trade.

## **TRAITS REQUIRED FOR BIO-TECHNOLOGISTS**

- Above average intelligence
- Ability to concentrate for long hours
- An inquiring mind
- Imagination
- Capacity for original thought
- Interest in acquiring knowledge beyond immediate requirement
- Organising ability
- Ability for team work
- Practical approach to scientific problem
- An aptitude for biology, chemistry & mathematics.

If you possess majority of above mentioned traits, then Biotechnology may be a suitable career for you.

## **EDUCATIONAL/TRAINING FACILITIES**

Basic ground work preparation for entry into these fields of study would be the science stream at the plus Two level (ideally Physics, Chemistry, Biology and Mathematics). This could be followed with a graduate degree in : Agriculture, Veterinary Sc. and Animal Husbandry, Genetics, Pharmaceutical, Microbiology, Botany, Zoology, Chemistry, Bio-Technology, Chemical Engg./Tech., Agricultural Engg., Food Technology, Human Biology and allied subjects. This plan for a two-years M.Sc. in Bio-Technology.

## **M.SC. BIO-TECHNOLOGY**

Department of Bio-Technology (DBT) has initiated an extensive programme for manpower development in Bio-Technology. If you opt for admission to 2 years M.Sc. programme in Bio-Technology, you have to get through the Combined Entrance Examination for Bio-Technology conducted by Jawaharlal Nehru University, New Delhi on behalf of 26 participating Universities.

### **ELIGIBILITY**

10+2+3 pattern of education in Physical Science, Biology Science, Pharmacy, Agriculture, Vet. Sc., Fishery Sc. or a Bachelor Degree in Engg./Technology or medicine MBBS or BDS with minimum 55% marks.

The candidates who are due to appear in the respective qualifying examination shall also be considered for appearing in the entrance examination. They will be required to submit all the documents including final marks sheet of the qualifying examination before the deadline for admission fixed by the concerned participating university.

### **SCHOLARSHIP**

- Students selected for admission to M.Sc. Bio-Technology programme of the participating Universities which are financially supported by the Department of Bio-technology will be eligible to receive scholarships at the rate of Rs.400/- p.m.
- Following Institutes are currently not being financially supported by Deptt. of Bio-technology:-
  - M.Sc. Bio-technology programme being offered at Punjab University, Chandigarh. & Patiala
  - M.Sc. Bio-technology programme being offered at Pondicherry University, Pondicherry.
  - M.Sc. Bio-technology programme being offered by Thapar Institute of Engg. & Technology, Patiala .
- Students admitted to Gulbarg University, Karnataka, will not get scholarship.

**RESERVATION:** S.C. – 15 % Seats, S.T. – 7 ½ % Seats, Physically Handicapped - 3% Seats

**ISSUE OF APPLICATION FORM : MARCH**

**EXAMINATION : MAY**

**LIST OF PARTICIPATING UNIVERSITIES:**

<i>Name of the State</i>	<i>Name of the University</i>
Andhra Pradesh	University of Hyderabad, Hyderabad
Assam	Tezpur University, Tezpur
Delhi	Jawaharlal Nehru University, New Delhi
Gujarat	1.M.S. University of Baroda, Baroda 2.Gujarat University, Ahmedabad
Goa	Goa University, Goa
Haryana	Guru Jambheshwar University, Hissar
Himachal Pradesh	Himachal Pradesh University, Shimla
J & K	University of Jammu, Jammu
Karnataka	1.Gulbarga University, Gulbarga 2.University of Mysore, Mysore
Kerala	Calicut University, Kerala
Madhya Pradesh	Devi AhilyaVishwavidyallaya, Indore
Maharashtra	University of Pune, Pune
Pondicherry	Pondicherry University, Pondicherry
Punjab	1.Guru Nanak Dev University, Amritsar 2.Punjab University, Chandigarh 3.Punjabi University, Patiala 4. Thaper Institute of Engg. & Technology, Patiala
Tamil Nadu	Madurai University, Madurai
Uttar Pradesh	1.University of Allahabad, Allahabad 2.Banaras Hindu University, Varanasi 3.University of Lucknow, Lucknow
Uttaranchal	1.G.B. Pant University of Agriculture & Technology, Pant Nagar 2.Kumaun University, Nanital
West Bengal	University of North Bengal, Siliguri

**OTHER COURSES AVAILABLE FOR STUDY OF BIO-TECHNOLOGY** are

**M.Tech. in Bio-technology –**

**Eligibility** – Bachelor's degree in Agriculture, Horticulture, Forestry or Agriculture Engineering.

This course is offered at Anna University, Chennai.

### **M. Sc. (Agri. Bio-technology) & M.Sc. (Animal Bio-technology) –**

**Eligibility** – Bachelor's degree in Agriculture, Horticulture, Forestry or Agriculture Engg.

These courses are offered at Tamil Nadu Agriculture University, Coimbatore; G.B. Pant University of Agriculture & Technology, Pant Nagar; Birsa Agriculture University, Ranchi; Ch. Sarwan Kumar H.P. Krishi Vishwavidyalaya, Palampur; Indira Gandhi Agriculture University, Raipur ; Marathwada Agriculture University, Parbhani.

### **M. Bio-technology –**

**Eligibility** – M.Sc. degree from any recognized University.

This course is offered at All India Instt. of Medical Science, New Delhi.

### **University of Rajasthan**

University of Rajasthan Jaipur, conducts JEE for admission to M.Sc.(B.T.). The major Institutes in Rajasthan offering M.Sc. programme in B.T. are:

1. University of Rajasthan, Jaipur
2. M.L. Sukhedia University, Udaipur
3. Mahatma Gandhi Institute of Applied Science, Tonk Road, Jaipur
4. Mahatma Jyoti Rao Phoole P.G. Mahila Mahavidyalaya, Jaipur
5. India International College for Girls, Jaipur
6. Seedling Academy of Design Technology and Management, Jaipur

### **OTHER UNIVERSITIES**

Some other Universities independent of Deptt. of Bio-Technology also conduct similar M.Sc./M.Tech. programmes in Bio-Technology as below:

I.I.T., Kharagpur, Delhi & Bombay  
Roorkee University, Roorkee  
Rajasthan University, Jaipur  
Agra University, Agra

Guru Ghasi Das University, Bilaspur  
Ranchi University, Ranchi  
Jadavpur University, Kolkata etc.

## **RESEARCH ACTIVITIES**

- Some of the Indian Universities have good infrastructure for research work. Deptt. of Bio-Technology, Govt. of India, has funded the creation of Seven (7) Centres for Plant Molecular Biology (CPMB) at different Institutions spread all over India.
- In addition to Deptt. of Bio-Technology - ICAR(Indian Council for Agricultural Research), New Delhi and CSIR (Council for Scientific and Industrial Research), New Delhi are also promoting research activities in Bio-technology.
- An International Centre for Genetic Engg. and Bio-technology (ICGEB) has been established by the United Nations Organisation (UNO). ICGEB has two Centres : One of them is located at New Delhi
- Private Sector is becoming increasingly interested in Bio-technological Research.
- Other Institutes are also engaged in research work as below:
  - National Environmental Engineering Research Institute, Nagpur
  - Centre for Cellular and Molecular Biology, Hyderabad
  - National Institute of Immunology
  - Defence Research Development Organisation, New Delhi
  - Department of Science & Technology, New Delhi
  - National facility for Tissues and Cell Culture, Pune
  - Indian Council for Medical Research, New Delhi
  - Indian Institute of Science, Bangalore.

## **JOB OPPORTUNITIES**

There is no doubt that Bio-technology in its many forms will have an increasingly important role to play in our society. Biotechnology has a great effect on sectors such as pharmaceuticals, health care, agriculture, pollution management & insurance. Dear Students, if you are equipped with sufficient qualifications in Bio-technology then there are chances of absorption in -

1. Research & Development (R&D) Division of Drug Industry
2. Marketing & Production Division of Drug Industry.
3. Seed Companies

4. Food Processing Companies
5. You can be a research Scientist
6. Teacher
7. Quality Control Offices

### **ATTENTION PLEASE**

- For dates of application, examination, number of seats etc. always keep a watch on Newspaper Advertisements or obtain latest prospectus of the concerned university.
- This publication is only a guideline to think before you opt for the career.

# BIO-INFORMATICS

Dear students,

If you are a student of Biology? Have you studied biology? Are you looking for better career in this field? Do you also like to work at computers? Then, BIO-INFORMATICS may be the career-field for you. Following information will be useful for you.

## WHAT IS BIO-INFORMATICS?

In the present scenario, when every part of life is more or less directly or indirectly dependent on computers, the most intellectual hybrid of biological information and computer technology is **Bio-informatics**. Presently it is an emerging career for those Biology students who have keen interest in computer and software. It is a branch of science that deals with the use of computer technology to handle and maintain biological information.

Apart from Agriculture and Aquaculture applications, the focus of Bio-tech industry has been on producing new drugs. In search for new drugs, the pharmaceutical industry would now depend more on biological and medical sciences rather than relaying on Organic chemistry. In particular, the human genome project to discover every single gene in existence will also reshape the process of drug discovery. For example genetically engineered bacteria can produce insulin used for treating diabetics. In order to make sense of all the data being produced on genes, and genetic make-up of all kinds of species, entirely new field called BIO- INFORMATICS has emerged. Bio-informatics involves the identification of pattern in gene variation and the design of custom molecule that would attract suspect gene and proteins. Considerable research work on Bio-informatics is in progress both in academic institutions and industries.

Bio-informatics is the study of biological information as it passes from its storage site in the genome to the various gene products in the cell. Generally speaking, Bio-informatics involves the creation and the development of advanced information and computational technologies for problems in molecular biology. Bio-informatics is truly the science of coming century and now is the right time for those whose interests span Biology and Computers to take advantage of the exciting opportunity.

## **THE SCOPE**

Bio-informatics as a field of study is becoming increasingly important due to the interest of pharmaceutical industry in genome projects, which comprise a key segment of the discipline. There is a vital need to harness this information for medical diagnostic and therapeutic uses, and there are opportunities for other industrial applications. This field is evolving rapidly, which makes it challenging for biotechnology professions to keep up with recent advancements.

Bio-informatics specialists are involved in all aspects of collecting/assembling and analyzing the staggering quantities of information that are being generalized by the human genome project, as well as genome projects for other animals, plants and disease causing micro organism.

## **THE NEED**

After every 14 months (approximate) the contents of nucleotide data base doubles and after every two years, the quantity of genes and protein structures also doubles. In such condition when on one hand the base pairs in Genbank are enormously increasing and on the other, the sequencing projects are producing more and more nucleotide sequences. Bio-informatics is found to be the topmost solution for managing the cumbersome information. Bio-informatics or bio computing, being a triplet of biology, mathematics and computer, prove to be an effective means of handling, accessing, analyzing and integrating biological data.

## **THE TRAITS AND KNOWLEDGE REQUIRED**

### **ESSENTIAL**

- Ability to concentrate for long hours
- Imagination for original thought
- Logical thinking
- Practical approach to scientific problems
- Basic knowledge related to computers

### **DESIRABLE**

- Knowledge of UNIX, the operating system used for many biology programmes

- Knowledge of structured Query Language (SQL)
- C++, Java, OOPS, J2EE, XML
- knowledge of some web tools like Hypertext Markup Language(HTML),ASP,JSP, JDBC, Swing etc.,
- Knowledge of Sequences programmes like BLAST, and explain FASTA conceptual study of Biology, Statistics, Probability, Gene bank, SWISS-PROT, Biojava, etc.

Dear student please compare your personal qualities with the above mentioned traits. If your knowledge and traits match with these, you may go ahead to take up Bioinformatics as your career.

## **QUALIFICATIONS REQUIRED TO BE A PART OF BIO-INFORMATIC DEPARTMENT**

If you want to be a part of Bio-informatics department or programmes, then you should have Graduate degree in the Life Science and Computer Science, and experience in programming and database development. If you are Ph.D. in molecular biology, cell biology or bio-chemistry and B.S. in Computer sciences then you can also be a part of it. People with Ph.D. in Life Sciences with key computer skills have good opportunities.

- For **Data Analyst**, experience with NTand UNIX environments is required.
- For **Graphic Support Specialist**, you must have Bachelor's degree in biology or related discipline with relevant experience in art, graphic design. Experience with Adobe Photoshop, Adobe Illustrator, Macromedia Freehand is also required.
- **Software Engineer**, the requirements is Ph.D in Computer Science or Biology with knowledge on soft ware development. Of course, Good written and verbal communications, also a part of it.

## **NATURE OF WORK INVOLVED IN SOME OCCUPATIONS RELATED TO BIO-INFORMATICS**

- **Data Analyst**: The work involves Examination of Data Quality and Analysis of DNA Sequencing Projects.
- **Scientific Programmer**: The duty of Scientific Programmer is to maintain robust data processing systems and to collect feed back from laboratory users for the identification of problems.
- **Graphic Support Specialist**: The work of Graphic Specialist is Unique in nature. They provide necessary training to scientists for the use of graphics and image processing software and hardware. Apart from this, the Graphic Support Specialist evaluates and introduces new graphics related software and hardware.
- **Team leader**: The work involves issuing instructions to software engineers and programmers and monitoring the progress of team projects.

- **Software Engineers:** The overall work is to implement and maintain Information Systems for genomic research, Programming Languages, writing codes and checking them for quality production in software application.

## **TRAINING/EDUCATIONAL INSTITUTIONS.**

At present some Universities are offering courses like

- Post Graduate Diploma in Bio-informatics
- Advanced Diploma in Bio-informatics
- M.Sc Bio-informatics
- B.Tech, Bio-informatics etc.

## **LIST OF SOME UNIVERSITIES/INSTITUTIONS OFFERING BIO-INFORMATICS RELATED COURSES.**

1) The Centre for Bio-chemical Technology(CBT),New Delhi, a constituent laboratory of the Counsel of Scientific and Industrial Research(CSIR) , Govt. of India and “Informatics” have together designed the unique **Post Graduate Diploma in Bio-informatics** course offering multiple domain expertise to career aspirants seeking entry into Biochemical industry.

CBT and Informatics jointly certify successful participants

- Eligibility: B.Sc ( Life Science), M.Sc ( Life Science), M.Sc Statistics, M.B.B.S, B.Tech, M.C.A
- Duration : Six months

### **2) Bharathiar University, Coimbatore-46.**

- **Courses:** M.Sc Bio-informatics. **Duration :** Two years/ 5 semesters

Selection is based on performance in the entrance test of this University.

### **3) Bio-informatics Centre, University of Pune, Pune-411007**

- **Courses:** Advanced Diploma in Bio-informatics **Duration :** One year/ 2 semesters

➤ **Course** : M.Sc in Bio-informatics. **Duration** : 2 years

**4) Jawaharlal Nehru University, New Delhi**

➤ **Course** : Advanced Diploma in Bio-informatics **Duration** : 1 year

**5) Bio-informatics Centre School of Bio-technology, Madurai Kamaraj University, Madurai-625021**

➤ **Course** : Advanced Diploma in Bio-informatics **Duration** : 1 year.

Other institutions offering Bio-informatics courses are -

- 6) Institute of Bio-informatics and applied Bio-Informatics , Bangalore, Karnataka.
- 7) Bose Institute, Kolkata.
- 8) Banaras Hindu University, Varanasi.
- 9) Indian Institute of Technology, Delhi.
- 10) Indian Institute of Technology Kharagpur
- 11) Bioinformatics Institute of India, Noida, U.P.
- 12) Indian Institute of Information Technology, Allahabad.

## **JOB PROSPECTS**

Bio-informatics industry needs experts from various domains of expertise like Micro Biology, Molecular Biology, Bio-Physics, Bio-Statistics, Mathematics, Programming and Algorithm, Data base designing and maintenance, Graphic designing, Protein Chemistry, Genomics, Proteomics etc with multi discipline and multiple discipline exposure.

Bio-informatics has a vital role in all areas of human well being such as health agriculture, veterinary sciences, fisheries, food processing and environment. Bio-informatics would ensure the journey to new discoveries being quicker and most effective.

Since it is an emerging field, there are Enormous Career Opportunities in companies, Government sectors related to

➤ Drug development,

- Chemical plants,
- Hybrid plants,
  
- Petroleum derivatives .
- Bio-informatics plays a key role in Agricultural related industries.
- There are Enormous prospects in R and D organisations,
- Software Companies and Government organisations.
- The Application of BIO-INFORMATICS Solution in Various Life Science has Steadily increased in the last few years.
- This field also has scope on database design, gene analysis, proteomics and pharmacogenomics, in various academic institutes and companies
- As per preliminary estimate appeared in printing media more than one million Bio-Technology experts will be absorbed in the next five years or so.

Hence, Bio-informatics is truly the science of the coming century and therefore, dear student, this is the ideal time for you if your interests cover Biology and Computers, to take advantage of this exciting opportunity.

**“BIO-INFORMATICS IS THE FIELD OF INTEGRATING BIOLOGY AND COMPUTERS TO IMPROVE THE DISCOVERY OF NEW MEDICAL BREAKTHROUGH”**

# **CAREERS IN MASS COMMUNICATION**

## **INTRODUCTION**

Mass Communication both as a discipline and as a profession has witnessed dramatic expansion. Apart from the exponential growth in the Industry, new genre like corporate communications, internet Journalism and new media have also emerged. The functions of mass communication i.e. IEC: Information, Education and Communication is fast taking the shape ICE: Information, Communication and Entertainment.

Mass Communication is addressed to large-scale audience via Media like print and broad cast. The entire content of a television channel or a radio station would get covered here. News though is a part of mass communication is usually covered academically under the heading “Journalism”. Mass Communication encompasses the different media used for the communication of news, information, entertainment and any other public messages to a large number of people.

Advertising, communications (Print, electronic, films etc.), and public relations are the different areas under the umbrella of mass communication.

## **ADVERTISING**

During the recent years, the Indian advertising industry has expanded very fast. Most of the well known international advertising firms are represented in the country and the Indian advertising can very well compete at the global level. The industry has also taken upon several areas like “Marketing communication” which includes public relations, direct marketing and event Management. The contemporary Society has been greatly impacted by advertising. Advertising is considered directly responsible for Promoting Satellite television. Advertising has helped in expanding the consumer market. It has also helped in raising aspirations of people in the society and brings improvement in their living conditions.

As per latest reports it is estimated that the industry will grow by 7% to Rs. 10,000 crores, creating new opportunities and excitement in the advertising field. The three Gold Lions awarded to the Indian advertising industry at the Cannes this year has highlighted the success of this industry.

## **ELECTRONIC MEDIA**

Electronic Media has witnessed exponential growth during the closing years of the twentieth century. The increase in the number of cable and satellite television homes, Initiative is establishing private radio stations in the metros, the recent policy of setting up community and campus radio stations throughout the country have fuelled the growth of this sector.

All media is multimedia today. Every news organisation combines a newspapers, magazine, T.V., internet. The quality, packaging and coverage of news are all undergoing a sea change. The very complexion of media is now different. Online newspapers, 24-hrs. News channels, news postal, interpretative reporting, graphics supporting the story find a mention in a national channel. Acquiring basic skills is important but one must also be multitalented

## **PRINT MEDIA**

The Indian Print Media – newspaper, magazines and book publishing is a vibrant industry. It has witnessed unprecedented expansion recently, particularly progress is the regional language Press. Uncensored news, fearless editorial comments and other articles published in newspapers and magazines influence the day-to-day governance of the country to a great extent.

Hence, there are several jobs in each of these areas. So you need to identify which aspect of mass communication interests you.

## **TRAITS REQUIRED**

Dear Students if you are interested in Mass Communication related career, you just verify your personal traits. Some important traits required for this career are mentioned below:

- Cent percent Commitment. (As most jobs involve long unsocial hours)
- Ability to perform well under pressure
- Being a good team player
- Excellent Communication skills and persistence
- Creativity
- For a news paper editor, factual accuracy would rate high than imagination
- Physical stamina, strength
- A keen sense of observation
- An intuition to perceive what is not directly revealed.

- Sound general awareness
- Interest in current affairs, arts, cinema & music and a global Respective on the trend in these streams.
- An aptitude for technology

If majority of Traits are matched with your personal traits, you may go ahead to take up this career. Because of high competition in this Sector, apart from your traits good knowledge, qualification, accurate training in the concerned field is very much essential. Courses related to Mass Communications are offered by various Universities/Colleges/Organisation. List of some organisations mentioned below:

## TRAINING FACILITIES

### LIST OF COLLEGES

Sl. No.	Name of the Institute/College	Course	Eligibility	Duration	Remarks
1.	A.J.K. Mass Communication Research Centre, Jamia Milia Islamia, New Delhi -110 025	P.G. Diploma in Maintenance & Operation Broadcast Equipment	B.Sc. Engg. /B.Tech, B.E., Electronics & Communication/Ele. Or B.Sc. (Hons)/Pass .	One year (part time)	Admission will be on the basis of performance in a written test & Interview.
2.	Bharatiya Vidya Bhavan(Sardar Patel College of Communications Management), Kasturba Gandhi Marg, New Delhi – 110 001	P.G. Diploma in 1. Radio & T.V. Journalism 2. Television Direction 3. Video Camera 4. Video Editing	Graduation in any discipline from a recognized University.	1 year	Branches in New Delhi, Mumbai, Kolkata, Chennai, Hyderabad & Bangalore
3.	International Institute of Mass Communication, H-15, South Extension –I, New Delhi- 110 049	P.G. Diploma in 1) Radio & Television Journalism 2) Advertising & Public Relations 3) Print Journalism	Graduate in any discipline from a recognized University.	1 year	-

4.	Indian Institute of Mass Communication (Autonomous body funded by M/o Information & Broadcasting, Govt. of India), Aruna Asaf Ali Marg, New Delhi – 110 067	1) P.G. Diploma in Journalism (English), New Delhi & Dhen Kanal (Orissa) 2) P.G. Diploma course in Journalism (Hindi), New Delhi 3) P.G. Diploma Course in Radio & Television Journalism, New Delhi 4) P.G. Diploma Course in Journalism (Oriya), Dhenkanal (Orissa) 5) P.G. Diploma Course in Advertising & Public Relations, New Delhi	Bachelor's degree in any discipline	9 months (starts August to April)	Selection is based on written Test & interview.
5.	Indian Institute of Journalism & New Media, 210, 5 Across HRBR Extension, B Block, Kalyananger Post, Bangalore – 560043	1. P.G. Diploma in Print & Web Journalism 2. Diploma in Print & Web Journalism 3. Part-time Certificate Course	Bachelor degree in any discipline  Standard 12 or Pre-University	1 year	These programmes are recognized by Media organisations in India & Abroad.
6.	Delhi School of Communication, OSC Centre, 321/2, IGNOU Road, Neb Sarai, New Delhi – 110068	P.G. Programme in Communication	Graduation	2 years	-
7.	Film & Television Institute of India (FTII), Pune	Courses in Film direction, film production, motion picture photography	Bachelor's Degree in any discipline	-	Admission on the basis of an Entrance Test.

8.	The Satyajit Ray Films & T.V. Institute in Kolkata	Specialised courses in Motion picture photography & video direction	-	2 years	-
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### **LIST OF ORGANISATIONS/COLLEGES OFFERING COURSES RELATED TO MASS COMMUNICATIONS**

- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. Manipal Institute of Communication</li> <li>2. Symbiosis Institute of Journalism &amp; Mass Communication, Pune</li> <li>3. Department of Communication &amp; Journalism, University of Poona</li> <li>4. New Delhi YMCA, Centre for Mass Media.</li> <li>5. P.G. College of Communication &amp; Management, Bharatiya Vidya Bhawan, New Delhi.</li> <li>6. Sophia's Polytechnic, Mumbai</li> <li>7. Asian College of Journalism, Chennai</li> <li>8. Oxford College of Education, Patnotola Lane, Kolkata</li> <li>9. Film &amp; Television Institute of India (FTII), Chennai &amp; Kolkata</li> <li>10. Assam University</li> <li>11. University of Kolkata</li> <li>12. Aligarh Muslim University, U.P.</li> <li>13. Banaras Hindu University, U.P.</li> <li>14. Guru Nanak Dev University</li> <li>15. Punjab University, Ludhiana</li> <li>16. Kurukshetra University, Haryana</li> <li>17. Jawahar Lal Nehru University, New Delhi</li> <li>18. Guru Gobind Singh Indraprastha University, New Delhi</li> <li>19. IGNOU, New Delhi</li> <li>20. Sardar Patel University, Gujarat</li> <li>21. Nagpur University</li> <li>22. Dr. Ambedkar Marathwada University, Aurangabad</li> <li>23. Osmania University, Hyderabad</li> </ol> | <ol style="list-style-type: none"> <li>24. Anna Malai University, Chennai</li> <li>25. Madurai Kamraj University, Chennai</li> <li>26. Karnataka University, Karnataka</li> <li>27. Punjab University, Patiala</li> </ol> |
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## **CAREER OPPORTUNITIES**

It is a career where age and seniority are of no consequence. A career in Mass Communication involves a placement at any one of the media i.e. Print Media, Electronic Media.

Some important occupations in this career are:

### **ANNOUNCERS, NEWS READERS, PRESENTERS –**

These are the people in electronic Media identified by the masses but many more work behind the scenes, in production, editorial, Management.

### **ALL INDIA RADIO**

The Government wants to promote Campus or Community radio through recognized Institutions and Colleges like the Indian Institute of Technology (IITs). The plan is to enable around 100 institutes wired up to campus radio within a year. Such situation offers excellent employment opportunities.

The AIR presently broadcasts 314 daily news bulletins. It has 90 regular Correspondents in India & seven Abroad. The AIR also has 246 part-time Correspondents based at important districts headquarters.

### **DOORDARSHAN**

According to Doordarshan India 2002, as on May 2002 Doordarshan has 1314 transmitters within 56 Studio Centres and 23 Satellite Channels. The increase in the number of Cable and Satellite Television homes. This Sector has about 100 Pvt. Channels and Cable network all over the country. This situation fuelled the growth of the Sector and plenty of Job Opportunities.

### **CORRESPONDENTS, REPORTERS, SUB-EDITORS, EDITORS, FEATURE, SCRIPT WRITERS, CRITICS, COLUMNISTS, FREELANCERS, LAYOUT ARTISTS, PRINTER, ETC.**

These are the people in Print and Broadcast Media. According to the 46<sup>th</sup> Annual Report, Press in India, 2002, by the Registrar of newspapers in India, the number of newspapers and periodicals grew by over 5% in 2001. Newspapers were published in as many as 101 Languages and Dialects. Apart from English & 18 other official languages, these were also published in 82 other languages, dialects and a few foreign languages. The Press Trust of India (PTI India's largest news agency offers the services in Hindi & English. PTI subscribers include more than 450 newspapers in India and Abroad. PTI has over 100 bureaus across the country. It employs over 400 Journalists and about 300 Stringers as its news staff. Another major news agency United News of India (UNI) is one of the largest news agencies in Asia with over 100 bureaus in India & Abroad. It has more than 1000 subscribers in the country & over 30 in foreign

countries. It has more than 300 Journalists working full time and over 400 as stringers. UNI has a full fledged Indian language news service Univarta. It has also launched Urdu service on teleprinter for the first time in the world

If you know how to handle a camera reasonably well you could also explore the opportunity of finding a job as a Photo Journalist, Fashion Photographer.

### **OPPORTUNITIES FOR PLACEMENTS ARE IN**

1) Publishing 2) Radio & T.V. 3) The Corporate World 4) Industry 5) Agencies 6) Entertainment

# LEATHER INDUSTRY

## INTRODUCTION

Leather industry is a huge industry that touches the need of the entire population. Extremely beautiful leather footwear and various leather equipment for persons who fight in a battle were always in demand because of their importance. Leather Industry is a highly Labour-oriented industry as well as major thrust area for export of leather good and footwear. Leather goods embrace a wide range of products including luggage & bags of all kinds, Saddles, shoes, fancy goods, belts, Jackets, gloves, purse, etc. In this era of rapid technological developments making leather items is not just an art & craft but is a specialized technological field. Indian leather and footwear Industry is being transformed from unorganized sector to the professionally organized sector.

The leather and leather products industry has gone global in a big way crossing the \$2.1 billion mark in exports. A chunk of it was contributed by the footwear segment. Producing 685 Million pairs annually, India is second in shoe production in the world next to China.

The Leather Industry has its own designers who have to be closely involved with manufacturing process. Apart from the mechanized shoe-making process the leather industry, in fact, has thousands of shoe manufacturers and other leather goods manufacturers under unorganized sector who are performing the work due to traditional family background who survive barely on their Manual Skills. They specialize in areas of leather cutting, upper Making, Sole/bottom piece making, padding, stitching, shoe-lasting , pasting, ironing, colouring and polishing to ultimately provide it as a finished good touch,. The manually finished leather goods have a great demand with the consumers in general but as compared to the machine made shoes and leather good; they are generally costlier and have a ready market.

## NATURE OF WORK

The work in a leather industry has two main areas of work:

1. The processing of raw leather to finished leather and make it ready for the manufacturing industries.
2. The design, production and marketing of finished leather goods.

Leather technologists are trained in the treatment of animal skin which goes through a process called tanning which makes it soft, flexible, prevents it from rolling and preserve the leather. The technologists are involved in directing and supervising the processing of raw-hide dyeing, fat liquoring, stretching by taking, toggling and pasting.

## TRAITS REQUIRED

- The ability to work as one of a team.
- A Scientific bent of mind.
- Artistic skills
- Creativity
- Understanding capacity of market-trends & consumers.
- Good knowledge about social, climatic and user trends.

## EDUCATIONAL/TRAINING FACILITIES

1. Footwear Design & Development Institute (M/o Commerce, Govt. of India), A-10/A, Sector-24, NOIDA -201301.

**Courses:** (i) Six - Semester Diploma in Footwear Technology.

**Qualification:** 10+2.

(ii) Four - Semester Advanced Diploma in Footwear Design.

**Qualification:** Master/Bachelor of Fine Arts.

(iii) Four – Semester, P.G. Diploma in Footwear Technology & Management.

**Qualification** – Graduation in Science with minimum 60% Marks/P.G. in Science with minimum 50%/B.E./B.Tech. Degree.

Selection will be based on written test and Group Discussion.

2. Central Footwear Training Institute, 65/1, GST Road, Guindy, Chennai -600 032.

**Course:** (i) One-year – Post Diploma in Footwear Technology.

**Qualification-**Diploma on the basis of academic Merit.

(ii) Two –years Diploma in Footwear Design & Production

**Qualification-**10+2 on the basis of written Test and interview.

(iii) One-year Certificate in Footwear Technology after 10<sup>th</sup> pass on the basis of academic merit.

3. Central Leather Research Institute, Adayar Chennai 600020.

**Course:** (i) Diploma course in Footwear (52 weeks)

**Qualification** – 10+2/equivalent with 55%.

(ii) Certificate Course in Footwear of 26 weeks.

**Qualification** – 10/equivalent with 55%.

(iii) Shoe designing – 10 weeks.

**Qualification** – 10 + 2 / equivalent.

4. Central Footwear Training Institute (Government of India, M/o Industry), C-41-42, Industrial Area, Sikandra, Agra – 282 007.

**Course:** (i) Two years Diploma in Footwear Design and Production.

**Qualification** – 10 + 2

(ii) One year Certificate Course in Design and Product Development.

**Qualification** – 10+2 /Fine Arts Graduates preferred.

(iii) Six months Basic Design and Pattern Cutting.

**Qualification** – 10<sup>th</sup>

(iv) **Other Short-term course**

Operator's Course in clicking and Material Technology.

a) Supervisor's Course in Upper Closing (Sewing) Technology.

b) Operator's Course in Lasting and Bottom Making.

c) Certificate Course in Computers aided Shoes Designing.

5. NSIC Technical Services Centre, The National Small Industries Corporation Ltd. (Govt. of India Enterprise), B-24, Guindy Industrial Estate, Ekkadutungal , Chennai – 600 097.

**Course** – (i) One year Post-Diploma in Footwear Technology after Degree/Diploma in Engineering.

(ii) Three years Accessory Design after + 2.

6. Anna University, Guindy, Chennai-600 025.

**Course:** M. Tech. Footwear Science & Engg. After B. Tech.

7. Dr. B.R. Ambedkar, Regional Engineering College, Suranussi, Jullundhar – 144 011.

**Course:** B. Tech.

**Qualification** – 10+2 pass. Apply through REC in State.

8. College of Leather Technology, L-B Block, Sector –III, Salt Lake City, Kolkata – 91

**Course:** B. Tech. (L.T.)

**Qualification** - PCM & English at 10+2 level.

**Reference:** Engg. Admission under West Bengal.

9. Institute of Technology, Bihar University, Muzaffar Nagar – 842 003.

**Course:** B.Sc. Leather Technology (4 ½ years)

**Qualification:** 10+2 with PCM Merit in CEE test (Refer Bihar Engg. Entrance Test).

10. Harcourt Butler Technological Institute, Kanpur – 208 002.

**Course:** B. Tech. (Leather Technology)

**Qualification** – 10 + 2 with PCM . (Refer U.P., Engg. Entrance Test).

11. Anna University, Chennai

Alagappa College of Technology, Guindy, Chennai – 600 025

**Course:** (i) B. Tech.

**Qualification:** 10+2 PCM with minimum 60% & written examination (only for Residents of TamilNadu except for reserved seats for other States).

(ii) M. Tech. ( 3 Semesters)

**Qualification:** B. Tech.

(iii) P.G. Diploma in Footwear Science & Engineering.

**Qualification:** B. Tech.

12. Bharath Institute of Science & Technology, 173, Agharans Road, Selaiyus, P.O., Chennai – 600 073

**Course:** B. Tech. (4 years) Leather Technology. Refer State Level Common details under Tamil Nadu.

13. NIFT, Hauzkhas, New Delhi – 110 016.  
NIFT, Plot E/4, GIDC, Electronic Estate, Gandhinagar – 382 004.

### **DIPLOMA COURSES IN LEATHER/FOOTWEAR TECHNOLOGY**

Sl.. No.	Name & Address of the College	Course Offered	Duration	Qualifications
1.	Govt. Training Institute, Nakoder Road, Jalandhar	Leather Technology Footwear Technology	3 years 2 years	SSLC
2.	Institute of Leather Technology, CIT Campus, Taramani, P.O. Chennai – 13	Leather Technology	3 ½ years	
3.	Institute of Leather Technology, Golkonda, Post, Hyderabad-5	Leather Technology	3 ½ years	
4.	Karnataka Institute of Leather Technology, Mysore Road, Bangalore - 25	Leather Technology Footwear Technology Leather Goods	3 ½ years 3 ½ years 3 ½ years	
5.	Govt. leather Institute, Nunrai, Agra	Leather Technology Footwear & Leather Goods	3 years 2 years	
6.	Govt. Leather Institute , Prabati Bengal Road, Souterganj, Kanpur	Leather Technology Footwear Goods	3 years 2 years	
7.	Govt. Institute of Leather Technology, Bandra East, Mumbai – 51	Leather Technology Footwear Technology Leather Goods	3 years 2 years 3 years	
8.	Govt. Polytechnic for Leather Technology, Royaghada, Koraput Distt., Orissa	Leather Technology	3 years	

## **CAREER PROSPECTS**

The requirement of Exports in the field has increased manifold. A Leather technologist finds employment with industries which manufacture a) footwear, b) Leather Garments, c) Leather products. There are bright prospects for entrepreneurship and self-employment with our export of leather finished goods overtaking traditional goods.

Employment prospects in India's footwear industry are in (i) designing, (ii) manufacturing and (iii) marketing.

The large number of production units from primary processing to products manufacturing constitute the job market for those who specialize in design and manufacturing. Domestic Distribution Companies and the export trading houses are major employers for design & marketing specialists.

## **SOME IMPORTANT TRADES IN LEATHER INDUSTRY**

1. Leather Technologist  
(Production Manager) Leather Embosses
2. Leather Glazer Machine
3. Leather Seasoner
4. Leather Machine Setter
5. Leather Sprayer
6. Supervisor
7. Mechanics/Machine Operation
8. Chemists/Lab. Analysts
9. Leather Designers/Pattern Makers
10. Leather Duffer – Machine
11. Leather Currier
12. Leather Cutter
13. Leather Lasters and Sewers
14. Leather Drencher
15. Leather Dyer Machine
16. Leather Grander
17. Leather Sorter
18. Leather Embosses
19. Leather Glazer Machine
20. Leather Seasoner
21. Leather Machine Setter
22. Leather Sprayer

## **SOME IMPORTANT OCCUPATIONS**

1. Shoe Supplier – wholesale
2. Shoe Shopkeeper/shoe Agency Holder
3. Shoe Shop Attendants
4. Leather Garments/Shoe Exporter
5. Leather Garments Sewers
6. Leather Garments Agency Holder
7. Leather Garments Salesman

# **THE NURSE**

## **INTRODUCTION**

Nursing is a profession that demands one's physical as well as emotional involvement. Nurses are typically involved in providing for the physical, mental and emotional needs of patients. They assist Physicians, Surgeons during treatments and examinations and in rehabilitation and convalescence. Nursing is a demanding career and involves shift duty on a round the clock basis so as to provide care to needy patients.

Majority of Nurses work in hospitals in different departments they may be assigned to general, operating room or maternity room duty. They may specialize in caring for the sick children or working in emergency rooms, intensive care units or outpatients clinics, in physicians consulting rooms in private nursing homes or school infirmaries. They not only nurse the sick but also educate the patients about preventive care. Nursing is basically a women's profession. Today nurses constitute the largest single group of female health workers in the world.

The Nursing field has become challenging. Nursing has been finally recognized as a career avenue where opportunities are coming up. There is a demand for independent Nursing practice in the field of community health & Midwifery. Nursing today comprises many specializations. A specialization depends on the type of care required by a patient and the department in which the nurse works, specializations include the areas of psychiatric Nursing, pediatric Nursing, orthopedic nursing, Cardio – thoracic vascular Nursing, Neuromedical and Neurosurgical Nursing, Career Nursing, gynecological nursing, community health nursing, Rehabilitations Techniques etc.

## **NATURE OF WORK**

The profession demands 8 to 10 hours of work each day. A nurse has to record, temperature, pulse, administer medication orally and hypodermically (injection), change dressing, assist patients in personal care, prepare patients for surgery and any number of duties which require skill and understanding of patient's needs. Thus they work with doctors for speedy recovery of patients.

## **TRAITS REQUIRED**

- Unstinted Dedication
- Patience
- Professional commitment

- Order linen in work
- Responsibility
- Punctuality
- Ability to work at odd hours
- Ability to make observations & decisions rapidly
- Ability to work as a part of a team
- Common sense & practical bent of mind.
- Sensibility with a certain amount of toughness.

## **TRAINING/EDUCATIONAL FACILITIES**

Training is imparted in colleges of Nursing attached to medical colleges in various States. Usually admissions are restricted to domiciles of the respective States. However, a number of prominent colleges admit students through All India entrance tests; others keep some seats open for students from other States. Many Nursing Colleges restrict themselves to training female candidates, but the field is also open to males, although in fewer numbers.

Nursing Education is available at six levels –

1. 18 months Auxiliary Nurse Midwife (ANM)/Multipurpose Health Workers (MHW) Courses. Basic required qualification is Xth pass.
2. A 3- year Diploma Courses in General Nursing & Midwifery (GNM) is open to students who have completed +2 or equivalent
3. A 4-year first degree course in B.Sc. Nursing. Qualification 10+2 with Science PCB.
4. A 2-year B.Sc. (Nursing) Post basic Condensed. Qualification 10+2 or equivalent in Science with work experience ( 3-5 years)
5. A 2-year P.G. Course (M.Sc. Nursing)
6. Research Degree Course (M. Phil. /Ph.D.) specialised courses.

Indian Nursing Council is responsible for regulation & maintenance of uniform standards of training for Nurses, Midwives, Auxiliary Nurse Midwives & Health visitors. The Council prescribes the syllabi & regulations for various Nursing Courses. On an average 13,000 to 15, 000 nurses qualify every year. So far 7,75,812 –GNM & 4,11,220 ANM nurses have been registered with various State Nursing Councils.

Students must ensure that they are seeking admission to institutions that are approved by the Council.

Sl. No.	Name & Address of the College	Course	Duration	Educational Qualifications	Age	Eligibility
1.	Christian Medical College, Ludhiana-141 008	M.Sc. Nursing				
2.	Banaras Hindu University, School of Nursing, Sir Sunderlal Hospital	General Nursing & Midwifery	3 years	Intermediate/10+2 or equivalent with Physics, Chemistry, and Biology with English having obtained 45% marks in aggregate for General Category & 35% for S.C. Category. Hindi is essential in High School/SSLC.	17-35 years	Females only, unmarried or Divorce/widow with no children (Indian National only)
3.	Ahilya Bai College of Nursing, Govt. of N.C.T. of Delhi.	B.Sc. (Hons.) Nursing	4 years	Sr. Secondary School Examinations (10+2) course of Indian School Certificate Examination or its equivalent with English Core/Elective Physics, Chemistry & Biology with at least 50% (45% for S.C./ S.T.)	17 years	Only women candidates are eligible for admission.
4.	Post-Graduate Institute of Medical Education & Research, Chandigarh. National Institute of Nursing Education	1. B.Sc. Nursing  2. B.Sc. Nursing (Post-Basic)	4 years  2 years	10+2 with Physics, Chemistry, Biology & English or any other equivalent Examination recognized by Punjab University.  1) 10+2 or any other equivalent examination recognized by Punjab University.  2) 3 years experience in bed side Nursing/Public health Nursing from a Hospital	17-25 years	Only for female candidates

		3. M.Sc. Nursing Specialization (i) Medical Surgical (ii) Community Health	2 years	recognized by the State Govt./Govt. of Punjab  B.Sc. Nursing (Post-Basic)/B.Sc. Nursing degree of the Punjab University or any other degree recognized by Punjab University with 50% marks in aggregate. Two years experience in bedside Nursing or Public Health Nursing		
5.	All India Institute of Physical Medicine and Rehabilitation, Government of India, Haji Ali Park, K.Khadya Marg, Mahalaxmi, Mumbai-400 034	Post-Graduate Diploma Course in Rehabilitation for Nurses	1 year	-	-	Registered Nurses with Degree/Diploma from recognized Institute
6.	Panna Dai Nursing School, Deen Dayal Upadhyay Hospital, Hari Nagar, New Delhi	General Nursing and Midwifery	3 years	10+2 with Physics, Chemistry & Biology with 50% marks.	17-22 years	-
7.	Hindu Rao Hospital, New Delhi	General Nursing & Midwifery	3 years	10+2 with Minimum 50%.	17-22 years	-
8.	Kasturba Hospital, Delhi	General Nursing & Midwifery		-	-	-
9.	Dr. Ram Manohar Lohia Hospital, New Delhi	General Nursing & Midwifery	-	-	-	-

10.	School of Nursing, Lady Harding Medical College & Associated Hospital (Smt.Sucheta Kripalani Hospital), New Delhi	General Nursing & Midwifery	-	-	35 years ( 5 years relaxation for SC/ ST)	-
11.	Safdarjung Hospital, New Delhi	General Nursing & Midwifery	-	10+2 with 50%	16-24 years	Unmarried women
12.	Annamalai University, Annamali Nagar, Chennai, Tamil Nadu	B.Sc. (Nursing)	-	An aggregate of 50% marks in the Science subjects Bio or Botany & Zoology, Physics, Chemistry examination of High School Certificate/any examination accepted by Annamalai University . 40% in case of SC/ST.	-	Unmarried female candidates only.
13.	National Institute of Mental Health & Neuro Sciences (Deemed University) P.B. No. 2900, Hosur Road, Bangalore – 560 029	1.Diploma in Psychiatric Nursing  2. Diploma in Neurological Neurosurgical Nursing  3. Ph.D. Degree in Nursing.	1 year  1 year	1. Should posses ‘A’ Grade Certificate in General Nursing recognized by Indian Nursing Council. 2. Should be a recognized nurse in the State Nursing Council with 2 years experience.  1. M.Sc. in Psychiatric Nursing/Master’s degree in Nursing with clinical specialty of Psychiatric Nursing with minimum 55% marks . 2. M.Sc. in Psychiatric Nursing	-  -	-  1. The course is open to those who are registered Nurses with B.Sc./B.Sc. (H) in Nursing 2. Should have a minimum of 2 years of



## **PROSPECTS**

The demands for qualified and skilled nurses continue to grow with the expansion of health care facilities. After Training Courses, jobs are available at Hospitals, Clinics, Nursing Homes, or Pharmacy, Old-age Homes. Apart from these jobs there is a scope for private practice.

As the volume of medical care needs goes up, we are looking at ideal figures of Nurse patient ratio 1:3 or 1:5 which translate into demands running into few lakhs in the near future.

Career option in this profession are *Chief Nurse , Nurse Associate, Anesthetics*( Charge-clinic, District, Industrial, Maternity, Obstetrics, Occupational Health, Orthopedics, Pediatrics, Psychiatric, School-Sister, Nursing Associate Professional, Principal, Nursing associate and Nurse infant, Nurse aid-delivery and related worker).

Career option in the profession of midwifery is limited to midwife associate in hospital, primary health centers, clinics and similar institutions.

The current demand for Nurses from India to service the demands of health care in various advanced countries has enhanced the employment prospects of Nurses. Bangalore is a Centre for the Commission on Graduates of Foreign Nursing Schools (CGFNS) examination in India. Trained Nurses with a valid license and preferably some work experience may appear for this examination.

# MATHEMATICS AS A CAREER

## INTRODUCTION

Mathematics is one of the most useful and fascinating subjects of human knowledge. It helps us in many important areas of study and has the power by which man can solve some of the most complex puzzles he faces. Mathematics applies almost everywhere in our life. In fact, every thing that we do in our daily life is governed by mathematics. Mathematics is one of the old sciences. Its knowledge is essential for understanding of various other subjects. Therefore a study of mathematics in higher secondary /Intermediate/Pre-university classes is essential for further studies and subsequent career in a large number of fields.

In fact, it will not be incorrect to say that today mathematics has applications in almost all walks of life, not only in areas like engineering & technology, Physical sciences, Statistics, Computers, Operation research but also in Commerce, Economics, Actuarial science, Life sciences etc... We however, practice mathematics without realizing that we are using the same intricate algebraic formulae and complicated geometrical theorems, which used to send shivers down our spine when we studied them in childhood.

Mathematics may be broadly defined as the scientific study of quantities, including their relationships operations and measurements expressed by numbers and symbols. **Arithmetic** deals with quantities expressed in numbers, Algebra uses quantities and relationships expressed in symbols, Geometry involves quantities associated with figures in space i.e length, breadth, area & figures in space, Trigonometry is connected with relationships of angles, Analytical geometry applies algebra to geometric studies, Calculus works with pairs of associated quantities, a more advanced level of mathematics called Encryption algorithms come into play when we use credit or debit cards, mathematics is even applicable in our telephone conversations, where, whatever we speak is broken up and reassembled at the other end using Signal processing algorithms & coding, the applies to other electronic devices too.

Mathematics has two branches namely 1) Pure Mathematics 2) Applied Mathematics.

Pure mathematics is concerned with theories & ideas. It deals with applied abstract mathematical concepts with or without immediate concern for practical application of every day problems.

Applied mathematics is concerned with the use of mathematical theories and principles as tools to solve problems in any field, whether it is research in university or problems in field of Physics, Chemistry, Biology, Business, Industry etc.

Another important area in mathematics is Operational Research. Operational research is Mathematics that speaks and helps you to solve various decision making problems. Operational Research is mathematics applied to a problem to arrive at a solution. From its use in defence matters, Operational Research has moved on to various areas, especially business. The applications are numerous: Scheduling fleets for airlines,

Finding the best place to cite a warehouse, finding an efficient and swift way to deploy troops, developing computer simulations of airports so that customers can be processed quickly and safely or hotel tariffs while keeping in mind lean seasons or days, predicting which individual will be a good bet for a credit company, deciphering the effectiveness of sales promotion, developing customer profile etc.

## **TRAITS REQUIRED**

Some important traits which are essential for students opting Mathematics as career as follows

- Intellectual curiosity
- Clear concepts and a calculative brain
- Numerical Aptitude
- Spatial Aptitude
- Good Reasoning Ability
- Persistence in order to identify, analyse and apply basic principles to technical problems
- Good communication skills are important for prospective mathematicians as they must be interact with others
- Ability to work both independently and as a team.

Dear student if you are having majority of these traits you may go ahead with mathematics.

## **EDUCATIONAL AND TRAINING FACILITIES.**

Mathematics is taught right from the beginning of a child's education in school. It continues straight up to 10<sup>th</sup> standard .Till this stage; every student becomes conversant with mathematical knowledge and its practical aspect in life. Thereafter, it depends on the student's aptitude, inclination and scholastic achievement to offer mathematics as a subject at graduation/post graduation level.

Candidates who pass 10+2 with maths are not only eligible for admission to courses relating to Engineering and Technology, Architecture, Pharmacy but become eligible for seeking admission to Bachelors of computer applications, Bachelor of Financial and investment Analysis. In some universities, economics is offered at the graduation only to those who have studied mathematics at 10+2

level. Majority of Colleges/Universities are offering B.Sc and M.Sc courses in mathematics. Various Universities also offer M.A, M.Sc in mathematics through the distance learning system.

### **LIST OF SOME INSTITUTIONS OFFERING SPECIALIZED COURSES IN MATHEMATICS.**

- Chennai Mathematics Institute, 92 G N Cheltes Road, T.Nagar, Chennai-600017.
- The Institute of Mathematical Sciences, Taramani, Chennai-600013.  
(It offers one year intensive training programme in Physics/Mathematics to Post Graduate in Maths/Physics. The emphasis is on developing problems solving ability, initiative for self learning and exposure to advanced topics. This training benefits the individual to decide for a Career in Research or Teaching areas of Physics/Mathematics.)
- Mehta Research Institute of Mathematics and Mathematical Physics, 10 Kasturba Gandhi Marg, Allahabad – 19.  
(It conducts research in Mathematics & Theoretical Physics.)
- Tata Institute of Fundamental Research , Homibhabha Road, Mumbai-05.  
(It has School of Mathematics involved in research.)

Admission to the Institute of Mathematical Sciences, Taramani, Chennai & Mehta Research Institute, Allahabad are through a Joint Entrance Screening test.

### **LIST OF SOME OTHER UNIVERSITIES OFFERING SPECIALIZED COURSES IN MATHEMATICS**

- Dr. B.R.Ambedkar University, Agra – 04.  
M.Sc. in Industrial Maths and Computer Application, M.Sc. in Bio-Mathematics & Computing.
- Gujrat University, Ahmedabad – 09.  
Diploma in Mathematical economics.
- IIT ,Chennai – 36,  
M.Tech in Industrial Mathematics & Scientific Computing.
- Pondicherry University, Pondicherry – 14.  
M.Sc. in functional Mathematics,

- Rani Durgavati Viswa Vidhyalaya, Jabalpur – 01.  
M.Sc. in Mathematical economics.
- University of Roorkee – 67.  
M.Sc. in Industrial Mathematics & Informatics.
- Madurai Kamaraj University, Madurai – 21.  
M.Sc. in Mathematical economics.
- University of Delhi, Delhi.  
M.Sc in Operational Research (North Campus )  
M.Sc in Applied Operational Research (South Campus)  
B.Sc in Mathematical Sciences with Operational Research.
- The Indian Statistical Institute, Kolkata.  
M.Tech in Quality, Reliability and Operational Research

### **Job Opportunities/Career Prospects**

Following are the main fields where ample Job Opportunities are available

- Teaching in School/Colleges/Universities.
- Computer Programming.
- Actuarial Mathematics.
- Applied Mathematics & O R.

School teachers of Maths teach 9<sup>th</sup> to 12<sup>th</sup> standards. He should be a M.A./M.Sc. with a B.Ed. degree. Pay Scales of teachers vary from state to state. In Kendriya Vidhyalaya, Navodaya Vidhyalaya school teachers of Mathematics (i.e TGT & PGT) required qualification are B.Sc. with B.Ed., for TGT's and MA/M.Sc. with B.Ed., for P.G.T. Pay Scale for T.G.T. 5500 – 9000, for PGT 6500 – 10500. Selection to these posts is based on written test.

In a College/University/ Institute a teacher of Mathematics is designated as a Lecturer, Reader, Assistant Professor, Professor as per his stand in the institution. He must hold a distinct academic career preferably a Doctorate degree and he must clear the National Educational Test conducted by U.G.C.

The Mathematicians with Operational Research qualification were absorbed by Government organisations such as ONGC, BHEL, SAIL and the Defence Research and Development Organisation (DRDO)etc. In addition to these, plenty of openings exist in research and training as well as in Multi National Companies. In fact, now almost all MNC's have an R&D wing attached that has increased the job opportunities for OR students.

The mathematicians can also work in the field of Aviation, Aerodynamics, Applied Physics, Robotics, Market Research, Population Studies, Commercial Surveys and in Industrial research & development.

A combined degree in mathematics and computer science is suited for jobs in Data processing and other allied fields.

Various organizations like National Board for Higher Mathematics, TIFR-Mumbai and Bangalore, ISI-Kolkata, Harish Chandra Research Institute- Allahabad, Chennai Mathematical Institute, Indian Institute of Science, Bangalore etc. invite applications for Mathematicians. Besides teaching and research a mathematically trained person has opportunities in Computing, Finance, Banking, Space studies etc.

# THE TEACHER

## INTRODUCTION

Teaching is a noble profession which keeps you always in touch with young generation. As a result the teacher may also feel young and happy. Teaching might not pay monetarily, but you get a chance to mould the minds of tomorrow. If you choose teaching as a career, then you must be prepared to deliver to the students maximum without expecting any returns from them. A teacher's duty lies not only in imparting education to the students but also in creating their all-rounded personalities. India has yet to achieve a 100% literacy target. The country needs trained teachers who not only have a firm hold on their subjects but also have a positive approach towards human beings. The teacher's art and skills determine what kind of person a child grows into as seen by observing many Administrators, Doctors, Scientist, Engineers and other professionals which are the products of a sound teaching order. Though not as attractive as positions in the corporate sector in terms of financial emoluments, teaching gives plenty of opportunities vis-à-vis self advancement and development. As one of the finest and noblest professions in the world, it keeps you young, maintains your intellectual equilibrium and provides immense satisfaction: Teachers are now specially trained for the specialized areas like pre-nursery, primary, secondary, senior secondary and college levels. Even the subject they teach depends on the field of specialization.

Historically, teachers played a vital role in shaping the destiny of society and promoting the course of peace in different classes. In any society a teacher has a very respectable place being the source of morality and ideals and regulator of life values. It is the teacher who helps to transfer an individual into a person of imagination, wisdom, human love and enlightenment the teacher must be an embodiment of eternal values – values that remains the same, however, odd the circumstances may be.

Fair dealing with students by the teacher is very important point, particularly in the case of co-education; where boys or girls, should be equally and fairly treated for their healthy growth of personality. The relationship between a teacher and students is very important. A student can really learn from a teacher if he respects him and if a teacher wishes to have his student's respect, he has to be worthy of it. One of the pre-conditions for commanding the respect of students is upright behaviour. A good teacher is said to be one who is an interesting man or woman, a determined person with a sense of humors, good memory and kindness. The University Grants Commission has suggested three equally important activities for a teacher. These are Teaching Research and Extension work In addition to these, it is important to organize students in healthy groups for sports, cultural activities and similar other joyful occupations. Besides teaching, teachers may be asked to attend to various other items

of work depending upon their placement. In schools, generally teachers are asked to allot, collect and check home work of students, conduct promotion tests and prepare examination results.

## **TRAITS REQUIRED**

Dear student if you choose to be a teacher there are some personal qualities which you ought to possess. Some of them are

- Coherent speech
- Above average intelligence
- Liking for study and learning
- Self-discipline and emotional stability
- Temperament to understand the problems of your students.
- Sense of humour
- Sense of fair play
- Adaptability
- Cheerful, cool & friendly temperament
- Very caring & sharing nature
- Establishing good rapport with the students is important for class room communication
- Unbounded enthusiasm and inventiveness for the work at hand.

So, dear student if your qualities are matched with majority of above mentioned traits in addition to have in depth knowledge of the subject concerned, then you may go ahead and select this as one of your career choice.

## **WORK PROFILE**

A teacher designation depends upon the level or the type of training he has undergone. It varies from institution to institution and the class teacher and sometimes, his subject or discipline may determine his designation like

- Person who teaches arts & drawing may be known as *Drawing teacher*
- Person who teaches English, Sanskrit, Telugu etc. may be known as *Language teacher*

- Person who are working with Industrial Training Institute, Vocational Guidance Centre, Polytechnics may be known as *Instructor*
- Persons who are working in Colleges, Universities may be known as *Lecturer, Reader, Professor*, etc.
- Persons who are imparting Physical Education may be known as *Physical Education Teacher*
- Persons who teach Music etc. may be known as *Music Teacher*.

## LEVELS OF TEACHERS

1. Pre-Primary School Teacher
2. Primary Teacher
3. Senior Secondary Teacher
4. Physical Training Instructor/Physical Education Teacher
5. Special Education
6. The School Counsellor
7. Lecturer, etc

## EDUCATIONAL/TRAINING FACILITIES

<i>Sl. No.</i>	<i>Address of the College</i>	<i>Course</i>	<i>Eligibility</i>	<i>Age</i>	<i>Remarks</i>
I.	State Council of Education Research & Training, Defense Colony, New Delhi-110024	Diploma in early Childhood Care & Education.	10+2 Pass with 45% marks	17-30 years	The admission is through written test followed by an interview.
<b>II. NATIONAL COUNCIL OF EDUCATIONAL RESEARCH &amp; TRAINING, NEW DELHI</b>					
1.	Regional Institute of Education Bhopal -462013	B.Sc., B. Ed. (Integrated Course)	Higher Secondary/Senior Secondary (+2) or equivalent with at least 45% in aggregated . 5% relaxation for SC/ST candidates.  For admission in Physical	4 years	-

			<p>Science Group the candidate must have passed in Physics, Chemistry and Maths.</p> <p>For admission in Biological Science Group, the candidates must have passed in Physics, Chemistry &amp; Biology.</p>		
		B. Ed. (Secondary)	<p>At least 45% marks in B.A./B.Sc. (5% relaxation for SC/ST candidates)</p> <p>The candidate possessing B.Sc. Degree must have offered at least 2 of the following subjects at graduate level: Physics, Chemistry, Botany, Zoology, Maths.</p> <p>The candidates possessing B.A. degree should have offered at least following elective at graduate level:  (i) any one from Hindi, English, Gujarati, Marathi &amp; Urdu (ii) any one from History, Economic, Geography, Political Science.</p>	2 years	-
		M.Ed. (Elementary Education)	<p>At least 50% marks in Post-Graduate degree in Science/ Humanities/Social Science.  At least 50% marks both in theory &amp; practical separately in B. Ed. or in the Education part of 4 years B.A. B. Ed./B.Sc. B. Ed.</p>	1 year (2 Semesters)	-

		Post-Graduate Diploma in Guidance & Counselling (PGDGC)	M.A./M.Sc. in Psychology/ Educational Psychology/ Education/M. Ed. One year Social work/Child Development/ Human Development or M.A./M.Sc. in any School subject having B.Ed. with psychology/counselling as papers/B.A. with psychology as a paper. Minimum, 50% at master level.	1 year	-
2.	Regional Institute of Education, Ajmer.	B.Sc., B.Ed.	Senior Secondary or equivalent with 45% marks.	4 years	-
		B.Ed. Secondary	Graduation with 50% marks	2 years	-
		M.Ed. Elementary Education	B.Ed. or equivalent with 50% marks.	1 year	-
		Post-Graduate Diploma in Guidance & Counselling	M.A./M.Sc./M.Ed (Secondary/elementary) in Psychology/Educational Psychology/Education/Social work/ Child Development/ Human Development.	1 year	-
3.	Regional Institute of Education, Bhubneswar-751022 (A Constituent Unit of NCERT, New Delhi)	B.Sc. B. Ed. (Integrated)	Pass in +2 Science with 45% (minimum). The candidates should have either the subject combination of Maths, Physics, Chemistry of that of Physics, Chemistry & Biology.	4 years	-
		B. Ed. Secondary Two Streams B. Ed. (Sc.) B.Ed. (Arts)	Graduate in Science/Humanities with a at least 50% of marks in the aggregate.  B. Ed.(Science) – any one of the combination at graduate level –	2 years	-

			Physics, Chemistry & Maths. Chemistry, Botany & Zoology.  English, Hindi, Oriya, Bengali & Maths.  History, Geography, Pol. Science & Economics.		
		M.Ed. (Elementary Education)	Post-Graduate Degree in Science/Humanities/Social Science with a minimum of 50% marks in the aggregate.  B. Ed. with 50% marks in the aggregate.  B.Sc. B. Ed./B.A. B. Ed. with 50% marks.	1 year	-
		Post-Graduate Diploma in Guidance & Counselling.	Master's degree in any discipline with at least 50% marks.	1 year	-
4.	Regional Institute of Education, Mysore-570 006.	B.Sc./B. Ed.	PUC or equivalent from academic stream with 45% marks in aggregate with subjects - i) Physics, Chemistry & Maths.  ii) Chemistry, Botany, Zoology or Physics, Chemistry, Biology, Maths.	4 years	-
		M.Ed..	B.Ed. or equivalent with 50%	1 year	-
		Post-Graduate Diploma in Guidance Counselling (Programme in NCERT)	Master's Degree in Psychology or Education with at least 55% marks.	1 year	-

<b>III.</b>	<b>Faculty of Education, University of Delhi, Central Institute of Education, Delhi</b>	B. El. Ed (Bachelor Elementary Education)	10+2	4 years	-
		B. Ed.	Graduation	1 year	-
		M.Ed.(Full Time)	B. Ed.	1 year	-
		M. Ed/(Part-Time)	B. Ed./B. El. Ed.	2 years	-
		M. Phil. (Education)	M.Ed.	-	Admission through written test & interview.
		Ph. D (Education)	M. Phil (E)/M.Ed.	-	Admission through Interview on the basis of research. Proposal to be submitted in the Deptt. Of Education for further details contact: Dean, Faculty of Education, University of Delhi, Central Institute of Education, 33, Chhatra Marg, Delhi – 110007.
<b>IV.</b>	<b>Jamia Millia Islamia University (A Cenral University by an Act of Parliament, Jamia Nagar, New Delhi – 110025</b>	Diploma in Elementary Teacher Education	-	-	-
		B. Ed., M.A. (Edu), B. Ed. (Spl. Edu), B. Ed.(Nurs.), M.Ed.(Spl. Edu), M. Phil,	-	-	-

		M.A. (Edu. Plan & Admn), B.F.A.(Art Education), B.F.A. (App. Art), B.F.A. (Painting), B.F.A. (Sculpture) Certificate Course in Fine Arts.			
<b>V.</b>	<b>IGNOU, Maidan Garhi, New Delhi-110068</b>	B. Ed.,	A Bachelor Degree or a higher degree from any recognized University. In-service teacher with 2 years full time regular teaching experience in a primary, Secondary/Secondary Secondary recognized by the Central or State Government or U.T.	2 years	The admission to this programme is on the basis of an Entrance Test.
<b>VI.</b>	<b>Annamalai University</b>	B. Ed.	Candidate should have passed - (i) Graduate Degree Examination with any one of the following as main subject with minimum of 50% marks. Tamil (B.A. Litt.), English, History, Geography, Maths, Physics, Chemistry, Botany, Zoology, B.Sc.(Computer Sc.) (ii) Post-Graduate Candidate in M.A (Economics ) & M.Com.	-	-
		M.Ed.	50% in B.Ed. degree examination	-	-
		B.P.Ed.	A pass in any degree from a recognized University	-	-
		B.P.E.S.	A pass in the Higher Secondary (10+2) or equivalent	-	-

		M.P.E.S.	A pass in B.P.Ed. or B.P.E.S. or B.Sc. Physical Education from a recognized University.	-	-
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**B.Ed. courses also available in the following Universities through correspondence for teachers of recognized Schools who have two years experience**

1. IGNOU, New Delhi
2. H. P. University, Shimla
3. M.D. Univesity, Rohtak
4. Punjab University, Patiala
5. Kurukshetra University, Kurukshetra

**Other than Regional Institutes of Education following are the institutes offer B.Sc. B.Ed., B.A. B.Ed. courses of 4 years duration:**

1. Barkatullah University, Bhopal
2. Devi Ahilya University, Indore
3. M.D. Saraswati University, Ajmer
4. Utkal University, Bhubaneswar
5. Shivaji University, Kolhapur
6. University of Mysore, Mysore.

**Institutes that offer B. Ed. or M.Ed. courses in special Education:**

1. Banaras Hindu University, Varanasi
2. Kurukshetra University, Kurukshetra
3. M.J.P., Rohilkhand University, Bareilly
4. University of Mumbai, Mumbai
5. Osmania University, Hyderabad
6. SNDT Women's University, Mumbai

**Institutes that offer P.G. Diploma in Guidance and Counselling are-**

1. Ravi Shankar University, Raipur

2. M.S. University, Baroda
3. University of Mumbai, Mumbai
4. Rani Durgavati University, Jabalpur
5. Punjab University, Chandigarh
6. Barkatullah University, Bhopal

## **PROSPECTS**

Job prospects for professionally trained teachers continued to be bright because various government policies on education are now more focused towards primary education, adult education and learning programmes, keeping in view the low literacy rate in the country.

As per the information given by Ministry of Information and Broadcasting, Government of India, plan out lay on education has increased from Rs.151 crore in the Ist 5-year plan to Rs. 42,850 crore in the Tenth five-year plan (2002-07). The expenditure on education as a % of GDP also rose from 0.64% in 1951-52 to 4.11% in 2000-01 and universalisation of Elementary Education (UEE) has been accepted as a national goal. As a result of Central and State Government efforts, 94% of country's rural population have primary schools within one km. At the upper primary level, 89% of the rural population have schools within a distance of 3 km.

The scheme of operational Black board (OB) was launched in 1987-88 with the aim of improving human and physical resources available in primary schools of the country. Provision of at least 2 large rooms, at least 2 teachers and teaching/learning materials for every existing primary school. During 1993-94 the scheme was extended to cover upper primary schools. It provides for 3 rooms and an additional teach for upper primary schools and a third teacher for primary schools. These statistics indicate the demand of teachers in our society.

Government Schools, whether State or Central, provide a good salary structure with adequate facilities. In the Kendriya Vidyalaya, T.G.T./Librarian Teacher/P.E.T/Drawing Teacher etc. currently are employed in the pay scale of Rs.5500-175-9000, P.G., T. are employed in the pay-scale of Rs.6500-200-10,500. Primary Teacher./Music Teacher etc. are employed in the scale of Rs.4500-125-7000.

Teachers in Universities and Colleges are presently placed in the pay-scale of Rs.8000-275-13,500 at the time of recruitment.

# CAREERS IN OCEANOGRAPHY

## INTRODUCTION

The oceans of the world covered 71% of the area of the world and are reservoirs of energy, minerals and seafood. The Oceans also play an important role in regulating the weather and climate. However, the only a small fraction of the large resources of the Oceans have been tapped in our country. Now the Government is playing more attention towards the oceans to meet the vast needs of the population.

The professionals engaged in studying various aspects relating to the ocean is known as Oceanographer. An Oceanographer studies the physical, chemical, biological and other scientific aspects of the ocean. He studies and analyses phenomenon associated with the water itself, the atmosphere above it, the land beneath it and for coastal borders.

The Oceanographer is usually a highly skilled personnel with specialization n one or more of the following branches of Oceanography:-

1. Biological Oceanography : The Biological Oceanographer or the Marine Biologist studies various types of Marine organisms such as bacteria, plants and animals.
2. Chemical Oceanography: The Chemical Oceanographer investigates the chemical composition of the water and ocean flog.
3. Geological Oceanography: Geological Oceanographers study the topographic features of sea bottom and mineral composition of bottom and mineral composition of bottom sediments and deposits
4. Physical Oceanography: The Physical Oceanographers study physical aspects of Oceans such as temperature, salinity, ocean circulation patterns and the relationship between the sea and the atmosphere.

## PERSONAL QUALITY

- 1) Seagoing technicians must be in good health and free from sea sickness.

- 2) Must enjoy out of doors work
- 3) Must be well adjusted enough to be able to tolerate crowded conditions under uncomfortable and sometimes hazardous circumstances.
- 4) An inquisitive mind.
- 5) A love for adventure.

## EDUCATIONAL AND TRAINING FACILITIES

<i>Sl. No.</i>	<i>Name of the University</i>	<i>Course</i>	<i>Duration</i>	<i>Eligibility</i>
1.	Andhara University, Waltair-530 003, A.P.	a) B.Sc. in Horticulture fisheries b) M. Sc. Oceanography c) M. Sc. Capture and Culture Fisheries d) M. Sc. Chemical Oceanography e) M. Sc. Physical Oceanography f) M. Sc. Meteorology and Oceanography	3 years 2 years 2 years 2 years 2 years 2 years	Intermediate Part I Compulsory  B.Sc. Examination B.Sc. with Zool (Main) and any two , Bot., Chem. and Fisheries B.Sc. with Zool (Main) and any two , Bot., Chem. and Fisheries B.Sc. with Zool (Main) and any two , Bot., Chem. and Fisheries B.Sc. with Zool (Main) and any two , Bot., Chem. and Fisheries
2.	Barkatullah Vishwa Vidyalaya, Hoshangabad Road, Bhopal – 462 026, M.P.	M. Sc. in Fish Genetics.	3 years	B.Sc.
3.	Cochin University of Science and Technology, Cochin – 682 022, Kerala	(a) M. Sc. in Oceanography (b) M. Sc. incl. Fisheries	2 years 2 years	B.Sc. Degree B.Sc. Degree
4.	University of Madras, Centenary Buildings, Chepauk, Madras – 600 005, Tamilnadu	a) M. Sc. Ocean Life Science b) M. Sc. Ocean Resources and Management	2 years 2 years	B.Sc. with Bot. or Zool. (Main) B.Sc. with Bot. or Zool. (Main)
5.	College of Fisheries, Tuticorin, Tamilnadu	a) B.F.Sc.	4 years	10+2 by Tamilnadu Board/Pre-University from University of Madras/Madurai/Annamalai in any

		b) M.F.Sc.	2 years	of the following subjects – Phy./Chem./Botany/Zoology/Bio. With 60% marks in each of the subject. B.Sc.
6.	Marathwada University, Aurangabad, Maharashtra	B.Sc. Fisheries/Zoology	3 years	12 years Hr. Sec. or equivalent Subject Compulsory English as Language.
7.	Nagarjuna University, Nagarjuna Nagar – 522 510 Guntur, Andhra Pradesh	B.Sc. Fisheries/Zoology	3 years	Intermediate Examination
8.	Osmania University, Administrative Bldg., Hyderabad-500 007, Andhra Pradesh	B.Sc. Fisheries/Zoology	3 years	Intermediate with 40% marks in the concerned optional subject.
9.	Utkal University, P.O. Vani Vihar, Bhubaneswar – 751 004, Orissa.	B.Sc. Fisheries/Zoology	3 years	Intermediate or Higher Sec. Courses with Compulsory English
10.	Assam Agricultural University, Jorhat- 785 013, Assam	B.F.Sc. (Fishery Production) and Management Fisheries Biology, Hydro Biology.	4 years	10+2 Examination with Phy., Chem., Bio., having 50% marks in aggregate.
11.	Kakatiya University, Vidyananyapuri, Warangal-506 009, Andhra Pradesh	B.Sc. in Zool. & Fisheries Sc.	3 years	Intermediate Examination as the H.Sc. (Multipurpose) XII standard Examination of the Govt. of Andhra Pradesh with 40% marks.
12.	Karnataka University, Pavate Nagar, Dharwad – 580 003, Karnataka	B.Sc. Fishery Sc.	3 years	2 years Pre-University with three Sc. subjects. Subject compulsory English
13.	Manipur University, Canchipur, Imphal -795 003 Manipur	B.Sc. Fishery/Zoology	3 years	Pre-University, 2 years.

14.	ITI, Kharagpur	B.Tech. in Ocean Engineering and Naval Architecture	4 years	10+2 with Maths, Phy. and Chemistry.
15.	IIT, Chennai	Degree M.Tech. in Ocean Engineering and Naval Architecture	5 years	10+2 with PCM

This subject is research oriented and lot of time is spent conducting surveys collecting samples and analyzing data.

- The National Institute of Oceanography, Dona Paula, Goa(404004) conducts front line research you can enroll as a Senior Research Fellow for 3 years, provided you have own M.Sc./B.Tech. degree in a relevant discipline.

## THE JOB PROFILE

As a physical Oceanographer, you may have to study the interaction between the Ocean & its boundaries, like the land, seafloor and atmosphere and the relationship between the sea, the weather and climate. A Chemical Oceanographer has to take seawater Samples and then, conduct experiments in order to detect the level of Pollution that ultimately has an impact on seawater levels.

## SELF-EMPLOYMENT OPPORTUNITIES

India is one of the major producers of Sea foods. There, at present, are 300 fish processing units in the country having a total processing capacity of 3500 tonnes per day. So there are vast self-employment opportunities for persons possessing degree/post-graduate, diploma courses in fisheries. They may also open small units for cleaning, freezing, icing and salting of fish. Loans are provided by Nationalized Banks for setting up such units. They may start their own business in cargo booking, ship chartering, marine transporting etc. There are scopes for setting up firms to handle loading/unloading of ships. The Merchant Officers, Seamen and Engineers may take up jobs with private shipping concerns dealing with ship engineering. They can also start consultancy service and ferry services. Maintenance and repairs of ships, making of nets and their repairing work are other areas of self-employment. Brackish water aquaculture, which is fast growing field, give excellent self-employment opportunities.

**EMPLOYMENT OUTLOOK:** Although oceanography is growing, persons entering in the field in the next few years will face competition for the positions that are open.

Those with Post-Graduate Degree will have the best opportunities for employment. Persons with less education will have opportunities for employment as assistants or technicians doing more routine work. The demand for oceanographers is increasing. In many ways ocean research is an investment for our future. World affairs, technological achievements and the nation's economy will no doubt affect the rapidity with which ocean research progresses.

# THE COMPANY SECRETARY

## INTRODUCTION

A Company Secretary has been recognized by various enactments as one of the principal officers of the company. The knowledge and training acquired by him makes him versatile to carry out various functions in finance, accounts, legal administration and personnel areas in addition to his own secretary's duties and responsibilities. In fact, his role starts from the very moments where the idea of formation of a company is conceived. However, his responsibilities may vary from company to company. A Company Secretary's work involves mainly the following:

- I. To act as an agent of the Management, policy forming and exercising of powers of the company visits with the Directors. The Secretary is the medium to carry out the instructions and order of the Board. He represents the Board to the share holders, staff and outsiders in their dealing with the company.
- II. To act as a registrar for the company looking after the secretarial functions.
- III. To act as a Chief Executive, assuming full responsibilities and control of the company's operation.

The Institute of Company Secretaries of India is (I.C.S.I.) a premier national professional body (imparting education primarily through distance learning) established by an Act of parliament (Company Secretaries Act, 1980) to develop and regulate the profession of Company Secretaries in India. The ICSI, besides conducting Company Secretaryship examinations, enrolls qualified students as members, conducts practical training exercises maintains professional supervision over the members in matters pertaining to professional ethics and Code of Conduct, organizes professional development on a regular basis, continues educational programmes and brings out research publications, guidance notes, secretarial standards as well as professional monthly journal (i) Chartered Secretary for corporate executives; (ii) Student Company Secretary and (iii) CS Foundation Course Bulletin for students. The ICSI also interacts regularly with the Government, regulatory bodies and chambers of commerce and industry of policy and professional matters.

The ICSI has on its rolls over 15000 qualified members both in Employment and in Practice. Nearly 1.5 lakhs students are currently pursuing the CS Course. The Institute is a statutory body working under the administrative control of the Department of Company Affairs, Ministry of Law, Justice & Company Affairs, Government of India.

TRAITS REQUIRED :

- High level organizational skills
- Flair for Administration
- Integrity and sound judgement with the ability to act with the authority for the good of the company
- Good Communication skills
- Understanding of figures and Information Technology

## **COMPANY SECRETARYSHIP COURSES & EXAMINATION**

A person desirous of becoming a member of the Institute of Company Secretaries of India (ICSI) must pass the *INTERMEDIATE* and *FINAL* Examinations conducted by ICSI and undergo 15 months training which is arranged by the Institute. A person passing the final examination may enroll as Licentiate ICSI at his/her option until completion of the practical training. After qualifying the final and undergoing practical training, he/she is eligible to be admitted as Associate member. *The C.S. Course is by CORRESPONDENCE with provision for OPTIONAL ORAL COACHING CLASSES.*

## **EIGHT MONTHS FOUNDATION COURSE**

Minimum qualification is 10+2 or equivalent. (Arts/Commerce/Science Stream except Fine Arts)

**LAST DATE: 31<sup>ST</sup> MARCH / 30<sup>TH</sup> SEPTEMBER**

Fee for the Foundation Course is Rs. 1800/-. Prospectus: Rs. 70 (Cash Payment). By Registered post Rs. 110 ( DD/PO)

## **INTERMEDIATE COURSE**

Minimum qualifications are Foundation Course/Graduation in any discipline other than Fine Arts.

**LAST DATE: 28<sup>TH</sup> FEBRUARY / 31<sup>ST</sup> AUGUST**

Fee for Intermediate is :Rs. 3400/- (For Commerce). Rs.,4000 (for non Commerce Students

Prospectus (Handbook): Rs. 100 (Cash payment). By registered post: Rs, 150/- (DD/PO)

## **FINAL EXAMINATION:**

A student is admitted to the Final Examination after undergoing coaching of nine months after passing the Intermediate examination. Minimum qualification is Intermediate Course.

Fees for the Final: Rs. 2500/-.

## **ADMISSION**

Admission is open through out the year, examinations are held in June and December at 55 examination Centres spread all over India and one overseas centre at Dubai.

## **SYLLABUS**

New Syllabus for CS Course as approved by the Central Government w.e.f. Ist September, 2001 (for CS Intermediate Course) and w.e.f Ist October, 2001 (for Foundation Course).

There is also an option for students to switch over the new syllabus if they so desire. The details of the new syllabus and related guidelines have been hosted on the Institute's Website: [www.icsi.edu](http://www.icsi.edu).

## **FOUNDATION COURSE**

1. English and Business Communication
2. Basic Economics and Business Environment
3. Financial Accounting
4. Elements of Business Laws and Management; and
5. Information Systems and Quantitative Techniques

## **INTERMEDIATE COURSE**

### **GROUP – I**

1. General and Commercial Laws
2. Company Accounts and Cost & Management Accounting
3. Tax Laws; and
4. Management Information Systems and Corporate Communication

### **GROUP – II**

5. Company Law
6. Company Secretarial Practice
7. Economic, Labour and Industrial Laws; and
8. Securities Laws and Regulation of Financial Markets

### **GROUP - III**

7. World Trade Organisation – International Trade, Joint Venture and Foreign Collaboration
8. Direct and Indirect Taxation – Law and Practice; and
9. Human Resource Management and Industrial Relations

## **FINAL COURSE**

### **GROUP – I**

1. Advanced Company Law and Practice
2. Secretarial Practice relating to Economic Laws and Drafting & Convincing; and
3. Secretarial, Management and System Audit

### **GROUP - II**

4. Financial, Treasury and Forex Management
5. Corporate Restructuring – Law and practice; and
6. Banking and Insurance – law and Practice

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### **GROUP - II**

4. Financial, Treasury and Forex Management
5. Corporate Restructuring – Law and practice; and
6. Banking and Insurance – law and Practice

### **GROUP - III**

7. World Trade Organisation – International Trade, Joint Venture and Foreign Collaboration
8. Direct and Indirect Taxation – Law and Practice; and
9. Human Resource Management and Industrial Relations.

## **FURTHER ACADEMIC PURSUITS**

The Company Secretaryship qualification has been recognized by some of the Universities in India for the purposes of admission to the Ph.D. Course. A few of the universities have also recognized the company secretaries' qualification for the purpose of appointment as Lecturers. The Institute also appoints its members to act as part-time examiners to evaluate students' response sheets under its postal tuition scheme or as part-time lecturers for its various Oral Tuition Centres. The members are also given various academic assignments such as preparation, revision/review, etc., of postal coaching material. Many professional institutes and educational bodies also consider utilization of the services of company secretaries on full or part-time basis for academic or research assignments in the fields of Accountancy, Law or Management as very useful.

## **EMPLOYMENT PROSPECTS**

A qualified CS has access to openings both in the private and public sector, financial institutions, stock exchanges and even the Central/State Government. As per Section 383 A of the Companies Act, 1956, companies with a paid up share capital of Rs.50 lacs or more are statutorily required to appoint a whole-time Company Secretary. Membership of the Institute is the only prescribed qualification which a person must possess for appointment as Company Secretary such a company. Even in the case of a company having a paid-up share capital of less than Rs.50 lac if it appoints a Secretary he should possess one of the prescribed qualifications which include persons

having passed the Intermediate Examination at the Institute. All companies seeking a listing on stock exchanges are required to have a whole-time qualified CS. The Ministry of Human Resources Development Deptt. of Education has recognized membership of the ICSI for appointment to superior posts and services under the Central Government. It is one of the essential qualifications for recruitment from Grade I to Grade IV in the accounts branch of the Central Company Law Service of the Department of Company Affairs. The Indian Banks Association has recommended to banks to consider appointment of Company Secretaries as specialists in the fields of finance, accounts, law and merchant banking.

Almost every kind of organisation whose affairs are conducted by boards, councils and other corporate structures, be it a company, cooperative society, trust, society, association, federation, authority, commission, board or the like, finds it useful to appoint a person who holds the qualification of company Secretaryship in key administrative positions. Members of the Institute may also go in for *independent practice*. Being a versatile professional a company secretary in practice renders a wide range of services to companies under the various corporate, economic, commercial, tax and securities laws. Besides issuing statutory certifications and appearing before various quasi-judicial authorities as an authorized representative, he issues due diligence and comfort certificates, acts as a secretarial auditor and an advisor and consultant on finance and management.

## **SELF-EMPLOYMENT (PRACTICE)**

A member may also practice as a practicing Company Secretary after obtaining a certificate of practice from the Institute provided in the Company Secretaries Act. The Act {Section 2(2)} provides that a company secretary in practice may be called upon to arrange the promotion, formation and incorporation of a new company or amalgamation, reorganization or winding up of others. He may act as authorized representative of a company with respect to filing, registering, presenting, attesting or verifying any document (including forms, applications and returns) by or on behalf of the company. He may also act as a share transfer agent and issuer, a share and stockbroker, a secretarial auditor or consultant or an adviser to a company or management including any legal or procedural matter falling under Companies Act, 1956 and various other Corporate laws. The Companies (Amendment) Act, 2000 has opened up a core area of practice for Company Secretaries in practice by providing that every company not required to employ a whole-time secretary and having a paid-up share capital of Rs. Ten lakh or more shall file with Registrar of Companies a Compliance Certificate from a secretary in whole-time practice. Further, the Annual Returns of all listed Companies in India are required to be signed by a Company Secretary in whole-time practice in addition to the authorized officials of a company. A Company Secretary in practice is also recognized to make statutory declaration that all requirements of the Companies Act, 1956 and the rules there under have been complied with in respect of registration of a company, to make verified declaration of compliances for obtaining a certificate of commencement of business/commencement of other business, to certify that the requirements of Schedule XIII have been complied with, to pre-certify the documents filed with Registrar of Companies and to certify the compliance of Private Limited Company and Unlisted Public Company (Buy-Back of Securities) Rules, 1999.

## **FOR FURTHER DETAILS ICSI HEAD OFFICE**

### **THE INSTITUTE OF COMPANY SECRETARIES OF INDIA**

'ICSI HOUSE' 22, Institutional Area, Lodi Road, New Delhi – 110 003

Ph. 24617321-24, 2464431-32 (STD 011) Fax: 91-11-24626727

E-mail: [info@icsi-india.com](mailto:info@icsi-india.com). Website: [www.icsi.edu](http://www.icsi.edu)

### **NORTHERN INDIA REGIONAL OFFICE OF THE ICSI**

ICSI-NIRC Building, PlotNo.4, Prasad Nagar Institutional Area,

Rajendra Place, New Delhi- 11 005

Ph: 25763090, 25767190 (STD 011) Fax: 91-11-5772662

E-mail: [icsinirc@nde.vsnl.net.in](mailto:icsinirc@nde.vsnl.net.in)

### **EASTERN INDIA REGIONAL OFFICE OF THE ICSI**

3A, Ahiripukur Ist Lane, Behind Beck Bagan Nursing Home,

Kolkata- 700 019

Ph: 22871872,22816542,22816541 (STD: 033) Fax: 033-22816542

E-mail: [icsieric@cal2.vsnl.net.in](mailto:icsieric@cal2.vsnl.net.in)

### **SOUTHERN INDIA REGIONAL OFFICE OF THE ICSI**

New No.9 (Old No.4) Wheat Crofts Road, Nungambakkam, Chennai – 600 034

Ph: 28279306 (STD 044) Fax: 044-28253016

E-mail: [icsisirc@md5.vsnl.net.in](mailto:icsisirc@md5.vsnl.net.in)

### **WESTERN INDIA REGIONAL OFFICE OF THE ICSI**

13, Jolly Maker Chambers No .II (Ist Floor), Nariman Point,

Mumbai – 400021.

Ph: 22021826, 22844073 Fax: 022-22850109

E-mail: [wircicsi@bom.5.vsnl.net.in](mailto:wircicsi@bom.5.vsnl.net.in)

# THE CHARTERED ACCOUNTANT

## INTRODUCTION

The Chartered Accountants (CAs) are entrusted with substantial responsibility under various legislations such as compulsory audit of the all companies, banks, stock brokers, big income-tax assesses, large bank borrowers, etc. This shows the confidence and trust reposed by the Government and society in the profession. The society has increasingly recognized the services of CAs in the entire gamut of management consultancy services including management accounting, management information and control system, international finance information technology and financial services sector. The types of functions generally performed by the Chartered Accountants are quite varied, some of the important ones amongst them are listed below:

- i. **Accountancy:** The writing up of accounts and the preparation of Financial statements from the simplest receipts and payment Accounts of a small club to the complex and detailed accounts of large public limited companies.
- ii. **Auditing:** The purpose of auditing is to satisfy the users of financial Statements that the accounts presented to them are drawn up on correct accounting principles and that they represent a true and fair view of the state of affairs.
- iii. **Taxation:** The assessment of taxes is closely linked to financial Accounts. The Chartered Accountant with his experience in accounts is in an advantageous position to prepare the returns for tax purposes, represent assesses before the income tax authorities and render general advice on taxes to his clients. The services of CA may be requisitioned by the tax department for auditing-taxation cases with large revenue potential.
- iv. **Cost Accountancy:** A Chartered Accountant is equipped to provide information on costing for the guidance of management, introduce cost control methods and assist the management in determining appropriate selling prices.
- v. **Special Company Work:** The services or advice of Chartered Accountants are frequently sought in connection with matters such as the formation, financial structure and liquidation of limited companies.

Besides these the other functions of a Chartered Accountant are investigation to ascertain the financial position of a business houses for the purpose of issue of new shares, purchase or sale or financing business. They are also often appointed as Executor under a **Will** or **Trust** in order to carry on the administration of the estate or settlement. For **Management Accounting** their services are utilized for formulation of policies, control and performance evaluation. Other duties undertaken by Chartered Accountants are Arbitrator for settling disputes, specially those connected with insolvency work such as the preparation of statement of affairs and the duties of a trustee in bankruptcy or under a deed of arrangement.

## TRAITS REQUIRED FOR CHARTERED ACCOUNTANT

- Business acumen and numerical ability
- Good communication skills
- Objective Attitude
- Independence of thought and Integrity
- Ability to work under pressure of deadlines.

**MEMBERSHIP :** A person who desires to be a Chartered Accountant has to be a member of the Institute of Chartered Accountant of India, Indraprastha Marg, New Delhi -110 002.

**COURSES OF STUDY:** One can enter the Chartered Accountancy course by joining Professional Education Course. This course is in two parts –

- A. Professional Education Course (PE Course-I)
- B. Professional Education Course (PE Course-II)

**A. PROFESSIONAL EDUCATION COURSE (PE COURSE –I)** is compulsory for students joining after 10+2 and Graduates with less than specified marks. Candidates who are graduates with more than specified marks or those who have passed the final examination of the Institute of Cost and Works Accounts of India (I.C.W.A.) or the Institute of Company Secretaries of India (I.C.S.I.) are exempted from **PE Course- I**.

**ELIGIBILITY:**

- Pass in Senior Secondary Examination (10+2) or equivalent recognized examination with no restriction of age.
- Following graduates (except in the music, dancing, photography, painting and sculpture) who have secured less than specified marks are also eligible –
  - i. Commerce Graduates with Accountancy, Auditing and Mercantile Law or Commercial Law as full examination paper. (For this purpose full examination paper means a paper carrying out not less than 50 marks).
  - ii. Non-Commerce Graduates with Mathematics as one of the subjects and with less than 60% of the total marks.
  - iii. Non-Commerce graduates with subjects other than Mathematics and with less than 55% of the total marks.

**REGISTRATION:** The registration is open throughout the year. A student may register at any time during the year. The examinations are held twice a year in May and November. A student should get himself registered at least ten months before the examination.

## **SUBJECTS OF STUDY**

The subjects of study for the Professional Education Course-I are as follow:

- i. Fundamental of Accounting
- ii. Mathematics and Statistics and
- iii. Economics
- iv. Business communication and Organization and management.

**DURTION:** The minimum duration of the course is ten months.

## **THEORETICAL EDUCATION**

Students of **PE-I Course** are covered under Postal Test Scheme. Study material and test papers booklets are made available under this scheme. Students have to submit answers to the specified number of test papers and obtain the minimum qualifying marks of 45% in each subject. Students who attend classes which are organized by Accredited Institutions and satisfy the relevant requirements are exempted from answering the test papers.

## **PROFESSIONAL EDUCATION (EXAMIANTION-I)**

For passing this examination, the following conditions are to be fulfilled:

- To obtain at one sitting a minimum of 40% marks in each paper
- A minimum of 50% of the total marks of all the papers.
- To pass this examination within five consecutive attempts.

## **B. PROFESSIONAL EDUCATION COURSE-II –(P.E. COURSE –II)**

**PE Course –II** is compulsory for all irrespective of the fact whether one is coming through **PE Course-I** stream or is exempted from **PE Course-I**. After completion of the Professional Education Course-I a candidate has to join this course.

## **ELIGIBILITY**

- A pass in the Professional Education Course Examination.

- A pass in the Chartered Accountant Foundation Examination under CA Regulations, 1988.
- Graduates with the following conditions are also eligible:
  - i. Commerce Graduates with Accountancy, Auditing and Mercantile Law or Commercial Law as full papers and with minimum 50% marks of the total marks (Full paper means a paper carrying not less than 50 marks).
  - ii. Non-Commerce Graduates with Mathematics as one of the subjects and with minimum 60% of the total marks.
  - iii. Non-Commerce Graduates with subjects other than Mathematics and with minimum 50% of the total marks
  - iv. Candidates who had passed the Final examination of the Institute of Cost and Works Accountants of India (I.C.W.A.I.) or the Institute of Company Secretaries of India.

Candidates who have appeared in the above examinations are also eligible for Provisional Registration for this Course.

## **SUBJECTS OF STUDY:**

The subjects of study for this course are available in two groups viz. , Group –I- covers Accounting, Auditing, Business and Corporate Law and Group –II comprises of Cost Accounting and Financial Management, Income Tax and Central Sales Tax and Information Technology.

## **THEORETICAL EDUCATION**

For this course, the requirements of Theoretical Education are similar to those applicable for **Professional Education (Course-I)**

## **PROFESSIONAL EDUCATION (EXAMINATION-II)**

For passing this examination a student –

- Can appear in both Groups simultaneously or in one Group and in the other Group at any subsequent examination but he has to pass both the Groups.
- One has to secure at one attempt a minimum of 40% in each paper of the Group and 50% in the aggregate of all the papers of that Group.

**ACCREDITION:** Several Colleges, Schools and other Institutions affiliated to recognized Universities and Schools affiliated to CBSE or other equivalent State Boards, organize classes for the benefit of Professional Education (Course-I & II) students. Students attending such classes are exempted from answering test papers under the postal tuition scheme but (i) they have to satisfy the

requirements of minimum attendance of 75% of the classes in each subject and (ii) secure a minimum of 45% marks in each subject in the final test conducted by such institutions.

**MEDIUM OF EXAMINATION:** Students are allowed to opt for Hindi Medium for answering question papers.

**REGISTRATION FOR PROFESSIONAL EDUCATION COURSE :** Students of the Professional Education (Course-I) and (Course-II) have to forward their applications in the prescribed form along with the prescribed fee through Demand Draft drawn in favour of the Secretary, Institute of Chartered Accounts of India, payable at New Delhi, Mumbai, Kolkata, Chennai, Kanpur as the case may be (Please see **Annexure – I**).

**COMPUTER TRAINING:** Students are required to attend and successfully complete at least 250 hours of Computer training prior to the commencement of practical training of three years. One can undergo such a training along with his Professional Education Course-I and Course-II.

## **REGISTRATION FOR ARTICLED CLERK**

The Articled Clerk is a trainee attached to a practicing Chartered Accountant. After passing the Professional Education (Examination-II) one can register as an Articled Clerk for practical training and for admission to the Final Course of the Chartered Accountancy.

## **ELIGIBILITY**

One should not be less than 18 years of age on the date of commencement of Article-ship. Must have passed the Professional Education Examination and successfully completed the Computer training programmes. After passing the Final Examination, an Articled Clerk is required to attend a Programme of General Management and Communication Skills.

## **FINAL EXAMINATION**

The subjects of Final Examination are offered under two Groups viz. Group-I covers Advance Accounting, Management, Accounting and Financial Analysis, Advance Auditing, Corporate Laws and Secretarial Practice. Group –II has Cost Management, Management Information and Control System, Direct Taxes and Indirect Taxes.

**PRACTICAL TRAINING:** Practical training is given to acquire work experience of a professional nature while working with a practicing Chartered Accountant. He also works as an Industrial Trainee for about one year in an approved industrial establishment during the last year of practical training.

**STIPEND:** An Articled Clerk is entitled to receive monthly stipend as per the rates specified from time to time. These rates vary from 1st years to 3<sup>rd</sup> years in the range of Rs.200 to Rs.800. They also vary from city to city. After passing the intermediate or the Professional Education (Examination-II) an Articled Clerk also gets additional stipend.

**MEMBERSHIP:** After qualifying the Final Examination of Chartered Accounts, one can take membership of the Institute to be recognized as Associate member of the Institute. A person who is an Associate Member and is in continuous practice for minimum five years and possesses the experience prescribed is entitled for “Fellow Membership”. A member desirous of practicing as a Chartered Accountant is required to obtain a Certificate of Practice from the Institute.

## **JOB OPPORTUNITIES**

Chartered Accountants have various options for pursuing rewarding career. Some of the options are-

- i. To set up Independent Professional Practice.
- ii. To join a practicing Firm of Chartered Accountants.
- iii. To render services in the field of Capital Market.
- iv. To engage in your own Industrial Business venture.
- v. To take up a suitable position in business or industry.

Chartered Accountants are appointed Trustees and Executors under a Will or Trust to carry on the administration of an estate or settlement in collaboration with Solicitors or Lawyers. They act as administrators and receivers, custodians and arbitrators on accounts and financial matters. Many of them rise to managerial and senior executive posts, like Chief Accountant, Financial Advisor, Internal Auditor, General Manager and Company Director, etc. Most Chartered Accountants posts are normally advertised. Most employers also notify junior level vacancies to Employment Exchanges. Better paid Government posts are filled through the Union and State Public Service Commissions.

**ANNEXURE –I****LIST OF REGIONAL OFFICES OF THE INSTITUTES OF CHARTERED ACCOUNTANTS OF INDIA**

<b><i>SL.NO.</i></b>	<b><i>ADDRESS</i></b>	<b><i>REGION</i></b>
1.	The Joint Secretary, The Institute of Chartered Accountants of India, P.O. Box. 7100, Indraprastha Marg, New Delhi-110 002	Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Delhi and Union Territory of Chandigarh.
2.	The Joint Director of Studies, Western India Regional Council, The Institute of Chartered Accountant of India, Anveshak-27, Cuffe Parade, Colaba, Mumbai- 400 005.	Gujarat, Maharashtra, Goa and the Union Territories of Daman & Diu and Dadar & Nagar Haveli
3.	The Deputy Secretary, Southern India Regional Council, The Institute of Chartered Accountants of India, 122, M.G. Road, Post Box No. 3314, Nungambakkam, Chennai – 600 034	Andhra Pradesh, Kerala, Karnataka, Tamil Nadu and the union Territories of Pondicherry and Lakshadweep Islands.
4.	The Deputy Secretary, Eastern India Regional Council, The Institute of Chartered Accountants of India, 7, Russel Street, Kolkata – 700 001.	Assam, Meghalaya, Nagaland, Orissa, West Bengal, Manipur, Tripura, Sikkim, Arunachal Pradesh, Mizoram and Union Territory of Andaman-Nicobar Islands.
5.	The Assistant Secretary, Central Indian Regional Council, The Institute of Chartered Accountants of India, Post Box No. 314, 16/777-B, Kanpur Civil Lines Kanpur-208 001	Uttar Pradesh, Bihar, Madhya Pradesh, Rajasthan, Uttranchal & Jharkhand.

# ACTUARY

## INTRODUCTION

The Actuarial profession was formally established in 1848 with the formation of the institute of Actuaries (London). At one point of time it was the only institute in the world to conduct the professional examination. According to the report of the committee on reforms in the insurance sector(1994), at the time of nationalization there were only 67 actuaries in the service of the Life Insurance Company, but their number eventually came down to eleven. Entry of private companies has been allowed by the Government since recent past years. Many of these like HDFC STANDARD, Bajaj Allianz, Prudential ICICI, ICICI Lombard, Birla Sunlife HDFC STANDARD, Bajaj Allianz, Prudential, ICICI, ICICI Lombard, Birla Sunlife, IFFCO, TOKIO, Max New York and Tata AIG,Aviva Life, Met Life, SBI Life, Om Kotak Mahendra, ING Vysya, Tata AIG, Reliance and Royal Sundran are very active in the market because of which the demand for actuaries is sure to gain momentum, because an actuary is the heart of the insurance business .

Actuarial Science essentially deals with the education of insurance risks and Financial Management of Insurance Companies. It involves the application of Mathematical, Statistical and Economic analysis to a wide range of decision making process in Insurance, investment, financial planning and management. The profession requires intensive training in mathematics and statistics, accounting and insurance probabilities.

## WHO IS AN ACTUARY?

An actuary is an expert who applies mathematical and statistical methods for assessment of financial and other risks relating to various contingent events and for scientific valuation of financial products in the fields of insurance, retirement and other benefits, investments etc.

## THE JOB

The Actuary designs insurance & pension plans. Also determines insurance premium rates and contract provisions for each type of policy offered, compiles data relating to rates of mortality, sickness, injury, retirement and property loss from accident, theft, fire or any other hazard. On the basis of data thus collected, he/she analyzes insurances' claims from Corporation or Company. Also evolves new types of attractive policies ensuring greater business.

An Actuary works in LIC, GIC, ESIC, Banks, Stock Exchanges and other financial institutions controlled by Govt. and Private bodies.

### **AN ACTUARY'S SKILLS ARE USED BY THE OFFICE OF AN INSURANCE COMPANY TO:**

- 1) Design an insurance product and set its price
- 2) Select the right people for insurance products.
- 3) Minimize the amount of losses for the company by reinsuring the company's insurance policies with another insurance (called reinsures).
- 4) Maximize the profits for the company and thus protect the customers' amounts kept with the insurance company for a number of years etc.
- 5) Prepare on a given date a summary of the company's liabilities (commitments)
- 6) To determine the adequacy of the reserves.
- 7) To certify the solvency of the insurance company.

He looks into the future financial prospects of an insurance company. The liabilities are expected death claims and other benefits payable by an insurer to the policy holders (purchasers of insurance contracts) in the future. The Actuary's certificate indicates that the company is (not) solvent and can (not) meet varying payments due at any time in future. For others it is not easy to find whether an insurer is solvent or not. For an actuary, it is that difficult a job as he can use his professional skills to walk into the future and see how much income comes to the fund and how much expenses and benefit payments go out of the fund every year in future.

### **TRAITS REQUIRED FOR ACTUARY**

Dear student please check your personal qualities/abilities with the following traits if you dream to be an Actuary:

- i. One must have a natural problem solving ability
- ii. Be able to see situation from different vantage points,
- iii. Develop lateral thinking.
- iv. Practical Outlook
- v. Probing curiosity and business sense with highly developed inter personal communication skills
- vi. An Aptitude for Mathematics
- vii. Deep knowledge of Statistics and Commerce

Well, if majority of the above mentioned traits are tallied with your personal traits, you may go ahead to take up this line of Actuary as your career choice.

## **WHOM TO APPROACH TO BECOME A PROFESSIONAL ACTUARY?**

**I) ACTUARIAL SOCIETY OF INDIA, 9, JEEVAN UDYOG, 3RD FLOOR, 278, DR.D.N.ROAD, MUMBAI-400001.**

### **CRITERIA FOR BECOMING STUDENT MEMBER**

A person is eligible to be considered for admission as student member if he/she satisfies one of the following five conditions:

A person is eligible to be considered for admission as student member if he/she satisfies one of the following five conditions:

1) Those who have passed 10+2(H.Sc..) or equivalent a) with at least 85% in Mathematics/Statistics, b) with recommendations from two Fellow members of the society c) Having English as the medium of instruction in +2 or equivalent level.

2) Graduate or Post Graduate with subjects like Mathematics, Statistics, Economics, Computer Science, Engineering, MBA (Finance) and alike. Besides a person would also be eligible provided;

- i) The total marks secured in the subjects coming under the classification of Mathematical Sciences, taken together in all the years of the degree course are not less than 55%.
- ii) The content of Mathematical Sciences subjects in all the years of the course taken together is not less than 50% of the total content. This is measured by the ratio which the maximum marks allotted to Mathematical Science subjects in all the years of the course bears to the total maximum marks allotted to all subjects included in the examination of the entire course excluding languages.
- iii) The medium of instructions at the Graduate/Post-Graduate level has been English.

3) Fully qualified members of professional bodies such as the Institute of Chartered Accountants of India, The Institute of Cost and Works Accountants of India and Certified Institute of Financial Analysts of India and Fellow of Insurance Institute of India(Passing with subjects 81-Mathematical Basis of Insurance and 82-Statistics) as also other qualified persons like MBA to be considered on case to case basis.

4) All continuing students of Institutes.

5) Faculty of Actuaries, UK, Society of Actuaries, USA, Casualty Actuarial Society, USA and Institute of Actuaries of Australia shall be admitted on application being made.

## **SUBJECTS FOR THE EXAMINATIONS**

Students must take 15 subjects (14+1 optional) in preparing for the actuarial examinations. These subjects are grouped into 100 Series, 200 Series, 300 Series and 400 Series.

In 100 Series, there are 9 subjects numbered 101 to 109 namely

- 101 – Statistical Modeling
- 102 – Financial Mathematics
- 103 – Stochastic Modeling
- 104 – Survival Models
- 105 – Actuarial Mathematics – I
- 106 – Actuarial Mathematics – II
- 107 – Economics
- 108 – Finance and Financial Reporting
- 109 – Financial Economics

Alternative subjects for specialization in General Insurance

104 (a) Introduction to property and casualty Insurance and Ratemaking instead of subject – 104

105 (a) Non Life Reserving, Accounts and Re-insurance

**In 200 Series, there is one subject numbered 201, namely-**

201 – Communication

**In 300 Series, there are 4 subjects numbered 301 to 304 namely-**

- 301 – Investment & Asset Management
- 302 – Life Insurance
- 303 – General Insurance
- 304 - Pension & other Employee Benefits.

**In 400 Series, there are 4 subjects numbered 401 to 404 namely-**

- 401 – Investment & Asset Management (2 papers)
- 402 – Life Insurance (2 papers)
- 403 – General Insurance (2 papers)
- 404 – Pension & other Employee benefits (2 papers)

**EXAMINATION CENTRES** (All the examinations are held at the following Centers, in May and November every year.)

- **In India:** Mumbai, Kolkata, Delhi, Hyderabad, Kanpur, Chennai, Bhopal, Bangalore, Lucknow, Coimbatore and Cuttak..
- **Outside India:** Dhaka (Bangladesh), Colombo (Sri Lanka) and Port Louis (Mauritius)

### **CERTIFICATE IN ACTUARIAL TECHNIQUES:**

On passing all the 100 Series subjects a student member is eligible to get the Certificate in Actuarial Techniques (CAT).

### **ASSOCIATE SHIP:**

On passing all the subjects upto and including 300 Series a student is eligible to be admitted as an Associate Member of the Society and can use AASI against him/her name as a registered Actuary.

### **FELLOWSHIP:**

On passing all the subjects up to and including 400 series levels and on satisfying other criteria specified for the purpose, a student is eligible to be admitted as Fellow Member of the Society and can use FASI against his/her name as a recognized fellow of ASI.

### **OTHER EDUCATIONAL INSTITUTIONS OFFERING ACTUARIAL SCIENCE COURSES**

- I) Bishop Herber College ,Tiruchirapalli-17,(Nationally Accredited with 5 Stars),Affiliated to Bharathidasan University, Tiruchirapalli)
- II) CMD School of Insurance and Actuarial Sciences, Modi Nagar, Uttar Pradesh  
Delhi Office: 18, Community Centre, New Friends Colony, New Delhi-110 065.

- III) Institute for Integrated Learning in Management, (IILM) Lodhi Road , New Delhi.
- IV) Amity School of Insurance and Actuarial Science, 1<sup>st</sup> block,2<sup>nd</sup> floor, Sector- 44, Noida, (ASIAS) Goutambudha Nagar-201303.

## **CAREER OPPORTUNITIES**

**APPOINTED ACTUARY SYSTEM** The IRDA has introduced the system of Appointed Actuaries both for life insurance business and general insurance business carried on in India, and no insurers can transact life insurance business in India without an appointed Actuary.

- The regulations require that each life insurers shall have an Appointed Actuary as a full time employee.
- However, a relaxation has been made in case of non-life insurance companies, that they can appoint a consultant actuary.
- The growth of the insurance industry coupled with the entry of private sector in the last two years, has impacted the evolution of the system of Appointed Actuary.

## **ACTUARIAL APPRENTICES WITH LIC**

Graduates/Post-Graduates with Mathematics and Statistics as main subjects with 60% or more marks in the aggregate or Graduate/Post-Graduate in Commerce with Statistics/Actuarial Science as major subjects with 60% and more marks in the aggregate, between 18 – 25 years of age could apply for this scheme.

## **SELF-EMPLOYMENT AVENUES**

A number of Actuaries have set up their own Consultancy Firms to advise in matters like gratuity, pension, leave encashment and other employees benefit schemes.

# HOTEL MANAGEMENT AS A CAREER

**Dear students,**

If you are smart and you have capacity for hard work, temperament to get along well with others and a strong desire to look after the needs and comforts of the guests, then you have better career opportunities to bright your future in Hotel Industry.

## INTRODUCTION

Hotel industry is basically “a service industry” where customer’s satisfaction is very important. A modern hotel is open for 24 hours a day. Work is carried out generally in three shifts. Each shift is of 8 hours duration. Employees have to work by rotation in all the three shifts. Sometimes during the peak seasons, where there are more guests in the hotel, the working hours of the employees are required to be extended.

The hospitality Industry has received a tremendous boost with liberalization. The rapid growth of the industry has resulted in a chronic lack of trained Manpower at all levels. Promotion in tourism and increasing cooperation among the nations has revolutionized the Hotel Industry. The hospitality sector has, being the predominant area of the Tourism industry, really taken off in India and there is really a boom going on in this Industry. One can, therefore, expect faster career growth opportunities in this line because India is becoming a growing tourist attraction due to its vastness, rich culture/historical heritage, natural beauty, business opportunity, adventure options, sports and many other reasons. These tourists spend billions on accommodation, food, and other entertainment activities, as a result, hotel industry accounts for a major chunk of foreign exchange earned for our country.

## TRAITS REQUIRED

- You must be at ease among people and have an outgoing personality that keeps you happy among people.
- Good communication skills.
- Diplomacy and the ability to keep you cool under trying conditions.
- Capacity to work hard.
- Working hours tend to be long and in shifts so you should be able to adopt yourself to long and for irregular hours.
- Smart, articulate, hard working.
- Right attitude, right aptitude.
- Potential for leadership.

## VARIOUS DEPARTMENTS AND THEIR FUNCTIONS

Following are the major functions of some of the important departments in this industry:

1. **Front Office**
2. **House Keeping**
3. **Food & Beverage**
4. **Marketing**
5. **Human Resources and Personal Department**
6. **Accounting Department**
7. **Security Department**
8. **Maintenance Department**

**Front Office:** The Front office in the first point of formal contact between a hotel and guest, it is the face of a hotel. The important qualities that a person managing this counter must possess are smartness and dedication.

**House Keeping:** This Department's job involves presenting a clean, healthy atmosphere for guests to stay and ensure that they get every essential supply according to their needs. They have to ensure that their guests are feeling most comfortable.

**Food and Beverage:** The Food and Beverage Department has a world of its own. It prepares and sells food and beverages to the guests. Food and Beverage Department may be divided into **two Sections – (i) Kitchen and (ii) Restaurant/Bar Services**. Main duty of this Department is to serve the most appropriate food according to the choice of guests.

**Marketing:** This is the most important Department of Hotel Industry. Marketing personnel has to ensure that the hotel occupancy is maximum and also market the food and beverage and other amusement joints of the hotel chain.

**Human Resource and Personnel Department:** The Personnel Department undertakes the responsibilities of training of staff, administration, deals with salaries, Labour disputes and day-to-day manpower planning and placements.

## EDUCATIONAL/TRAINING FACILITIES

If you choose hoteliering as a profession, you may have to undergo specialised training programme after your school education. Training in different trades of the hotel industry is offered at a number of institutes established in different parts of the country.

## **NATIONAL COUNCIL FOR HOTEL MANAGEMENT**

The National Council for Hotel Management and Catering Technology is a registered Society under Ministry of Culture and Tourism, Government of India. The Council centrally regulates academics for hospitality management through structured courses of studies that are imparted at the Government sponsored *twenty four* Institutes of Hotel Management and *Eight* Food Craft institutes located in different parts of the country.

The Bachelor of Science programme in Hospitality and Hotel Administration is offered by the National Council and the Indira Gandhi National Open University. A Joint Entrance Examination is conducted at various Centres all over the country for about 2715 seats.

### **MINIMUM QUALIFICATION**

Minimum qualification for admission is a pass certificate in the final examination of 10+2 system or its equivalent. Those who are appearing in 10+2 final or equivalent examination can also appear in Joint Entrance Examination (JEE).

### **AGE LIMIT**

Age of the candidate should not be more than 22 years as on 1st July, in the year of application. Maximum age is relaxable up to 25 years for SC/ST candidates.

### **RESERVATION**

S.C –15% , S.T—7 ½%, P.H—3%

### **PHYSICAL FITNESS**

All qualified candidates will have to submit a physical fitness certificate from a Registered Medical Practitioner in the prescribed format.

### **LANGUAGE OF QUESTION PAPER**

Question paper will be bilingual i.e. in English and Hindi.

## PATTERN OF WRITTEN EXAMINATION

<i>Subject</i>	<i>No. of Questions</i>	<i>Duration</i>
Reasoning & logical Deduction	40	3.00 hours
Numerical Ability & Scientific Aptitude	40	
Aptitude for Service Sector	40	
General Knowledge	40	
English Language	40	

## CENTRALISED COUNSELLING

There is centralized Counselling for on-the-spot allotment of Institute based on their merit.

## LIST OF ALL INSTITUTES OF HOTEL MANAGEMENT, CATERING TECHNOLOGY AND APPLIED NUTRITION IN INDIA

1.	<b>Institute of Hotel Management</b> , Government Polytechnic Compound, Ambawadi, Ahmedabad – 380 015.
2.	<b>Institute of Hotel Management</b> , S.J. Polytechnic Campus, Seshadri Road, Bangalore – 560 001
3.	<b>Institute of Hotel Management</b> , 1100 Quarters, Near Academy of Administration, Bhopal – 462 016.
4.	<b>Institute of Hotel Management</b> , Veer Surendra Sai Nagar, Bhubaneswar – 751 004.
5.	<b>Dr. Ambedkar Institute of Hotel management</b> , Sector 42 D, Chandigarh – 160 036.
6.	<b>Institute of Hotel Management</b> , CIT Campus, TTTI-Tharamani, Chennai – 600 113.
7.	<b>Institute of Hotel Management</b> , Library Avenue, Pusa Complex, New Delhi – 110 012.
8.	<b>Institute of Hotel Management</b> , Bhind Road, Maharajpur P.O. , Gwalior – 744 020
9.	<b>Institute of Hotel Management</b> , F'Row, Durgabai Deshmukh Colony, Vidyanagar, Hyderabad- 500 007.
10.	<b>Institute of Hotel Management</b> , Near Bani Park Police Station, Sikar Road, Jaipur – 302 016.
11.	<b>Institute of Hotel Management</b> , Govt. Polytechnic Campus, Residency Road, Jodhpur – 342 001.
12.	<b>Institute of Hotel Management</b> , P-16, Taratola Road,Kolkata – 700 088.
13.	<b>Institute of Hotel Management</b> , Seed Farm, Sector G, Aliganj, Lucknow – 226 024.
14.	<b>Institute of Hotel Management</b> , Veer Sawarkar Marg, Dadar(W), Mumbai – 400 028.
15.	<b>Institute of Hotel management</b> , Catering and Nutrition Industrial Area, PO Box 165, Panipat – 132 103 (Haryana)
16.	<b>Delhi Institute of Hotel Management</b> , Behind Lady Sriram College, Lajpat Nagar IV, New Delhi- 110 024.
17.	<b>Institute of Hotel Management</b> , P.S. Road, PB-49, Gangtok-737 101.
18.	<b>Institute ofHotel Management</b> , Alto Porvorim, Bardez, Goa -403 521.
19.	<b>Institute of Hotel Management</b> , Village Bariar, GT Road, Gurdaspur – 143 521.

20.	<b>Institute of Hotel Management</b> , G.S. Road, Bus Stop ABC, Bhangagarh, Guwahati – 781 005.
21.	<b>Institute of Hotel Management</b> , Upadhyay Complex, Kankar Bagh Road, Patna – 800 020.
22.	<b>The Institute of Hotel Management</b> , “Lyumpyngad”, Bishop Cotton Road, Shillong – 793 001.
23.	<b>Institute of Hotel Management</b> , Kufri, Shimla – 171 012.
24.	<b>Institute of Hotel Management</b> , Boulevard Road, Nehru Part, Srinagar – 190 001.

#### **ADDRESSES OF THE FOOD CRAFT INSTITUTES:**

1. Kidmath Tourist Bungalow, Pushkar Road, Ajmer-305 004.
2. Sector 42-D, Chandigarh-160 037.
3. Lewis Jubilee Sanatorium, Darjeeling–734 101.
4. Badkhal Lake Chowk, Faridabad-121 001.
5. Industrial Area, PO Box 165, Panipat – 132 103(Haryana)
6. Pondicherry Institute of Hospitality Crafts, UPlam Road, Pondicherry – 605 001.
7. Chetak Circle, Behing Luv-kush Stadium, Udaipur – 313 001.
8. Visakha Valley School Campus, Visakhapatnam-530 040.

#### **LIST OF OTHER COURSES OFFERED:**

Admission to the following short courses is regulated by the respective institutes. Announcement for admission is released by them between May-July each year:

<i>Sl.No.</i>	<i>Course</i>	<i>Duration</i>	<i>Qualification</i>	<i>Upper Age Limit</i>	<i>Institutes where course is available.</i>
1.	Post Graduate Diploma in Accommodation Operation and Management	1 ½ years	Graduation on in any stream with English as a subject	25	Bhopal, Bhubaneswar, Mumbai, Kolkata, Chennai, Delhi(Pusa), Gwalior, Hyderabad, Shimla, Faridabad(FCI)
2.	Post Graduate Diploma in Dietetics and Hospital Food Service	1 year	Graduate with Science or Bachelor in Home Science	25	Chennai, Delhi (Pusa) and Mumbai
3.	Craftsmanship Course in Food Production	1 ½ years	10 <sup>th</sup> Class pass of 10+2	22	Bhopal, Bhubaneswar, Mumbai, Kolkata, Chennai, Goa, Gwalior, Shimla, Delhi (Pusa)
4.	Craftsmanship Course in Food	24 months	10 <sup>th</sup> Class Pass of	22	Bhopal, Bhubaneswar, Mumbai, Kolkata,

	and Beverage Service		10+2		Chennai, Goa, Gwalior, Shimla
5.	Certificate Course in Hotel and Catering Management	6 months	Class XII of 10+2 system or equivalent	28	Mumbai
6.	Diploma in Food Production	1 ½ years	10+2 or equivalent	22	Ajmer, Chandigarh, Darjeeling, Faridabad, Gangtok, Jodhpur, Udaipur
7.	Diploma in Food and Beverage Service	1 ½ years	10+2 or equivalent	22	Ajmer, Chandigarh, Darjeeling, Faridabad, Gangtok, Jodhpur, Udaipur & IHM, Delhi (Pusa)
8.	Diploma in Front Office	1 ½ years	10+2 or equivalent	22	Ajmer, Chandigarh, Darjeeling, Faridabad, Gangtok, Jodhpur, Udaipur
9.	Diploma in House Keeping	1 ½ YEARS	10+2 OR EQUIVALENT	22	Ajmer, Chandigarh, Faridabad, Jodhpur
10.	Diploma in Baker and Confectionery	1 ½ years	10+2 or equivalent	22	Chandigarh and IHM, Delhi (Pusa)

### OTHER COURSES:

<i>Sl.No.</i>	<i>Address of the Institute</i>	<i>Course</i>	<i>Eligibility</i>	<i>Age</i>	<i>Reservation</i>
1.	Institute of Hotel Management Catering Technology & Applied Nutrition (Sponsored by Govt. of Sikkim), P.S. Road, Gangtok, Sikkim – 737 101	i) Diploma in Food Production ii) Diploma in Food & Beverage Service iii) Diploma in Front Office Operation.	The minimum qualification for admission to any of the above diploma courses is a pass in the +2 level of Senior Secondary Education or equivalent with compulsory knowledge of English	Maximum – 22 years as on Ist July of the academic year	S.C.-15%, S.T.-7 ½%, P.H.- 3%
2.	Ram Institute of Hotel Management & Catering Technology, Dehradun (Approved by AICTE, Govt. of India)	Bachelor Degree in Hotel Management & Catering Technology	Candidate should have passed 10+2 level of Senior Secondary or equivalent.	-	-
3.	Indian Institute of Catering & Technology & Hotel Management (Recognized by the Govt. of Tamilnadu) No.22, Shivaji Nagar,	i) Combined 3 years course in Hotel Management & Catering Technology ii) 3 years Bachelor of Hotel management (at Bharath	10 <sup>th</sup> standard/ SSLC/ Matriculation (Higher Secondary/10+2 Std. Preferable) Higher Secondary/+2	-	-

	Near Membalam, Thanjavur-613 001, Tamil Nadu	College Campus) iii) One year Craft Courses: a) Food & Beverage Production b) Food & Beverage Service c) House Keeping d) Bakery & Confectionary) iv) Front Office Operation (1 year)	10 <sup>th</sup> Std./SSLC/Matriculation  Higher.Secondary/10+2/Matric		
4.	Indian Institute of Science & Management, IISM Campus, Rundag, Ranchi, Deptt. of Hotel Management (Recognized & aided by AICTE, Ministry of HRD, Govt. of India Affiliated to State Board of Technical Education	3 years Diploma in Hotel Management & Catering Technology	10+2 or equivalent with 50% marks.	-	-
5.	Oriental Institute of Catering Technology & Hotel Management (Recognised by the Govt. of Tamil Nadu), Tallakulan Madurai, Tamil Nadu.	i) Combined 3 years Courses in Hotel Management & Catering Technology ii) One year Craft Courses a) Food & Beverage Production b) Bakery & Confection c) Food & Beverage Service d) House Keeping f) Front Office Operation	H.Sc./+2/10 <sup>th</sup>  10 <sup>th</sup> Std./Matriculation or equivalent.	Below 22 years	-
6.	Institute of Hotel Management, Catering Technology & Applied Nutrition (Approved by AICTE, Govt. of India) Affiliated by Board of Technical Education,	1.Degree in Hotel Management 2.Diploma in Hotel Management	10+2/equivalent	-	-

	U.P., Affiliated to Ch. Charan Singh University, Meerut.				
7.	NSHM School of Hotel Management, Durgapur, West Bengal	1) 4 years Bachelor Degree in Hotel Management & Catering Technology (Approved by AICTE, M/o HRD, Govt. of India) 2) 3 years Diploma in Hotel Management & Catering Technology (Approved by AICTE, M/o HRD, Govt. of India)	10+2 pass in any stream	-	-
8.	International Institute of Hotel Management (Recognized by AICTE, Govt. of India) EC-37, Salt Lake, Kolkata-700 064	3 years Diploma in Hotel & Catering Management (Recognized by AICTE)	-	-	-

## CAREER OPPORTUNITIES

Hotel Management offers young aspirants Job Opportunities in various fields be it in –

***Hotel; Customer Care Operations; Marketing; Public Relations; Academics; Restaurants; Cruise lines; Nursing Homes; Guest Houses; Airlines; Shipping ; Banks, etc.***

Jobs are available in higher management, as senior corporate manager, middle management, executives, In lower management as workers after passing Hotel Management Courses depending on the course structure/status and the reputation of the Institute in the Hotel Industry.

## DIFFERENT JOB TITLES AT DIFFERENT AREAS

### FRONT OFFICE

1) Front Office Manager, 2) Receptionist, 3) Information Assistant, 4) Bell Captain, 5) Bell Boy, 6) Doorman

### **HOUSE KEEPING DEPARTMENT**

1) Executive House Keeper, 2) Floor Supervisor, 3) House Keeper, 4) Linen Supervisor, 5) Linen man, 6) Room Maid

### **FOOD AND BEVERAGE DEPARTMENT**

1) Chef-de-Cuisin, 2) Sous-Chef, 3) Chef-de-Partis, 4) Cook, 5) Maitre-d'Hotel, 6) Chef-de-rang, 7) Demi-chef-de-Rang, 8) Bartender

### **ACCOUNTING DEPARTMENT**

1) Chief Cashier, 2) Cash Clerk/Bill Clerk

### **SECURITY DEPARTMENT**

1) Chief Security Officer, 2) Security Guard

### **MAINTENANCE DEPARTMENT**

1) Mechanical Engg., 2) Electrical Engg., 3) Plumber, 4) Carpenter, 5) Cabinet Maker, etc.

### **SELF-EMPLOYMENT**

Trained person in Hoteliering have good chances of starting their own work. If you are hard working and possess business acumen you may –

- 1) Run a small hotel, 2) A Baker, 3) A Confectionary shop, 4) A Mobile Kitchen knelt, 5) Out-door Catering for Parties, Wedding
- 6) You may also run Canteen in Industries, Educational and Medical Institutions on contract basis, 7) In big cities some well-experienced persons can start Hotel Consultancy Services.

# THE LIBRARIAN

## INTRODUCTION

A Librarian organizes and maintains systematic collection of books, periodicals and other printed matter in Library and issues them to readers. He also selects publications to be purchased and receives priced or complimentary copies of books, periodicals and other publications from authors or publishers. He classifies or supervises classification indexing, cataloguing, shelving of books and other publications and maintains records of stock and issues. One of the important functions of a Librarian is to guide readers in selecting books or in finding information required by them. He also examines books periodically for damages, if any and decides which books are to be repaired or re-bound. He also maintains liaison with other libraries and library associations. May determine library policy and look after organisation and administration of library.

Generally there are three aspects of Library work – user services, technical services and administrative services. Librarians in user services such as reference and children’s libraries, work with the public to help them find information they need. This may involve analyzing user’s needs to determine what information is appropriate. They must be aware of the characteristics of clients, their environment and needs.

Librarians in technical services such as preparing of catalogue acquire and prepare materials for use and may not deal directly with the public. Librarians in Administrative Services look after the management and planning of libraries, negotiate contracts for services, materials, and equipment supervise library employees, perform public relations prepare budget and direct activities to ensure that everything functions properly.

## DUTIES OF A MODERN LIBRARIAN

- Classification, indexing, cataloguing and shelving of publications.
- Preparation of abstracts of articles/ books and bibliographies.
- Guiding readers in selecting books or in finding pieces of information from internal as well as external sources.
- Establishing liaison with other libraries and library associations, that facilitates inter library exchange of publications.

In modern libraries use of computers greatly facilitates the library services.

**PERSONAL QUALITIES:** - Library and information Science is best suited to persons having

- Wide ranging interests
- Patience with people's reading latest and questions
- Ability to deal with a mass of information Systematically
- A methodical approach with a logical mind.

## **EDUCATIONAL AND TRAINING FACILITIES**

Library and Information Science is a professional course which involves practical, observational and experimental study. Training in this discipline is available in our country at various levels, ranging from semi-professional, professional to specialised courses and research programmes. Many universities conduct B.Lib Sc. and M.Lib Sc. courses. Some of the Universities/ institutions also offer these courses through correspondence. A sample list of correspondence courses is given at Annexure-I. The courses are as follows:-

**CERTIFICATE IN LIBRARY SCIENCE (C.LIB.SC.):** - This ranges in duration from 3 months to 6 months. These are conducted by Colleges, Universities as well as professional library associations. These courses are open to students after passing Secondary (10<sup>th</sup>)/Senior Secondary (10+2) examination.

**DIPLOMA COURSES IN LIBRARY SCIENCE (D.LIB.SC.):**- The duration of this course ranges from 6 months to one year. These are conducted by Colleges, Universities and as well as by Polytechnics. These are available to students who have passed Senior Secondary examination (10+2); in a few places this course may be open to graduates only.

**BACHELOR OF LIBRARY SCIENCE (B.LIB.SC.):**- This one year degree course is open only to graduates. In some cases admission is based on academic merit i.e., marks obtained in the qualifying examination. In others an entrance examination is conducted. Performance in the entrance examination determines selection.

**MASTER OF LIBRARY SCIENCE (M.LIB.SC.):**- This one year (some times 2 years) course is offered mostly to those who have acquired the Degree in Library Science (B.Lib.Sc.).

**SPECIALISED COURSES:** - There are specialised Courses, M.Phil and Ph.D programmes for those who wish to get into teaching and research work.

Masters degree holders in any discipline or those who hold degree such as Bachelor of Engineering(B.E.) or M.B.B.S. or have completed Bachelor of Library Science and have 3 years experience in Library and Information Science can apply for 2 years ASSOCIATESHIP in Documentation/Information Science (equivalent to M.Lib.Sc.) at Indian National Scientific Documentation Centre, INSDOC, 14, Satsang Vihar Marg, New Delhi110067, or for 2 year ASSOCIATESHIP in Documentation and Information Science at Indian Statistical Institute, Documentation Research & Training Centre, 8<sup>th</sup> Mile, Mysore Road, Bangalore-560059.

**SCHOOL OF ARCHIVAL STUDIES, (NATIONAL ARCHIVES OF INDIA), JANPATH, NEW DELHI-110001.**

This school offers “Certificate Course in Archives Administration” to make the trainees aware of acquisition, arrangement, upkeep and retrieval of records. This is a full time 6 week’s course. Graduate in any discipline from a recognized University below 50 years of age are eligible. Sponsored candidates should apply through proper channel.

**ELIGIBILITY: -**

A second class graduate preferably in Science from a recognized University and below 50 years of age are eligible for admission. It is desirable that the candidate should be well conversant in Hindi/English language.

**DETAILS OF POSTS QUALIFICATION REQUIRED FOR UNDER THE CENTRAL GOVERNMENT OFFICES/ ORGANISATIONS**

Sl.No.	Post	Qualifications required
1.	Library Attendant	Certificate in Library Science.
2.	Library Assistant	Diploma in Lib.Sc./Graduate and B.Lib.Sc.
3.	Senior Library Assistant	Post Graduate and B.Lib.Sc.
4.	Assistant Librarian	Post Graduate and B.Lib.Sc.

5.	Librarian	Post Graduate and B.Lib.Sc.
6.	Senior Librarian	Post Graduate and B.Lib.Sc.
7.	Principal Library Officer or Director	Post Graduate and B.Lib.Sc.

## **EMPLOYMENT OPPORTUNITIES**

Employment opportunities for trained librarians are available in: -

- i) Schools, Colleges and Universities,
- ii) Specialised Research Institutions,
- iii) Research and Development Departments of Industrial Establishments,
- iv) Documentation and Information Centres,
- v) Government offices,
- vi) Public Libraries and
- vii) Libraries managed by non-Government organisations.

Persons with requisite training in library Science are appointed as librarian in various capacities in libraries belonging to educational institutions for teaching and research and those maintained by Local Authorities, Commercial and Industrial Organisations, Ministries, Autonomous Institutions etc. Highly paid jobs exist in National, Regional and University libraries, and various Ministries of Government of India.

Entry into the profession at lower levels is through press advertisements, Employment Exchange and Staff Selection Commission. Senior level posts in Central and State Governments are, however, filled through Union Public Service Commission (UPSC) and State Public Service Commissions (SPSCs). The salaries of librarians vary from post to post from State to State and also from Establishment to Establishment.

## **SELF – EMPLOYMENT OPPORTUNITIES IN LIBRARY AND DOCUMENTATION SCIENCE**

The most useful and lucrative areas of self-employment are of compiling bibliographies, indexing and abstracting services, preparation of directories, Union Catalogues, State of the art reports etc. The indexing, abstracting Services are directly needed by researchers, teachers, scholars, scientists, technologists and industrialists to keep themselves abreast of the latest thought in the respective areas of interest. Providing bibliometric Services, reprographic Services, translation Services from various Western and Eastern languages to English and vice-versa Electronic imaging of manuscripts/graphics are some of the areas open for self-employment. Trained librarians may make themselves as useful consultants and provide access to the information which is scattered otherwise.

## **EMPLOYMENT OUTLOOK**

With enormous growth of libraries all over the Country by virtue of a growing awareness among the public to acquire knowledge there is a demand for qualified librarians. Now information technology has made it possible to have an easy access to information. It further helps in improving efficiency of functioning of the libraries and the entire education system. With the introduction of computer based facilities like Compact Disks, Electronic mail, Internet etc. the field of Library and Information Science will continue to offer exciting employment opportunities.

## **UNIVERSITIES/INSTITUTIONS OFFERING COURSES IN LIBRARY/INFORMATION SCIENCE THROUGH CORRESPONDENCE**

Sl.No.	UNIVERSITY/INSTITUTION	COURSES
1.	Indira Gandhi National Open University, Maidan Garhi, New Delhi-110068.	Computer and Library Information Science, B.Lib.Sc, M.Lib.Sc.
2.	Dr. Hari Singh Gour Vishwa Vidyalaya, Sagar, M.P.	B.Lib.Sc, M.Lib.Sc.
3.	Directorate of Distance Education, Annamalai University, Annamalai Nagar, Tamil Nadu.	B.Lib.Sc, M.Lib.Sc.
4.	ICFAI Centre for Distance Education & ICFAI University, 23, Nagarjuna Hills Punjagutta, Hyderabad.	B.Lib.Sc.,M.Lib.Sc.

5.	Bhartiya Siksha Parisad,Lucknow, Uttar Pradesh.	B.Lib.Sc.,M.Lib.Sc.
6.	Bundelkhand University (Campus for open learning) University Campus, East End, Near Medical College, Jhansi-284128.	B.Lib.Sc.,M.Lib.Sc.
7.	Centre for Distance Education University of Hyderabad, Hyderabad-500046.	Post-Graduate Diploma in Library Automation & Networking (PGDLAN).
8.	Dr. C.V.Raman, Commerce and Management, Institute of Open and Distance Education,University of Science & Technology, Raipur,M.P.	D.Lib.Sc., B.Lib.Sc.,M.Lib.Sc.
9.	Madhya Pradesh Bhoj(Open) University, Red Cross Bhawan, Shivaji Nagar, Bhopal-462016.	B.Lib.Sc.,M.Lib.Sc.
10.	Directorate of Correspondence Courses, Kurukshetra University, Kurukshetra-136119.	D.Lib.Sc., B.Lib.Sc.,M.Lib.Sc.
11.	Directorate of Distance Education, M.D.University, Rohtak,Haryana.	B.Lib.Sc.
12.	Directorate of Distance Education, Alagappa University, Karaikudi, Tamil Nadu-630003.	B.Lib.Sc.,M.Lib.Sc.
13.	Kota Open University, Kota, Rajasthan.	B.Lib.Sc.
14.	School of Distance Education, Mahatma Gandhi University, Kottayam, Kerala-686560.	B.Lib.Sc.

# THE PHARMACIST

## INTRODUCTION

The pharmacy profession has made significant advances in the last few decades. Pharmacy has evolved over the years from compounding of mixtures to patient related practice from preparation of galenicals to drug discovery.

Pharmacists are health professionals responsible for the dispensation of medicines as prescribed by Physicians. They act as consultants to health practitioners and extend help to the general public concerning adverse drug reactions and interactions and may also give advice relating to medical supplies and durable healthcare equipment. A Pharmacist is the competent person who is academically and legally qualified to handle drugs.

The Pharmacists are the link between doctors and their patients because they are in a position to understand and explain the effects and correct use of medicines. With more new drugs in the market, the role of the pharmacist is changing.

## TRAITS REQUIRED

1. Manual dexterity
2. Accuracy and Precision
3. High degree of concentration
4. Good Interpersonal skills

## EDUCATION AND TRAINING

The minimum qualification for entering a Pharmacy profession in India is Diploma in Pharmacy (D. Pharm). Apart from Diploma, one can go for a 4-year Degree course in Pharmacy followed by Masters and Doctorate in Pharmacy.

### DIPLOMA IN PHARMACY (D. PHARM)

**DURATION** - 2 years

**Eligibility** - One has to pass 10+2 with Science (PCM or PCB) with at least 50% marks and must be of 17 years of age.

**Admission** – Admission to D. Pharm is either through merit of 10+2 marks (PCM or PCB) or by entrance examinations Conducted by technical Education Boards.

**Scope** – After passing Diploma in Pharmacy one has to register with State Pharmacy Council for practicing pharmacy.

**I) Registered Pharmacists** can be employed as **Hospital Pharmacist**. Job profile of Pharmacist consists of purchases, storage, handling and dispensing of drugs to in-patients and out-patients of the Hospitals.

**II) Retail/Wholesale Chemist** - As per the provisions of Drugs and Cosmetics Act for selling drugs one must be a Qualified Pharmacist or employ the services of qualified Pharmacist.

**III) Manufacture of Cosmetics** – A person having Diploma in Pharmacy is qualified to obtain a license for the manufacture of cosmetics.

**IV) Repackaging of Drugs** – Diploma Pharmacist is considered as a competent person to obtain license for repackaging drugs.

## **BACHELOR OF PHARMACY (B. PHARM)**

**Duration** – 4 years

**Eligibility** – Minimum requirement is 10+2 with Science and 17 years of Age.

**Admission** – Admission to B. Pharm course is either on the basis of merit or Entrance Examination.

### **Scope**

**I)–** Apart of the areas covered under D. Pharm, a pharmacy under graduate can be employed as a Pharmacist.

**II) Manufacturing Chemist** – The job profile consists of supervising and monitoring manufacturing of dosage forms like tablets, capsules, injections, ointment, eye drops etc. After B. Pharm one has to undergo 18 months practical training in the manufacturing of specific dosage before being approved by Drugs Control Authorities.

**III) Analytical Chemist** - The job profile consists of conducting and analysis quality control tests on the raw material semi-finished and finished products.

**IV) Drug Inspectors** - The job profile consists of inspecting the premises of manufacturing houses and retail outlets, filling Drug samples and enquiring the complaints, all these to ensure that standard drugs are delivered to patients.

**V) Drug Analyst** – Job profile consists of analyzing the samples of medicine filled by Drug Inspectors for their conformity To prescribed standards. They are also appointed under Drugs and Cosmetics Act 1940 and by UPSC and State Public Service Commissions.

**VI) Medical Representatives** –Job profile consists of apprising the doctors with their company’s products for promoting sales.

## HIGHER STUDIES

After B. Pharm, Pharmacy graduates can go for M. Pharm, M. Tech. (Bio-technology), M. Tech. (Bio-informatics), MBA, L LB.

There are some specialized courses run by National Institute of Pharmaceutical Education Research (NIPER), S.A.S. Nagar, (Mohali), :Punjab – 160 062 India

## MASTERS’ PROGRAMMES

Sl. No.	Department	Degree	Eligibility
1.	Medicinal Chemistry	M.S. (Pharm.)	B. Pharm/M.Sc. in Organic Chemistry
2.	Bio-technology	M.S. (Pharm.)	B. Pharm/M.Sc. in Biological Sciences
3.	Natural Products	M.S.(Pharm.)	B. Pharm./M.Sc. in Organic Chemistry
4.	Pharmaceutics	M.S.(Pharm.)	B. Pharm.
5.	Pharmacology & Toxicology	M.S.(Pharm.)	B. Pharm./B.V. Sc./M.B.B.S.
6.	Pharmaceutical Technology	(a)M. Pharm (b)M. Tech. (Pharm.)	B. Pharm. B. Pharm./M.Sc. in Organic Chemistry/B.E./B. Tech. in Chemical Engineering
7.	Pharmaceutical Analysis	M.S.(Pharm.)	B. Pharm./M.Sc. in Organic or Analytical Chemistry
8.	Pharmacy Practice	M. Pharm.	B. Pharm.

## PH.D PROGRAMMES

Sl. No.	Department	Eligibility
1.	Medicinal Chemistry	M. Pharm./M.S. (Pharm.)/M.Sc. in Organic Chemistry
2.	Bio-technology	M. Pharm./M.S. (Pharm.)/ M.Sc. in Biological Sciences

3.	Natural Products	M. Pharm./M.S. (Pharm.)/.M.Sc. in Organic Chemistry
4.	Pharmaceutics	M.Pharm./M.S.(Pharm.)
5.	Pharmacology & Toxicology	M. Pharm./M.Sc.(Pharm.)M.Sc. in Pharmacology/Drug Assays/M.V. Sc./M.D.
6.	Pharmaceutical Technology (a) Formulations  (b) Bulk Drugs	M. Pharm. in Pharmaceutics/Pharmaceutical Technology/Industrial Pharmacy, M.S. (Pharm.) in Pharmaceutics  M.Sc. in Organic Chemistry/Pharmaceutical Chemistry, M.S. (Pharm.) in Medicinal Chemistry, M. Tech. (Pharm.)

## GENERAL ELIGIBILITY CRITERIA

For Masters'/Ph.D. Programmes, the candidate should have passed the prescribed examination with minimum 60% marks in aggregate wherever marks are awarded or GPA of 6.75 on a 10 point scale wherever such grades are awarded or equivalent as determined by Board of Studies and Research of NIPER. For candidates belonging to SC/ST category 55% of marks or GPA of 6.25 on a 10 point scale or equivalent will be the eligibility criteria. For Physically Handicapped candidates eligibility criteria will be 50% marks or GPA of 5.75 on a 10 point scale or equivalent. Such candidate should furnish a medical certificate indicating a minimum of 40% of physical defect or deformity duly signed by Medical Board and Counter signed by Principal Medical Officer of a Government Hospital.

**Passing GATE/NET examination shall be an essential qualification for all candidates.**

## PROSPECTS AND PLACEMENT

Pharmacy offers diverse possibilities such as Research, Quality Control, Management, Sales, Production, Packaging etc. Technical personnel deal with Research, Quality Control Production, Packaging, etc. while the managerial staff co-ordinate the work of the various departments. Sales (Medical Representatives) and advertising personnel handle the promotional sales functions.

The nature of the job one holds as well as the volume of business controlled by the employing organization influences the remuneration package. Pharmaceutical companies with foreign collaborations and multinationals in large numbers in the pharmaceutical industry offer good remuneration packages. Managerial staff starts off with monthly salaries of Rs.10,000-15,000 approximately and scientific personnel usually with post graduate qualifications also begin in the same scale.

B. Pharm. graduates are highly preferred for sales and marketing functions. Perquisites and allowances vary between organizations and the caliber of the new entrant.

India's pharmaceutical industry is one of the largest and most advanced among the developing countries. About 250 large units and about 8000 Small Scale Units form the core of the pharmaceutical industry in India including five Central Public Sector Units (IDPL, HAL, SSPL, BCPL, BIL). Among the MNCs are Abbott Laboratories India Ltd., Burroughs Wellcome India Ltd., Duphar-interfran Ltd., E-Merck (India) Ltd., German Remedies Ltd., Glaxo India Ltd., Novartis India Ltd., Hoechst Marion Roussel Ltd., etc. while the domestic ones include Alembic Chemical Works Co. Ltd., Ajanta Pharmaceuticals Ltd., Ambalal Sarabhai Enterprises Ltd., Cadila Healthcare Ltd., Cipla Ltd., Dr. Reddy's Laboratories Ltd., Ranbaxy Laboratories Ltd., etc.

## **PROMINENT INSTITUTIONS OFFERING PHARMACY RELATED COURSES**

1. College of Pharmacy, Pushp Vihar, Sector III, New Delhi – 110 017
2. Faculty of Pharmacy, Hamdard Nagar, New Delhi – 110 062
3. M.S. University of Baroda, Pharmacy Department, Kalabhavan, Vadodara – 390 001
4. University of Mumbai, University Institute of Chemical Technology (Autonomous), Matunga, Mumbai–400 019
5. Bombay College of Pharmacy, Kalina, Santa Cruz, Mumbai -400 098
6. Birla Institute of Technology and Science (BITS), Pilani – 333 031, Rajasthan.
7. Institute of Pharmaceutics, Banaras Hindu University, Varanasi – 221 005
8. University Institute of Pharmaceutical Technology, Annamali University, Annamalainagar – 608 002
9. SNTD Women's University, C.U. Shah College of Pharmacy, Sir Vithaldas Vidyavihar, Santa Cruz(W), Mumbai – 400 049
10. Department of Pharmaceutical Technology, Jadavpur University, Kolkata – 700 032
11. University Institute of Pharmaceutical Sciences, Punjab University, Chandigarh – 160 012
12. Tamil Nadu Dr. M.G.R. Medical University, No. 40, Anna Salai, Chennai – 600 032
13. Rajiv Gandhi University of Health Sciences, Karnataka, Jayanagar General Hospital Complex, 4<sup>th</sup> 'T' Block, Jayanagar, Bangalore -560 041
14. Punjabi University, Patiala – 147 002
15. University of Pune, Ganeshkhind, Pune – 411 007
16. University of Nagpur, Rabindra Nath Tagore Marg, Nagpur – 440 001
17. University College of Pharmaceutical Sciences, Kaktiya University, Warangal
18. Bihar College of Pharmacy, Beli Road, Patna
19. Birla Institute of Technology, Mesra, Ranchi - 835215

# THE DAIRY TECHNOLOGIST

## INTRODUCTION

Dairy development has played a major role in increasing milk production, improving the nutritional standards of the people, generating employment opportunities, improving income level in rural areas, especially for small and marginal farmers. Indian milk output during 2001-02 is expected to reach the level of 85 million tones. This has not only placed the industry first in the world, but also represent sustained growth in the availability of milk and milk products for the population of the country.

Dairy Technology deals with methods of handling milk from its production and to its consumption which includes its processing, packaging, storage, transport and physical distribution among the consumers. Based on the sciences of biochemistry, bacteriology, and nutrition, Dairy Technology employs the principles of engineering. Dairy Technologists handle the procurements, processing and marketing of milk and its products.

The Dairy Farming in this country has grown rapidly, as the demand for milk and its products keeps on increasing which creates openings in both public and private sectors. Though much of work in this sector is handled by cooperatives and milk federations, however, there are many openings for trained professionals within organizations for handling the procurements of milk, its processing and packaging; and in areas like quality control. Besides, in the private sector there are enterprises handling the manufacturing process of milk and marketing of its products like cheese, butter, ice-cream, chocolates, milk foods, baby foods and so on which offers employment to Dairy Technologists.

In spite of large volume of milk in India, there has been a marginal increase in the per capita availability of milk. The economic demand for milk may increase further with the up surging population, growing urbanization and nutritional awareness amongst the masses. This also denotes that there is a considerable scope for dairying sector to expand and grow as the demand always stimulates growth.

## TRAITS REQUIRED

- Technical competence
- Business acumen

- Supervisory ability
- Scientific understanding
- Initiative, Patience and Discipline
- Leadership qualities
- Team spirit
- Quick decision making ability
- Knowledge of men and machine
- Motivation
- Commitment

## **EDUCATIONAL/TRAINING FACILITIES**

B. Tech or B.Sc. in Dairy Technology is essential for this industry. The entry point is through state joint entrance exams, where you have to list your course performance as a dairy technology. Students who have passed 10+2 with Physics, Chemistry and Mathematics are allowed to sit for the test. There is another route through the All India exam conducted by the Indian council for Agricultural Research (ICAR) for filling of 15% of the total number of seats in all State Agricultural Universities, Central Agricultural University, Imphal, Banaras Hindu University, Varanasi, Vishwa Bharati(WB) and 100% of the seats in Dairy Technology in National Dairy Research Institute, Karnal. The Council will also Award National Talent Scholarship on merit, based on the examination provided students join University in state other than his/her state of Domicile.

The study of Dairy Technology incorporates subjects dealing with the dairy engineering as applied to production process, dairy chemistry which deals with the composition of the product, dairy bacteriology dealing with research and bio-technological applications and quality control with testing procedures. The course includes inputs into management of dairy plants and processing industries including financial management.

The Indian Council of Agricultural Research (ICAR) conducts common All India Test to fill-up 100% of the seats in Master's degree programmes in all branches National Dairy Research Institute (NDRI), through All India Combined Competitive Examination. The combined Examination is conducted at different Centers spread all over of the country to enable a large number of students to seek admission to Master degree programmes in different disciplines.

Master's degree course in dairy science and dairy technology are offered by various institutions of Dairy Science and Technology, some agricultural colleges, college of veterinary science and animal husbandry, National Dairy Research Institute, Karnal also offers graduate, master's and doctorate courses in various discipline of Dairy Husbandry Technologies.

## M.SC. DAIRYING: COURSES OFFERED AT NDRI, KARNAL, HARYANA.

<i>Sl. No.</i>	<i>Disciplines</i>	<i>Eligibility</i>
1.	Animal Genetics Breeding	B.Sc. (D), (D.H.), B.Sc. (Animal Science), B.V.Sc., B.Sc.(Agri. With Animal Science as electives)
2.	Livestock Production & Management	B.Sc. (D), (D.H.), B.V.Sc., B. Sc. Animal Science, B.Sc. Agri. With Animal Sciences as electives
3	Animal Nutrition	B.Sc. Dairying (D.H.), B.V.Sc., B. Sc. Animal Science, B.Sc. (Physiology), Bio-chemistry, Chemistry)
4	Animal Physiology	B.Sc. Dairy (D.H.), B.V.Sc., B.Sc. (Ani. Sc.), B.Sc. (Physiology/Biology/Zoology/Biochemistry/Chemistry)
5	Animal Biochemistry	B.Sc. Dairying, B.Sc. (D)(D.T./D/H), B.V.Sc., B.Sc. (Hons.), Bio-chemistry, B.Sc. PCM, B.Sc. CBZ.
6	Dairy Economics	B.Sc. Dairying, B.Sc. (D)(D.T./D.H.), B.Sc. (Agri.), B.V.Sc.
7	Dairy Extention	B.Sc. Dairying, B.Sc. D.(D.T./D.GH.), B.Sc. (Home Sc.), B.Sc. (Agri.), B.V. Sc.
8	Dairy Microbiology	B.Sc. Dairying, B.Tech-(DT),B.V.Sc, B.Sc –Microbiology/Food Sciences/Food Technology, B.Sc with Chemistry and any two of the subjects: Botony, Zoology, Genetics, Microbiology, Biochemistry, Dairy Science
9	Dairy Chemistry	B.Sc Dairying, B.Sc Dairying(DT/DH), B.Tech(DT), B.Sc Chemistry,B.Sc-Food Tech, B.Sc Biochemistry, B.Sc (Agri) with Dairy Science, B.Sc with Physics,Chemistry,Mathematics.
10	Dairy Technology	B.Sc Dairying, B.Sc Dairying(DT/DH), B.Tech(DT), B.Sc-Food Tech., B.Sc with Physics, Chemistry, Mathematics.
11	Dairy Engineering	B.E/B.Sc. Engg/B.Tech/ B.Sc Dairying/B.Tech.(DT)

## COURSES OFFERED AT BANGALORE, NDRI

P.G. Diploma in Quality Control in Dairy Processing

**ELIGIBILITY:** Bachelor's degree in (i) Dairying (ii) Animal Sciences/Veterinary Science.

## DAIRY SCIENCE & TECHNOLOGY COURSES STATE-WISE

<i>Sl. No.</i>	<i>State</i>	<i>University</i>	<i>College</i>	<i>Courses</i>
1.	Andhra Pradesh	Acharya N.G. Ranga Agricultural University	College of Veterinary Sc., Hyderabad  College of Veterinary Sc., Tirupati  Dairy Science College, Tirupati Institute of Dairy Technology	M.V.Sc. (DP/DT)  M.V.Sc. (DT/DS)  B.Sc.(D.T.) B.Sc.(D.T.)
2.	Bihar	Rajendra Agricultural University, Patna	Sanjay Gandhi Institute of Dairy Technology	B.Tech. (D.T.)
3.	Gujarat	Gujarat Agricultural University, Anand.	Bhailabhai & Bhikabhai Poly Technic College Seth M.C. College of Dairy Science	DIP (DE)  B.,Tech. (DT) M.Sc.(D), Ph.D.
4.	Haryana	National Dairy Research Institute, Karnal	Dairy Science College	Diploma in Dairy Technology – B.Tech. (D.T.) M.Dairying, Ph.D.
5.	Karnataka	University of Agricultural Sciences, Bangalore	Dairy Science College  National Dairy Research Institute, Southern Regional Centre, Bangalore	B.Tech. (DT) M.Sc. (DS) Ph.D.  NDD, M. Dairying, Ph.D.
6.	Kerala	Kerala Agricultural University, Thrissur	College of Veterinary & Animal Sciences,	M.V.Sc.(DS), Ph.D.
7.	Madhya Pradesh	Indira Gandhi Krishi Vidyalaya, Raipur	College of Dairy Technology	B.Tech. (DT)

8.	Maharashtra	<p>1. Marathwada Krishi Vidyapeeth, Pasbhani</p> <p>2. Dr. Punjabrao Deshmukh Krishi Vidyapeeth, Warnd</p> <p>3. Aarey, Mumbai</p> <p>4. Konkan Krishi Vishwavidyalaya, Dapoli</p> <p>5. Mahatma Rhule Krishi Vidyapeeth, Rahuri</p> <p>6. Dr. Punjabrao Krishi Vidyapeeth, Akola</p>	<p>1. College of Agriculture</p> <p>2. College of Veterinary &amp; A.S. College of D.T.</p> <p>Dairy Science Institute,</p> <p>College of Agriculture</p> <p>Faculty of Agriculture</p> <p>Faculty of Agriculture</p>	<p>M.Sc.(Ag. In A.H. &amp;D)</p> <p>M.V.Sc.(DS)</p> <p>B.Tech. (D.T.), M.Sc(AH&amp;D)</p> <p>Indian Dairy Diploma (DT)</p> <p>MS (AH&amp;DS)</p> <p>M.Sc.(Agriculture in D.S.)</p> <p>M.Sc.(Agriculture in AH &amp; D)</p>
9.	Punjab	Punjab Agricultural University, Ludhiana	Department of Food Science	Diploma in DT
10.	Rajasthan	Maharana Pratap University of Agriculture & Technology, Udaipur	Dairy Science College	B.Tech. (DT) M.Sc. (DH/DS) Ph.D.(DS)
11.	Tamil Nadu	T.N. Veterinary & Animal Science University, Chennai	<p>Madras Veterinary College</p> <p>Gandhigram Rural Institute, Gandhigram</p>	<p>M.V.Sc. (DS)</p> <p>Ph.D. (DS)</p> <p>P.G. Diploma in Dairying</p>
12.	Uttar Pradesh	<p>1. Allahabad</p> <p>2. Gobind Ballabh Pant University of Agr. &amp; Tech., Pantnagar</p>	<p>Allahabad Agricultural Institute,</p> <p>College of Agriculture</p>	<p>Indian Dairy Diploma (DH)</p> <p>Indian Dairy Diploma (DT)</p> <p>M.Sc. (Ag. in DT)</p> <p>M.V.Sc.(DH)</p>

		<p>3. Chandra Sekhar Azad University of Agricultural &amp; Technology, Kanpur</p> <p>4. Govt. Polytechnic, Etawah</p> <p>5. Govind Ballabh Pant University of Ag. &amp; A.H.</p> <p>6. Izatnagar</p> <p>7. Banaras Hindu University, Varanasi</p> <p>8. Kanpur University</p> <p>9. Agra University, Agra</p> <p>10. Varanasi</p>	<p>-</p> <p>-</p> <p>-</p> <p>Indian Veterinary Research Institute</p> <p>Institute of Agriculture</p> <p>-</p> <p>R.B.S. College</p> <p>Uday Pratap College</p>	<p>M.Sc. (Ag. in DT)</p> <p>Diploma in Dairy Engg.</p> <p>M.V.Sc. (Dairy Husbandry)</p> <p>M.V.Sc. (Livestock Product Technology)</p> <p>M.Sc. (AH&amp;D)</p> <p>M.Sc. (DT)</p> <p>M.Sc.(Ag. in AH &amp; D)</p> <p>M.Sc. (Ag. in AH &amp; D)</p> <p>M.Sc. (Ag. in AH &amp; D)</p>
13.	West Bengal	<p>1.W.B. University of Animal &amp; Fisheries Sciences, Mohanpur</p> <p>2.Kharagpur</p> <p>3. Haringhata</p>	<p>Dairy Science College</p> <p>I.I.T.</p> <p>State Institute of Dairying</p>	<p>B.Tech. (DT)</p> <p>M.Sc. (Dairy Bacteriology)</p> <p>M.Sc. (Dairy Chemistry)</p> <p>M.Tech. (Dairy &amp; Food Engineering)</p> <p>Indian Dairy Diploma (DT)</p>

## **CAREER OPPORTUNITIES**

There can be job openings both in public and private sector like in dairy plants, co-operatives, federations and farms. You can also work with NGOs and rural banks that fund dairy enterprises. For masters degree holders or those with a Ph. D the scope is even better, provided you have creativity, an academic bent of mind and the ability to look beyond the obvious.

The spectacular growth of the dairy Industry in the last two decades had created various demands for indigenous production of dairy equipment, increased quality standards and production of varieties of milk products. This has resulted in the progressive development of dairy equipment manufacturing industry and technical consultancy organizations and has also given impetus to research and teaching. Such notable expansion of the dairy processing and related industries has opened up vast career opportunities for dairy technologists.

There are now more than 400 Dairy plants in the country making various types of milk products. They need good qualified and well trained personnel to run the plants efficiently. The growth of the dairy processing industry has also encouraged the indigenization of dairy equipment. Presently, there are over 170 dairy equipment manufacturers.

## **VARIOUS DEPARTMENTS DAIRY PLANTS**

- Processing Department that process milk and milk products
- Quality assurance Department
- Maintenance Department
- Marketing Department

## **DIFFERENT JOB TITLES IN DAIRY PLANTS**

- Technician
- Technologist
- Assistant plant Manager
- Deputy plant Manager
- Plant Manager

## **VARIOUS JOB TITLES IN PUBLIC/PRIVATE DAIRY PLANTS**

- Management trainee/Executives
- Junior officers
- Shift incharge
- Superintendent
- Manager
- General Manager
- Managing Director

**THE INDUSTRY HAS TWO DISTINCT KINDS OF JOB:**

1. Equipment Design, Fabrication and Plant Design.
2. Project Execution.

**DAIRY TECHNOLOGISTS CAN ALSO UNDERTAKE:**

- (i) Consultancy work
- (ii) Teaching
- (iii) Research
- (iv) Own Enterprises such as Small-scale Milk Plants, Creamery, ice-creams units.

# INFORMATION TECHNOLOGY AS A CAREER

## INTRODUCTION

### INFORMATION TECHNOLOGY

Information Technology (commonly known as I.T.) is the collective term for various technologies involved in processing and transmitting information. They include computing, telecommunications and micro electronics. Information Technology has not only enabled work to be done quickly, but also gives decisions makers the opportunity to consider for more data when making decisions.

Information Technology has virtually transformed both the face and the nature of the workplace. Two vital dimensions, viz. (i) increased volume and (ii) speed have been added to workplace by Information Technology which virtually, have revolutionized the human creativity, activity and commerce world over. The impact of Information Technology on business, industry, financial institutions and governments has been pervasive leading to structural changes in their working systems. In the sphere of public administration, e – governance is the “in-thing”. The technology is also enabling Academics, Researchers, Librarians and Information scientists and other “Knowledge” workers to significantly change the way they communicate, collaborate, identify sources of Information and disseminate new information and knowledge.

The Information Technology software and services industry in India accounted for about 2% of Indian GDP during 2001-02. Indian Information Technology software and services exports account for over 18% of India’s total exports during 2001-02. It is expected that by the year 2008, Indian IT software and services industry will account for 7% of India’s GDP and 35% of India’s total exports.

A large Number of Indian Software Companies have acquired international quality certification. Out of top 400 companies, more than 250 have already acquired ISO 9000 certification. Information Technology’s great complementary power is speeding up the development process. It can also help to deliver basic services in more efficient and innovative ways. Land records, Caste Certificates, Income Certificates etc. which enable rural people to gain access to Government sponsored development inputs, can be provided through the help of IT at a very small cost. The I T could be used by the State Government, local authorities, NGO’s and groups of rural people for effective delivery of development inspects, quickening the pace of data collection, analysis, decision making and conveyance of these decisions to reach the development functionaries at the cutting edge level.

## TRAITS REQUIRED

- Good communication skills (written and spoken)
- Power of logical reasoning
- Numerical Ability
- Patience and persistence
- An aptitude for Mathematics
- Ability to communicate complex ideas simple terms
- Be able to work well under pressure and dead lines,
- Always be willing to learn more about new and different technologies
- Strategy is more important than more knowledge
- Speed and Time Management is essential.

## ENTRY FOR I.T. RELATED COURSES AT VARIOUS LEVELS

### (I) AFTER 10<sup>TH</sup> CLASS WITH SCIENCE

Computer operator and programming Assistant. Certificate from the Industrial Training Institutes (ITIs) - Duration: 1 year.  
Data processing and Computer Software Diploma from polytechnics. Duration: 3 years.

### (II) AFTER 10+2

B.Sc. Computer Science or  
B.Sc.  
(PCM)  
Duration: 3 years

B.C.A. with Maths  
Duration: 3 years

B.E. / B.Tech.  
(Com.Sci./IT)  
Duration: 4 years

BIT/BIS offered by Delhi  
University  
Duration: 4 years

### (III) AFTER GRADUATE

M.Sc. (Computer Science)  
Duration: 2 years

M.C.A. for any graduate  
preferably with  
Mathematics at 12<sup>th</sup>  
Duration: 3 years

M.E. (Elec./Computer  
Science/IT) after B.E  
Duration: 3 Semesters

Ph.D. Computer  
Science/allied subjects after  
Master Degree in related  
disciplines

## **ADMISSION PROCEDURE INTO VARIOUS INSTITUTIONS**

Admission procedures for the course offered by the university system Vary depending upon the institutions and the levels of educations. Admission to BE/ B.Tech courses are made on the basis of state-wise common entrance test conducted by state Government. Some universities and Institutions which admit students on all India basis conduct their own entrance Test. For MCA course, similar state-wise common entrance tests are conducted by state Government although many universities have their own tests

MCA is one of the most sought after and evidently the most competitive of IT courses. All Institutes offering MCA courses conduct separate admission tests. However, some states conduct combined tests for admission in various Institutes. In U.P. State MCA Test is conducted for admission in more than 20 Colleges in the state while in M.P. State (Pre MCA test) and Andhra Pradesh State (CET) also conducted test on the same line.

## **EDUCATIONAL AND TRAINING FACILITIES**

The formal sector comprises schools, vocational Institutes, Polytechnics, Institutions within the university system (i.e., university, Department of Computer Science, and colleges affiliated to university). It also covers institutions outside the university system i.e., training institutions recognized by AICTE, including newly established IIIT's and DOEACC accredited training courses.

All these institutes offer programmes at various levels, i.e., certificate, diploma, post-diploma, graduation, Post Graduation and Doctoral level.

**VOCATIONAL INSTITUTIONS-** At the Vocational education level, the National Council for Vocational Training (NCVT), a non-statutory advisory body of the Ministry of Labour, had introduced computer programmes in NVTI for women, Regional Vocational Training institute for women (RVTI) and the model Training Institutions (MTI) attached to Advanced Training institution (ATI). The courses are **computers operator and programming Assistant and Data processing and computers software diploma**  
**Eligibility:** Candidates who have passed 10+2 Examination.

**POLYTECHNIC** - large number of Polytechnics offer three-year diploma courses in Computer Engineering. It is open to students who have passed the class 10 examination.

**UNIVERSITY SYSTEM** - Courses in Colleges affiliated to Universities :

B.Sc. (Computer Science), B.I.T., B.C.S., B.Sc. (Applied Science)  
B.Sc. (Computer Application)  
Bachelor of Development and IT (BDIT),  
Bachelor of E-Commerce (B.E-Com.)  
B.C.A., M.C.A., M.Sc (Computer .Science.), M.Sc. (IT), M.Sc. (Computer Application)  
PGDCA, BE/ B.Tech. Computer Science and Engg. /Tech.  
M.E./M.Tech.

**DOEACC** - Department of Electronic Accreditation of computers courses, Electronics Niketan, 2<sup>nd</sup> floor, 6 CGO Complex, New Delhi-110003 an autonomous body of the Ministry of Information and Technology. At present 711 institutions have received accreditation throughout the country. The Society has designed standard syllabuses for four levels of study and examination viz:

O level:  
Foundation courses

A level:  
Advanced Diploma

B level:  
MCA equivalent

C level:  
M.Tech. Equivalent

Examinations are conducted by the society for all the levels twice a year (Jan. & July)

**REGISTRATION** is meant for students and is a pre- requisite for taking the examination for O, A, B or C level under the DOEACC scheme.

- Registration is allowed only at one level at a time.
- It is valid for a specific period after which re-registration is required.
- After completion of a particular level successfully, registration is allowed for the next higher level after paying the application fees.

**ELIGIBILITY** “O” level - 1 year - 10+2/10+ ITI certificate (plus) Accredited “O” level course or working experience (IT).  
**Or** A pass in NCVT-Data preparation and computers software course.

- “A” level - 2 years - A pass in “O” level or pass 10 class polytechnic Diploma in Engineering. **Or** Graduation plus Accredited “A” level course **Or** Working experience (IT) of one year **Or** Accredited “A” level course
- “B” level - 3 years - A pass in “A” level **Or** Post polytechnic Diploma in computer (PPDIA) **Or** PGDCA **Or** Polytechnic Diploma in Engineering **Or** Graduation plus Accredited “B” level course **Or** Working experience in (IT) of 2 years
- “C” level - 1 year - A pass in “B” level **Or** B. Tech./B.E./MIA/M.Sc. degree, a Masters degree in Mathematics /Statistics **Or** MBA (or its equivalent) with Mathematics/Statistics at BA/B.Sc. level **Or** Valid GATE (computer) score plus Accredited “C” level course or working experience (IT) of 1 year.

**DOEACC qualifications are accepted for appointments at different professional levels in Government, Public Sector Undertakings and Private Industries.**

## **DISTANCE LEARNING PROGRAMMES**

1. IGNOU, Maidan Garhi, New Delhi-110068  
 IGNOU and Madhya Pradesh Bhoj (open) University offer courses mostly in computer application (CIC, BCA and MCA) through distance learning mode through virtual campus IGNOU from Sep.1999 offers IGNOU, K-76, Hauz Khas, New Delhi-110016.
 

(1) BIT	-	3 years degree programme open to 10+2 students
(2) Advance Diploma in I.T. (ADIT)	-	1 year programme sponsored by Directorate of Education, Government of India. Open to graduates graduates.

(Eligibility:-Graduation from any university)
  
2. Karnataka State Open University, Mysore-570006
 

(1) B.Sc. (IT)	-	3 years, 10+2 or equivalent
(2) M.Sc. (IT) I semester	-	2 years, Graduation
(3) M.Sc. (IT) III semester	-	1 year, Graduation+PGDCA

Graduation + A level of DOEACC

(Some other Universities also offer Distance Learning Programmes.)

## SOME IMPORTANT COLLEGES/UNIVERSITY OFFERING I.T. COURSES

<i>COURSE</i>	<i>DURATION</i>	<i>ELIGIBILITY</i>	<i>REMARKS</i>
1) Indian Institute of Information Technology (IIIT),Allahabad (Deemed University), Nehru Science Centre, Kamla Nehru Road, Allahabad-211002 <i>B.Tech. I.T.</i> <i>P.G.Courses</i> M.Tech. I.T. (Intelligent System, Wireless Communication & Computing)	4 years  2 years	12 <sup>th</sup> standard examination with Physics, Chemistry and Mathematics	Selection through Joint Entrance Examination conducted by IIT-JEE.
2) IIIT, Gachi Bowli, Hyderabad-500019. (Deemed University) B.Tech. Computer Science & Engineering  <i>P.G. Courses</i>  M.Tech. Computer.Science. , IT in Building Science.	4 years  2 years	10+2 Sr. Sec. Examination or its equivalent with 50% aggregate marks in Physics, Chemistry & Mathematics	Selection through AIEEE conducted by CBSE, New Delhi.
3) IIIT & Management, Gwalior, Gola ka Mandir, MITS Campus, Gwalior-474005. (Deemed University) Post Graduate Diploma in I.T. M.Tech.(Integrated) I.T. with special Software Engineer, Computer Net, Multimedia, DBMS	5 years	10+2 with Physics, Chemistry and Mathematics	Selection through JEE conducted by IIT's
4) IIIT, Bangalore P.G.programme	4 Semester (2 years)	Ist class degree in BE/B.Tech./B.Sc.(Engg.)/ M.Sc./MCA	

5 ) Punjab Technical University, Jalandhar, Punjab. M.Sc.(IT) P.G.D.C.A. P.G.D. in Software Technology B.Sc.(I.T.) M.Sc.(I.T.) Lateral Entry	2 years 1 year 2 years 3 years 1 year	Graduation in any discipline. Graduation in any discipline Graduation in any discipline 10+2 in any discipline. Graduation with PGDCA/PGDIT	
6) Indian Institute of Software Engineering,Millenium Business Park, Technology Building, Building No.7, Sector No.3, Mohape, Navi Mumbai-400701. P.G.D. in Information Technology(PGDIT)	3 Semester	(i) Candidates should be BE or M.Sc. or equivalent. (ii) The Candidates through GATE Score in Computer Science or Qualifying marks in NCST, D Level examination.	The candidates who do not fulfill the criteria mentioned at Previous Column will be required to appear for a written test.
7) Centre for Electronics Design & Technology of India, Mohali. (An Institute of Govt. of India, M/o Information & Technology) Advanced Diploma in E-commerce, Advanced Diploma in System Maintenance Engg. Advanced Internet Programming in JAVA	6 months 26 weeks 12weeks	Diploma(Comp. Sc.)/B.Sc.(Comp. Sc.)/BCA/ PGDCA/MCA/BE/M.Sc. Diploma or B.E. in Elec./Electrical/Comp. Sc. or B.Sc./M.Sc. etc. Diploma(C.S.)/B.Sc.(C.S.)/BCA/PG DCA/MCA/BE/M.Sc.	

#### LIST OF SOME OTHER INSTITUTIONS OFFERING IT COURSES

- 8) IIIT, Techno Campus, X-1/11&12, Block-EP, Sector-V, Salt Lake Electronic Complex, Kolkatta-9.
- 9) IIIT, 4<sup>th</sup> floor, MSIL House, 36 Cunningham Road, Bangalore-560052.
- 10) IGNOU, Maidan Garhi, New Delhi – 110068.
- 11) ET&T Computer Education and Training Division 15/48 Malcha Marg, Chanakyapuri, New Delhi – 110021.
- 12) Centre for Development of Advanced Computing(C-DAC), Pune, University of Pune has authorized Training Centres and advanced computing training schools all over the country.
- 13) Centre for Electronics Design and Technology, Aurangabad-431004.
- 14) Centre for Electronics Design and Technology, Near Chandigarh.

- 15) Centre for Electronics Design and Technology, Imphal  
15) CMC, A-5, Ring Road, South Extension, Part-I, New Delhi..

## **INSTITUTE OF DEVELOPMENT & RESEARCH IN BANKING TECHNOLOGY(IDRBT),HYDERABAD**

IDRBT, Hyderabad, launched an *M.Tech in Banking Technologies* last year and a post graduate programme in *Banking Technology Management* this year with a specific mandate from RBI ex Director Bimal Jalan, to train manpower for the rapidly computerized banking industry.

- These programmes launched in collaboration with the University of Hyderabad
- The admission into M.Tech in Banking Technology is through an all-India entrance examination, followed by a group discussion and interview.
- Only a GATE score of more than 85% can get you through IDRBT
- Minimum requirement for entry in to PGPBTM is first class B.E/B.Tech/B.Sc(Engg.)/M.Sc/M.C.A degree
- Age Max 30 yrs
- IDRT also offers distance education programme in banking technologies in association with the IIT, Mumbai.

## **CAREER OPPORTUNITIES**

The special group on “Ten Million Employment opportunities per year” constituted by the Planning Commission, estimated that IT Sector will create about four lakh new jobs every year during the 10<sup>th</sup> Plan. Most of these jobs involve operations as software development, various on time operations, data collecting to the value addition needs of corporate sector and would require professional qualifications at the entry level.

Some important job titles related to I.T. Professionals are as below:-

- Programmer Assistant
- Junior Programmer
- EDP Assistant
- Programmer
- EDP Officer
- Assistant to Data base Manager
- Teaching Faculty
- Lab Demonstrator

- System Analyst
- EDP Manager
- Project Manager
- System Manager
- Consultant
- Database Specialists/Administrators
- Computer Trainers
- Computer Network specialists/Administrator
- Computer Maintenance Engineers/Technicians
- Software Engineers etc.

# CAREERS IN PARAMEDICAL SERVICES

## INTRODUCTION

Dear students, if for any reason you could not get through the Medical Entrance Examination and could not get medical seat in any medical college, do not lose heart. There are chances left for you to enter into the medical field as a Paramedical Expert.

Para medicine is a field that has many areas of specialization. Some of them are (i) Physiotherapist (ii) Occupational therapist (iii) Radiographer (iv) Prosthetic Engineer (v) Optometry/Ophthalmic Technologist (vi) Dental Assistant (vii) Sanitarians (viii) Medical Lab Technicians.

With the increase in Medical facilities, Hospitals, Health Care Centres, Polyclinics, Nursing Homes and Diagnostic Centres etc. there is a demand for trained Doctors, Surgeons and Paramedical Experts and Technicians. Health care today needs the services of a variety of Medical Technicians and Technologists, Occupational Therapists, Physiotherapists, Radiologists etc. who can extend diagnostic support services to Physicians, Surgeons and rehabilitative medical experts. As doctors are depending more and more on diagnostic techniques, procedures and devices, these professionals are needed to contribute significantly towards the well-being of the community. Medical Laboratory technicians and radiographers help in the diagnosis of an ailment. Physiotherapists and occupational therapists also together help in the treatment and care of patients.

## TRAITS REQUIRED

- Capacity & Willingness to work hard
- Mechanical Aptitude & the ability to follow detailed instructions
- Questioning attitude
- Keen interest in the diagnosis & care of medical problem
- Good communication skill to be able to build rapport with patients in order to elicit better results.

## DIFFERENT PARAMEDICAL OCCUPATIONS:-

### PHYSIOTHERAPIST:

Physiotherapy is the most curative specialization within Para medicine. It is a natural medical treatment option offered to restore the normal function. A physiotherapist assesses and diagnoses the problem to administer treatment programmes to restore a function or minimize dysfunction after disease or injury. Professional in this field treats disorders of bones, muscles and the nervous system.

**OCCUPATIONAL THERAPIST:**

This is the therapeutic use of self-care, work & play activities which increase independent function, enhance development and cope with disability. Occupational therapy is primarily use for treating patients with various kinds of physical and mental disabilities. Occupational therapy area of work is wider than Physiotherapy. Occupational therapists often treat individuals who are mentally unstable or emotionally disturbed. To help them therapists choose activities that enable them to cope with daily life.

**RADIOGRAPHY:**

Radiography is another specialization available in Para medicine. In fact, today, when most of the diagnosis is through X-ray, Sonography, C.T.Scan or MMR, the role of radiographer has become significant. Radiotherapy and electrotherapy have now become important tools in the treatment and diagnosis of a large number of diseases including tumours and ulcers. This involves diagnosing the patients illness for which they take x-ray photographs and operate the ultrasound and other such equipment. Through the means of radiography, Radiotherapists treat patients' illness by using radio isotopes. Specialists in this area monitor the levels of radiation, exposure and thereby ensure that no one is over exposed to these radiations.

**PROSTHETIC AND ORTHOTIC ENGINEER:**

This branch of Para medicine is related to both medicine and Engineering. The work done by Prosthetic and Orthotic Engineering is to design and manufacture artificial structure which replace the missing parts of the body and thereby enable people who have lost certain limbs to carry on normal activities to the maximum possible extent.

**OPTOMETRY / OPHTHALMIC TECHNOLOGIST:**

Optometrists are involved in the treatment of visual defects with the help of optical instruments. They are professionally trained to conduct eye tests in order to examine the patients' vision. They also fabricate lenses to suit prescribed specifications and the lenses are then fitted in the frames to suit the tastes of individual. They also conduct tests and prescribe contact lenses for patients.

**DENTAL ASSISTANTS:**

Dental Assistants carry out advisory, diagnostic, preventive and curative dental tasks. They assist dentists by preparing and taking care of instruments and other equipments and helping patients to prepare for examination and treatment.

**SANITARIANS:**

Persons in this occupation provide technical assistance and advice measures to restore or improve sanitary conditions and supervise their implementation.

## **MEDICAL LABORATORY TECHNICIANS:**

These persons generally deal with pathology or microbiology. They work in biochemical laboratories. They are involved in conducting laboratory tests of urine, stool and blood, doing blood cells counts and giving biological skin tests. They are also involved in the preparation of vaccines, labelling blood groups and differentiating the blood groups for transfusions etc.

## **EDUCATIONAL / TRAINING FACILITIES**

Generally students from the science background with Physics, Chemistry & Biology as subjects at 10+2 level can join these professions.

The Rehabilitation Council of India, based in New Delhi, Conducts a Joint Entrance Examination for admission to the first year of the professional course in Physiotherapy and Occupational Therapy. These courses are available as B.Sc. courses of 3½ years duration at the National Institute of Rehabilitation Training & Research in Cuttack & The National Institute for the Orthopaedically Handicapped in Kolkata. There are many Institutions that offer short term, diploma & degree courses in Physiotherapy.

### **List of Colleges recognized by The Indian Association of Physical Therapists, New Delhi:**

- Institute of the Physically Handicapped, New Delhi.
- National Institute for Orthopaedically Handicapped, Kolkata.
- National Institute for Rehabilitation Training & Research, Cuttack.
- School of Physiotherapy, SSG Hospital, Baroda.
- Christian Medical College, Vellore.
- School of Physiotherapy, Nagpur.
- G.S. Seth Medical College, Mumbai.
- All India Institute of Physical Medicine & Rehabilitation, Mumbai.
- S.M.S. Medical College, Jabalpur.
- Aligarh Muslim University, Jawahar Lal Nehru Medical College, Department of Orthopedic Surgery.
- J.K. College of Nursing & Paramedicals, Coimbatore.
- Institute of Rehabilitation Medicine, Chennai.
- Kasturba Medical College, Manipal.
- J.J. College of Physiotherapy, Chennai.

### SOME IMPORTANT INSTITUTIONS OFFERING PARAMEDICAL COURSES:-

S.No.	Name of the Colleges/Institutions	Courses	Duration	Eligibility
1.	DOON PARAMEDICAL COLLEGE & DOON COLLEGE OF AGRICULTURE SCIENCE, 28, Chakrata Road, Dehradun (U.A.), (Affiliated to HNB Garhwal University, Srinagar, Uttaranchal.)	BPT (Bachelor of Physiotherapy) B.Sc. (Medical Laboratory Technician)	4½ years 3½ years	10+2 or equivalent with Physics, Chemistry, Biology. 10+2 Physics, Chemistry, Mathematics.
2.	LYALLPUR KHALSA COLLEGE, JALANDHAR, PUNJAB (Affiliated to Guru Nanak Dev University, Amritsar, Punjab.)	BPT (Bachelor of Physiotherapy )	4½ years	10+2 or equivalent with Physics, Chemistry, Biology.
3.	ALL INDIA INSTITUTE OF PHYSICAL MEDICINE & REHABILITATION, Hazi Ali Park, K.Khadya Marg, Mahalaxmi, Mumbai-400034.	Bachelor of Prosthetics & Orthotics	3½ years (including 6 months internship)	12 Standard/10+2 with English, Physics, Chemistry, Biology.
4.	BHABHA ATOMIC RESEARCH CENTRE, TROMBAY, MUMBAI-400085.  <b>Admission through Entrance Test.</b>	Diploma in Radiation Medicine  Diploma in Medical Radioisotope Technician (DMRIT)	2 years  1 year	MBBS Degree including internship from Medical College/Recognized University.  B.Sc. Degree with 65% & above marks in aggregate of Science subjects of a recognized University with Chemistry, Physics, Life Science, Bio-Physics, Bio-Chemistry as one of the subjects of B.V.Sc./B.Sc. in Nuclear Medicine Technology.

5.	SARDAR BHAGWAN SINGH POST GRADUATE INSTITUTE OF BIOMEDICAL SCIENCES & RESEARCH. (Affiliated to HNB Garhwal University, Srinagar, Balawala, Dehradun-248161, Uttaranchal.)	Bachelor of Physiotherapy	4 ½ years	10+2 with minimum 50% marks in PCB/PCM
		Bachelor of Medical Laboratory Technician (Pathology)	3 years	10+2 with minimum 50% in PCB
		Bachelor of Medical Laboratory Technician (Radiology)	3 years	10+2 with 45% in PCB/PCM/BMLT
		Master in Physiotherapy	2 years	10+2+3 , BPT
		P.G.Diploma in Clinical Pathology & Diagnostic Technician.	1 year	BMLT
<b>Admission through Entrance Test.</b>				
6.	INSTITUTE OF APPLIED MEDICINES & RESEARCH (Affiliated to Ch.Charan Singh University, Meerut)	Bachelor in Physiotherapy	4 ½ years	10+2 PCB or Diploma in Physiotherapy eligible for admission in II year.
7.	APPOLLO COLLEGE OF PHYSIOTHERAPY (Recognized BY Government of Andhra Pradesh, Affiliated to NTR University of Health Science, Vijayawada.)	Bachelor in Physiotherapy	4 ½ years	Inter/PUC/10+2 with Biology, Physics, Chemistry

## LIST OF SOME MORE INSTITUTIONS OFFER

### One year P.G.Diploma Course in Radiography

- K.G. Hospital in Visakhapatnan

- Osmania General Hospital, Hyderabad

### **2 years degree course in Radiotherapy**

- P.G.Institute of Medical Education
- And Research, Chandigarh

### **Certificate Course Radiotherapy (18 months)**

- Madras Medical College
- SMS Hospital in Jaipur
- Radiography Training Centre at GB Hospital in Tripura.

### **Certificate Courses in Radiography (12 months)**

- SCB Medical College,Cuttack
- VSS Medical College, Sambhalpur,Orissa

### **2 years courses in Prosthetics & Orthotic Engineering. Admission to these Institutes is on the basis of an Entrance Examination conducted by R.C.B., New Delhi.**

- National Institute of Rehabilitation Training & Research, Cuttack
- National Institute for Orthopaedically Handicapped, Kolkata

### **Diploma Courses in Prosthetic & Orthotic Engineering**

- Department of Rehabilitation at Safdar Jung Hospital, New Delhi.
- Institute for the Physically Handicapped, New Delhi.

### **B.Sc. Courses in Optometry**

- AIIMS, New Delhi

### **Diploma course in Ophthalmic Technology of 3 years duration**

- Jaslok Hospital, Mumbai
- KEM Hospital, Mumbai
- BYL Nair Hospital, Mumbai

### **Diploma Courses of 2 years duration**

- Government Ophthalmic Hospital, Chennai
- Government Medical College, Aurangabad

- Government Medical College, Nagpur
- Gandhi Eye Hospital, Aligarh

## **CAREER OPPORTUNITIES/PROSPECTS**

Physiotherapy degree can open doors to many career opportunities. After Physiotherapy courses students can start their career as Junior Physiotherapists in public health care settings such as hospitals or they may go for private practice. Career paths in hospitals develop along clinical and administrative lines. The candidates can practice in the Orthopaedic, Neuro-Surgical and Paediatric units.

Occupational therapists can work in Rehabilitation Centres, Hospitals & Schools.

### **Some other career options available in Physiotherapy, Occupational therapy are**

- Chiropractor
- Physiotherapist
- Podiatrist and therapist
- Electrotherapist
- Fitter artificial limb
- Gymnast remedial
- Masseurs osteopath
- Lab technicians
- Technician Prosthetic
- Therapist physical & therapist recreational
- Rehabilitation therapist
- Respiratory therapist
- Speech therapist

### **Career Opportunities for Optometrists**

- Optician- dispensing
- Optician- ophthalmic
- Optometrist- ophthalmologists
- Optical designer
- Optical Engineers

- Otolaryngologists
- Otologists
- Optometric Assistant
- Orthodontic Technicians
- Contact lenses
- Curve grinder
- Lenses Cutter etc.

### **Career Opportunities for Sanitarians**

- Inspector -Safety & Health
- Inspectors -Industrial waste processing
- Inspector -Pollution
- Field Inspector- Disease & Insect Control

### **Career Opportunities for Dental related Courses.**

- Hygienist dental aid
- Dental Mechanic
- Dental Ceramist

After Radiography Courses students can be absorbed in medical colleges, Central & State Hospitals as Radiographer or Radiotherapy Technicians. Another alternative is to start a private X-ray centre.

# **SPORTS AS A CAREER**

## **INTRODUCTION**

In recent years the acceptability of Sports as a career has gone up. This is because of Government's New National Sports Policy, 2001. The salient features of which are (i) Broadcasting of Sports and achievements of excellence (ii) Up-gradation and development of infrastructure (iii) Supports to the National Sports Federation and other appropriate bodies (iv) Strengthening of Scientific and Coaching support to sports (v) Incentives to Sports persons (vi) Enhanced participation of women, S.T. & rural youth (vii) Involvement of the corporate sector in Sports promotion.

Sports careers include professional sports participation, training as well as the establishment and running of facilities providing sports services. The popularity and importance of sports are remarkably growing in recent years. With greater cash inflow, those with potential and talent can now consider taking up sports as a career. Sponsorships, Scholarships, Prize money, Contracts, Endorsements, Revenues from T.V. telecasts and Awards have all boosted up the prospects for careers in sports.

## **TRAITS REQUIRED**

- Keen Interest in sports and games.
- High level of Physical fitness, mental and physical stamina.
- Competitive spirit, leadership Quality.
- Organizing ability.
- Stamina.
- Self confidence, Self Discipline.
- Resistance and will-power to cope with injuries and setbacks.
- Dedication and preservation.

Government of India has started premier institutions to inculcate the Philosophy of keeping oneself fit in the minds of our young people. These are (1) Luxmibai National College of Physical Education (LNCPE) Gwalior, M.P. and (2) Netaji Subhash National Institute of Sports, Patiala, Punjab.

Sports Authority of India (SAI) was established in 1984 to promote sports consciousness and competitive activities in collaboration with National Sports Federations/Association and other allied bodies. In order to evolve an integrated approach towards

development and promotion of sports, Sports Authority of India and Society for National Institutions of Physical Education and Sports were amalgamated in May 1987, thus making Sports Authority of India the model agency in the country for sports.

Regional Centres of Netaji Subhash National Institute of Sports, Patiala were restructured in 1987 and six Regional Centres of Sports Authority of India were set up to ensure effective implementation and co-ordination of sports development programmes in different regions of the country. Sports facilities at these Centres are being created in phases so that top level sports persons can use the training facilities of international standards alongwith sports conscious backup.

**The details of each centre are as under:**

NAME OF CENTRES	AREA OF SPORTS DEVELOPMENT PROGRAMMES
1. SAI N.S. Southern Centre- Bangalore	Andhra Pradesh, Karnataka, Kerala, Tamilnadu, Pondicherry & Lakshdweep.
2. SAI N.S. Eastern Centre- Kolkata	West Bengal, Orissa, Bihar, A&N Islands (The Centre runs diploma courses in Cochin for training of coaches).
3. SAI N.S. Northern Centre- Patiala	H.P., J&K, Punjab and Chandigarh.
4. SAI N.S. Western Centre- Gandhinagar	Maharashtra, Gujrat, Goa, Dadar and Nagar Haveli.
5. SAI N.S. North-East Centre- Imphal	Implementation-and monitoring of various development programmes in all the eight States of North-East Regions.
6. SAI N.S. Central Centre- Delhi	Rajasthan, Uttar Pradesh, Madhya Pradesh and NCT of Delhi.

Intrinsic talent is the basic requirement for entry into a sporting career. Those with natural aptitude are supported well before they leave school. The Sports Authority of India (SAI) has initiated several schemes to support talent and to provide facilities for encouraging them.

**SPORTS AUTHORITY OF INDIA IMPLEMENTS THE FOLLOWING PROGRAMMES:-**

**NSTC** - National Sports Talent Contest Scheme; **SAG** - Special Area Games Scheme; **SHS** - Sports Hostel Scheme; **NCS**-National Coaching Scheme; **SPDA** - Sports Project Development Area; Bharatiyam; Sports Scholarship; All India Rural Sports Tournament; North-East Regional Sports Festival; . Sports Academics etc.

**EDUCATIONAL AND TRAINING FACILITIES**

Several Institutions offer various Diploma/Degree/Post-Graduate degree level course in the field of sports. Some of the important Institutions and courses offered by them are as follows:

**1. Lakshmibai National College of Physical Education (LNCPE) Gwalior with Regional College at Thiruvananthapuram Wing of Sports.**

Nature of the Course	Duration	Age	Educational Qualification	Mode of Selection
1. B.P.Ed.	4 years	Below 21 years	Higher Secondary or equivalent with 45% marks	Selection test and medical examination
2. M.P.Ed.	2 years	-	B.P.Ed. with 45% marks	Selection test and medical examination
3. M.P.Ed. (Summer Course)	3 years	19 years & above	D.P.Ed.+5 years experience	For in service Physical Teachers only
4. M.A./M.Sc.	2 years	19-23 years	Degree and should have represented college in at least two games/University in one game.	-
5. M.Phil.	1 year	-	M.P.Ed. with 55% marks	Entrance Examination

**2. Indira Gandhi Institute of Physical Education and Sports Sciences, Block 'B', Vikaspuri, New Delhi.**

Name of Courses	Duration	Total Seats	Eligibility	Age
1. B.Sc. in Physical Education, Health Education & Sports	3 years	50	Passed 10+2 in Second Division from CBSE, New Delhi or Certificate in Physical Education of at least one year duration with a total of 12 years of School Education	17-20 years up to 22 years for National players.
2. Post-Graduate Diploma in Physical Education	1 year	30 Seats (22 ½% seats reserved for SC/ST candidates).	B.Sc. Physical Education. Sports Sc. or B.A. (Hons.), B.Sc. (Hons.)/B.Com. (P), B.A. (Pass), B.Sc. (Gen.) from any University Recognized by the University of Delhi with 45% marks & who has participated in Inter Unit Tournament/Ist or Second Position in Inter-College Tournament/Senior National Sports events recognized by IOA.	Maximum age 20 years Relaxation of age Maximum 1 year.

### 3. Netaji Subhash National Institute of Sports

Name of Courses	Duration	Eligibility	Age
<b>1. Master Degree Course in Sports Coaching</b> (in Athletic, Basketball, Football, Gymnastics, Hockey, Swimming, Volleyball, Wrestling & Weightlifting ) <b>Only at the SAI NSNIS, Patiala</b>	2 years	Graduate with NIS Diploma(I/II) Five years Coaching experience.	Below 45 years.
<b>2. Diploma Course in Sports Coaching</b> (a) <b>At SAI NS Southern Centre, Bangalore</b> (Athletics, Hockey, Kho-Kho, Softball, Swimming, Taekwondo, Tennis, Kabaddi, & Volleyball) (b) <b>At SAI NSNIS, Patiala</b> (Athletics, Badminton, Basketball, Boxing, Cycling, Cricket, Football, Fencing, Gymnastics, Handball, Hockey, Judo, Squash, Swimming, Tennis, Table Tennis, Volleyball, Weightlifting, Wrestling & Wushu ) (c) <b>At the SAI NS Eastern Centre, Kolkata</b> (Archery, Athletics, Canoeing, Kayaking, Rowing, Sepaktakraw, Football.) (d) <b>At the SAI NS Western Centre, Gandhi Nagar</b> (Cricket, Handball, Kabaddi, Kho-Kho.)	1 year	Degree from any recognized University with proficiency in Sports. OR Matriculates with participation in Senior Nationals, Inter Services, All India Police Games, All India Railways and All India Steel Board meet and National Sports Festival for Women for at least three years.	Between 23-35 years for male and 21-35 years for female candidates (up to 38 years in the case of SC/ST).

\*For further details please see latest Notification/Prospectus of concern Institute.

### COURSES AVAILABLE AT DIFFERENT UNIVERSITIES

NAME OF UNIVERSITY	NAME OF COURSE	DURATION	ELIGIBILITY
1) Guru Nanak Dev University, Amritsar, Punjab.	BPED MPED MA Physical Education	1 year 1 year 2 year	B.A. Degree with 40% marks. BPED Degree with 50% marks. Bachelor Degree of 10+2+3 system with 50% marks.  Age required between 17 to 20 years (up to 22 years for National Players).

2) Marathwada University, Aurangabad-431004.	BPED MEPD	1 year 1 year	Bachelor Degree. BPED or DPED Examination.
3) Banaras Hindu University, Varanasi, -221005, U.P.	BPED MEPD	1 year 1 year	Bachelor Degree with 50% marks in aggregate or PG Degree with 50% marks and aptitude for Games and Sports, Gymnastics, Aquatics etc. BPED with 50% marks in aggregate plus test and interview.
4) Alagappa University, Alagappa Nagar, Karaikudi, -623003 Tamil Nadu.	MEPD MEPD Course	2 years Summer Two Consecutive sessions	Bachelor Degree. P.G. Diploma in Physical Education/BPED with 5 years experience.
5) Amravati University, Tapowan, Amravati-444602, Maharashtra.	BPED BPE MPED	1 year (19 years age) 3 years (17 years age) 2 years	Degree Examination. XII Standard Examination. 3 years BPE/BPED with 50% marks.
6) Andhra University, Waltair, -530003, Andhra Pradesh	BPED	1 year	Bachelor's Degree Examination.
7) Bangalore University, Jaana Bharathi, Bangalore-560056, Karnataka.	BPED MPED	1 year 1 year	Graduate. Graduates with additional Degree in Physical Education.
8) Punjabi University, Patiala, -147002 Punjab.	BPED MPED	3 years 1 year	10+2 Examination. BPED

## JOB PROSPECTS

While only a limited number of sports persons make a full-time living out of professional sports, there are several scholarships and awards for exceptional performance at State, National and International levels, which enable talented sportspersons to continue in their field.

Moreover, sportspersons can avail of the sports quota to acquire a job, although it is limited to admissions in the clerical grade, in various Government and Private concerns. Among the organizations having sports quota are the Central Industrial Security Force, Border Security Force, the Railways, Income Tax Department, Customs and Central Excise Department, Post and Telecommunications Department, Police Department, the Army and some banks. The Indian Railways takes in 300 people every year under the sports quota. Others organisations like State Bank of India and Indian Airlines have built up national-level teams by offering security of jobs, generous travel benefits, promotions and leave packages to top players in various disciplines. Private companies too are in the fray: while Mahindra & Mahindra patronizes Hockey, and JCT Football. Both organisations provide employment to all their team players.

There are other advantages in pursuing excellence in sports. Sportspersons can avail of admission in schools or colleges against the sports quota. Those who have earned sports scholarship can apply for admission to both professional and non-professional college courses under the sports quota.

On retiring from active play, sportspersons can also look forward to satisfying assignments as Umpires and Referees. For this, appointments or certification by recognized state or national bodies is required. Those with communicating skill can take up sports journalism, work with television, newspapers or magazines that have a sports column or programme. They can also get on to state and national bodies in the field of administration. Sports goods manufacturers often require sportspersons for marketing, or developing sports goods.

Trained coaches are in demand at all training Centres set up by SAI and by state and central sports bodies. Coaches can find opening in sports clubs, schools and colleges and in-house coaches for corporate sports teams. Physical education instructors train and coach students in games and athletics. With the growing interest in health and fitness, there is an increasing demand for trained physical education instructors at health clubs and gymnasiums. Clubs, holiday and sports resorts and hotels take on PE/sports coaches for training their clientele as well as for organizing and maintaining the sports facilities provided.

There are several sports organisations that promote and monitor sporting activities in the country that take on trained administrators. The SAI is a national organisation financed by the Government of India for promotion of sports in the country. There are National Sports Federations for individual disciplines and several public and private sports associations.

## **SELF-EMPLOYMENT OPPORTUNITIES**

There are vast self-employment opportunities for persons possessing Degree/Post-graduate, Diploma courses in Physical Education. They may also open sports goods shops. They may start coaching classes in various fields e.g. Judo, Swimming, Keep fit Classes. Good and reputed sportsman may find suitable job opportunities in Health Clubs of Hotels on contract basis. Various programmes are produced by various agencies. Sports events are shown on T.V. They can also earn by writing articles on sports in various magazines and newspapers. Many advertising agencies viz. Cibaca, Proctle & Gamble, Pepsi, Coke, Cola, OCM, Reliance, Airtel, Bata, and Action Shoes etc. take national and international level sportsmen for the advertisement of their product on contract basis. They are showing health aspects of sportsman of their products through advertisement.

## **FUTURE PROSPECTS**

Sports today have become a viable career option. Due to incentives, employment opportunities and excellent training facilities, it is increasingly becoming a field teeming with opportunities. The corporate houses have realized the dividends of sponsoring and encouraging games of sportspersons and are spending huge amounts of money. With more and more people opting for regular fitness

routines, even those not in the top leagues can find avenues for utilizing their talent. With encouraging wins in the area of tennis, cricket and some junior tournaments, sports are a major source of national pride.

# THE PSYCHOLOGIST

## INTRODUCTION

Psychology is the Scientific Study of behaviour of living beings, with special attention given to human behaviour. As a Science Psychologist is interested in understanding more and more about the behaviour of individuals and as a professional it is concerned with application of this knowledge to the prediction and control of behaviour.

The Psychologist studies mental, emotional and cognitive (thought) characteristics of human beings and identifies factors which govern human behaviour. He deals with psychological problems involved in diagnosis, treatment and prevention of mental illness and emotional and personality disorders. He examines individuals through interview to find out the causes of maladjustments and suggests corrective steps. He also develops psychological tests and experiments designed to measure mental characteristics of human beings. A psychologist also administers psychological and other tests to individuals to evaluate and measure their intelligence, aptitude, ability, interests and other personal characteristics. He also formulates methods to train physically and mentally handicapped persons and children. May render individual Counselling and Group guidance to persons and students to assist them in selection of their Career and Courses, inter-personal relationship etc.

There are opportunities to do specialization in different subfields of psychology. One is designated according to the area of specialization

**CLINICAL PSYCHOLOGIST:** - He is chiefly concerned with intellectual, emotional and behavioural disorders. He works on problems of sensation and perception, studies the effects of drugs on behaviour, evaluates intelligence and personality. He studies abnormal behaviour of the patient and uses psychotherapy to help victims of mental disorders in returning to normal life.

**CHILD PSYCHOLOGIST:** - He has a concern on the mental growth and development of the child; He studies children's problems and relates them with psychological, social, biological and environmental factors that are important in the growth of the child.

**INDUSTRIAL PSYCHOLOGIST:** - He is concerned with greater output in production and also greater happiness of the worker by focusing more attention on human factors. He makes efforts to bring down mental friction, irritability, annoyance, anxiety etc., in the factory or office surroundings. Industrial Psychologists are primarily concerned with human relationship within industry itself. They

work to achieve understanding between labour and the Management. They are also designated as Personnel Manager/Personnel Relations Officer/Labour Welfare Officer.

**EDUCATIONAL PSYCHOLOGIST:** - He deals with the fundamental laws of human behaviour and their application to education. He attempts to solve personality and adjustment problems of both normal and handicapped children. He also studies the nature and extent of individual differences and their meaning for education. They are also known as Educational Research Associates / Rehabilitation Officer.

**COUNSELLING PSYCHOLOGIST:-** He deals with the normal persons having minor emotional problems or wanting help in vocational, educational or other practical decisions or those persons who find it difficult to face the problems alone. As a Counsellor the important objective to Counselling is to facilitate decision making through a realistic orientation to one self and the environment. The Counsellor may specialize in any one type of Counselling such as vocational, educational, marriage etc.

Guidance Psychologists give career talks in schools and colleges. They also prepare occupational and guidance monograms, brochures or pamphlets. They may also conduct occupational survey and may help the clients in finding part-time or full-time employment. They are also known as Vocational Guidance Officer, Career masters/Career counsellors etc.

**ENGINEERING PSYCHOLOGISTS:** - He deals with the subject of human engineering or ergonomics. Engineering psychologists may collaborate with engineers in designing equipment so as to facilitate human performance.

**PERSONNEL PSYCHOLOGIST:** - His area of work is personnel selection and their classification. In industry, the techniques of personnel selection and classification are used not only in hiring new employees but also in connection with promotion, transfers, discharges and in arriving at other professional decisions. These techniques are also used in selecting suitable students for admission in medical, professional and technical institutes.

In armed forces, Psychologists develop techniques for the selection of officers' allocation of assignments in various units according to their capacities and the evaluation of their performance.

## **PERSONAL QUALITIES**

**All fields of psychology require:-**

- Intellectual curiosity about human behaviour
- An ability to establish support with others.
- Ability to win confidence of others

➤ Patience

## EDUCATIONAL AND TRAINING FACILITIES

Training to be a psychologist requires early planning one must take up Psychology as a subject at the plus two levels which is the first stage when the subject is offered for study. Without taking up this subject at this level you might find it difficult to choose this for your graduation. After plus two, you take up study of Psychology as a major/honours subject.

In Universities where there is no provision of Honours Degree in this subject you take Psychology as one of the subjects. Then after graduation you have to continue for the master's degree in Psychology. At this stage, the University you choose becomes important from the point of view of the specialization you seek.

Bachelor's degree holders have very few employment opportunities directly related to Psychology. They may find work as assistants at rehabilitation Centres in data collection and its analysis.

Psychologists are required to acquire a very good mastery over the subject of specialization through post-graduate study. In fact, it is usually a better idea to go for Ph.D. degree.

Training in psychology is necessary so that the qualities required for becoming Psychologist may be inculcated among people who wish to profess psychology. Training facilities in psychology are available in various institutions. Nearly in all Indian Universities, psychology can be taken as a subject at *GRADUATE* or *POST-GRADUATE* level. Some of the important Institutes and their courses are detailed below:-

NAME OF THE INSTITUTES	COURSES	DURATION	ELIGIBILITY
1. Central Institute of Psychiatry, Karke, Ranchi-834006, Jharkhand	Ph.D in Medical & Social Psychology	3 years 2 years	M.A. Psychology after M.Phil in Medical & Social Psychology
	M.Phil.in Medical & Social Psychology	2 years	M.A. in Psychology with 50% marks M.B.B.S.
	Diploma in Psychological Medicines	2 years	M.A. in Psychology
	Diploma in Medical & Social Psychology	2 years	M.A. in Psychology or

	Diploma in Psychiatric Social work	2 years	Sociology or Anthropology with Specialization in Cultural/Social Anthropology
2. The National Institute of Mental Health & Neuro Sciences, P.B.No.2900, Bangalore-560029.	Ph.D in Clinical Psychology M.Phil. in Clinical Psychology Diploma in Medical & Social Psychology	2 years - 2 years	M.Phil degree in Clinical Psychology M.A./M.Sc. in Psychology M.A. in Psychology
3. Regional Institute of Education, Mysore-570006	Post-Graduate Diploma in Guidance & Counselling	1 year	Master's degree in Psychology/Education
4. Regional Institute of Education, Bhopal-462013	M.Phil in Clinical Psychology	2 years	M.A./M.Sc. in Psychology
5. Sri Ramchandra Medical College & Research Institute, Porur, Chennai-600116	M.Phil in Clinical Psychology	2 years	M.A./M.Sc. in Psychology

**DEPARTMENT OF EDUCATIONAL PSYCHOLOGY & FOUNDATIONS OF EDUCATION, NATIONAL COUNCIL FOR EDUCATIONAL RESEARCH & TRAINING (NCERT), SRI AURBINDO MARG, NEW DELHI-110016.:**

(i) **INTERNATIONAL DIPLOMA IN GUIDANCE AND COUNSELLING** of 6 months duration is offered by N.C.E.R.T., New Delhi. Foreign Students having done Graduation or Teaching Degree are eligible for admission. Preference is given to candidates with background of Psychology, Sociology, Social work, Education and Child Development. In service candidates are given preference. These are thirty five (35) seats in this course.

(ii) **DIPLOMA IN GUIDANCE AND COUNSELLING** (National Level)- This course of 9 months duration is offered by Regional Institutes of Education located at Bhopal, Ajmer, Bhubaneswar and Mysore. Each Regional Institute has 35 seats. Eligibility:  
- Candidates with Post-Graduate Degree (M.A./M.Sc.) in Psychology or M.Ed. are eligible for admission.

**EMPLOYMENT OPPORTUNITIES**

There are diverse avenues of employment for Psychologists, Educational Institutions, and Vocational Rehabilitation Centre for Physically Handicapped, Vocational Guidance Units/Centres, Labour Intensive Industrial Establishments, various Government Departments such as Employment Service, Social Welfare department, Psychiatric departments of Hospitals avail their services.

Graduates and post-graduates in Psychology may also compete along with other graduates/post-graduates for the position of Employment Officers/Assistant Employment Officers. These posts in Central Government are filled through U.P.S.C. and in States through State Public Service Commission.

In industry, on Industrial Relations side there are also jobs which demand Psychology as the main requirement of the job. They include the post of Personnel / Welfare Officer, Labour Officer, Social Worker, Child Welfare Officer, Research Officer, Industrial Social Worker etc.

Appointments to the posts of Lecturers and Readers in Psychology are generally made through advertisements in Newspapers by Colleges and Universities.

Right from Research Assistant to Professor of Psychology all the posts are selection posts in N.C.E.R.T. Master's degree in Psychology with first/high second class in the subject is the minimum qualification required Doctorate degree is desirable for senior positions. Minimum experience of two to three years is required for most of these posts. Similar positions also exist in the State councils of Educational Research and Training (SCERTs).

**OTHER EMPLOYMENT OPPORTUNITIES:** - Teachers, Lecturers, Professors of Psychology teach in Institutions, Colleges, Universities and do research work. They perform classroom teaching by discourses, discussions, demonstration and supervise laboratory methods. They also guide scholars in their psychological research projects. They set examination papers conduct examination and evaluate answer books.

## **SELF- EMPLOYMENT OPPORTUNITIES**

It is a well known fact that Psychology, as a profession, is concerned with application of the knowledge to the prediction and controlled of behaviour. Following are some of the areas which possess the potentialities of providing self-employment to Psychologists.

- Private Child Guidance Clinics and Adolescent Guidance Clinics/Centres.
- Private Clinics in Psychiatry and Social Medicines
- Institutes for the Mentally Retarded
- Vocational Guidance and Counselling Clinics
- Setting up Psychological Testing Laboratories.

# THE ARCHITECT

## INTRODUCTION

Architecture is the science and art of building, natural Lighting, heating or cooling and Right from the Stone Age to the modern life, human beings have created practical and beautiful enclosures for themselves. Architect is concerned about this enclosure of space for human use.

Modern architect purports to create buildings and structures with the highest possible standards of functional performance in terms of efficient planning, good artificial and natural lighting, heating or cooling and proper acoustic conditions consistent with the price the client can afford to pay. Architecture is a multidisciplinary profession and requires a combination of artistic, technological and sociological expertise.

While designing buildings he discusses the purposes, requirements and budget of the project with the client and then prepares drawing and written information.

The role of present day architect is not limited only to the construction of buildings. He is now being increasingly called upon to undertake Landscape Architecture and Regional and Urban Planning. Landscape Architect plans the location of building and roads and the arrangement of flowers, shrubs and trees and other features of open space. In almost all the major cities and towns of India, there are urban development authorities who seek the assistance and advice of urban planners. Architect is also involved in the interior designing activities.

Architects generally work in a comfortable environment, most of his time is spent in advising clients, developing reports and drawings and working with other architects and engineers. He also often works at construction Sites reviewing the progress of projects.

## PERSONAL QUALITIES

An Architect should have the following personal qualities:-

- Ability to communicate ideas visually to his clients
- Artistic and drawing ability
- Visual orientation and the ability to conceptualize and understand spatial relationships
- Must have creativity and ability to work independently as well as part of a team
- Aesthetic appreciation

## EDUCATIONAL AND TRAINING FACILITIES

Aspirants of an architectural course should have taken up Physics, Chemistry and Mathematics at plus two level. The courses in architecture are available at the following levels.

**Diploma in Architecture (D.Arch.):**- Many of the polytechnics offer Diploma in Architecture also known as Architectural Assistantship course of 3 years duration. These courses are open to students after passing Secondary/10<sup>th</sup> /Senior Secondary (10+2) examination.

**Bachelor of Architecture (B.Arch.):**- In many colleges / Institutions admission is made through All India Engineering Entrance Examination conducted by the Central Board of Secondary Education (CBSE). This is a 5 years degree course open to students after passing Senior Secondary (10+2) examination.(A sample list of Colleges/Institutions offering B.Arch./M.Arch. is given in Annexure-A).

**Master's Degree in Architecture (M.Arch.):**- This course is available after completing the degree in Architecture i.e., B.Arch. The duration of this course is 2 years, those who wish to go in for teaching and consulting, gaining the master's degree is ideal for them, M.Arch. Course deals with a specific area of specialization such as Housing, Urban Designing, Architectural conservation etc.

**Bachelor of Planning (B.Planning):**- This degree course of 4 years duration is available after Senior School Certificate (12 years) examination of Central Board of Secondary Education or equivalent with Physics, Chemistry and Mathematics.

**Master's Degree in Planning (M.Planning):**- The eligibility for this course is Master's degree in Sociology, Economics, Geography or Degree in Architecture (B.Arch.) and Civil Engineering (B.E. /B.Tech.).

**Ph.D. in Architecture:** - After completing Master's degree in Architecture one can seek admission in Ph.D in Architecture.

Instead of studying in colleges of Architecture, students can take on alternative route to become an Architect. Indian Institute of Architects (IIA), the professional organisation of architects conducts examination in four parts. Students qualifying in all the parts are awarded Associate ship (A.I.I.A.) which is a recognized qualification to work as professional Architects like the B.Arch. degree holders.

## EMPLOYMENT OPPORTUNITIES

Employment opportunities for Architects are available as Architectural Assistant, Junior Designers, Draftsman, Junior Architect, Assistant Architect, Senior Architect and Chief Architect in Public Works Departments of State and Central Governments and Urban development authorities and local bodies such as municipalities, land development departments, defence services, with builders and construction companies and in some industrial organisations.

After gaining sufficient experience and confidence architects can start independent practice by establishing their own firms. Qualified Architects are required to register with the Council of Architecture for undertaking Practice.

## **ANNEXURE-A**

A sample list of Colleges/Institutions offering B.Arch./M.Arch.

### **ANDHRA PRADESH**

- J.N.T.U. School of Planning & Architecture, Mahavir Marg, Hyderabad-500028. B.Arch.
- Sri Venkateshwara College of Architecture, 86 Madhapur, Jubilee Hills, R.R.District, Hyderabad-500033. B.Arch.

### **BIHAR**

- Bihar College of Engineering.Patna-800005. B.Arch.

### **CHANDIGARH**

- Chandigarh College of Architecture, Sector-12, Chandigarh-160012. B.Arch.

### **DELHI**

- Faculty of Engineering & Technology. Jamia Millia Islamia, Jamia Nagar, New Delhi-110025. B.Arch.
- School of Planning & Architecture, 4, Block-B, Indraprastha Estate, New Delhi-110002. B.Arch.  
B.Planning  
Ph.D.

### **GOA**

- Goa College of Architecture, Dr. T.B. Cunha Educational Complex, Altinho, Panjim, Goa-403001. B.Arch.

### **GUJRAT**

- D.C.Patel School of Architecture, Arvindbhai Patel Institute of Environmental Design, Vallabh Vidyanagar-388120. B.Arch.
- Sarvajanik College of Engineering & Technology, Dr. R.K.Desai Marg, Athwa Lines, Surat-395001. B.Arch.

### **HARYANA**

- Chhotu Ram State College of Engineering, Murthal-131039, Distt. Sonapat. B.Arch.

## **JHARKHAND**

- Birla Institute of Technology, P.O.Mesra-835215, Ranchi. B.Arch.

## **KARNATAKA**

- Manipal Institute of Technology, Manipal-576119. B.Arch.
- Vachana Pitamaha Dr.P.G.Halakatti  
College of Engineering & Technology, Bijapur-582103. B.Arch.
- B.M.S. College of Engineering, P.B.No.1908,  
Bull Temple Road, Bangalore-560019. B.Arch.
- Bangalore Institute of Technology,  
K.R.Road Visveswarapuram, Bangalore-560004. B.Arch.
- Dayanand Sagar College of Engineering,  
Shavige Mallewara Hills, Kumaraswamy Layout, Bangalore-560078. B.Arch.
- University Visvesvaraya College of Engineering, K.R.Circle, Bangalore-560001. B.Arch.

## **KERALA**

- Thangal Kunju Musaliar College of Engineering, Kollam-961005. B.Arch.
- MES College of Engineering, Kuttipuram, Thrikkanapuram, Mallappuram Distt. B.Arch.
- Government Engineering College,  
Kannur, Parassinikkadavu (P.O.)-670563, Distt.Kannur. B.Arch.
- Government Engineering College, Wayanand,  
Nalloornadu P.O. Mananthavady, Wayanad Distt.670645. B.Arch.
- College of Engineering, Thiruvananthapuram-695016. B.Arch.
- Thangal Kunju Musaliar College of Engineering, Kollam-691005. B.Arch.

## **MADHYA PRADESH**

- I.P.S. Academy, School of Architecture, Rajendra Nagar,  
Agra-Bombay Road, Indore-452012. B.Arch.
- Institute of Environmental Planning & Technology (School of Architecture)  
34, Ambamolia Road, Bicholi Mardana, Indore-452016. B.Arch.
- Madhav Institute of Technology & Science, Gwalior-474005. B.Arch.

## **MAHARASHTRA**

- Marathwada Institute of Technology, P.B.-327, Satara Road, Aurangabad-431005. B.Arch.
- Jawaharlal Nehru Engineering College, N-6, CIDCO, Aurangabad-431003. B.Arch.
- Bharati Vidyapeeth's, College of Architecture, Sector-8, CBD Belapur, Navi Mumbai-400614. B.Arch.
- Indian Education Society's College of Architecture, 791, Shree Krishnachand Marg, Opp.Lilawati Hospital, Bandra Reclamation, Bandra (W), Mumbai-400050. B.Arch.
- Sir J.J. College of Architecture, 78/3, Dr. D.N.Road, Fort, Mumbai-400001. B.Arch.  
M.Arch.
- College of Architecture, 1061 A Ward, Shivaji Peth, Kolhapur-416012. B.Arch.

## **PUNJAB**

- Department of Architecture, Faculty of Physical Planning & Architecture, Guru Nanak Dev University, Amritsar-143005. B.Arch.

## **TAMIL NADU**

- School of Architecture & Planning, Chennai-600025. B.Arch.
- College of Engineering, Vadavamandal, Namandi (P.O.)-604410. B.Arch.
- Bharat Institute of Science & Technology, 173, Agharam Road, Selaiyur P.O. Chennai-600073. B.Arch.
- Dr. M.G.R.Engineering College, Maduravoyal, Chennai-602102. B.Arch.
- Hindustan College of Engineering, Old Mahabalipuram Road, Padur, (via) Kelambakkam, Chennai-603103. B.Arch.
- MEASI Academy of Architecture, "Association Gardens" 87, Peters Road, Royapettah, Chennai-600014. B.Arch.
- Mohammed Sathak Engineering College, Kilakarai-623806 Ramanad Distt. B.Arch.
- Periyar Maniammai College of Technology for women, Periyar Nagar, Vallam, Thanjavur-613403. B.Arch.
- Thiagarajar College of Engineering, Madurai-625015. B.Arch.
- Satyabhama Institute of Science & Technology, Jeppiaar Nagar, Old Mamallapuram Road, Chennai-600119. B.Arch.

## **UTTAR PRADESH**

- Zakir Hussain College of Engineering & Technology, B.Arch.

- Aligarh Muslim University, Aligarh-202002.
- Government College of Architecture, Tagore Marg, Lucknow-226026. B.Arch.
- Institute of Integral Technology, Dasauli, P.O.Basha, Kursi Road, Lucknow-226026. B.Arch.

### **WEST BENGAL**

- Bengal Engineering College, P.O. Botanic Garden, Shibapore, Howrah-711103. B.Arch.
- Faculty of Engineering & Technology (Jadavpur University), Kolkata-700032. M.Arch.

## **REGIONAL ENGINEERING COLLEGES**

(Offering B.Arch./M.Arch.)

Procedure for admission to these colleges is controlled by the Department of Secondary Education & Higher education, Ministry of Human Resource Development. Detailed notification calling for applications for entrance test/admission is issued by the respective colleges.

- Regional Engineering College, Hamirpur-177005, Himachal Pradesh. B.Arch.
- Calicut Regional Engineering College, Calicut-673601.Kerala. B.Arch.
- Maulana Azad College of Technology, (Regional Engineering College) Bhopal-462007, Madhya Pradesh. B.Arch.
- Visvesvaraya Regional College of Engineering, South Ambazari Road, Nagpur-440011, Maharashtra. B.Arch.  
M.Arch.
- Malaviya Regional Engineering College, Jaipur-302017, Rajasthan. B.Arch.
- Regional Engineering College, Tiruchirappalli-620015, Tamil Nadu. B.Arch.

### **INDIAN INSTITUTES OF TECHNOLOGY**

Joint Entrance Examination (JEE) is conducted for admission to B.Arch. course:

- Indian Institute of Technology, Kharagpur-721302. B.Arch.  
M.Arch.
- Indian Institute of Technology, Roorkee-247667. B.Arch.  
M.Arch.

# EXAMINATIONS CONDUCTED BY STAFF SELECTION COMMISSION FOR MATRIC LEVEL POSTS

## INTRODUCTION

The Government of India, in the Department of Personnel and Administrative Reforms vide its Resolution No. 46/1(S)/74-Estt.(B) dated the 4<sup>th</sup> November, 1975 constituted a commission called the Subordinate Services Commission (S.S.C.) which has subsequently been re-designated as Staff Selection Commission effective from the 26<sup>th</sup> September, 1977 to make recruitment to various Class III (Now Group "C") (Non-technical) posts in the various Ministries/Departments of the Government of India and in Subordinate offices. The functions of the Staff Selection Commission have been enlarged from time to time and now it has been decided that the Staff Selection Commission will take over the recruitment to all Group 'B' posts in the pay scale the maximum of which is less than Rs.10, 500.

The S.S.C. conducts so many examinations for Group 'B' and 'C' posts.

- All Group 'B' posts in various Ministries/Departments of Govt. of India and their attached and subordinate offices where maximum of pay-scales less than Rs.10, 500.
- All non-technical Group 'C' posts in the various Ministries/Departments of the Govt. of India and their attached subordinate offices, except those posts which are specifically exempted from the purview of the S.S.C.

In this Job-Seekers Guide, information related to the examinations conducted by S.S.C., Matric level is given. Details related to these examinations are as below:

The first combined Preliminary (C.P.) Examination for Matric Level posts has been introduced from 1999. Successful candidates of C.P. Examination will be eligible for main Examination for the following posts:

A – Clerks, Grade in the pay scale of Rs.3050-4590.

B – Grade ‘D’ Stenographers in the pay scale of Rs.4000-6000.

C – Grade ‘C’ Stenographers in the pay scale of Rs.5500-9000.

The Recruitment to the above posts will be in the following groups of services/officers:

- a) – Group ‘X’
- b) - Group ‘Y’ (for Clerks and Steno. ‘D’ only)

The posts under Group ‘X’ are in the Ministries/Departments of Central and mainly located in Delhi.

The posts under Group ‘Y’ are mainly in Subordinate and other offices of Central Government located in different States/Union Territories.

## EDUCATIONAL QUALIFICATION

A candidate must have passed matriculation or equivalent or Higher Examination:

<b>Age Limit</b>	10 to 27 years. Usual age relaxation as admissible to SC, ST, OBC, etc. as per Govt. orders in force.
<b>Fee Payable</b>	Rs.50 (Rupees fifty only) No fees for SC/ST, P.H. and Ex-serviceman.
<b>Mode of Payment</b>	The candidates should pay the fee by means of “Central Recruitment Fee Stamps are available at the Counter of all Departmental post offices of the Country in the denominations of Rs.5, Rs.10, Rs.20 and Rs.50. Fee can also be paid through Indian Postal Orders payable to Staff Selection Commission.

## SCHEME FOR COMBINED PRELIMINARY EXAMINATION

Written Examination (one paper having two parts)

<b>Test</b>	<b>Marks</b>	<b>Time allowed</b>
Part –I - General Intelligence	100	2 hours
Part – II – General Awareness	100	2 hours

<b>Total</b>	200	
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The questions in all the tests will be “Objective – Multiple Choice Type”. Candidates will be required to qualify in set in English and Hindi.

### **EXAMINATION CENTRES:**

The written test will be held at the following Centres or at some other place at the discretion of the Commission:

<b>Sl. No.</b>	<b>REGION</b>	<b>CENTRE</b>
1.	Eastern Region	Kolkata, Bhubaneshwar
2.	Western Region	Mumbai, Nagpur, Ahmedabad
3.	North-Eastern Region	Guwahati, Kohima
4.	Kerala-Karnataka Region	Bangalore, Trivandrum
5.	Southern Region	Chennai, Hyderabad
6.	Northern Region	Delhi, Jaipur
7.	Madhya Pradesh Region	Bhopal, Raipur
8.	North-Western Region	Chandigarh
9.	Central Region	Allahabad

### **SCHEME OF MAIN EXAMINATION FOR MATRIC LEVEL POSTS**

### **APPLICATION FOR EXAMINATION**

The candidates may note that application form for Main (written) Examination would be required to be sent to the office of the same Regional Director/Dy. Regional Director where he had applied for the Preliminary Examination. Hence, they are required to select a Centre falling under the same Region as opted for Preliminary Examination.

**FEE** – R.50/- (Rupees fifty only) each for LDCs, Steno. Grade 'D' and Steno. Grade 'C'. There shall be 3 Separate Main Examinations for Clerks Grade, Steno. Grade 'D' and Steno. Grade 'C'. Fees may be paid through Central Recruitment Fee Stamps (CRFS) only. The candidates will have to submit separate applications for each post for which he/she is applying. Fees of Rs.50/- in each case have to be paid. There is no fee for SC/ST/PH and EXS candidates.

### **A. MAIN EXAMINATION FOR LDC (CONVENTIONAL TYPE)**

<b><i>Paper – I</i></b>	<b><i>Marks</i></b>	<b><i>Duration</i></b>
Part (A) - General English	50	2 hours
Part (B) - General Studies (English/Hindi)	100	2 hours
Part (C) - Arithmetic (English/Hindi)	50	2 hours

**Skilled Test – Typing Test at the prescribed speed (Qualifying in nature) is conducted later for those candidates who qualify the main examination.**

### **B. MAIN EXAMINATION FOR STENOGRAPHER GRADE 'D' (CONVENTIONAL TYPE)**

<b><i>Paper - I</i></b>	<b><i>Marks</i></b>	<b><i>Duration</i></b>
Part (A) – General Studies (Hindi/English)	100	2 hours
Part (B) – Language Comprehension (Hindi/English)	100	2 hours

**Shorthand Test in Hindi OR in English – 300 marks for those who qualify at the Main Examination.**

The candidate will be given one dictation test in English or in Hindi at the speed of 80 words per minute for 10 minutes. The candidates who opt to take the shorthand test in English will be required to transcribe the matter in 65 minutes and the candidates who opt to take the test in Hindi will be required to transcribe the matter in 75 minutes.

Note – (i) The candidates who opt for Hindi/English in General Studies./Language Comprehensive paper has to take the skill test in Hindi/English as the may be.

(ii) Candidates who opt to take the Stenography at least in Hindi will be required to learn English Stenography and vice versa after their appointment.

## **C – SCHEME OF MAIN EXAMINATION FOR GRADE ‘C’ STENOGRAPHERS (CONVENTIONAL TYPE)**

### **SCHEME OF WRITTEN MAIN EXAMINATION**

<b><i>Paper I</i></b>	<b><i>Marks</i></b>	<b><i>Duration</i></b>
Part (A) – General English	100	2 hours
Part (B) – General Studies (English/Hindi)	100	2 hours
Paper – II – Essay (Hindi/English)	100	2 hours

The Shorthand Test in English will comprise one dictation test at 100 words per minute for ten minutes, which the candidates will be required to transcribe in 50 minutes.

The Shorthand tests in Hindi will comprise one dictation test at 100 words per minutes for 10 minutes, which the candidates will be required to transcribe in 65 minutes.

**Skill Test – Stenography Skill Test 100 words per minute.**

**300 marks (Stenography Test conducted later for those candidates qualify in the Main Examination).**

Note – (i) The candidates who opt for Hindi/English in General Language Comprehension Paper and Essay will have to take the Skill Test Hindi/English as the case may be.

(ii) For further details please see latest Advertisement in the Employment News.

